THE RISE AND FALL OF MENTAL DISORDERS: *AN ANALYSIS OF EPIDEMIOLOGICAL TRENDS*

by

Merrill Victoria van der Walt

Submitted in accordance with the requirements for the degree of

MASTER OF ARTS

in the subject of

PSYCHOLOGY

at the

UNIVERSITY OF SOUTH AFRICA

Supervisor: Professor Monika dos Santos

(April 2021)

Declaration

I declare that **'The Rise and Fall of Mental Disorders:** *An Analysis of Epidemiological*

Trends' is my own work and that all the sources that I used or quoted are indicated and

acknowledged by means of complete references.

(signature)

_____   April 2021

Merrill Victoria van der Walt

3078-897-8

Dedication

To my Nay, Dan and Leo. My children. My life. Please know, always, how exceptional you all

are. And anything you need to learn is learnable. And anything you want to do is doable.

Acknowledgements

"Cos I don't pray. I just behave.
cos saints and sinners
are quite the same.
Cos it's my temple,
the whole wide world.
That's why I think I am, I am, I am
a real religious man.

- Hombre religioso

My sincerest thanks and gratitude to the following people who were substantial contributors to this thesis.

My supervisor, ***Prof. Monika dos Santos***: Thank you for your knowledge, your experience, your support, your time, your expertise and your appreciative guidance throughout this process. Thank you for your complete trust in my ability and your willingness to allow me the freedom to accept the challenge of what is a new discipline for me.

To my wonderful family: Thank you for your unwavering belief in me.

To ***Nay, Dan, Leo, Rose, Lauren, Clyde, Candice, Jade, Olive and Bear.***

Abstract

Epidemiological trends in mental disorders are shown against a background governed by medical aid health policy. The study quantitatively analysed a dataset of mental disorders for South Africa's leading medical aid scheme.

South Africa's leading medical aid scheme has been in operation for almost three decades. This degree of longevity allows for a reliable longitudinal analysis of diagnostic trends. Through consent of the Scheme, a database was provided, which lists mental disorder diagnoses over seven years from 2008 to mid-way through 2015. Data from this source were analysed and interpreted.

Data fields provided and made use of from the raw medical scheme database are: Date of admission (Year, Month); Patient gender; Database population per year; Patient diagnosis (DEG Description); Total per DEG Description.

Each diagnosis (mental disorder) is presented in the following ways:

1. Bar charts showing the volume of specific mental illnesses each year.

2. Bar charts showing fluctuations of occurrence of a specific mental illness over time.

3. Frequency of specific mental illnesses over time, relative to the entire database population.

4. Male:Female ratio per mental disorder.

5. Female Outpatient vs. Inpatient volumes across each mental disorder and across all years (2008 – 2015).

6. Male Outpatient vs. Inpatient volumes across each mental disorder and across all years (2008 – 2015).

7. Total number of patients per mental disorder across time (2008 – 2015).

8. Frequency polygons showing the fluctuation of a selected mental disorder over time as compared to other selected mental disorders.

It is found that there are changes in prevalence rates of mental disorders over time and that these fluctuations are attributed to an economic factor within medical aid scheme cost-driven policy.

The effect of cost-driven policy is that members diagnosed with a mental disorder may not be granted provision of adequate treatment because diagnosis is in part, determined by economic structures.

Costs for mental illness treatment programmes are curtailed by keeping patient numbers significantly low, by radically over-diagnosing certain mental illnesses treated with comparably cheaper pharmaceuticals or by drastically curbing time spent in a mental health facility.

Some members of the medical aid scheme have been deliberately misdiagnosed. Alternatively, those, correctly diagnosed, do not receive the treatment required of such an illness. The scenario then is of thousands of mentally ill people, who are not treated effectively.

Members continue to pay fees, paying under the illusion that medical cover ensures effective treatment.

Key Terms

Diagnoses, disorder correlations, disorder frequency, epidemiological trends, longitudinal trends, Mental disorder, mental disorder database, Medical Aid Scheme policy, South Africa.

Table of Contents

List of Tables

Chapter 2: Methodology

Chapter 3: Results

Section I: Longitudinal Data

Section II: Gender Focus

Section III: Data Analysis: Patient numbers, gender analysis, disorder frequency and

comparison

Chapter 4: Discussion

List of Charts

Chapter 3: Results

Section I: Longitudinal Data

Section II: Gender Focus

Section III: Data Analysis: Patient numbers, gender analysis, disorder frequency and comparison

List of Figures

Chapter 1: Overview of mental illness

Chapter 1: Overview of mental illness

An introduction to fluidity in psychopathology

Those with a propensity for or a sufferer of a mental disorder are subject to the effects of a wide-reaching spectrum of influencing factors (Shrivastava, Johnston, & Bureau, 2012). These factors range from individual characteristics (such as intrusive thoughts, fluctuating emotions and erratic behaviours), to social, cultural, economic, genetic and environmental factors (such as working conditions, family and community support).

Thomas Kuhn (1996) proposed the concept of a paradigm as an intellectual scaffolding that frames the context of a theory or hypothesis. Proponents of a paradigm are then guided subconsciously as to which questions to ask and which evidence to view as relevant. The underlying social/geographic/political/historical traditions of the scientists' environment and the principles of the discipline itself contribute to forming the paradigm. The Theory of

Evolution by means of Natural Selection (Charles Darwin) is an example of a unifying paradigm in biological sciences.

In contrast, Psychology as a discipline is not steered by a unifying paradigm, which allows a single methodological approach. Instead, there is a splintering of paradigms into trends or themes, and these are associated with application specific psychiatric theory and practice. Watson (1967) refers to this as a prescriptive trend, and since it is the nature of a trend, these prescriptive trends fluctuate, shift, combine, separate, and recombine (Watson, 1967). Functionalism, Behaviourism, Gestalt psychology and Psychoanalysis are examples of the prescriptions referred to by Watson (Marx & Hillix, 1963).

Psychiatric theories evolve from a melting pot of doctors, patients and the society that surrounds them. Furthermore, psychiatric practice is made more complex because mental illnesses are often not static (Borch-Jacobsen, 2001). Static mental disorders are those with a purely

physiological/biological base and include tumoural,

neurological, endocrine, toxic, or infectious illnesses.

Examples of such illnesses would be epilepsy or Alzheimer's

disease.

Biological disorders will present along a predictable

continuum of symptoms. However, most mental disorders

present as dynamic, with great variation in symptoms. This is

because they do not have an exclusively genetic or

biochemical basis (Barrett, 1996). Symptoms, such as

auditory hallucination (classically associated with

schizophrenia) did not appear until the end of the 18th

century (Shorter, 1997; Hacking, 1999). Further examples of

the dynamism of mental illness are that the average duration

of schizophrenia is much shorter in the Third World than in

industrialised countries (WHO, 1979) and that the symptoms

of Chinese neurasthenia, correspond to severe depression,

but do not respond to antidepressants (Kleinman, 1986).

These examples show that it is critical to extend beyond the

framework of biological causes of mental illness and to integrate social and cultural contexts. (Benedict, 1934; Lévi-Strauss, 1950; Devereux, 1956; Bastide, 1965; Kleinman, 1988; Nathan, Stengers, & Andréa, 2000; Borch-Jacobsen, 2001).

An aspect of the symptoms of mental illness is the combination of a patient's interaction with medical professionals and institutions (Borch-Jacobsen, 2001). Patients present with symptoms that align or misalign with an illness category, and then they may subconsciously reject, accept or adopt new behaviours that reinforce an illness category. A dynamic feedback loop between doctor and patient drives the evolution into a new psychopathological paradigm (Watzlawick, Beavin & Jackson, 1967; Bateson, 1972; Hacking, 1999). This is because patients will tend to conform to the language of the medical professional and the society to which they belong, to expedite the treatment they so desperately need (Grivois, 1992). Barrett (1996), by way

of reinforcing this point, demonstrates how schizophrenic patients learn, during clinical interviews, to speak the doctor's language.

Hysteria for example, fell away as a diagnosis at the beginning of the 20th Century, because patients presented with new symptoms, such as catatonia or obsessional neurosis, through the trend initiated by medical professionals (Micale, 1993). Roudinesco (1999) questions whether this patient-doctor interplay is a factor in explaining the exponential increase in depressive disorders since the late 1950s. Healy (1998) showed that the explosion in depressive disorder figures corresponded directly to the introduction of antidepressant medications. Such a correlation can be understood in the light of patients modelling their symptoms on the psychotropic medications that act on those very symptoms.

An element of mental illness is the sum of symptoms developed between patients, medical professionals and

surrounding culture; therefore, it can be argued that the development of new psychiatric concepts and behaviours emerge from preconceptions, expectations and complex interactions (Bertolote, 2008). This creates a new mental illness paradigm common to the medical professional, patient and society (Borch-Jacobsen, 2001). Latour (1987) speaks of 'psychiatry in action', which is the extension of the patient-doctor interaction to other doctors and patients and to larger populations, resulting in the cementing of a psychiatric theory and the new symptoms that define it.

What is mental health?

There are numerous definitions for 'mental health.' At the simplest level, a definition for mental health is an absence of mental illness. A holistic definition is expressed by Mental Health Ireland (pg.31, 2009) to be "… a state of emotional and social wellbeing in which the individual can cope with the normal stresses of life and achieve his or her potential. It includes being able to work productively and contribute to

community life."

Those with sound mental health interact inclusively and equitably in ways that encourage personal wellbeing and the optimising of opportunities for development and the use of mental abilities. Mental health is not simply the absence of mental illness (Bertolote, 2008; Galderisi, Heinz, Kastrup, Beezhold & Sartorius, 2015).

Mental Illness

If, at a fundamental level, mental health is defined as the absence of a mental illness, then it follows that a mentally healthy individual does not have a psychiatric disorder (Sands, 1991; Galderisi et al., 2015). In contrast to behaviourist theory, the foundation of the DSM is that symptoms correspond with mental illness (Mayo Clinic, 2007). The DSM details the symptoms and functional impairments that signify a specific mental illness. Examples of such symptoms of illness would include:

- Behaviours (e.g., repeated actions)

- Feelings (e.g., apathy)

- Thoughts (e.g., delusions)

- Physiological responses (e.g., heart palpitations).

Mental Disorder

Mental Disorders are described as clinically significant behavioural or psychological patterns that cause distress, pain, disability and impairment to function (Sands, 1991; Schneiderman, Ironson & Siegel, 2005; DSM- IV Multi Axial System, 2007; Mayo Clinic, 2007). Furthermore, a mental disorder is also defined as a behavioural, psychological, or biological dysfunction that is not an expectable reaction to a particular event (Stein, Phillips, Bolton, Fulford, Sadler & Kendler, 2010). Morrison (1995) augments the description above, by adding the following criteria for defining mental disorders:

- Mental disorders describe disease processes, not people.

- There are not necessarily distinct boundaries between disorders. For example, the DSM-IV defines criteria for alcohol abuse and alcohol dependence, but in reality, alcohol users do not necessarily fit neatly into one of the two disorders.

- There is no difference between a physical condition (such as diabetes) and a mental disorder (such as bipolar I disorder).

- The DSM follows the medical model of illness, meaning that the DSM is a body of work derived from scientific studies of groups of patients presenting similarities in symptoms of their disease.

- The DSM makes no assumptions as to the

aetiology (cause) of most disorders.

According to Gaebel and Zielasek (2010), core mental
disorders in the DSM, are categorised as either:

1. Affective disorders,

2. Neurodegenerative disorders,

3. Personality disorders,

4. Developmental disorders, or

5. Disorders of addiction

The DSM System

Globally, the most commonly used diagnostic criteria
manual for mental disorders, is the Diagnostic and Statistical
Manual of Mental Disorders (DSM), developed and
published by the American Psychiatric Association (1994).
Pharmaceutical companies, policy makers, medical
practitioners and medical aids in the area of mental health
increasingly use the DSM (Brubeck, 1999).

The DSM and ICD systems

The International Statistical Classification of Diseases and Related Health Problems, 10th edition, is referred to as the ICD-10. ICD-10 codes are alphanumeric labels assigned to every medical diagnosis and description of symptoms. The World Health Organisation (WHO) develops and monitors the classifications (Torrey, 2009).

In South Africa, the Council for Medical Schemes and the National Department of Health have adopted the ICD-10 diagnostic coding system in the public and private health sector. It is also the diagnostic coding standard adopted in 1996, by the National Department of Health and the National Health Information System of South Africa (NHISSA) (The Board of Health Care Funders, 2007; Council for Medical Schemes, 2010).

In South Africa, Medical aid schemes mandate a DSM diagnosis from a psychiatrist before authorising mental health treatment and services (Dittmer, 2011; Kriel, 2011;

Pridigeon, 2011). Discovery, Polmed, GEMS (Government Employees Medical Scheme) and Liberty medical aid schemes approve mental health admission only with a comprehensive DSM-IV report for all psychiatric and mental health related services (Discovery Health, 2009; Government Employees Medical Scheme, 2010; Liberty Medical Scheme, 2010). Without this report, fees are deducted from the limited day-to-day benefits.

Mental health practitioners also use ICD-10 codes when processing medical aid claims (Duncan, 2008). The DSM and the ICD systems developed around diagnostic codes, but practitioners use the ICD for invoicing purposes and refer to the DSM for diagnostic criteria (First, Rebello, Keeley, Bhargava, Dai, Kulygina, Matsumoto, Robles, Stona & Reed, 2018).

Interestingly, and especially in South Africa, evidence shows that regarding mental disorders, medical practitioners prefer applying the DSM system because it is more comprehensive

than the ICD-10 coding system (Mezzich, 2002; Allers, 2008; Collin, 2008), and is a diagnostic classification system, specifically designed for mental disorders. It comprises a list of mental disorders (each uniquely coded) but with detailed classification criteria (First et al., 2018).

The DSM system is also the preferred clinical diagnostic guideline in South African private mental health hospitals (Clark, Cuthbert, Lewis-Fernández, Narrow, & Reed, 2017). According to the Hospital Association of South Africa (HASA) there are 247 private mental health hospitals totalling 30 334 beds. These private psychiatric hospitals have the same psychiatric admission and administration criteria, individualised for each of the 110 medical aid schemes, registered with the Council for Medical Schemes in 2009 (Clark, 2011; Perry, Lawrence & Henderson, 2020).

The history of the DSM

The first edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-I) was published in 1952. There

have been six revisions since the first publication, with each subsequent publication, expanded to include additional disorders, all with the aim of defining and classifying mental disorders to improve diagnoses, treatment, and research (Brubeck, 1999; Houts, 2000):

1. DSM-II (1968)

2. DSM-III (1980)

3. Revised DSM-III, DSM-III-R (1987)

4. DSM-IV (1994)

5. Revised DSM-IV-TR (2000)

6. DSM-V (2013)

In 1917, a 'Committee on Statistics' (referred to now as the American Psychiatric Association (APA)), together with the National Commission on Mental Hygiene, developed the first standard diagnostic classifications manual for mental hospitals called the 'Statistical Manual for the Use of Institutions for the Insane', and this listed 22 diagnoses (Brubeck, 1999; Houts, 2000).

The DSM-I listed 106 mental disorders, and the DSM-II expanded the list to include 182 disorders (Grob, 1991; Houts, 2000), with both documents not accentuating a clear distinction between 'normality' and 'abnormality' (Mayes & Horwitz, 2005; Wilson, 1993). The DSM-III listed 265 diagnostic categories and was used globally. In 1987, the DSM-III-R was published as a revision of DSM-III and cited 292 diagnoses (Burbeck, 1999; Houts, 2000).

The DSM-IV (1994) listed 297 disorders and was significant in its inclusion of a 'clinical significance criterion' to almost half of its categories, which made it mandatory that symptoms cause 'clinically significant distress or impairment in social, occupational, or other important areas of functioning' (Schaffer, 1996; Frances, Mack, Ross & First, 2000).

DSM-IV Multi-axial evaluation

The DSM-IV incorporated a multi-axial evaluation approach, with five axes to record the bio-psycho-social assessment of each patient. Axis I for clinical syndromes; Axis II for personality disorders and mental retardation; Axis III for physical disorders and conditions; Axis IV for psychosocial stressors such as environmental problems and axis V for global assessment of patient functioning over the previous year (The American Psychiatric Association, 1994; Morrison, 1995; Brubeck, 1999; Houts, 2000).

Axis I: Mental Disorders

Axis I record mental diagnoses as a clinical syndrome, except for personality disorders and mental retardation (The American Psychiatric Association, 1994; Morrison, 1995; Brubeck, 1999; Ruocco, 2005). In most instances, a patient will suffer a minimum of one Axis I diagnosis, but many patients will have more than one. The primary diagnosis should be listed on Axis I (Hout, 2000).

Axis II: Personality Disorders and Mental Retardation

Clinicians will be inclined to focus on an Axis I pathology and so the Axis II is necessary to ensure that personality disorders and mental retardation are not overlooked, and with some patients presenting with more than one Axis II diagnosis (Morrison, 1995).

Common Axis II disorders include personality disorders such as paranoid personality disorder, schizoid personality disorder, schizotypal personality disorder, borderline personality disorder, antisocial personality disorder, narcissistic personality disorder, histrionic personality disorder, avoidant personality disorder, dependent personality disorder, obsessive-compulsive personality disorder, and mental retardation (Røysamb, Kendler, Tambs, Orstavik, Neale, Aggen, Torgersen & Reichborn-Kjennerud, 2011).

Axis III: Physical Conditions and Disorders

A physical illness may have a direct effect on the Axis I diagnosis of a patient and can impact the management of an Axis I or Axis II disorder (Morrison, 1995, Røysamb et al., 2011).

Axis IV: Psychosocial and Environmental Problems

The role of Axis IV is to report any environmental or psychosocial event or condition that might affect the diagnosis or management of the patient (Morrison, 1995; Røysamb et al., 2011). The Axis I or Axis II disorder may have caused these problems, or they may be independent events. If the Axis IV identified variable occurred earlier, then it must have contributed to the development of the mental disorder.

According to Morrison (1995), there are nine categories of psychosocial and environmental problems:

1. Economic problems: Such as debt, poverty, inadequate welfare or child support.

2. Housing problems: Such as homelessness, poor housing, and dangerous neighbourhoods.

3. Problems with primary support group: Such as the death/illness of a relative, divorce/separation, physical or sexual abuse.

4. Occupational problems: Such as stressful work conditions, change of job, dissatisfaction with job or unemployment.

5. Educational problems: Such as academic challenges, illiteracy, or poor school environment.

6. Problems related to the social environment: Such as racial or sexual discrimination, retirement, or social isolation.

7. Problems related to the legal system or crime: Such

as incarceration or being a victim of crime.

8. Other psychosocial problems: Such as exposure to war, and natural disasters.

9. Problems with access to health care services: Such as no or insufficient health insurance or the unavailability of transportation to health care services.

Axis V: Global Assessment of Functioning (GAF)

The Global Assessment of Functioning (GAF) score is a numerical indication of a patient's current and overall (occupational, psychological, and social) functioning, recorded as a number on a 100-point scale (Morrison, 1995; Saleebey, 2001; Røysamb et al., 2011). South African Employee Assessment companies apply the DSM- IV's GAF Scale to determine if a patient could benefit from brief counselling (Keet, 2009).

DSM limitations and advantages

There is no standard diagnostic test or measurement for mental illness. Nevertheless, it is human nature to attempt to categorise experience (Phares, 1992), and so, not surprising many mental health professionals emphasise psychiatric classification systems to the point where they become the basis of diagnosis rather than just a supporting tool (Anello, 1989; Phares, 1992; Strong, 2007). The DSM has come under the scrutiny of criticism over the years. Below are some limitations:

Limitations of the DSM

1. The ever-expanding criteria of the DSM is indicative of the increasing medicalisation of human nature, driven by the influence of pharmaceutical companies on psychiatry (Cosgrove, Bursztajn, Kupfer, & Regier, 2006; Kupfer & Regier, 2009; Cosgrove, Bursztajn & Krimsky, 2009). One cannot ignore the potential for direct conflict of interest when half of

the authors who defined the DSM-IV have or previously had financial relationships in pharmaceutical companies (Kupfer & Regier, 2009).

2. Frances (2009) is highly critical of the processes adopted in the implementation of the DSM-5, where he is almost dire in his predication of the risk of serious and dangerous unintended consequences such as new false 'epidemics'.

3. The extreme fragmentation of mental disorders could explain why patients are often given more than one diagnosis simultaneously and why, in some instances patients are diagnosed with comorbidity within an Axis (Saleebey, 2001; Gomes de Matos, Gomes de Matos, & Gomes de Matos, 2005; Corcoran & Walsh, 2011). This statement does not refute the fact that comorbidities do exist.

4. The system needlessly captures human quirks and bad habits as mental disorders (Saleebey, 2001). Robbins

(2011) notes that under the new DSM-5 guidelines, some responses to grief are now definable as pathological disorders, instead of the archetypal human experiences they are (Allday, 2011). The essence of this criticism is aptly summarised by the British Psychological Society (June 2011 page 118) that states that "clients and the general public are negatively affected by the continued and continuous medicalisation of their natural and normal responses to their experiences ... which demand helping responses, but which do not reflect illnesses so much as normal individual variation."

5. The DSM-V needs greater cognisance of cultural and gender issues. This is vital, so as not to erroneously imply elevated psychopathology (Smart & Smart, 1997; Ivey & Ivey, 1998; Saleebey, 2001; Reyneke, 2008; Corcoran &Walsh, 2011).

6. Professionals using the DSM without extensive

theoretical knowledge, adequate training and/or

experience could be detrimental because many

symptoms in the DSM overlap different disorders

(Kendell & Jablensky, 2003; Corcoran & Walsh,

2011).

Huyssen (1999) states that criticisms about the DSM are

abundant, although few of its critics doubt the necessity of a

classification system. The manual must never replace

extensive clinical assessment and diagnosis that can only

result from the unique relationship between patient and

professional (Kendell & Jablensky, 2003; Gomes de Matos

et al., 2005; Corcoran & Walsh, 2011).

Advantages of the DSM

1. The proper use of the DSM can lead to improved

    treatment of individuals. Social workers in the field

    of mental health, for example, are responsible for

    making diagnostic decisions and they formulate their

    treatment plans according to the diagnosis. This is

reason enough to be familiar with the DSM (Brubeck, 1999; Kutchins & Kirk, 1995; Corcoran & Walsh, 2011; Smit, 2012).

2. Professionals need to communicate with colleagues using a common language, regarding treatment and to this end, the DSM manual provides a common 'mental health vocabulary' (Jampala, Zimmerman, Sierles & Taylor, 1992).

3. The DSM system can serve as a comprehensive educational and training tool (Kutchins & Kirk, 1995; Smit, 2012).

4. The DSM also provides a foundation upon which the effectiveness of counselling and treatment can be measured (Hohenshil, 1993).

Categorical/Diagnostic Model vs Dimensional Model

The overarching objective of the DSM is to deliver a standard language for defining psychopathology (Jampala et al., 1992). In creating this common language, what has resulted is a set of labels with definitions. On one end of the continuum, this creates a global standard of terms, but on the other end, a major flaw, is a lack of empirical evidence supporting every diagnosis.

Debate continues over which model would better suit the application of the DSM, and more importantly, would better apply to sufferers of mental illness. The two models are either the Diagnostic/Categorical Model preferred by psychiatrists or the Dimensional Model preferred by psychologists (Potuzak, Ravichandran, Lewandowski, Ongür & Cohen, 2012).

The Diagnostic Model adopts the diagnostic methodology of clinical medicine, but in so doing fails to include the complexities and subtleties of personality. The Dimensional

Model, in opposition, incorporates varied degrees of personality (Potuzak et al., 2012; Crocq, 2013).

The Diagnostic Model adopts the concept that an illness is either present or not: The criteria for a mental illness are met and the illness is present, or not met, and no illness is present. This method is what governs diagnosis in the DSM and ICD-10 (Widiger & Trull, 2007). The advantage of this model is the predictive power it creates (First & Tasman, 2004), because medical practitioners can theoretically expect similar behaviours and treatment results from patients who meet the set of criteria that defines a specific illness (Widiger & Trull, 2007).

The disadvantage of this model is that although symptoms of a mental disorder may be present, these may not meet all the criteria for that disorder, and therefore according to the stringency of DSM, the diagnosis cannot be made (Ruscio, 2008). In addition, there is scant research on treatments for

individuals who have only features or symptoms of a disorder (Cabassa & Baumann, 2013).

On the opposite end of the spectrum, the Dimensional Model adopts the philosophy that disorders are a sum of a complex interaction between factors over time and take into account the unique characteristics of individual symptoms. This model makes allowances for co-morbidity not concurrent with the main personality type (Widiger & Trull, 2007; Potuzak et al., 2012). The main disadvantage of this approach is the lack of clear thresholds establishing whether the individual has a disorder or not. This is problematic for health insurance, where treatment for precise diagnoses is a prerequisite (Ruscio, 2008).

The categorisation of personality disorders, for example, is more the result of observation than empirical study, making them largely inexact concepts, without clearly delineated boundaries. To emphasise this point, there is a call for the provision of empirical clinical data to evidence the linking of

personality and psychopathology in personality (Insel, 2013).

For example, is it possible for two individuals with the same

personality disorder diagnosis to have very different non-

overlapping symptoms (Cabassa & Baumann, 2013;

Krueger, Hopwood, Wright & Markon, 2014)?

Practitioners opposed to the diagnostic approach, advocate

instead, that mental health be viewed from a completely

different perspective. This perspective begins with

acknowledging and accepting the overwhelming evidence

that mental illness falls on a continuum with 'normal'

experience. In addition, it is critical to acknowledge that

psychosocial factors such as poverty, unemployment and

trauma are evidence-based, contributing factors to mental

illness. These practitioners are firm in their stance that

diagnosing mental illnesses, should not be from rigid

categories, but should begin instead, with the specific

experiences, or symptoms of the individual. This approach

would be from the ground up and not, as it currently stands,

from the top, down. Diagnostic labels are less useful than a description of a patient's symptoms for predicting treatment response (British Psychological Society, June 2011).

Terminology used in the DSM System

Definitions for 'mental disorder', 'mental illness' and 'mental health' vary according to cultural norms, schools of thought, research criteria etc. (Gopalkrishnan, 2018). According to Kendell (2002), for example, the term 'mental illness' or 'disorder' are synonymous. Whereas behavioural theorists for example, object to any medical definition of mental illness based on their disagreement with the assumption that there is a physiological cause for psychological problems (Tilbury, 2002).

In the DSM-IV, the challenges of defining these terms lessened by identifying biopsychosocial criteria for each mental disorder.

Attempts to define 'mental health' often involve describing a

behavioural 'baseline' as 'normal'. In this context, normality would then be the average or common behaviour within a community (Sands, 1991; Mayo Clinic, 2007). Societies define what is normal according to its religious, cultural, and behavioural characteristics (Gopalkrishnan, 2018).

Key changes in the DSM-5

The DSM-5 was published on May 18, 2013, overriding the DSM-IV-TR, which was published in 2000 (Wakefield, 2013). The greatest difference when comparing the two manuals would be the removal of the DSM-IV multiaxial system of diagnosis and the Global Assessment of Functioning (GAF). The World Health Organisation's (WHO) Disability Assessment Schedule was added to the DSM-5 as a suggested method to assess functioning (American Psychiatric Association, 2013).

Additional changes in the DSM-5

Neurodevelopmental disorders (A guide to DSM-5: Neurodevelopment; A guide to DSM-5: Neurodevelopment; A guide to DSM-5: Autism Spectrum; American Psychiatric Association, 2013).

- Mental Retardation is now referred to as intellectual disability (intellectual developmental disorder).

- Phonological disorder and stuttering are now collectively termed communication disorders, and include:

  - Language disorder
  - Speech sound disorder
  - Childhood-onset fluency disorder

- Social (pragmatic) communication disorder. This disorder is new to the DSM classification system and is characterised by impaired verbal and nonverbal communication.

- Autism spectrum disorder now incorporates:

  - Asperger disorder

  - Childhood disintegrative disorder

  - Pervasive developmental disorder not otherwise specified (PDD-NOS).

- Motor disorders is a new sub-category, and includes:

  - Developmental coordination disorder

  - Stereotypic movement disorder

- Tic disorders including Tourette syndrome

Schizophrenia spectrum and other psychotic disorders (Highlights of Changes, 2015).

- The DSM-5 no longer recognises schizophrenia subtypes (paranoid, disorganised, catatonic, undifferentiated, and residual).

- For the diagnosis of schizoaffective disorder, a major mood episode is required.

- Catatonia is now diagnosed if three of 12 symptoms are present. Catatonia may be an indicator of depressive, bipolar, and psychotic disorders; part of another medical condition; or of another specified diagnosis.

Depressive disorders (Guide to DSM-5: Disruptive Mood, 2013; Highlights of Changes, 2015).

- Disruptive mood dysregulation disorder (DMDD) is a new addition and is specified for children up to age 18 years.

- Premenstrual dysphoric disorder is a new addition.

- The term 'dysthymia' is now termed persistent depressive disorder.

Anxiety disorders (Highlights of Changes, 2015).

- For phobias and anxiety disorders, there is no longer the requirement that the patient need to acknowledge that their fear and anxiety is excessive or irrational.

- Panic disorder and agoraphobia are now two distinct disorders.

- Social phobia is now termed social anxiety disorder.

- Separation anxiety disorder and selective mutism now fall under the umbrella term of anxiety disorders, where previously they were classified as disorders of early onset).

Obsessive-compulsive and related disorders (Highlights of Changes, 2015).

- Obsessive-compulsive and related disorders now include an additional four disorders, and they are:

    - Excoriation (skin-picking) disorder

- Hoarding disorder

- Substance/medication-induced obsessive-compulsive and related disorder.

- Obsessive-compulsive and related disorder due to another medical condition.

- Trichotillomania (hair-pulling disorder) is categorised as an obsessive-compulsive disorder, where it was classified as an impulse-control disorder in the DSM-IV.

- A new disorder, falling within the obsessive-compulsive arena, is:

  - Body-focused repetitive behaviour disorder (such as nail biting, lip biting, and cheek chewing) or obsessional jealousy.

Trauma and stressor-related disorders (Highlights of Changes, 2015).

- Post-traumatic stress disorder (PTSD) is included in the new division: Trauma and Stressor-Related Disorders (Friedman, Resick, Bryant, Strain, Horowitz & Spiegel, 2011).

- For the diagnosis of acute stress disorder and PTSD, specific emotional reactions were a requirement, but this has been eliminated (Friedman, Resick, Bryant & Brewin, 2011), so as not to exclude military, law enforcement and first responder staff, whose training prepared them to not react emotionally to traumatic events (Adler, Wright, Bliese, Eckford & Hoge, 2008; Hathaway & Banks, 2010; Karam, Andrews, Bromet, Petukhova, Ruscio & Salamoun, 2010).

- Two new trauma and stressor related disorders are:

    - Reactive attachment disorder

- Disinhibited social engagement disorder

Somatic symptom and related disorders (Highlights of Changes, 2015; Diagnostic Ethics, 2015; DSM-5 Redefines Hypochondries, 2015; Pelletier, 2015).

- Somatoform disorders are now termed somatic symptom and related disorders.

- Patients that present with chronic pain can now be diagnosed with somatic symptom disorder (with predominant pain), or with an adjustment disorder.

Feeding and eating disorders (A Guide to DSM-5: Binge Eating, 2013; Highlights of Changes, 2015).

- Binge eating disorder is now a classified diagnosis.

- Feeding disorder of infancy or early childhood is renamed avoidant/restrictive food intake disorder.

Sleep/wake disorders (Highlights of Changes, 2015).

- Primary insomnia is now termed insomnia disorder, and narcolepsy is separate from other hyper-somnolence.

- Breathing-related sleep disorders include:

  - Obstructive sleep apnoea
  - Central sleep apnoea
  - Sleep-related hypoventilation

- Circadian rhythm sleep–wake disorders are expanded to include:

  - Advanced sleep phase syndrome
  - Irregular sleep–wake type
  - Non-24-hour sleep–wake type

- What was once 'dyssomnia' has been subdivided into two distinct disorders:

  - Rapid eye movement sleep behaviour disorder

- Restless legs syndrome

Sexual dysfunctions (Highlights of Changes, 2015).

- For females, sexual desire and arousal disorders are collectively termed female sexual interest/arousal disorder.

- Genito-pelvic pain/penetration disorder is a new diagnosis.

Gender Dysphoria (Gender Dysphoria in Adults, 2012; Highlights of Changes, 2015).

- Gender identity disorder in DSM-IV is like, but not the same as, gender dysphoria in DSM-5, because separate criteria are now given for children, adolescents and adults.

- Gender dysphoria is a stand-alone category and no longer falls within the sexual disorder's category.

Disruptive, impulse-control, and conduct disorders

(Highlights of Changes, 2015).

- Intermittent explosive disorder, pyromania, and kleptomania fall under the category of impulse-control disorders.

- Antisocial personality disorder is as a disruptive, impulse-control disorder.

- Conduct disorder is listed as a personality disorder.

- ADHD is listed as a neurodevelopmental disorder.

Substance-related and addictive disorders (A Guide to DSM-5: Substance Use Disorder, 2013; Highlights of Changes: Psychological Subtype, 2013; Highlights of Changes, 2015).

- Gambling disorder and tobacco use disorder are added to the disorders' list.

- Addictions and related disorders is a new category.

- Substance abuse and substance dependence are combined into specific substance use disorders. The Polysubstance dependence category is no longer accepted, and instead, the substance(s) must be specified. Substance dependencies include:

  - Alcohol dependence
  - Opioid dependence
  - Sedative, hypnotic, or anxiolytic dependence (including benzodiazepine dependence and barbiturate dependence)
  - Cocaine dependence
  - Cannabis dependence
  - Amphetamine dependence (or amphetamine-like)
  - Hallucinogen dependence
  - Inhalant dependence
  - Phencyclidine (or phencyclidine-like) dependence

o   Other (or unknown) substance dependence

o   Nicotine dependence

Neurocognitive disorders (A Guide to DSM-5:

Neurocognitive Disorder, 2013; Highlights of Changes,

2015).

- Dementia and amnestic disorder are now termed

    major or mild neurocognitive disorder.

Personality disorders (Personality Disorders, 2013;

Highlights of Changes, 2015).

- Personality disorder previously stood separate from

    the majority of disorders, but has been moved to a

    single axis, encompassing mental and other medical

    diagnoses.

- Ten types of personality disorder are identified. Each

    of the ten personality types are allocated to one of

    three clusters:

- **Cluster A** (Odd, Bizarre, Eccentric):

  1. Paranoid personality disorder

  2. Schizoid personality disorder

  3. Schizotypal personality disorder

- **Cluster B** (Dramatic, Erratic):

  1. Antisocial personality disorder

  2. Borderline personality disorder

  3. Histrionic personality disorder

  4. Narcissistic personality disorder

- **Cluster C** (Anxious, fearful):

  1. Avoidant personality disorder

  2. Dependent personality disorder

  3. Obsessive-compulsive personality disorder

Emerging diagnoses in the DSM-5

The conditions listed below are not formally classified

disorders, and are instead in the research phase, with the

potential for classification (American Psychiatric

Association, 2013).

- Attenuated psychosis syndrome

- Depressive episodes with short-duration hypomania

- Persistent complex bereavement disorder

- Caffeine use disorder

- Internet gaming disorder

- Neurobehavioral disorder associated with prenatal alcohol exposure

- Suicidal behaviour disorder

- Non-suicidal self-injury

An overview of mental health in South Africa

Grobler[1] classifies conditions with a biological basis, such as schizophrenia, as mental illness. A broader classification of mental disorders includes conditions that are not exclusively biological, such as alcohol and drug dependence. This classification is impactful when considering that from a mental health perspective, South Africa presents with high numbers of sufferers of mental disorders (when adopting the classification in the paragraph above) (Williams, Herman, Stein, Heeringa, Jackson & Moolmal, 2008).

According to the Sunday Times ('Sick State of Mental Health' 06 July 2014), more than 17-million people in South Africa are sufferers of either depression, substance abuse, anxiety, bipolar mood disorder or schizophrenia, accounting for approximately one-third of South Africa's 51.8-million population.

---

[1] Gerhard Grobler (President of the South African Society of Psychiatrists [SASOP]).

The South African Stress and Health (SASH) Study of 2009 (Herman, Stein, Seedat, Heeringa, Moomal & Williams, 2009; Stein, Williams & Kessler, 2009) presents an overview of mental disorders in South Africa using a large representative sample size of 4 351 adults across the country. Conclusions show that the lifetime prevalence for any disorder was 30.3%. The most predominant twelve-month and lifetime disorders were anxiety-based disorders, with the highest rates occurring in the Western Cape. Furthermore, it was found that the most common disorder was alcohol abuse, at 11.4%. During the twelve months of the study period, a staggering one in six adults (16.5%) suffered from common mental disorders. A quarter of these cases were classified as serious, which translates to four out of every hundred South Africans. In addition, it was exposed that maternal mental disorders are significantly high in low socio-economic groups, with the pervasiveness of maternal depression ranging from an overwhelming 18% to 47% for antenatal depression (Manikkam & Burns, 2012; Rochat, Bland,

Tomlinson & Stein, 2013; Tsai, Tomlinson, Dewing, Le Roux, Harwood & Chopra, 2014;Brittain, Myer, Koen, Koopowitz, Donald & Barnett, 2015) and from 32% to 35% for postnatal depression (Cooper, Tomlinson, Swartz, Landman & Molteno, 2009).

In South Africa, it is estimated that 4.5 to 5 million people, suffer from a mental disorder (Ngui, Khasakhala, Ndetei & Roberts, 2010). If alcohol and drug abuse are included, the number of sufferers' spikes to a devastating 15 million people, ranking mental disorders as third in their contribution to the burden of disease, after HIV and AIDS and other infectious diseases (Bertozzi, Padian & Wegbreit, 2006).

According to Dr David Bayever of South Africa's Central Drug Authority (CDA), South Africa ranks among the top ten drug and alcohol abusers in the world. This shocking statistic is double that of the global average. According to him, at least 15% of South Africans have a drug problem and this number is expected to rise (Health24, 2017).

Bronwyn Meyers, chief specialist scientist in the alcohol and drug abuse unit of the South African Medical Research Council (MRC), states that 11% (5.7 million people) of the South African population have an addiction disorder (Health24, 2013).

Furthermore, studies show extraordinarily high rates of traumatisation and post-traumatic stress disorder among the youth (Herman et al, 2009; Peltzer, Louw, Mchunu, Naidoo, Matseke & Tutshana, 2012). An estimated 20% of children suffer from a mental disorder because of exposure to levels of violence and domestic trauma, and approximately 10 000 people commit suicide in South Africa per year, with most of these instances being young individuals (Stansfeld, Rothon, Das-Munshi, Mathews, Adams, Clark & Lund, 2017).

Comparing South African suicide numbers against a global background, the 2015 WHO Global Health Estimates, calculated that 788 000 people died because of suicide (and many more than this number attempted suicide). Suicide

accounted for close to 1.5% of deaths worldwide, bringing it into the top 20 leading causes of death in 2015. Tragically, it was found that globally, suicide was the second leading cause of death among 15-29-year-olds in 2015, with 78% of global suicides occurred in low and middle-income countries (Brådvik, 2018).

Millions of South Africans have a mental disorder diagnosis and yet, tragically, this area is grossly underfunded with only four percent of the National Budget apportioned towards mental healthcare. According to Williams, Herman, Stein, Heeringa, Jackson & Moolmal (2008), mental health concerns should be calculated at six-fold the cost of their relative treatments. The increase in budget allocations to public psychiatric hospitals is only 3.8% per annum, while to general hospitals is 10.2% per annum (Burns, 2010). It is deeply concerning that 75% of people who live with a mental disorder in South Africa do not receive adequate treatment (Lund, Breen, Flisher, Kakuma, Corrigall & Joska, 2010). Of

greater concern, is that since it is estimated that only 10 to 15% of the global population with mental disorders seek help, the estimated number of South African mental illness sufferers must be even higher (Allen, Balfour, Bell & Marmot, 2014).

The social and economic environment of a country shapes population mental health (Allen et al., 2014). and with over one fifth of the South African population living below the food poverty line, a Gini co-efficient of 0.65, South Africa has one of the highest rates of inequality globally (Statistics SA, 2014). This paints a very bleak mental health profile. The Mental Health and Poverty Project (MHaPP, 2019), found a strong correlation in South Africa, between poverty and mental disorders, because of factors such as elevated stress levels, inadequate housing, food insecurity and exposure to violence (Patel, 2001; Lund, et al., 2010). At the same time, people with mental disorders are vulnerable to sliding into poverty because of exclusion from social and

economic opportunities (Patel, 2001), the high cost and difficulty of accessing treatment, or the loss of employment because of diminished productivity (Saraceno, Levav & Kohn, 2005).

In South Africa, mental disorders often co-occur with infectious diseases such as HIV and TB and non-communicable diseases such as cardiovascular disease and diabetes (Boutayeb, 2006; Mayosi, Flisher, Lalloo, Sitas, Tollman & Bradshaw, 2009). Research reveals a high prevalence of mental disorders among people diagnosed with HIV and TB (Freeman, et al, 2008; Kagee & Martin, 2010; Peltzer et al, 2012). This is of relevance in South Africa, considering the pervasiveness of both TB and HIV (Karim, Churchyard, Karim & Lawn, 2009).

The South African Mental Health Care Act (Government of South Africa, Mental Health Care Act, 2002) addresses mental health as a major public health issue, which must be consistent with international human rights standards. The Act

advocates the protection of the human rights of people with mental illness. The reality is that none of what is outlined in the Act has been actualised. To highlight this point, 53% of government hospitals are listed to provide 72-hour assessments of psychiatric emergencies (Lampros & Talias, 2020). However, according to reports from the South African Depression and Anxiety Group (SADAG), these hospitals frequently do not have the capacity to provide the treatment required, with patients being admitted to general wards and even suicidal patients turned away because of space constraints.

Allers (2012) cited an appallingly low figure of 320 practising psychiatrists in South Africa, which translates to a ratio of 150 000 patients per psychiatrist. But, because a mere 15% of the population (Council for Medical Schemes, March 2019) belong to a medical aid scheme and with 200 of the 320 psychiatrists working in the private sector, this ratio

translates to 33 000 patients per private psychiatrist and 440 000 patients per state psychiatrist.

On the Essential Drug List for State medicines supply to state hospitals, low priority is given to psychiatric medication (Kar, Pradhan & Mohanta, 2010). This means that if medication for the treatment of psychiatric disorders is severely limited, the recovery of many patients becomes less likely.

There is a significant inequality in mental health resources between provinces. Focusing on State hospitals, there is a single psychiatrist per 5 000 000 patients in the North West, compared to a single psychiatrist per 110 000 in the Western Cape. The number of beds in community residential facilities, range from zero in the North West and Northern Cape to 6.5 beds per 100 000 patients in Gauteng, showing the degree of under-sourcing. For many rural areas, in South Africa, there are no psychiatrists, even though, for example

1.5% of the rural population was treated for a mental illness in 2005 (De Kock & Pillay, 2017).

There are 23 provincial mental hospitals, providing 18 beds per 100 000 patients. Of this, one percent are reserved for children and adolescents. Medical staff resources, dedicated to treatment in these mental hospitals are an untenable 0.28 psychiatrists, 0.45 other medical doctors, 10.08 nurses, 0.32 psychologists, 0.4 social workers, and 0.13 occupational therapists per 100 000 patients. There are 41 psychiatric inpatient units in general hospitals in South Africa with 2.8 beds per 100 000 patients, with only 3.8% of these beds held in reserve for children and adolescents (Lund & Flisher, 2002).

It is important to provide this overview of the state of mental health services in South Africa, to highlight the severity of the lack of available resources for the overwhelming number of people desperately in need of adequate care and treatment.

Understanding that approximately 15% of the South African population belong to a Medical Aid Scheme (Council for Medical Schemes, March 2019), it is possible to:

1. Extrapolate the findings within this database to establish a clearer picture of the South African mental illness landscape. Or

2. Alternatively, using current mental illness statistics for South Africa, we can compare the mental health statistics in this dissertation (that represent private health care figures), against the general population and even global statistics.

The cost of mental illness

Mental disorders lead to considerable deterioration in health and functioning (National Collaborating Centre for Mental Health (UK), 2011). This deterioration can be extrapolated to the population level by multiplying the rate of occurrence of disorders by the average level of disability associated with

them. This calculation provides an estimate of Years Lived with Disability (YLD). YLD's are added to Years of Life Lost (YLL) to calculate Disability-Adjusted Life Years (DALY's). DALY's are the measurement used to gauge the Global Burden of Disease (GBD) (Lopez, Mathers & Ezzati, 2006; Disability Adjusted Life Years (DALYs), 2008; Vos, 2010; Larson, 2013).

In 2015, depressive disorders comprised a global total of over a confounding 50 million Years Lived with Disability (YLD) (Reddy, 2010). More than 80% of this non-fatal disease burden stemmed from in low and middle-income countries. Globally, depressive disorders rank as the single largest contributor to non-fatal health loss (7.5% of all Years Lived with Disability) (Lopez, Mathers & Ezzati, 2006; Reddy, 2010; Global Burden of Disease Study, 2013; Global Burden of Disease Collaborative Network (GBD), 2017).

In 2015, anxiety disorders totalled a global figure of 24.6 million YLD (Bandelow & Michaelis, 2015). Estimates are

lower for anxiety disorders compared to depression because these disorders are associated with a lower average level of disability (Bandelow & Michaelis, 2015). Anxiety disorders rank as the sixth largest contributor to non-fatal health loss globally and appear in the top 10 causes of YLD in all classified World Health Organisation regions (Whiteford, Ferrari, Degenhardt, Feigin & Vos, 2015; Rehm & Shield, 2019).

Mental disorders create a cascade of effects in terms of suffering, disability and mortality and are a major contributor to health and social care costs. Mental disorders result in a decline in economic productivity because of the inability to work, absenteeism or poor performance at work (Rajgopal, 2010). Premature death from suicide or physical illness further contributes to a loss in productivity (Jenkins, Baingana, Ahmad, McDaid & Atun, 2011). For a dependent family, the loss of income from a breadwinner, diagnosed with a debilitating mental disorder, may (and easily) result in

a spiral into poverty (Knapp, Funk & Curran, 2006; Jenkins et al., 2011).

A Kenyan based study (Kirigia & Sambo, 2003) estimated that the cost per patient hospitalised with mental disorders in 1999 was US $2351. This value included the cost to family members at US $51 and productivity losses of US dollars. What is important is to look at these findings against the average income per head in Kenya. This gives a sense of the economic impact of mental illness. At the time of the study, the average income per head was a mere US $580 per annum, with more than 50% of the population surviving on less than US $1 per day (McDaid, Knapp & Raja, 2008).

In a comparative study, in India (2005), the cost for an outpatient with schizophrenia was US $274. This amount included the cost of a loss of job opportunities for the patient. The cost also included the value of loans taken out to meet the cost of treatment (Grover, Avasthi & Chakrabarti, 2005).

A study in rural Ethiopia of 300 family caregivers concluded that these caregivers experienced financial difficulties, reduced work opportunities, tense family, and social relationships (Shibre, Kebede & Alem, 2003). A similar study in Zimbabwe of 66 caregivers reported that two-thirds experienced financial difficulties (Nyati & Sebit, 2002).

The inadequate treatment of mental disorders results in intergenerational liability. Untreated disorders of childhood have the knock-on effect of affecting education, leading to unemployment and exacerbated illness in adulthood. The cycle then continues, with untreated adults negatively affecting the intellectual, physical and emotional development of their children creating an intergenerational cycle of disadvantage (Rutter & Quinton, 1984; Nyati & Sebit, 2002; Grover et al., 2005; McDaid et al., 2008).

Child health intricately links to the health and wellbeing of the primary care giver. It has been found that if the child's primary caregiver has a mental disorder, routine clinic visits

for immunisation will be missed, and the child's health and nutritional needs will be negatively impacted (Rutter & Quinton, 1984). Depression among mothers significantly increases the risk for malnutrition in children (Patel, Rahman & Jacob, 2004).

Many mental health disorders are chronic, and unless successfully treated, come with increased risk of physical co-morbidities (Daré, Bruand & Gérard, 2019). There is scant data available in low and middle-income countries on the cost implications of physical co-morbidities, but Chisholm, Diehr & Knapp (2003), concluded that healthcare costs were between 17% and 46% higher for individuals who had co-morbid depression and physical health problems.

People diagnosed with mental illness, especially women, are more vulnerable to sexual abuse, putting them at higher risk for contracting and spreading HIV (Ciesla & Roberts, 2001; Des Jarlais, 2007; Altice, Kamarulzaman & Soriano, 2010). There is a correlation between the increased risk of co-

morbid mental disorder and tuberculosis (Janmeja, Das & Bhargava, 2005; Prince, Patel & Saxena, 2007). It is therefore critical to initiate the early recognition and adequate treatment of mental disorders because this will improve the overall treatment outcome for HIV and tuberculosis (Ciesla & Roberts 2001; Janmeja et al., 2005; Prince et al., 2007).

Another devastating correlation shows a high level of mental illness and learning disability in children affected by malaria, especially in Sub-Saharan African countries, where malaria is rife (Weiss, 1985; Amexo, Tolhurst & Barnish, 2004; Snow, Guerra & Noor, 2005).

Health Insurance and Medical Aid: Similarities and differences

Health Insurance

- The Long-Term Insurance Act regulates health insurance plans in South Africa.

- Health insurance is aimed at providing for health costs (as is a medical aid scheme) but is also in place to protect the policyholder's financial assets.

- Health insurance covers various disabilities and accidental injuries.

- Health insurance can be used to cover shortfalls in coverage of a regular medical aid scheme.

- In the case of accidental injury or disability, health insurance can cover the salary of an individual, deemed unable to work.

- It is possible to consolidate a health insurance plan with a life insurance policy or funeral cover.

- Health insurance pays the stated amount (benefits) directly to the policyholder (Institute of Medicine, 2002; Kim, Lee, Yoo & Park, 2015).

Medical Aid

- The Council for Medical Schemes governs medical aid.

- Medical aid pays out to the beneficiary (hospital or doctor), and not the policyholder.

- Medical aid does not include accident, disability or cover for the loss of limbs.

- Medical aid pays out according to the National Recommended Price List.

- A medical aid scheme is not authorised to include death or funeral cover.

- A medical aid scheme is legally bound to the
  coverage of Prescribed Minimum Benefits (PMB)
  (Institute of Medicine, 2002; Kim et al., 2015).

Medical aid schemes and support for mental illness

Medical aid and health insurance schemes have affected the
mental health arena considerably, to the point where Rappo
(2002) views the current state as the management of health
cost rather than health care.

The current reality is that medical aid and health insurance
providers determine access to and the delivery of health care
services, as well as the regulation of reimbursement. The
health insurance market in South Africa began developing in
the mid-1980's, and by 1989 there were approximately 50
000 policies on offer, growing exponentially in the early
1990's (Coovadia, Jewkes, Barron, Sanders & McIntyre,
2009).

Health insurance developed in response to spiralling health care costs and was modelled around consumers, medical and mental health professionals, hospitals, nursing homes and mental health organisations. The health insurance model centred on the feedback loop relationship between payers, providers and consumers so that services and their consequences are influenced and monitored (Cuffel, Snowden, Masland & Piccagli, 1996).

Approximately 9 million people (one in six South Africans) are members of medical aid schemes (Gray & Vawda, 2018). The Medical Schemes Act of 1998 (Regulation 8) mandated Medical aid schemes to pay in full for the diagnosis and treatment of certain diseases. Regardless of the benefit option, any member has a guaranteed right to a minimum level of care, called prescribed minimum benefits (PMB's). PMB's were introduced to ensure that members of medical aid schemes would not run out of benefits for certain conditions and be forced to go to state hospitals for

treatment. In this way, PMB's ensure continuous healthcare (Fish, Ramjee, Richards, Hongoro, Hoffman, & McLeod, 2006).

Prescribed minimum benefits cover 270 conditions (such as HIV, diabetes, epilepsy, various cancers, cardiac treatment and medical emergencies) and 27 chronic illnesses (such as schizophrenia, bipolar mood disorder and epilepsy).

Medical aid schemes tag PMB's as a major cost driver, and to this end, in September 2014, a case was submitted against the Minister of Health, arguing that he may determine the list of conditions that comprise the PMB's, but he has no authority overregulating the scope of payment. Medical aid schemes argue that the open-ended costs for PMB conditions have forced them to increase their rates significantly because of the difficult managing expenditure on claims (Council for Medical Schemes, October 2019).

If the court rules in favour of medical aid schemes, this means that schemes could lower the payment scope,

covering a much smaller proportion of the costs of PMB's. This would leave patients under-covered and unable to afford to pay or co-pay for the treatment and medications required (McQuoid-Mason, 2011).

Discovery Health Medical Aid Scheme is the largest medical aid scheme administrator in South Africa, with 2.8 million members. Discovery accounts for 56% of all beneficiaries in its sector and 31% of the overall market (Business Tech, 2019). Discovery Health Medical Aid Scheme limits payment for 15 categories of health professionals, including psychologists. Psychologists fall under the 'allied health benefits category', a category that provides limited annual cover for art therapists, chiropractors, homeopaths, podiatrists, social workers and speech therapists (IFC, 2019). Because clinical psychology falls into the same category as art therapy (for example), the status of psychology is undermined. Bipolar mood disorder, for example, requires constant, long-term and intense management – management

that includes the expertise of a psychologist. That Discovery

Medical Aid Scheme now limits payment to these medical

professions translates to severely cutting access to mental-

health treatment. This is extremely serious, especially when

viewed against the backdrop that The Medical Research

Council estimates 15.8% of South Africans suffer from an

anxiety disorder (Nel, Augustyn, Bartman, Koen,

Liebenberg, Naudé & Joubert, 2018).

There are opposing viewpoints around the value of managed

health. Champions of managed health care see it as a realistic

approach to cost control while sustaining quality health care

(Cummings, Budman & Thomas, 1998). The main argument

in support of managed healthcare is that cost containment

drives lower insurance premiums (Johnsen, 1994). The

reality though, is that as health care costs increase, so the

number of constraints on reimbursement for mental health

services increase (Austad, Hunter & Morgan, 1998; Bilynsky

& Vernaglia, 1998; Cooper & Gottlieb, 2000). This amounts

to ever-diminishing access to services and where admission is granted, services are managed (Huff, 2000).

A managed approach to mental health becomes particularly challenging when compensation is denied because of not honouring DSM codes (Kirk & Kutchins, 1988; Mead, Hohenshil, 1997; Glosoff, 1998; Murphy, DeBernardo & Shoemaker, 1998; Danzinger & Welfel, 2001). In some instances, when patients cannot afford to cover costs personally, therapists and patients may agree to submit an inaccurate mental disorder diagnosis that is reimbursable, so that patients can receive a measure of care. Wylie (1995) refers to this practice as "diagnosing for dollars."

Bipolar mood disorder, for instance, is eligible for PMB coverage, but other forms of depression are excluded. This means that some patients are falsely coded as having bipolar mood disorder to receive medical care. What this amounts to is discrimination against psychiatric patients, especially since depression is not listed as a prescribed minimum benefit

(Mbele, 2017).

Certain DSM codes are denied medical aid reimbursement for various reasons. Two commonly used reasons are that medical necessity is regarded as not justifiable, or that benefits were exhausted. Medical aid schemes often deny benefits for adjustment disorders, for disorders requiring long-term counselling, and for diagnostic codes grouped exclusively to Axis II status (Glosoff, 1998).

V-Codes assigned on Axis I are often denied when they are the primary focus of treatment. V-Codes are identified in the DSM-IV-TR (APA, 2000) under "Relational Problems" and "Other Conditions That May Be a Focus of Clinical Attention". These include amongst others, problems related to physical and sexual abuse, bereavement and religious or spiritual problems (Murphy, DeBernardo & Shoemaker, 1998). This is deeply concerning and short-sighted because the levels of distress associated with V-Code problems may be as severe as the distress experienced by Axis I disorders.

V-code problems can be more challenging than for example, generalised anxiety disorder (which is reimbursable) (Wylie, 1995; Murphy et al., 1998).

The majority of mental health counsellors admit that medical aid and health insurance requirements have a negative impact on their practices (Miller, 1996; Murphy et al., 1998; Danzinger & Welfel, 2001). Smith (1999) found that 6.6% of professional counsellors were very satisfied working within medical aid guidelines, 35.7% were somewhat satisfied and the majority (47%) were not satisfied.

Managed health care has radically altered the counselling landscape (Stern, 1993; Cuffel, Snowden, Masland & Piccagli, 1996). Mental health benefits may be limited to 20 sessions and brief therapy can be limited to as little as one to five sessions (Cuffel et al., 1996; Kiesler, 2000). This means that mental health workers battle to reconcile the demands of managed mental health care constraints and commitments to patients. This imbalance has created ethical and legal

dilemmas, a few of which are listed below (Acuff, Bennett, Bricklin, Canter, Knapp & Moldawsky, 1999; Glosoff, Garcia, Herlihy & Remley, 1999; Cooper & Gottlieb, 2000).

1. Informed consent: Patients may not be aware of or be fully informed of their mental health benefits (Cooper & Gottlieb, 2000).

2. Confidentiality: Before managed health care, patient-doctor/counsellor confidentiality was sacrosanct (except in situations involving harm to self or to others, and in the event of court-mandated disclosure). Counsellors and doctors can no longer pledge non-disclosure because medical aid schemes can request patient information to determine treatment and reimbursement (Cooper & Gottlieb, 2000; Danzinger & Welfel, 2001).

3. Patient autonomy: Managed health care policies create limitations that reduce patient and counsellor autonomy in making decisions that are in the best

interest of the patient (Wineburgh, 1998; Meyers, 1999; Danzinger & Welfel, 2001).

4. Competence: Medical aid schemes advocate brief therapy models. Counsellors and psychologists may not be adequately trained in brief therapy techniques. This has the knock-on effect of not delivering treatments effectively (Cooper & Gottlieb, 2000).

5. Treatment plans: The first task of a managed care psychotherapist is to accommodate treatment to the parameters of the benefit package (Austad & Hoyt, as cited in Miller, 1996). Tragically, this translates to adhering to treatment plans that comply with medical aid payment policy, rather than patient need.

6. Termination: Medical aid regulation dictates when counselling is to be terminated, where even requests for additional sessions are denied (Corcoran & Vandiver, as cited in Cooper & Gottlieb, 2000). Here again, is an example of the patient, not receiving the

care they require, because of the boundaries imposed

by policy. The repercussions of this in the end are

dire.

Complying with medical aid policies present challenges for

family counsellors who counsel from a family systems

approach – an approach that focuses on managing strategies

rather than pathology (Hawley, 2000). Family counsellors

adopt the view that the family system is malfunctioning, and

symptoms are manifestations of a dysfunctional whole and

not just that of a single family member (Goldenberg &

Goldenberg, 1996). This is why family counsellors can be

ethically opposed to assigning an Axis I diagnosis other than

V Codes because doing so inaccurately labels clients with

the added stigma of mental illness (Brown & Bradley, 2002).

The stigma attached to mental illness manifests in tangible

ways, where, for example, certain mental illness diagnoses

can result in denial, cancellation, or refusal to renew health,

life, and/or vehicle insurance (Mental Health: A Report of

the Surgeon General—Executive Summary, 1999; Missouri Department of Labour and Industrial Relations, 2003; Barker, as cited in Strom, 1992).

Inaccurate diagnoses create erroneous epidemiological trends over time. How reliable are mental health statistics when it is shown that counsellors, psychiatrists, social workers, therapists, and psychologists have intentionally misdiagnosed mental disorders? A case in point is the intentional misdiagnosis of depression or generalised anxiety disorder codes instead of a V-Code diagnosis (Davis, Sudlow & Hotopf, 2016). Intentional misdiagnosis creates data gaps around global mental health prevalence (Whiteford, Ferrari & Degenhardt, 2016; Davis et al., 2016; Ritchie & Roser, 2019).

The Code of Ethics of the American Mental Health Counsellors Association, Principle 1, Welfare of the Consumer, Item A.1 (AMHCA, 2000, p. 2), states, "the primary responsibility of counsellors is to respect the dignity

and to promote the welfare of clients." Surely then counsellors/doctors/mental health workers violate this code when they intentionally misdiagnose a mental disorder for refund purposes? However, a counsellor will often intentionally misdiagnose to assist the patient because without a misdiagnosis that is refundable, the patient will not receive treatment or care (Pandit & Pandit, 2009). The question is then, are the counsellors or the medical aid schemes acting unethically?

Mental health workers may interpret the rigidity of medical aid policy as a questioning of their professional authority by creating a polarisation between their professional commitment to their patients and their obligation to scheme policy (Grumet, 1989; Goold, Hofer, Zimmerman & Hayward, 1999). Manipulation of medical aid reimbursement policy falls under one of three strategies:

1. Exaggerating the severity of conditions (Lo, 1995; Hilzenrath, 1998; Freeman, Rathore, Weinfurt,

Schulman & Sulmasy, 1999).

2. Changing diagnoses (Matthew, Wynia, Cummins, Van Geest & Wilson, 2000) and/or

3. Reporting signs or symptoms that did not present, to assist in securing coverage (Matthew et al., 2000).

According to Matthew (JAMA, 2000), 39% of medical professionals admit to using these strategies, with 54% admitting to manipulation more often now, than 5 years ago. Manipulating managed health care is called 'gaming the system' for patients (Morreim, 1991), and can be interpreted as patient advocacy and even professional responsibility (Kalb, 1999; Nemes, 1993; Burda, 1993).

The question at the root of this is whether health care be viewed as a market-based contractual model (Veatch, 1972), or a profession-based fiduciary model? A profession-based fiduciary model would see doctors striving to provide an equally high standard of care to all, regardless of what

patients can afford to pay (Eisenberg, 1986; Council on Ethical and Judicial affairs, JAMA, 1994; How Physician Organisations are responding to Managed Care, 1999).

Prevalence rates of common mental disorders

Valid and current estimates of the percentage of a general population affected by mental health disorders is critical for the:

- Effective implementation of health policies.

- Calculation of death and disability statistics.

- Establishment of a clearer view of global occurrence.

- Calculation of the distribution across low, middle to high-income countries.

The most commonly occurring mental disorders are depression, anxiety, phobias and obsessive-compulsive disorders, psychosis (mainly schizophrenia and bipolar disorder), substance abuse (alcohol and drugs) and dementia

(mainly Alzheimer's disease, vascular dementia and HIV-related dementia) (National Collaborating Centre for Mental Health (UK), 2011). On a global scale, approximately 5 to 15% of the population suffer from a common mental disorder and 0.5% from psychosis (Kessler & Ustun, 2001; WHO: World Mental Health Surveys, 2008). Learning difficulties are a common mental disorder, with incidences of severe mental retardation at approximately 3.5 per 1000 people in prosperous countries and between 3 and 22 per 1000 in disadvantaged countries (Institute of Medicine, 2001).

Certain common mental disorders are acute while others are chronic, with half lasting more than two years, unless effectively treated (Jenkins, Baingana, Ahmad, McDaid & Atun, 2011). Two-thirds of people with psychosis experience relapse or a deteriorating course of illness unless adequately treated (National Collaborating Centre for Mental Health (UK), 2011).

Neuropsychiatric disorders comprised 10.5% of the global burden of disease and extrapolated, this number could rise to 15% by 2020 (World Bank, 1993). Currently, neuropsychiatric disorders make up 13% of the global burden of disease (WHO, 2015). It is predicted that neuropsychiatric disorders will be the leading cause of disability in high-income countries, second to HIV/AIDS in middle-income countries and third to HIV/AIDS and perinatal conditions in low-income countries (Mathers & Loncar, 2006).

Progressive biological diseases of the brain (such as dementia) affect roughly 5% of people over 65, in several Asian and Latin American countries, while significantly lower rates of between 1 and 3% affect people in India and Sub-Saharan Africa (Kalaria, Maestre, Arizaga, Friedland, Galasko, Hall, Luchsinger, Ogunniyi, Perry, Potocnik, Prince, Stewart, Wimo, Zhang & Antuono, 2008). Worldwide, 47.5 million people have dementia, with the

illness becoming increasingly common in low and middle-income countries because of the overall increase in life expectancy (Ferri, Prince & Brayne, 2005). In countries with high HIV-AIDS statistics, HIV-related dementia is a disease burden of concern. In high-income countries for example, HIV-related dementia affects up to 30% of people with late-stage AIDS (Bell, 2004).

Worldwide, in 2017, the number of people with depression exceeded 260 million, translating to an average of 4.4% of the global population (Ritchie & Roser, 2019) and ranging between 2 and 6% (Kleinman & Cohen, 1997). Overall, depression is more common among females (5.1%) than males (3.6%) (Albert, 2015). Depression is ranked by the World Health Organisation as the greatest global underwriter to disability (Malhi & Mann, 2018) and is the foremost contributor to suicide deaths, which are close to 800 000 per annum (Bachmann, 2018).

The incidence of depression varies by region, from 2.6%

among males in the Western Pacific to 5.9% among females on the African continent (Kessler & Bromet, 2013). Sufferers of depression vary with age, with the highest incidence in later adulthood and although depression does occur in children, it is at a lower incidence (Fiske, Wetherell & Gatz, 2009).

The number of people diagnosed with depression increased by 18.4% between 2005 and 2015 (Lim, Tam, Lu, Ho, Zhang & Ho, 2018). According to Hidaka (2012), the increase in the global population over time, as well the accompanying increase in the age groups in which depression is more prevalent, could explain the escalation of depression numbers, but additional factors, such as the influence of pharmaceuticals and adverse environmental variables, should be considered.

Anxiety disorders are a group of mental disorders characterised by feelings of anxiety and fear, including generalised anxiety disorder, panic disorder, phobias, social

anxiety disorder, obsessive-compulsive disorder and post-traumatic stress disorder (Felman, 2018).

The prevalence of anxiety disorders across the world varies from 2.5 to 7% (Remes, Brayne, Van der Linde & Lafortune, 2016). Globally, in 2017, an estimated 284 million people experienced an anxiety disorder, making it the foremost mental disorder (Ritchie & Roser, 2019).

Anxiety disorders are more common among females than males (4.6% compared to 2.6% respectively) (Jayashree, Mithra, Nair, Unnikrishnan & Pai, 2018), with the highest occurrence in the Americas (7.7% of the female and 3.6% of the male population) (Whiteford, Degenhardt & Rehm, 2013).

The global prognosis on treatment

The prognosis for severe disorders such as psychosis follows three distinct trajectories where one-third of sufferers will experience a single psychotic episode and will recover fully, one-third will experience relapse if they do not continue preventative medication and in the final cohort, the illness deteriorates unless effective rehabilitation is received (Byrne, 2007).

From a global perspective, children with mental disorders (10% of the global population) can be effectively treated (Marquez & Saxena, 2016). Treatment for children is critical to allow sufferers the chance to attain education and to reduce the risk of progression into an adult disorder (Lieberman, Stroup & McEvoy, 2005; Bhattacharjee & El-Sayeh, 2008; WHO: Integrating Mental Health into Primary Care, 2008; El-Sayeh & Morganti, 2009). The World Health Organisation (WHO) (2008) published best practice guidelines for integrating mental health into primary care,

which have been adapted in Kenya, Tanzania, Uganda and Malawi (Jenkins et al., 2010; Mbatia & Jenkins, 2010; Baingana, 2010).

Cost-effective mental illness treatments for psychosis, depression and panic disorder are recognised worldwide, irrespective of how under resourced a country (Hyman, 2006; Patel, 2007; Patel, Araya & Chatterjee, 2007). Up-to-date antipsychotic medications and psychological interventions are not accessible in low-income countries (Saxena, Thornicroft & Knapp, 2007), however, in a resource-constrained country such as Nigeria, with schizophrenia, for example, the combination of older antipsychotic medicines and psychosocial treatment at community based level appears effective at a cost of $1,67 per avoided DALY (Disability-Adjusted-Life-Year) (Chisholm, Gureje & Saldivia, 2008). Considering the constraints of developing countries, there is still much that can be done to instil effective mental health care at the

population level, at a cost of between $3 and $4 per capita per annum in Sub-Saharan Africa and Asia (Patel et al., 2007).

Access to medicines and treatments

Depression can be treated effectively with psychological intervention, together with a range of medications, including low-cost older tricyclic antidepressants (InformedHealth, 2017). The more modern medications that are available in developed countries and in private hospitals/clinics in developing countries are often easier to tolerate, but reviews do not show enhanced clinical outcomes (NICE, 2010; Mosadeghrad, 2014). Unfortunately, however, in developing countries, anxiety and depression are often treated with benzodiazepines and this is of great concern, because these are addictive and not beneficial in the treatment of the disorder (Bandelow, Michaelis & Wedekind, 2017).

Antidepressants can be an effective form of treatment for moderate to severe depression but are not the first line of

treatment for cases of mild depression (Goldman, 2019), or for treating depression in children and adolescents (Driessen & Hollon, 2010).

Mild and moderate depression and anxiety are treated effectively with behavioural therapies, but only with intensive management. Unfortunately, developing countries do not have enough trained specialists to provide this level of management against the number of sufferers (Gureje & Alem, 2000). On average a primary care centre of 10 000 people will present with 100 patients with psychosis, 300 with severe depression and 300 with epilepsy, of which at least half would require active rehabilitation (Jenkins et al., 2011).

Schizophrenia is a severe mental disorder, affecting about 21 million people globally (McGrath, Saha, Chant & Welham, 2008). Schizophrenia as a mental illness is particularly misunderstood and ignorance of the illness creates stigma and discrimination, resulting in a lack of access to health and

social services (Henderson, Evans-Lacko & Thornicroft, 2013). Phenothiazine medication is given to treat acute episodes of psychosis, with these older medications proving to be highly cost-effective and widely available. Doctors and patients often prefer newer medications (with dissimilar drug profiles and side effects), but they are exponentially costlier (Patel et al., 2014). The newer medications do not show significantly improved outcomes (El-Sayeh & Morganti, 2006; Bhattacharjee & El-Sayeh, 2008).

Bipolar disorder affects about 60 million people worldwide (Charlson, Van Ommeren, Flaxman, Cornett, Whiteford & Saxena, 2019). The prevention of a relapse of bipolar disorder is managed with the use of lithium, but this requires the regular monitoring of drug levels in the blood and is therefore not available in primary care. What this translates to, is that rather than focusing on the provision of newer more costly medications, it would be of greater value in developing countries, to establish regular continuing

professional development (CPD) for primary and secondary care practitioners, to efficiently and effectively deliver existing medications and psychological therapies (Ranis, Stewart & Samman, 2005).

Aims of Study

The aim of this study is to show epidemiological trends in mental disorders against a background governed by health policy. It shows epidemiological trends in mental disorders of a private healthcare database compared against South African and global trends. This study examines possible contributing factors for the fluctuating nature of mental disorder frequencies. A factor underlying this study is the recognition that there are metamorphoses of mental disorders that may result in altered or overlapping symptoms. This overlapping/transformation of symptoms is the factor that inadvertently supports increasingly constrained medical aid policy. Altered, overlapping or even symptoms that may no longer present can be understood against a background

relating to the concept of a paradigm and the form it takes in psychology.

Rationale

Mental disorders can be difficult to diagnose (Wakefield, 2007). The reason for this is that disorders often present with concurrent symptoms (Salloum & Thase, 2000). Medical practitioners diagnose symptoms as belonging to one or another psychopathology, but because of concurrency, misdiagnosis may be likely. The diagnoses of disorders are, in part, determined by social, economic and other circumstances rather than being exclusively clinical (Epstein & Ayanian, 2001). Highlighting these circumstances, together with trend analyses of mental disorders, can add value to the formulation of clinical policy guidelines in the private health care arena. It is of value to create a much-needed awareness of the impact and prevalence of mental disorders in the South African context.

Chapter 2: Methodology
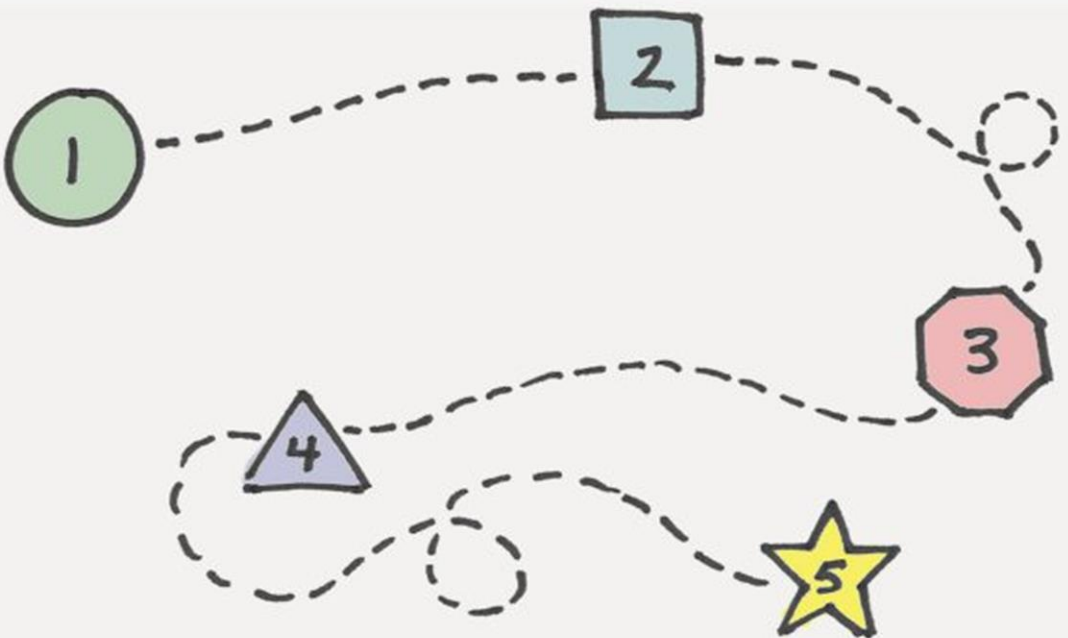
Chapter 2: Methodology

Aims of the study revisited

The aim of this study is to show epidemiological trends in mental disorders against a background governed by health policy. It shows epidemiological trends in mental disorders of a private healthcare database compared against South African and global trends. This study examines possible contributing factors for the fluctuating nature of mental disorder frequencies. A factor underlying this study is the recognition that there are metamorphoses of mental disorders that may result in altered or overlapping symptoms. This overlapping/transformation of symptoms is the factor that inadvertently supports increasingly constrained medical aid policy. Altered, overlapping or even symptoms that may no longer present can be understood against a background relating to the concept of a paradigm and the form it takes in psychology.

Research questions

1. Are there changes in prevalence rates of mental disorders over time?

2. If there are changes in prevalence rates of mental disorders over time, what are the values of these trends?

3. Are there additional epidemiological trends apparent when examining mental disorders over time?

4. Can these trends be attributed to an economic factor?

5. Assuming the conclusion of an economic factor influencing mental health statistics, what is the predicted effect of this?

Data source: Discovery Health Medical Aid Scheme

Discovery Health Medical Aid Scheme has been in operation for almost three decades, with its inception in 1992 (Discovery Integrated Annual Report, 2018). This degree of longevity allows for a reliable longitudinal analysis of diagnostic trends. Discovery Health Medical Aid Scheme covers 2.7 million beneficiaries as of the end of 2016 and is the largest open medical scheme in South Africa, with a market share of 56.6% of the open market (Discovery Integrated Annual Report, 2018). The Scheme is a non-profit entity governed by the Medical Schemes Act 131 of 1998 and is regulated by the Council for Medical Schemes (CMS).

Through consent of the Scheme, a database was provided, which lists mental disorder diagnoses over seven years from 2008 to mid-way through 2015. Data from this data source was analysed, interpreted and graphically presented.

The data source will remain anonymous in any publications to follow from the dissertation. A contractual agreement to this end has been secured.

Research design

This study on the rise and fall of psychopathologies is an epidemiological study. Epidemiological research subscribes to several research designs, the choice of design is dependent on the nature of the data, its collection, and the hypothesis put forward. This section focuses on the research design, principles and reasons behind the design selection.

John Last (1988) defined epidemiology as the study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to the control of health problems. This study focuses on the distribution and possible determinants of mental health related states in a specified population. The population in this instance is the total population of a medical aid scheme database from 2008 and 2015.

This epidemiological study falls under the bracket of what London Health Observatory (2006) considers Public Health Intelligence. Public Health intelligence is the utilisation of population data which has been analysed, interpreted and presented in clear and accessible form, to inform proposed improvements to health services (London Health Observatory, 2006). This informative function aligns with the shift towards evidence-based practice in Public Health (Killoran & Kelly, 2009). Most of the variables in the study are nominal with binary categories like male or female, in-or outpatient, so ratios, rates, and proportions are applied because they best suit the analysis of dichotomous variables (Etikan, Abubakar & Alkassim, 2017).

The role of a theoretical framework, whether overt or implied, shapes what we see, or do not see and what we consider relevant or irrelevant. While there are frameworks informing research in social epidemiology, literature articulating theoretical frameworks in descriptive

epidemiology are sparse. To this end, no formal framework was adopted, and the analysis of the data was approached without ambiguity. This was able to be done because of the binary nature of the data (Stallones, 1980; Krieger, 1994; Krieger & Zierler, 1995; Schwartz, Susser, & Susser, 1999).

Primary principles of epidemiology

The Centers for Disease Control (CDC, 2017) deconstruct Last's (1988) definition of epidemiology to expose the primary principles of epidemiology. These are:

1. *Study*: Assuming the scientific method of inquiry at its foundation, the epidemiological methods adopted for this study, include:

   a. Descriptive studies (investigating distribution) and,

   b. Analytical studies (investigating determinants) (WHO: Epidemiology, 2017).

2. *Distribution*: The principle of distribution is
   subdivided into the following concepts:

   a. Frequency: The number of health events in a
      population.

   b. Prevalence: For this study, prevalence
      measures the incidence of occurrence of a
      mental disorder in the database population
      over a period (including all data between two
      dates). Prevalence calculations are based on
      annual as well as monthly incidences of
      disorders.

   c. Incidence: The principle of incidence for this
      study reveals how patterns of disorders
      fluctuate over time and are then extrapolated
      to predict future patterns.

      i. Incidence is often confused with
         prevalence. Importantly, prevalence is

the proportion of cases in the overall
population at a given time, whereas
incidence is the pattern that forecasts
the rate of occurrence of new cases. In
summary then, incidence predicts the
chance of suffering from a specific
mental disorder, whereas prevalence
shows how widespread the disorder is
(Shields & Twycross, 2003).

d. *Determinants*: The causes and other factors
that influence the occurrence of a mental
disorder.

e. *Specified population*: Observations are often
deduced from a study sample, which is
selected from the target population (BMJ:
Epidemiology, 2017). For this study, a study
sample was not selected, but instead, the total
target dataset was analysed.

Adopted research design

In epidemiology, research designs range from solely quantitative to exclusively qualitative. Quantitative designs are either descriptive or analytic. The quantitative model adopted for this study embraces both descriptive and analytic techniques. The descriptive model concerns the 'who, what, where and when' of the occurrence of specified disorders and the analytical epidemiological model concerns the 'who, what, where, when and why.' Figure 1 below, summaries the quantitative model checklist ('The five W's'). The five W's can be applied when considering any health condition in a population, where descriptive epidemiology highlights patterns of a disorder, followed by analytical epidemiology that is applied to propose the cause of that trend (Bhopal, 2008). Figure 2 is a schema of the research design for this study and shows how the quantitative model utilised, is subdivided into two approaches:

1. Descriptive epidemiology and

2. Analytical epidemiology.

Each approach has its own techniques. Descriptive epidemiological techniques are applied to deduce patterns in the dataset, and from those patterns to infer a possible cause or possible causes (analytical epidemiological techniques). The sum of pattern and cause is what delivers the resultant interpretation of the database.
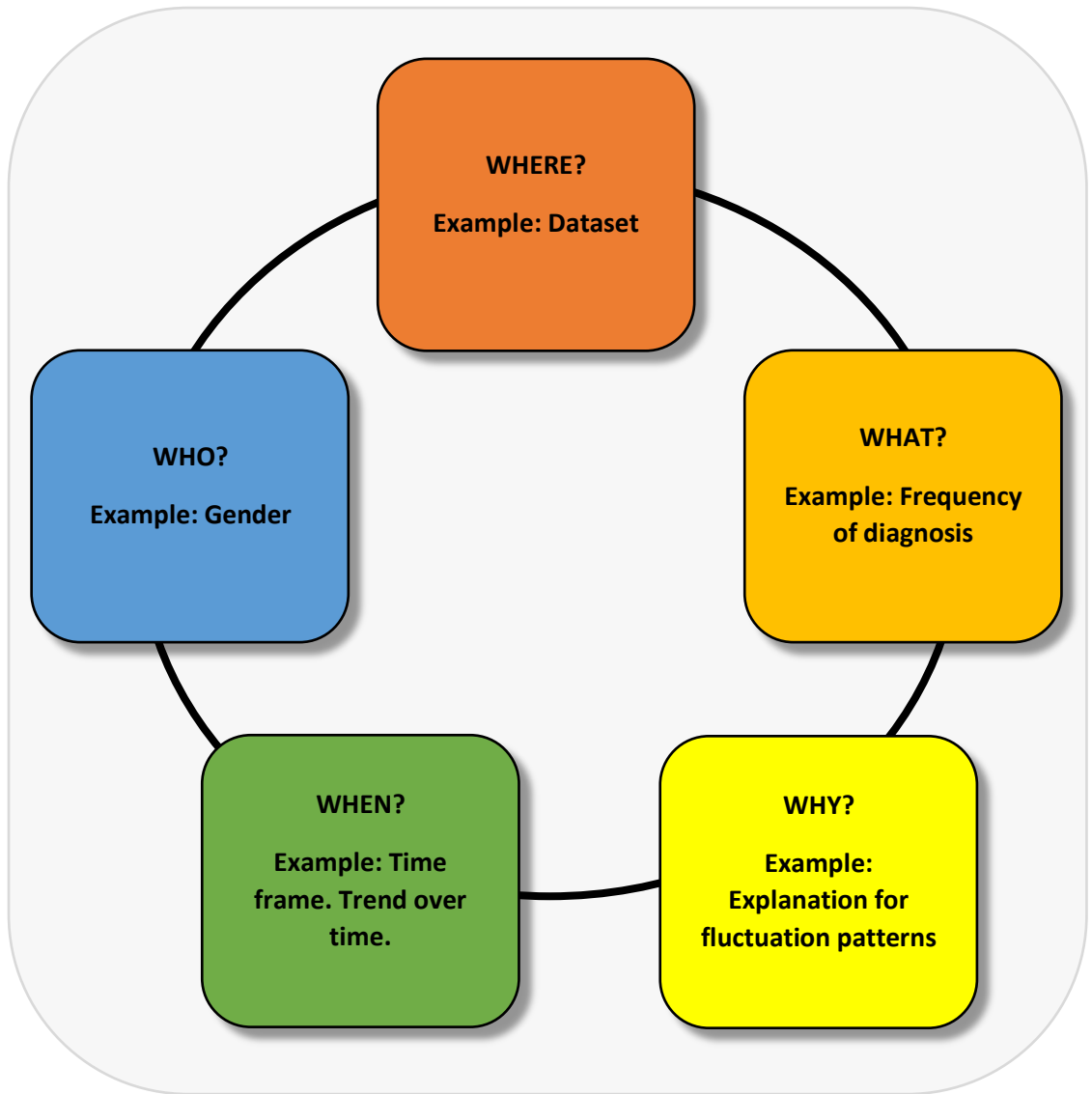
Figure 1: Quantitative model checklist (Mesly, 2015)
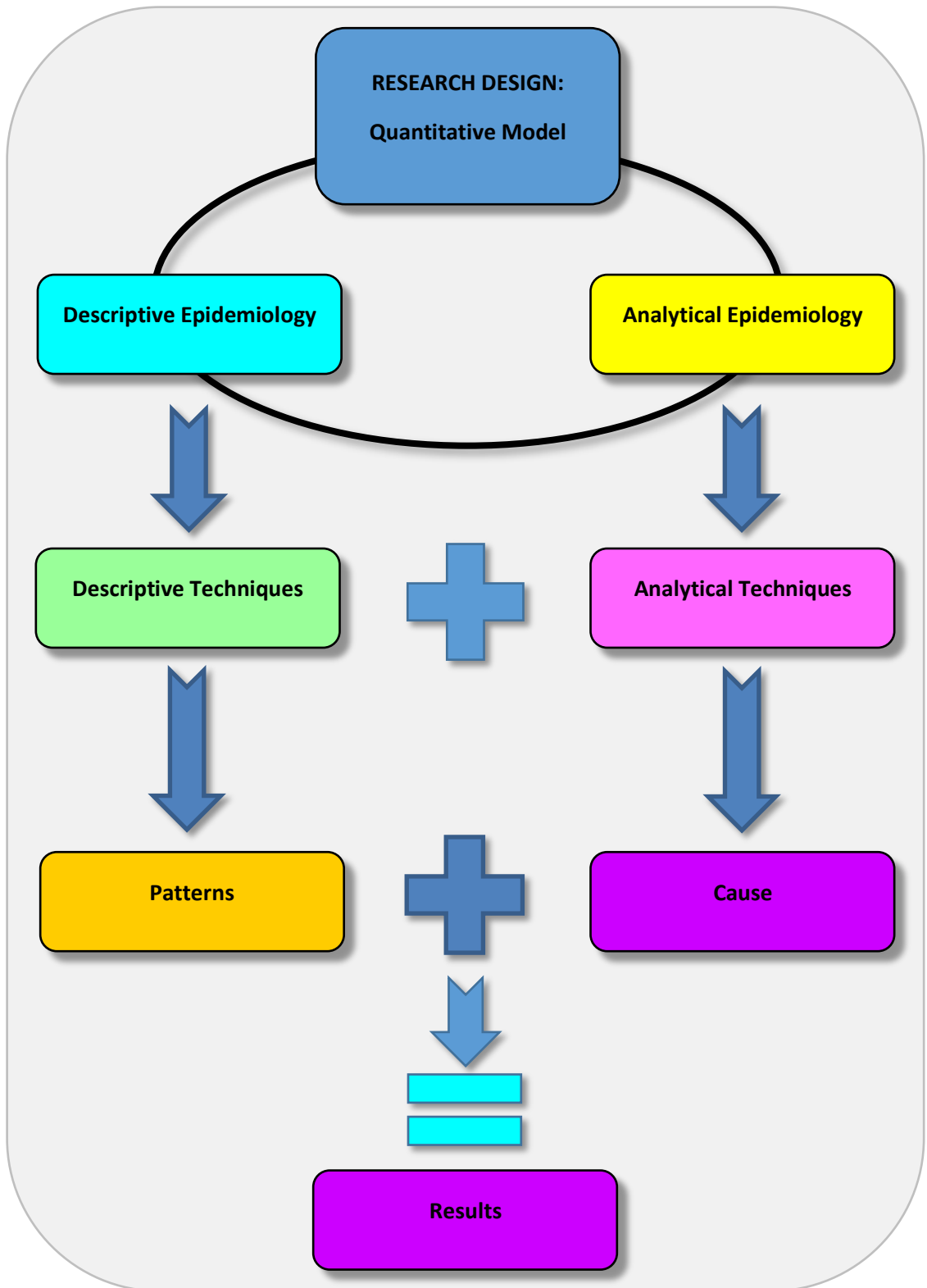
Figure 2: Schema of research design (Mesly, 2015).

Epidemiological study design within the quantitative model

This study on fluctuation patterns of specified mental disorders, over a specified timeframe, is descriptive in approach. Since it is descriptive data, the selected approach for this study is described below:

Quantitative data analysis

Quantitative data analysis in epidemiology searches for illness patterns, organises, and analyses data to view variations in illness frequency over time (Ressing, Blettner & Klug, 2010). This allows for the identification of illness trends, which enables concluding on possible explanations about the determinants of the viewed frequencies. In searching for patterns, pattern-indicators may be:

a) Differences: If the frequency of a disorder differs across time.

b) Similarities: If a high or low frequency of a disorder is found across time.

c) Correlations: If the frequency of a disorder varies in relation to another disorder.

Quantitative data analysis means transforming raw numbers into meaningful data through the application of rational and critical thinking, secondary data integrated in a logical and unbiased manner (Saunders, Lewis & Thornhill, 2012). Quantitative data analysis, for this study, includes the calculation of frequencies of variables and differences between variables. The aim of the quantitative approach is to find evidence that support or rejects the research questions of this study.

The level of measurement associated with this dataset is nominal data. Nominal data is basic classification data and there is no order associated with fields in the dataset. For example, male patient numbers and female patient numbers are not placed in any order.

Quantitative methods emphasise objective measurements and the statistical and numerical analysis of data, with the aim of explaining a phenomenon, validating a hypothesis or answering a question. To validate, explain or answer effectively, the evidence obtained needs to be logically and unambiguously addressed (Robson, 2011). For this study, to uncover the narrative of the data, frequency distributions have been the primary approach.

Secondary data

A common source of secondary data used for quantitative research is administrative data. This study makes use of administrative data from the Discovery Health Medical Aid Scheme. This secondary data allows for investigation of the frequencies of mental disorders within the entire population of medical aid members. It is also considered secondary data because Discovery Health Medical Aid Scheme collected the data for purposes other than this study.

Presenting epidemiological outputs

The descriptive epidemiological outputs are presented graphically. Disorder charts, that reflect trends over time, is the technique used to illustrate changes of frequencies of diagnoses over time. This technique is also optimum for highlighting inequalities according to gender. Polynomial curves plot new the potential frequencies of specific disorders over time.

After completion of the descriptive component of the quantitative approach, the analytical epidemiological facet, considers possible factors causing the frequency patterns for the various disorders (Bonita, Beaglehole & Kjellström, 2006). This means, investigating which factors can contribute to an increase or decrease in the volume of diagnoses. It is important to establish whether a factor is simply associated with the disorder pattern or whether it is causing it.

This study applied descriptive statistics in the interpretation of the dataset. Compared with the logic of inferential statistics, most descriptive statistics are intuitive compared to the more intricate rationale for statistical inference (probability theory, sampling theory, etc.) (Brown, 2012). Descriptive statistical methods are fundamental since inferential methods are conceptually dependent on them (Ott & Longnecker, 2001).

The use of graphics is an optimum tool for descriptive statistics. Descriptive data becomes significantly more informative through an aptly presented graphic. The work of Tufte (2001) is renowned for examples of best practices in the visual display of quantitative information.

Graphical displays, such as bar charts (in this study) are a critical tool in the exploratory phase of data analysis. Interestingly, evidence has shown that the use of graphs in research in psychology and across other disciplines correlates highly with the 'hardness' of those scientific fields. An inverse relationship is found between hardness of certain sub-disciplines of psychology and the use of inferential statistics, indicating inferential methods are perhaps used in an attempt to deal with inadequate data (Smith, Best, Stubbs, Archibald & Roberson-Nay, 2002).

For this study, bar charts represent the frequency distribution of each disorder within the dataset. Classes (time/disorder/gender) are displayed on the horizontal axis and the frequencies/relative frequencies of the class on the vertical axis. Frequency is defined as the number of patients that fall in a specified class. The height of a bar indicates how common a particular value is in the distribution (the bar height is equal to the number of patients occurring within a defined class in the dataset). Relative frequency is measured in this study and is the ratio of the frequency of a class to the total population size/relative to another class and is the proportion or percentage of patients that fall into a class.

Linear regression analysis

In Section I: Longitudinal Data, the disorder charts show a summary of the total number of patients diagnosed with each diagnosis per year (2008 – 2015). The diagnosis trend for each of these charts shows the overall frequency pattern of the disorder over time, with the forecast extension showing a prediction of frequency going forward.

A linear approach to modelling the trend line is adopted. Linear regression is a well-suited approach, especially when prediction is the aim of the analysis. Despite the term 'linear model,' curvature can be modelled using a polynomial (Shields & Rangarajan, 2013).

The line of best fit selected for the trend line charts in Section I is the polynomial trend line. This quadratic curved line is best suited to data that fluctuates (curves) and is more typical in real-world data (representative of the study database). The linear model with the quadratic approach, delivers solid predictions (Shields & Rangarajan, 2013; Kumar & Shanker, 2017).

The bar charts are reflective of a continuous dependent variable, making linear regression the ideal approach. The continuous variable (y-axis) is the number of patients in a specific year, diagnosed with a specific disorder. The variable is dependent because the value is dependent on the data bound by a specific year. The variable is continuous because it can theoretically take on any value between its minimum value (no medical aid patients) and its maximum value (total number of medical aid patients in a given year).

Although the continuous variable is subdivided into patient numbers per year for the disorder charts, it can be viewed as a single continuous variable since it is really the sampling of a specific disorder in various years. Therefore, it is most suited to test for linearity when using a single variable.

Linear regression calculates an equation that minimises the distance between the fitted

(curved) line and the data points. A good fit is if the differences between the data values and the linear model's predicted values are small. R-squared (coefficient of determination) is the statistical measure of how close the data are to the fitted regression line (Lewis-Beck, Bryman & Futing Liao, 2004; Schneider, Hommel, & Blettner, 2010). R-squared is always between 0 and 100% with 0% indicating no commonality between actual values and fitted values, and 100% indicating perfect mirroring of actual and fitted values (Lewis-Beck et al., 2004; Schneider et al., 2010). Therefore, the higher the R-squared, the better the model fits the data. Refer, below, to Table 1: R-squared values, showing goodness of fit for disorder trend charts. From the table, the R^2 values for each disorder trend chart approach 1, giving confidence in the forecast for the disorder going forward, since the fit between actual and fitted values is very closely aligned (Lewis-Beck et al., 2004; Schneider et al., 2010; Shields & Rangarajan, 2013; Kumar & Shanker, 2017).

Correlation

Tables A5 and A6 (tables showing degrees of correlation between mental disorders), display the degree of strength (correlation) between disorders. A correlation coefficient measuring the strength of relationships between the mental disorders investigated in this study was calculated. Applying correlation to this study was suitable, knowing that correlation is suited to quantifiable data (Cheung & Chan, 2004). The quantity in this case being the number of patients diagnosed with specific mental disorders.

From tables A5 and A6, in terms of the strength of relationships, the values of the correlation coefficients vary between 1 and 0. The value of 1 indicates a perfect degree of association, and so that is seen next to the disorder itself, since a disorder can only have a perfect correlation with itself. Thereafter, the closer the value is to 1, the greater any two disorders are associated, and as the correlation coefficient value goes towards 0, the relationship

between disorders will be weaker. The correlation coefficient results are all positive values, indicating positive relationships between disorders (Munshi, 2012). This and the nature of the relationships is discussed in Chapter 4: Discussion.

For this study, Spearman's correlation coefficient is selected over Pearson Correlation Coefficient, because unlike Pearson's correlation, there is no requirement of normality, since Spearman's correlation coefficient does not carry any assumptions about the distribution of the data (Coffman, Maydeu-Olivares & Arnau, 2008).

For this study, the free and open-source software R was employed for the statistical analysis. R was selected because it is designed specifically for statistical computing and graphics. R provides an adaptable analysis toolkit housing all standard statistical techniques (R Core Team, 2020).

Table 1

R-squared values, showing goodness of fit for disorder trend charts

Mental Disorder	R^2 Value
Abuse, dependence/overdose of opioid	0.8599
Alcoholism	0.9602
Anxiety disorder	0.9800
Attention deficit and hyperactivity disorder	0.9997
Behavioural disorder	0.9866
Bipolar mood disorder	0.9999
Delusional disorder	0.6489
Depression	0.9999
Developmental and learning disorder	0.9742
Dissociative disorder	0.8966
Eating disorder	0.9379
Impulse control disorder	0.8915
Mental retardation	0.9407
Non-specific neuroses	0.9198
Non-specific psychosis	0.9790
Obsessive compulsive disorder	0.9454
Parasomnia or sleep disorder	0.9998
Personality disorder	0.8532
Psychosis due to a general medical disorder	0.9748
Psycho-social disorder of childhood	0.7297
Schizophrenia	0.9344
Sexual and gender identity disorder	0.9985
Somatoform disorder	0.9171
Substance abuse or dependence behaviour	0.9522
Tic disorder	0.8531
Unconfirmed psychology disorder	0.9830
Vascular dementia	0.8473

Quantitative research approach for this study

Data fields made use of in this study, from the raw medical scheme database are:

1. Date of admission (Year, Month)

2. Patient gender

3. Database population size per year

4. Patient diagnosis (DEG Description)

5. Sample total per DEG Description

Data fields not used (not provided in raw data) in the data analysis of this study include:

1. Patient details

2. Patient age

3. Contact details

4. Personal notes

5. Race

What is key, from an analytics perspective, is the mental illness diagnosis recorded per patient admission.

Each diagnosis (mental disorder) is presented in the following ways:

9. Bar charts showing the volume of specific mental illnesses in a given year. The x-axis listing mental disorders and the y-axis indicating the volume (number of patients diagnosed) within each disorder.

10. Bar charts showing fluctuations of occurrence of a specific mental illness over time. (Graph per mental disorder). For each, the x-axis indicates time in years and the y-axis indicates the volume (number of patients) in any given year.

11. Frequency of specific mental illnesses over time, relative to the entire database population. (Graph per mental illness). The x-axis indicating the year (2008 – 2015) and the y-axis showing the total volume database.

12. Male:Female ratio per mental disorder. This is represented as pie charts per mental illness, as a sum of male and female numbers from 2008 – 2015.

13. Female Outpatient vs. Inpatient volumes across each mental disorder and across all years (2008 – 2015).

14. Male Outpatient vs. Inpatient volumes across each mental disorder and across all years (2008 – 2015).

15. Total number of patients per mental disorder across time (2008 – 2015).

16. Summary trends:

   a. Frequency polygons showing the fluctuation of a selected mental disorder over time as compared to other selected mental disorders. The x-axis indicates time in years and the y-axis indicates numbers of patients. The graph legend shows which mental disorders are represented.

   b. Emergent epidemiological trends require investigation. Is, for example, a 'spike' in the volume of admissions of a specific mental disorder relative to other mental disorders indicative of an economic factor?

List of mental disorders analysed for this study:

1. Abuse, dependence, overdose of opioid

2. Alcoholism

3. Anxiety disorder

4. Attention deficit and hyperactivity disorder

5. Behavioural disorder

6. Bipolar mood disorder

7. Delusional disorder

8. Depression

9. Developmental and learning disorder

10. Dissociative disorder

11. Eating disorder

12. Impulse control disorder

13. Mental retardation

14. Non-specific neuroses

15. Non-specific psychoses

16. Obsessive compulsive disorder

17. Parasomnia or sleep disorder

18. Personality disorder

19. Psychosis due to a general medical disorder

20. Psycho-social disorder of childhood

21. Schizophrenia

22. Sexual and gender identity disorder

23. Somatoform disorder

24. Substance abuse or dependence behaviour

25. Tic disorder

26. Unconfirmed psychology disorder

27. Vascular dementia

Hallmarks of quantitative research

The three hallmarks of quantitative research are:

1. Precision

2. Validity

3. Confirmability

Precision

Precision refers to a lack of random variation in a study's estimates (Rothman & Greenland, 1998). Random variation arises from the subjects in the study, the way in which subjects are sampled, and the way in which variables are measured (Rothman & Greenland, 1998). In this study, the way in which the data are captured, is reliant on the diagnoses of the attending doctors. The research questions put forward in this study raise this point: to what degree are the mental disorder frequencies observed in the original data, the result of random variation? What is meant by this question is to what extent are the characteristics that define specific illnesses, different from the variables that are used in the medical scheme policy? Should they not be similar, then, the raw data from the medical aid scheme lacks precision, when viewed against the defining characteristics of specific illnesses.

To evaluate the level of precision, the sample size needs to be considered, since according to Rothman & Greenland (1998), a larger study will produce estimates that are more precise. For this study, the sample size is the population size, since the entire database from 2008 – 2015 was used for analysis. Therefore, should there be imprecision, when the results are compared to

global trends, the random variation is not due to the small sample size, but rather to the way in which subjects are sampled, and the way in which variables are measured.

Random error is the result of fluctuations around a true value and is just that: random. Random error can take place during data collection or analysis for example. In this study, random error would be a typographical error during data capture on the original sheet. It is impossible to correct for random error, but to reduce it, is to increase the sample size of the study. Making use of the entire medical scheme population during 2008 – 2015, and filtering for mental disorder totals, means sample sizes are at their maximum.

Validity

Descriptive research is gauged in terms of both its internal and external validity. Internal validity refers to the strength of the inferences from the study and external validity is the ability to generalise study results to a global population (Mickenautsch, 2010; Rothman & Greenland, 1998). Internal validity is, therefore, a precondition for external validity.

An indication that a study lacks external validity is if the internal inferences are not representative of external findings. When applying the definitions of internal and external validity to this study, it is imperative that the inferences drawn from the raw data is strongly validated. By this, the numerical assessment of patient numbers for disorders across time and within the context of the entire medical scheme population must be aligned to the evidence. A test for this would be a perfect repetition of the numerical analysis by another researcher. This is, of course is transferability of results.

Based on the definitions of external and internal validity above, it is concluded, that if the internal analysis is validated, then the results should align to external trends (external validation). The aim of this study is to ensure internal validation, and then to compare the results to external disorder trends. If the internal results do not align to the external disorder trends, explanations for this are presented. For this study, there is the underlying question that the internal and external findings do not correlate.

Confirmability

Lincoln and Guba (1985) and Attride-Stirling (2001) suggest that a researcher leave a trail of work done that can be traced back to source. This means that analysis performed on raw data can be replicated, and in replication, credibility is added to the conclusion. The audit trail is then the raw data (Discovery Health Medical Aid Scheme data [available on request]), the products (charts and tables) of the data analysis, data forecasts and interpretations.

Ethical Consideration

Standard of Privacy and Confidentiality

1. The scope of requested records is restricted to that which is consistent with the purposes of the study. This means no personally identifying data of patients was obtained. Identifying data includes patient name, contact information or any additional data fields that may lead to the identification of that patient. The scope of the data requested is limited to patient gender, admission date, in-or-out patient and diagnosis, and total population size of database per year.

2. The nature of this study precludes obtaining patient details and therefore by default, informed consent from patients was not required.

3. Specific approval for the release of requested data was obtained from the Health Medical Scheme authorities concerned.

4. The data source will remain anonymous in any publications to follow from the dissertation.

5. A contractual agreement to this end (Point 4 above) was signed before proceeding with the study.

Ethical principle of Research Integrity

1. The researcher pledges honesty and accuracy in conveying research conclusions, discussion and research findings, and in acknowledging the potential limitations of the study.

2. The researcher pledges to claim only appropriate ownership or credit for her research, published writings, or other scientific contributions.

3. The researcher explicitly states that the research study was approved by the Research Ethics Committee of the University of South Africa.

Chapter 3: Results

Section I: Longitudinal Database: 2008 – 2015

Abuse, Dependence, Overdose of Opioids

Table LD1 and Chart LD1, summarise the total number of patients diagnosed with abuse, dependence and/or overdose of opioid per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD²1: Longitudinal Data (2008 – 2015): Abuse/Dependence, Overdose of Opioids

---
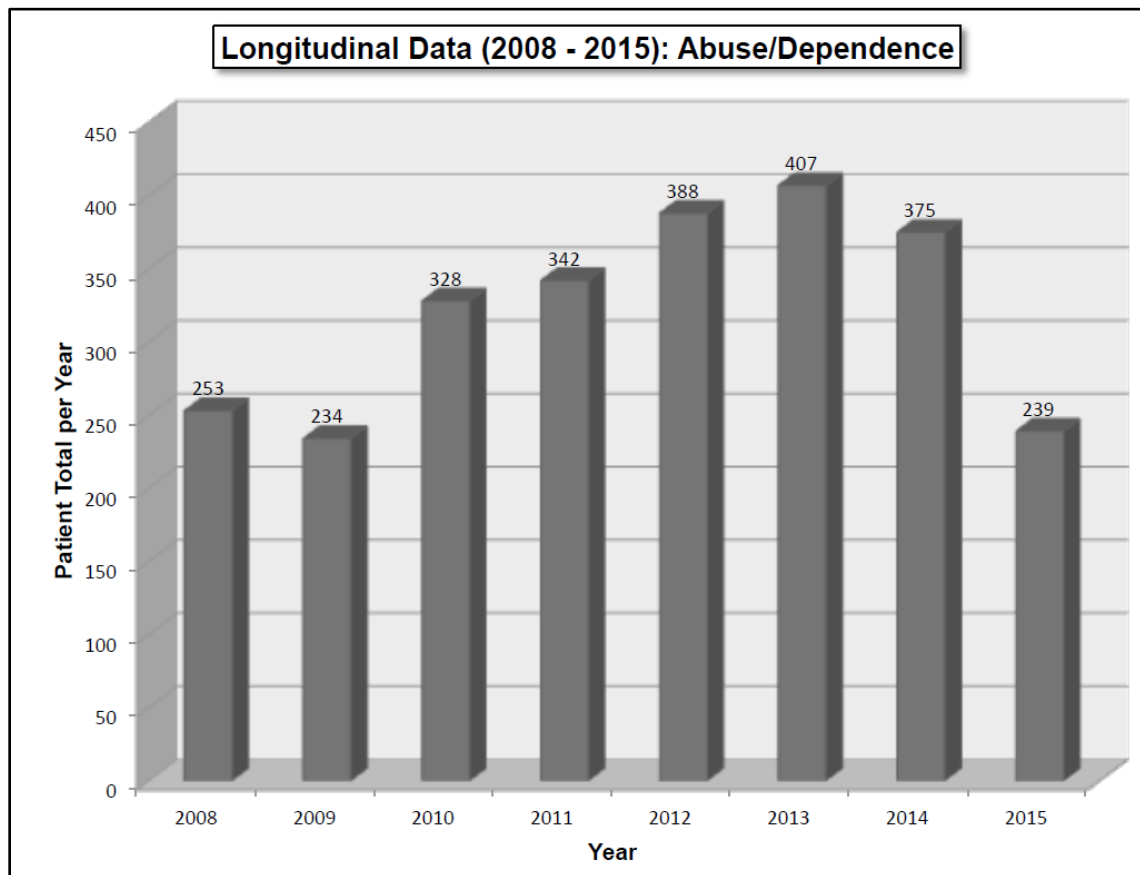
[2] LD = Longitudinal Database. Source: Discovery Health Database

Table LD1

Longitudinal Data (2008 – 2015): Abuse/Dependence, Overdose of Opioids

Diagnosis	Year	Total Patients	Total DP
Abuse, dependence, overdose of opioids	2008	253	2092183
Abuse, dependence, overdose of opioids	2009	234	2192129
Abuse, dependence, overdose of opioids	2010	328	2434220
Abuse, dependence, overdose of opioids	2011	342	2581043
Abuse, dependence, overdose of opioids	2012	388	2711594
Abuse, dependence, overdose of opioids	2013	407	2822416
Abuse, dependence, overdose of opioids	2014	375	2923433
Abuse, dependence, overdose of opioids	2015	239	2984103

The results are as follows:

a.   2008

In 2008, 253 patients were diagnosed as suffering from abuse, dependence and or an overdose of opioids. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. Abuse/dependence/overdose of opioids as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

253 out of 2 092 183 patients diagnosed with abuse, dependence and or overdose of opioids,

translates to 0.012% of the total claimant population for 2008.

b.   2009

In 2009, 234 patients were diagnosed as suffering from abuse, dependence and or an overdose of opioids. This value is 19 less patients than in 2008 and translates to a 7.5% decrease in diagnosis of abuse/dependency and or overdose of opioids, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

234 out of 2 192 129 patients diagnosed with abuse, dependence and or overdose of opioids, translates to 0.011% of the total claimant population.

c.   2010

In 2010, 328 patients were diagnosed as suffering from abuse, dependence and or an overdose of opioids. This value is 94 more patients than in 2009 and translates to a 28.7% increase in diagnosis of abuse/dependency and or overdose of opioids, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

328 out of 2 434 220 patients diagnosed with abuse, dependence and or overdose of opioids, translates to 0.013% of the total claimant population.

d.   2011

In 2011, 342 patients were diagnosed as suffering from abuse, dependence and or an overdose

of opioids. This value is 14 more patients than in 2010 and translates to a 4.1% increase in diagnosis of abuse/dependency and or overdose of opioids, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 5.7% growth in claimant population in one year.

342 out of 2 581 043 patients diagnosed with abuse, dependence and or overdose of opioids, translates to 0.013% of the total claimant population.

e.   2012

In 2012, 388 patients were diagnosed as suffering from abuse, dependence and or an overdose of opioids. This value is 46 more patients than in 2011 and translates to an 11.9% increase in diagnosis of abuse/dependency and or overdose of opioids, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

388 out of 2 711 594 patients diagnosed with abuse, dependence and or overdose of opioids, translates to 0.014% of the total claimant population.

f.   2013

In 2013, 407 patients were diagnosed as suffering from abuse, dependence and or an overdose of opioids. This value is 19 more patients than in 2012 and translates to a 4.7% increase in diagnosis of abuse/dependency and or overdose of opioids, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than

in 2012 and translates to a 3.9% growth in claimant population in one year.

407 out of 2 822 416 patients diagnosed with abuse, dependence and or overdose of opioids, translates to 0.014% of the total claimant population.

g.   2014

In 2014, 375 patients were diagnosed as suffering from abuse, dependence and or an overdose of opioids. This value is 32 less patients than in 2013 and translates to a 7.9% decrease in diagnosis of abuse/dependency and or overdose of opioids, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

375 out of 2 923 433 patients diagnosed with abuse, dependence and or overdose of opioids, translates to 0.013% of the total claimant population.

h.   2015

From January to June of 2015, 239 patients were diagnosed as suffering from abuse, dependence and or an overdose of opioids. By mid-year 2014, the number of patients is 214 (according to Table: Database_2008_2015_Abuse Dependence). By June 2015, 25 more patients are recorded when compared to the half-year sum for 2014. This translates to a 10.5% increase in patient diagnosis. Therefore the 10.5% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 414 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database

population of 3 031 600. This is 108 167 more claimants than in 2014.

414 out of 3 031 600 patients diagnosed with abuse, dependence and or overdose of opioids, translates to 0.014% of the total claimant population.

Table LD2

Results summary: Abuse, Dependence, Overdose of Opioids

Year	Diagnosis % Increase/Decrease	% Diagnosis across Population
2008	N/A	0.012%
2009	7.5% decrease	0.011%
2010	28.7% increase	0.013%
2011	4.1% increase	0.013%
2012	11.9% increase	0.014%
2013	4.7% increase	0.014%
2014	7.9% decrease	0.013%
2015	10.5% increase	0.014%

Chart LD2: Disorder Trend: Abuse/Dependence, Overdose of Opioids

Disorder Trend: Abuse/Dependence/overdose of Opioids

253 — 2008
232 — 2009
328 — 2010
342 — 2011
388 — 2012
407 — 2013
375 — 2014

$R^2 = 0,8599$
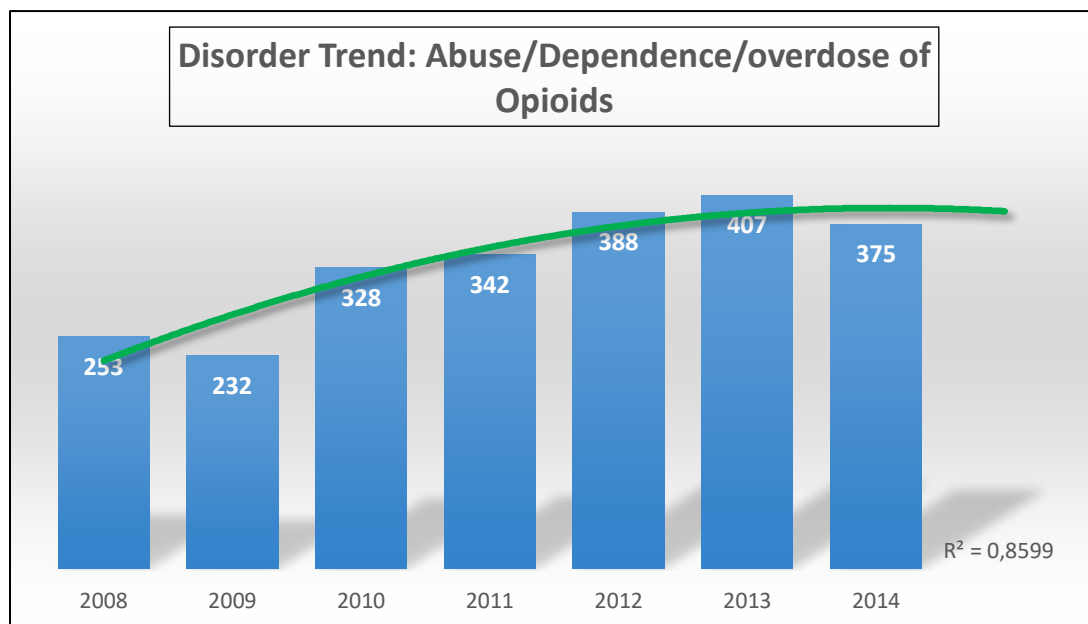
Source: Discovery Health Database

Summary of Table LD2 and Chart LD2. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with abuse/dependence, and/or overdose of opioids is 0.013%, within the entire database. The lowest frequency of abuse/dependence, and/or overdose of opioids is in 2009, with a percentage of 0.011% occurrence within the entire population and the highest frequency is in 2015, with 0.014% of the total database population.

The diagnosis trend shows an initial increase in patient numbers from 2008 - 2010, followed by a gradual increase. The forecast predicts a levelling out of the frequency of patient numbers for abuse/dependence, and/or overdose of opioids, showing a constancy in patient numbers going forward.

Alcoholism

Table LD3 and Chart LD3, summarise the total number of patients diagnosed with alcoholism per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD3: Longitudinal Data (2008 – 2015): Alcoholism
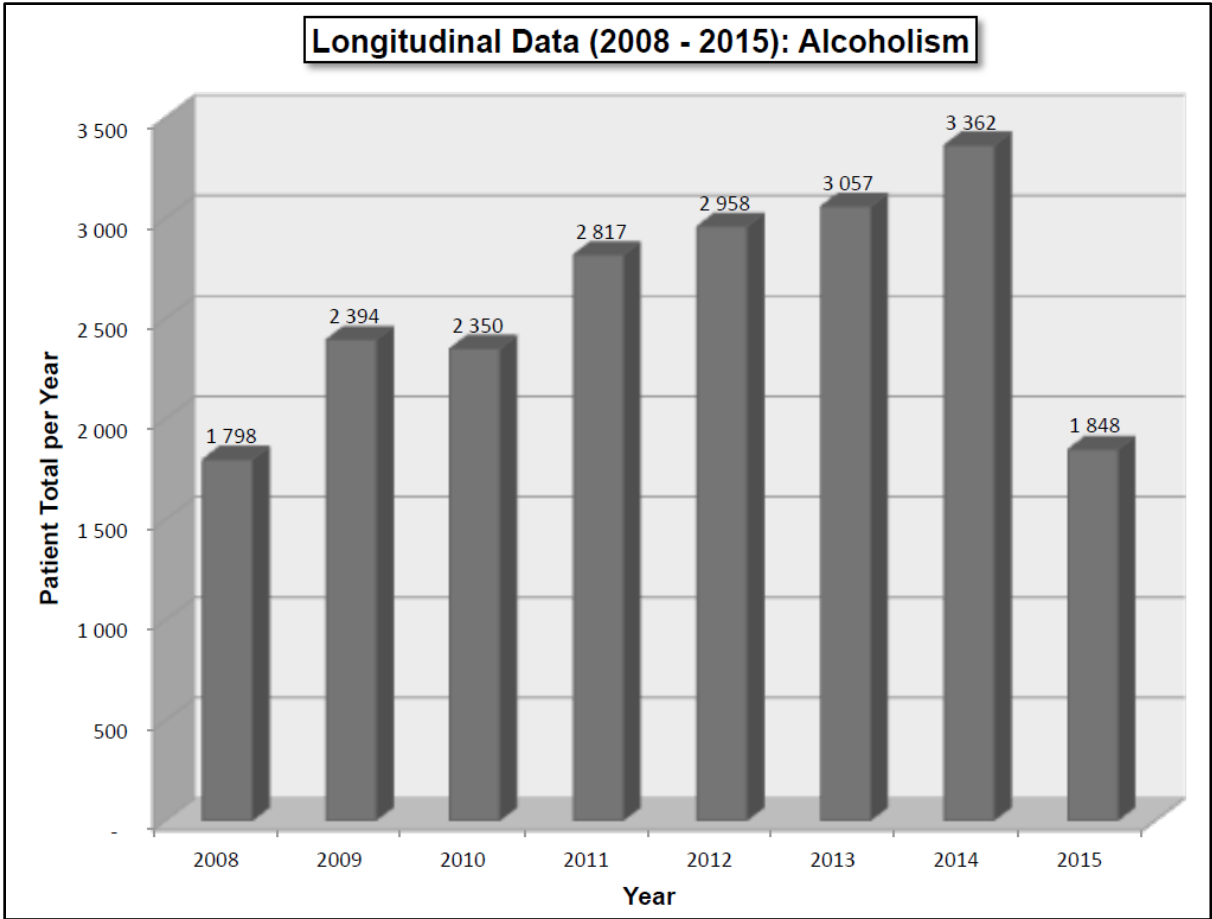
Source: Discovery Health Database

Table LD3

Longitudinal Data (2008 – 2015): Alcoholism

Diagnosis	Year	Total Patients	Total DP
Alcoholism	2008	1,798	2,092,183
Alcoholism	2009	2,394	2,192,129
Alcoholism	2010	2,350	2,434,220
Alcoholism	2011	2,817	2,581,043
Alcoholism	2012	2,958	2,711,594
Alcoholism	2013	3,057	2,822,416
Alcoholism	2014	3,362	2,923,433
Alcoholism	2015	1,848	2,984,103

The results are as follows:

a.   2008

In 2008, 1798 patients were diagnosed as suffering from alcoholism. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. Alcoholism as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

1798 out of 2 092 183 patients diagnosed with alcoholism, translates to 0.086% of the total claimant population for 2008.

**b.	2009**

In 2009, 2394 patients were diagnosed as suffering from alcoholism. This value is 596 more patients than in 2008 and translates to a 24.9% increase in diagnosis of alcoholism, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

2394 out of 2 192 129 patients diagnosed with alcoholism, translates to 0.109% of the total claimant population.

**c.	2010**

In 2010, 2350 patients were diagnosed as suffering from alcoholism. This value is 44 less patients than in 2009 and translates to a 1.84% decrease in diagnosis of alcoholism, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

2350 out of 2 434 220 patients diagnosed with alcoholism, translates to 0.097% of the total claimant population.

**d.	2011**

In 2011, 2817 patients were diagnosed as suffering from alcoholism. This value is 467 more patients than in 2010 and translates to a 16.58% increase in diagnosis of alcoholism, when

compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 5.7% growth in claimant population in one year.

2817 out of 2 581 043 patients diagnosed with alcoholism, translates to 0.109% of the total claimant population.

e.   2012

In 2012, 2958 patients were diagnosed as suffering from alcoholism. This value is 141 more patients than in 2011 and translates to a 4.8% increase in diagnosis of alcoholism, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

2958 out of 2 711 594 patients diagnosed with alcoholism, translates to 0.109% of the total claimant population.

f.   2013

In 2013, 3057 patients were diagnosed as suffering from alcoholism. This value is 99 more patients than in 2012 and translates to a 3.2% increase in diagnosis of alcoholism, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 3.9% growth in claimant population in one year.

3057 out of 2 822 416 patients diagnosed with alcoholism, translates to 0.108% of the total claimant population.

g.   2014

In 2014, 3362 patients were diagnosed as suffering from alcoholism. This value is 305 more patients than in 2013 and translates to a 9.1% increase in diagnosis alcoholism, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

3362 out of 2 923 433 patients diagnosed with alcoholism, translates to 0.115% of the total claimant population.

h.   2015

From January to June of 2015, 1848 patients were diagnosed as suffering alcoholism. By mid-year 2014, the number of patients is 1661 (according to Table: Database_2008_2015_Alcoholism). By June 2015, 187 more patients are recorded when compared to the half-year sum for 2014. This translates to a 10.12% increase in patient diagnosis. Therefore the 10.5% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 3702 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

3702 out of 3 031 600 patients diagnosed with alcoholism, translates to 0.122% of the total claimant population.

Table LD4

Results summary: Alcoholism

Year	Diagnosis % Increase/Decrease	% Diagnosis across Population
2008	N/A	0.086%
2009	24.90% increase	0.109%
2010	1.84% decrease	0.097%
2011	16.58% increase	0.109%
2012	4.80% increase	0.109%
2013	3.20% increase	0.108%
2014	9.10% increase	0.115%
2015	10.12% increase	0.122%

Chart LD4: Disorder Trend: Alcoholism
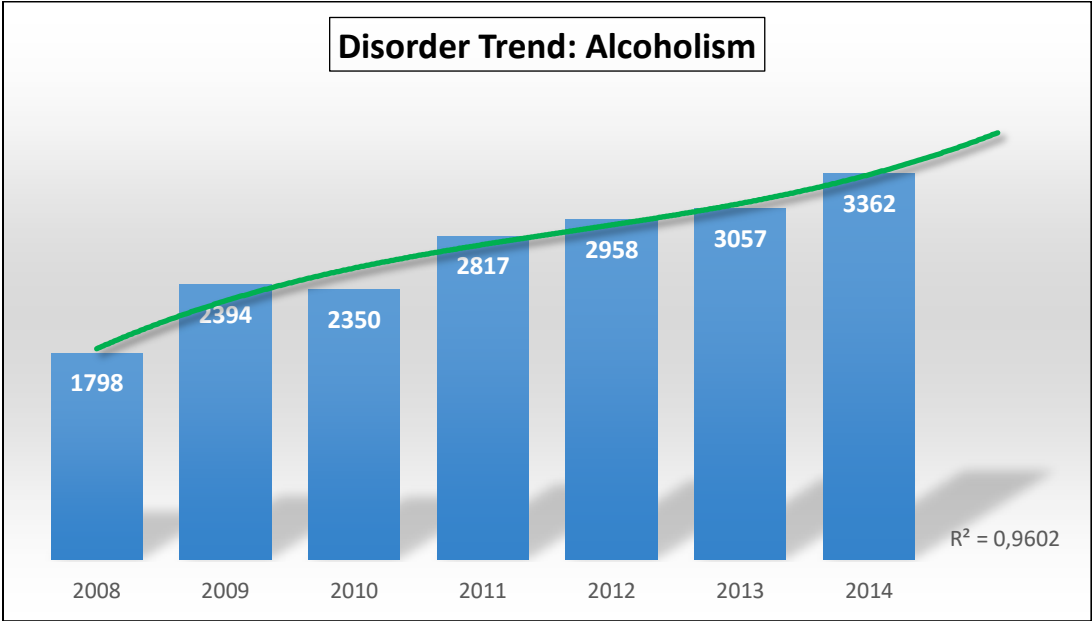
Source: Discovery Health Database

Summary of Table LD4 and Chart LD4. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with alcoholism is 0.107%, within the entire database. The lowest frequency of alcoholism is in 2008, with a percentage of 0.086% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 0.122% of the total database population.

The diagnosis trend shows a steady increase in patient numbers across time. The forecast predicts a consistent increase in patients diagnosed with alcoholism going forward.

Anxiety Disorder

Table LD5 and Chart LD5, summarise the total number of patients diagnosed with anxiety disorder per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD5: Longitudinal Data (2008 – 2015): Anxiety Disorder
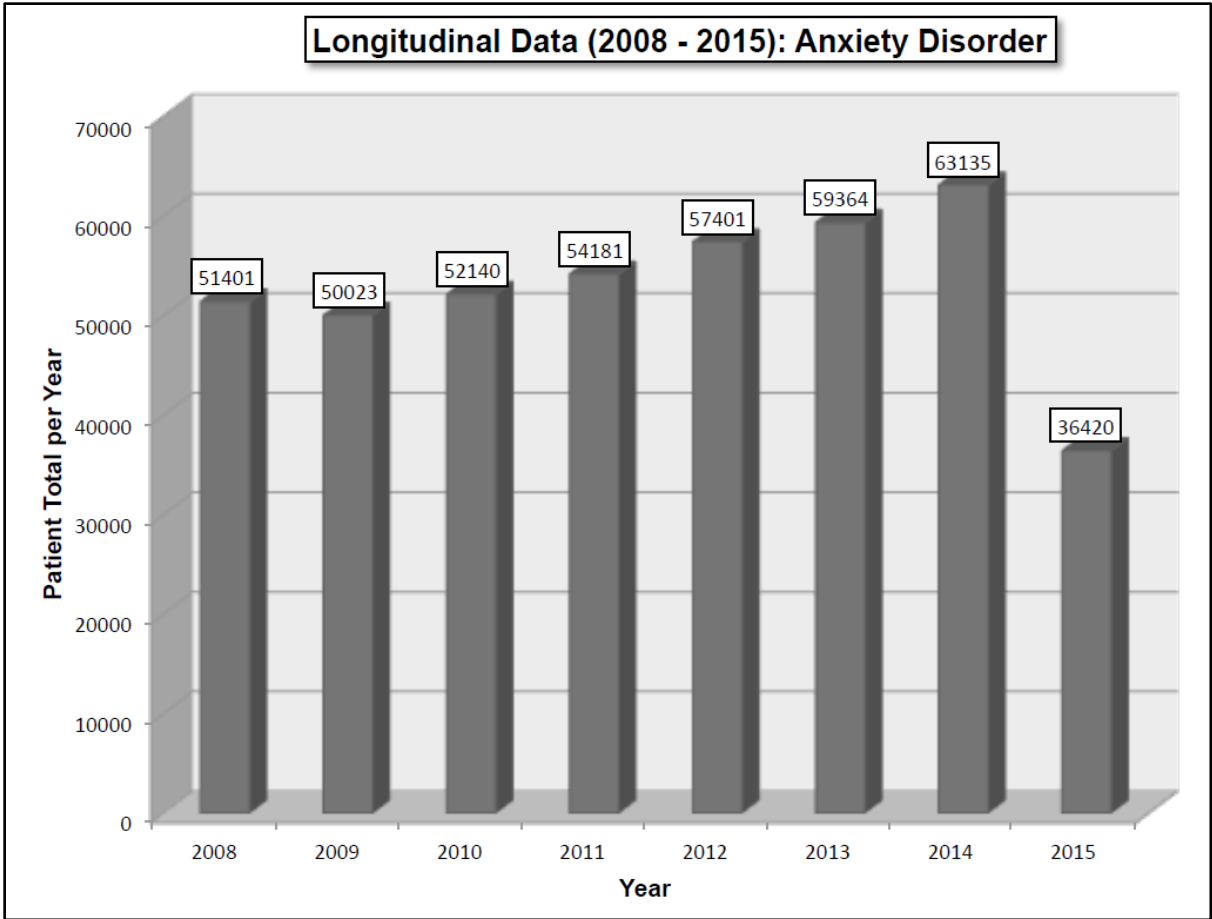
Source: Discovery Health Database

Table LD5

Longitudinal Data (2008 – 2015): Anxiety Disorder

Diagnosis	Year	Total Patients	Total DP
Anxiety disorder	2008	51 401	2,092,183
Anxiety disorder	2009	50 023	2,192,129
Anxiety disorder	2010	52 140	2,434,220
Anxiety disorder	2011	54 181	2,581,043
Anxiety disorder	2012	57 401	2,711,594
Anxiety disorder	2013	59 364	2,822,416
Anxiety disorder	2014	63 135	2,923,433
Anxiety disorder	2015	36 420	2,984,103

The results are as follows:

a.   2008

In 2008, 51 401 patients were diagnosed as suffering from anxiety disorder. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. Anxiety disorder as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

51 401 out of 2 092 183 patients diagnosed with anxiety disorder, translates to 2.46% of the total claimant population for 2008.

b.   2009

In 2009, 50 023 patients were diagnosed as suffering from anxiety disorder. This value is 1378 less patients than in 2008 and translates to a 2.68% decrease in diagnosis of anxiety disorder, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

50 023 out of 2 192 129 patients diagnosed with anxiety disorder, translates to 2.28% of the total claimant population.

c.   2010

In 2010, 52 140 patients were diagnosed as suffering from anxiety disorder. This value is 2117 more patients than in 2009 and translates to a 4.06% increase in diagnosis of anxiety disorder, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

52 149 out of 2 434 220 patients diagnosed with anxiety disorder, translates to 2.14% of the total claimant population.

d.   2011

In 2011, 54 181 patients were diagnosed as suffering from anxiety disorder. This value is 2041 more patients than in 2010 and translates to a 3.77% increase in diagnosis of anxiety disorder,

when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 5.7% growth in claimant population in one year.

54 181 out of 2 581 043 patients diagnosed with anxiety disorder, translates to 2.01% of the total claimant population.

e.   2012

In 2012, 57 401 patients were diagnosed as suffering from anxiety disorder. This value is 3220 more patients than in 2011 and translates to a 5.6% increase in diagnosis of anxiety disorder, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

57 401 out of 2 711 594 patients diagnosed with anxiety disorder, translates to 2.12% of the total claimant population.

f.   2013

In 2013, 59 364 patients were diagnosed as suffering from anxiety disorder. This value is 1963 more patients than in 2012 and translates to a 3.3% increase in diagnosis of anxiety disorder, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 3.9% growth in claimant population in one year.

59 364 out of 2 822 416 patients diagnosed with anxiety disorder, translates to 2.1% of the total claimant population.

g.   2014

In 2014, 63 135 patients were diagnosed as suffering from anxiety disorder. This value is 3771 more patients than in 2013 and translates to a 6.0% increase in diagnosis anxiety disorder, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

63 135 out of 2 923 433 patients diagnosed with anxiety disorder, translates to 2.14% of the total claimant population.

h.   2015

From January to June of 2015, 36 420 patients were diagnosed as suffering anxiety disorder. By mid-year 2014, the number of patients is 32 509 (according to Table: Database_2008_2015_ Anxiety Disorder). By June 2015, 3911 more patients are recorded when compared to the half-year sum for 2014. This translates to a 10.74% increase in patient diagnosis. Therefore the 10.74% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 69 916 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

69 916 out of 3 031 600 patients diagnosed with anxiety disorder, translates to 2.31% of the

total claimant population.

Table LD6

Results summary: Anxiety Disorder

Year	Diagnosis % Increase/Decrease	% Diagnosis across Population
2008	N/A	2.46%
2009	2.68% decrease	2.28%
2010	4.06% increase	2.14%
2011	3.77% increase	2.01%
2012	5.60% increase	2.12%
2013	3.30% increase	2.10%
2014	6.00% increase	2.14%
2015	10.74% increase	2.31%

Chart LD6: Disorder Trend: Anxiety Disorder

Disorder Trend: Anxiety Disorder

Year	Value
2008	51401
2009	50023
2010	52140
2011	54181
2012	57401
2013	59364
2014	63135

$R^2 = 0,98$
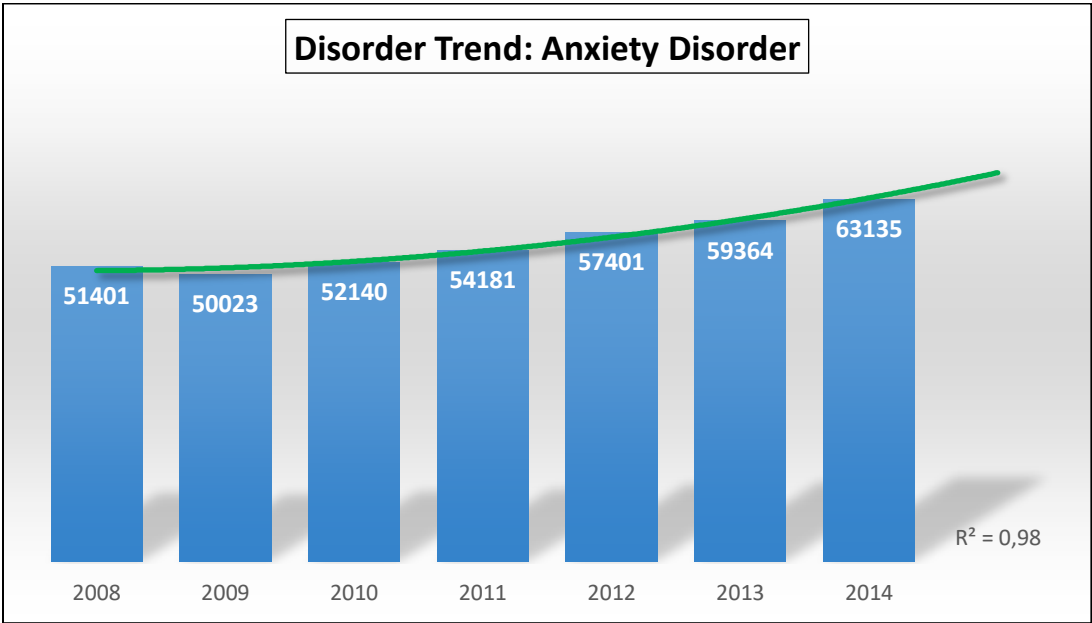
Source: Discovery Health Database

Summary of Table LD6 and Chart LD6. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with anxiety disorder is 2.2%, within the entire database. The lowest frequency of anxiety disorder is in 2011, with a percentage of 2.01% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 2.46% of the total database population.

The diagnosis trend shows a steady increase in patient numbers across time. The forecast predicts a consistent increase in patients diagnosed with anxiety disorder going forward.

Attention Deficit Hyperactivity Disorder

Table LD7 and Chart LD7, summarise the total number of patients diagnosed with attention deficit hyperactivity disorder per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD7: Longitudinal Data (2008 – 2015): Attention Deficit Hyperactivity Disorder
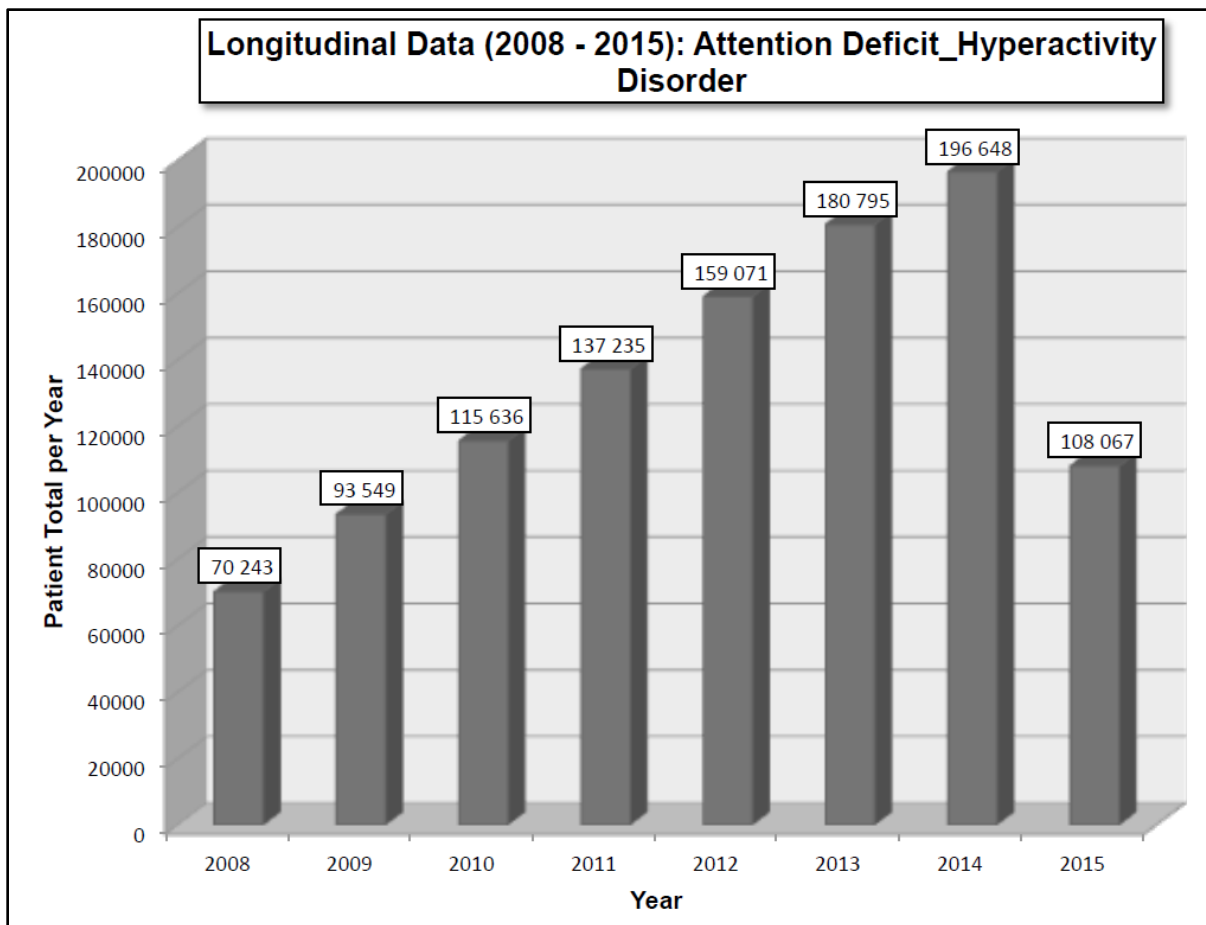
Source: Discovery Health Database

Table LD7

Longitudinal Data (2008 – 2015): Attention Deficit Hyperactivity Disorder

Diagnosis	Year	Total Patients	Total DP
Attention deficit and hyperactivity disorder	2008	70 243	2,092,183
Attention deficit and hyperactivity disorder	2009	93 549	2,192,129
Attention deficit and hyperactivity disorder	2010	115 636	2,434,220
Attention deficit and hyperactivity disorder	2011	137 235	2,581,043
Attention deficit and hyperactivity disorder	2012	159 071	2,711,594
Attention deficit and hyperactivity disorder	2013	180 795	2,822,416
Attention deficit and hyperactivity disorder	2014	196 648	2,923,433
Attention deficit and hyperactivity disorder	2015	108 067	2,984,103

The results are as follows:

a.   2008

In 2008, 70 243 patients were diagnosed as suffering from attention deficit hyperactivity

disorder. This is the total number of diagnoses, includes both male and female patients. The

ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all

medical claimants on the dataset. Attention deficit hyperactivity disorder as a diagnosis is one

of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a

summary of disorders specified in this dataset.

70 243 out of 2 092 183 patients diagnosed with attention deficit hyperactivity disorder,

translates to 3.36% of the total claimant population for 2008.

b.   2009

In 2009, 93 549 patients were diagnosed as suffering from attention deficit hyperactivity disorder. This value is 23 306 more patients than in 2008 and translates to a 24.91% increase in diagnosis of attention deficit dyperactivity disorder, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

93 549 out of 2 192 129 patients diagnosed with attention deficit hyperactivity disorder, translates to 4.27% of the total claimant population.

c.   2010

In 2010, 115 636 patients were diagnosed as suffering from attention deficit hyperactivity disorder. This value is 22 087 more patients than in 2009 and translates to a 19.1% increase in diagnosis of attention deficit hyperactivity disorder, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

115 636 out of 2 434 220 patients diagnosed with attention deficit hyperactivity disorder, translates to 4.75% of the total claimant population.

d.   2011

In 2011, 137 235 patients were diagnosed as suffering from attention deficit hyperactivity disorder. This value is 21 599 more patients than in 2010 and translates to a 15.74% increase in diagnosis of attention deficit hyperactivity disorder, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 5.7% growth in claimant population in one year.

137 235 out of 2 581 043 patients diagnosed with attention deficit hyperactivity disorder, translates to 5.32% of the total claimant population.

e.   2012

In 2012, 159 071 patients were diagnosed as suffering from attention deficit hyperactivity disorder. This value is 21 836 more patients than in 2011 and translates to a 13.73% increase in diagnosis of attention deficit hyperactivity disorder, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

159 071 out of 2 711 594 patients diagnosed with attention deficit hyperactivity disorder, translates to 5.87% of the total claimant population.

f.   2013

In 2013, 180 795 patients were diagnosed as suffering from attention deficit hyperactivity disorder. This value is 21 724 more patients than in 2012 and translates to a 12.02% increase in diagnosis of attention deficit hyperactivity disorder, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

180 795 out of 2 822 416 patients diagnosed with attention deficit hyperactivity disorder, translates to 6.41% of the total claimant population.

g.   2014

In 2014, 196 648 patients were diagnosed as suffering from attention deficit hyperactivity disorder. This value is 15 853 more patients than in 2013 and translates to an 8.06% increase in diagnosis attention deficit hyperactivity disorder, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

196 648 out of 2 923 433 patients diagnosed with attention deficit hyperactivity disorder, translates to 6.73% of the total claimant population.

h.   2015

From January to June of 2015, 108 067 patients were diagnosed as suffering attention deficit hyperactivity disorder. By mid-year 2014, the number of patients is 102 299 (according to Table: Database_2008_2015_ Attention Deficit Hyperactivity Disorder). By June 2015, 5768 more patients are recorded when compared to the half-year sum for 2014. This translates to a 5.34% increase in patient diagnosis. Therefore the 5.34% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 207 149 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

207 149 out of 3 031 600 patients diagnosed with attention deficit hyperactivity disorder,

translates to 6.83% of the total claimant population.

Table LD8

Results summary: Attention Deficit Hyperactivity Disorder

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	3.36%
2009	24.91% increase	4.27%
2010	19.10% increase	4.75%
2011	15.74% increase	5.32%
2012	13.73% increase	5.87%
2013	12.02% increase	6.41%
2014	8.06% increase	6.73%
2015	5.34% increase	6.83%

Chart LD8: Disorder Trend: Attention Deficit and Hyperactivity Disorder

Source: Discovery Health Database

147
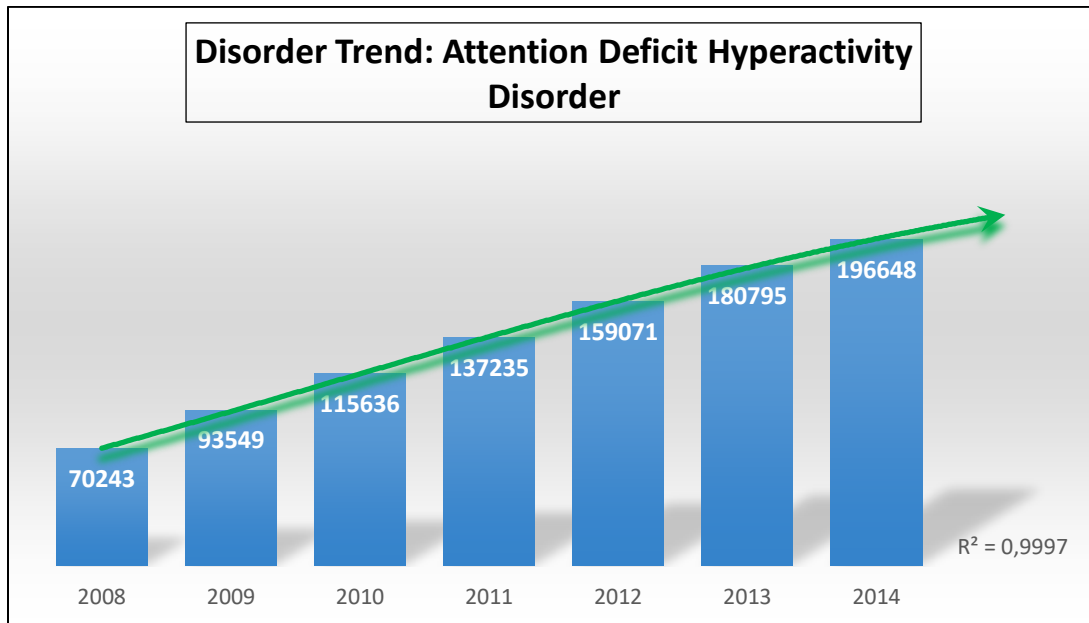
Summary of Table LD8 and Chart LD8. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with attention deficit and hyperactivity disorder is 5.44%, within the entire database. The lowest frequency of attention deficit and hyperactivity disorder is in 2008, with a percentage of 3.36% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 6.83% of the total database population.

The diagnosis trend shows a steady increase in patient numbers across time. The forecast predicts a consistent increase in patients diagnosed with attention deficit and hyperactivity disorder going forward. From 2008 to 2015, the number of patients diagnosed with attention deficit and hyperactivity disorder doubled.

Behavioural Disorder

Table LD9 and Chart LD9, summarise the total number of patients diagnosed with behavioural disorder per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD9: Longitudinal Data (2008 – 2015): Behavioural Disorder
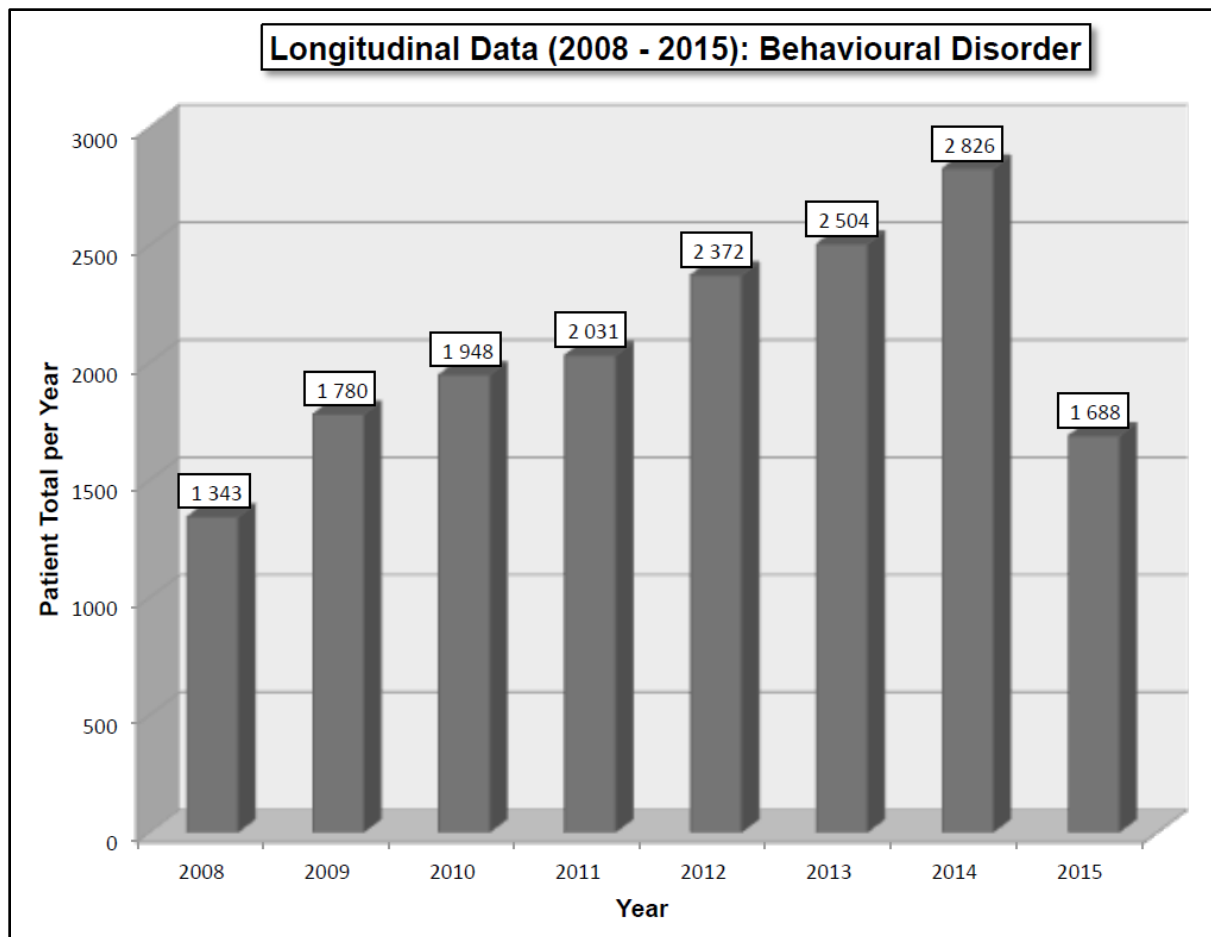
Source: Discovery Health Database

Table LD9

Longitudinal Data (2008 – 2015): Behavioural Disorder

Diagnosis	Year	Total Patients	Total DP
Behavioural disorder	2008	1 343	2,092,183
Behavioural disorder	2009	1 780	2,192,129
Behavioural disorder	2010	1 948	2,434,220
Behavioural disorder	2011	2 031	2,581,043
Behavioural disorder	2012	2 372	2,711,594
Behavioural disorder	2013	2 504	2,822,416
Behavioural disorder	2014	2 826	2,923,433
Behavioural disorder	2015	1 688	2,984,103

The results are as follows:

a.   2008

In 2008, 1343 patients were diagnosed as suffering from behavioural disorder. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. Behavioural disorder as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

1343 out of 2 092 183 patients diagnosed with behavioural disorder, translates to 0.064% of the total claimant population for 2008.

b. 2009

In 2009, 1780 patients were diagnosed as suffering from behavioural disorder. This value is 437 more patients than in 2008 and translates to a 24.55% increase in diagnosis of behavioural disorder, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

1780 out of 2 192 129 patients diagnosed with behavioural disorder, translates to 0.081% of the total claimant population.

c. 2010

In 2010, 1948 patients were diagnosed as suffering from behavioural disorder. This value is 168 more patients than in 2009 and translates to an 8.64% increase in diagnosis of behavioural disorder, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

1948 out of 2 434 220 patients diagnosed with behavioural disorder, translates to 0.080% of the total claimant population.

d. 2011

In 2011, 2031 patients were diagnosed as suffering from behavioural disorder. This value is 83 more patients than in 2010 and translates to a 4.03% increase in diagnosis of behavioural

disorder, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 5.7% growth in claimant population in one year.

2031 out of 2 581 043 patients diagnosed with behavioural disorder, translates to 0.079% of the total claimant population.

e.   2012

In 2012, 2372 patients were diagnosed as suffering from behavioural disorder. This value is 341 more patients than in 2011 and translates to a 14.78% increase in diagnosis of behavioural disorder, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

2372 out of 2 711 594 patients diagnosed with behavioural disorder, translates to 0.087% of the total claimant population.

f.   2013

In 2013, 2504 patients were diagnosed as suffering from behavioural disorder. This value is 132 more patients than in 2012 and translates to a 5.27% increase in diagnosis of behavioural disorder, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

2504 out of 2 822 416 patients diagnosed with behavioural disorder, translates to 0.089% of the total claimant population.

g.   2014

In 2014, 2826 patients were diagnosed as suffering from behavioural disorder. This value is 322 more patients than in 2013 and translates to a 11.39% increase in diagnosis behavioural disorder, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

2826 out of 2 923 433 patients diagnosed with behavioural disorder, translates to 0.097% of the total claimant population.

h.   2015

From January to June of 2015, 1688 patients were diagnosed as suffering from behavioural disorder. By mid-year 2014, the number of patients is 1445 (according to Table: Database_2008_2015_ Behavioural Disorder). By June 2015, 243 more patients are recorded when compared to the half-year sum for 2014. This translates to a 14.4% increase in patient diagnosis. Therefore the 14.4% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 3232 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

3232 out of 3 031 600 patients diagnosed with behavioural disorder, translates to 0.107% of the

total claimant population.

Table LD10

Results summary: Behavioural Disorder

Year	Diagnosis % Increase/Decrease	% Diagnosis with Population
2008	N/A	0.064%
2009	24.55% increase	0.081%
2010	8.64% increase	0.080%
2011	4.03% increase	0.079%
2012	14.78% increase	0.087%
2013	5.27% increase	0.089%
2014	11.39% increase	0.097%
2015	14.40% increase	0.107%

Chart LD10: Disorder Trend: Behavioural Disorder
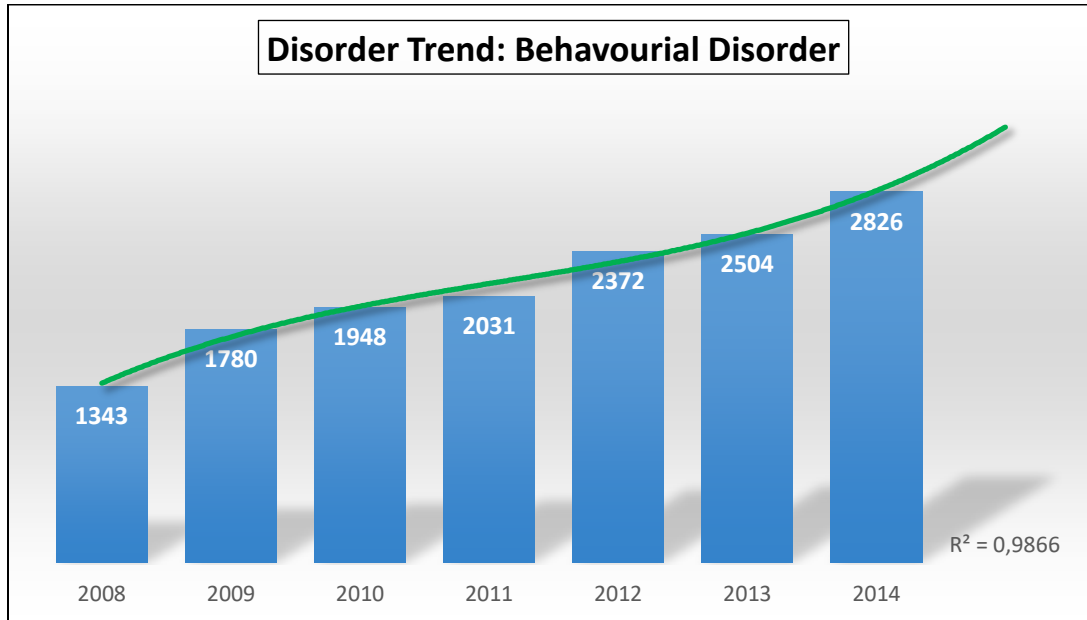
Source: Discovery Health Database

Summary of Table LD10 and Chart LD10. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with behavioural disorder is 0.09%, within the entire database. The lowest frequency of behavioural disorder is in 2008, with a percentage of 0.064% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 0.107% of the total database population.

The diagnosis trend shows a steady increase in patient numbers across time. The forecast predicts a steep increase in patients diagnosed with behavioural disorder going forward.

Bipolar Mood Disorder

Table LD11 and Chart LD11, summarise the total number of patients diagnosed with bipolar mood disorder per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD11: Longitudinal Data (2008 – 2015): Bipolar Mood Disorder
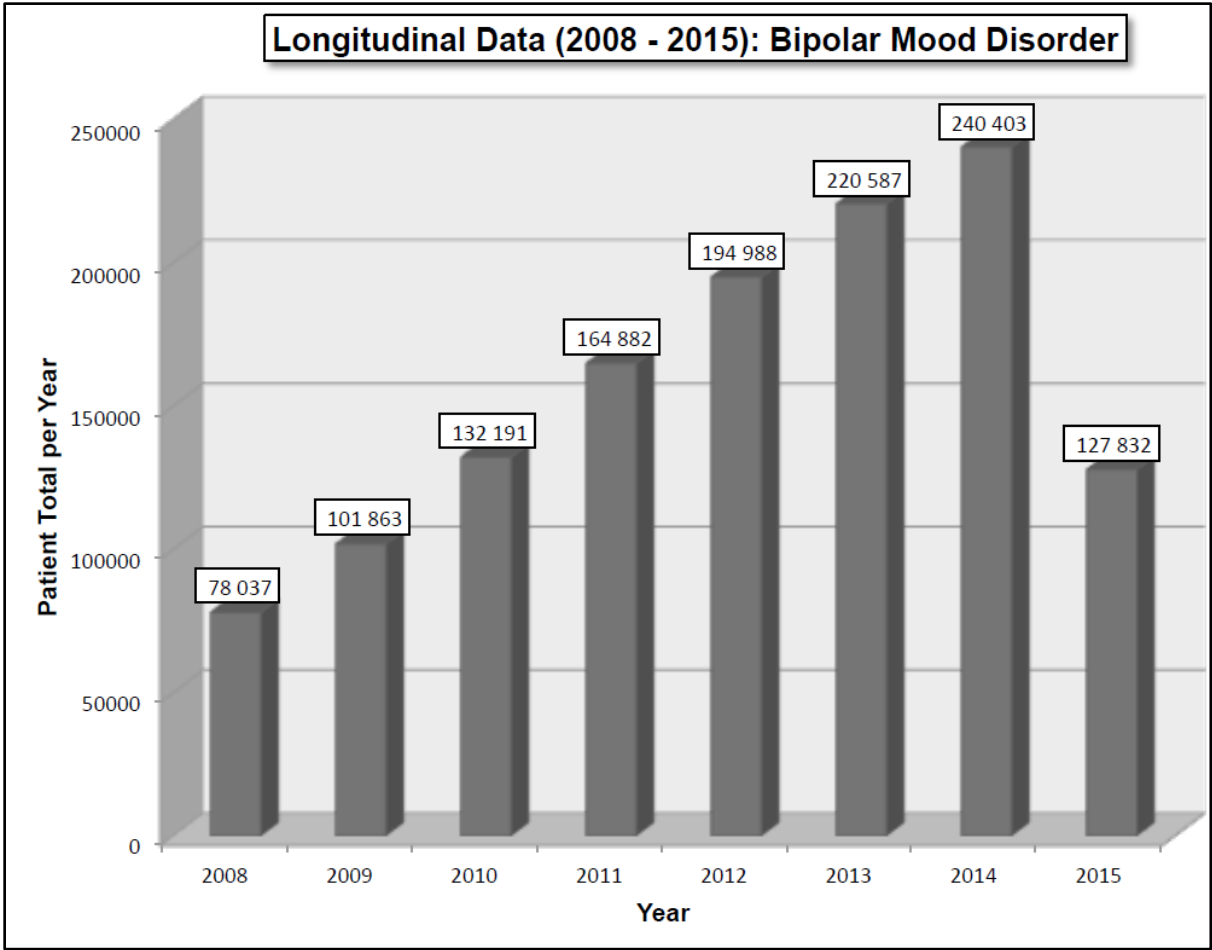
Source: Discovery Health Database

Table LD11

Longitudinal Data (2008 – 2015): Bipolar Mood Disorder

Diagnosis	Year	Total Patients	Total DP
Bipolar mood disorder	2008	78 037	2,092,183
Bipolar mood disorder	2009	101 863	2,192,129
Bipolar mood disorder	2010	132 191	2,434,220
Bipolar mood disorder	2011	164 882	2,581,043
Bipolar mood disorder	2012	194 988	2,711,594
Bipolar mood disorder	2013	220 587	2,822,416
Bipolar mood disorder	2014	240 403	2,923,433
Bipolar mood disorder	2015	127 832	2,984,103

The results are as follows:

a.   2008

In 2008, 78 037 patients were diagnosed as suffering from bipolar mood disorder. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. Bipolar mood disorder as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

78 037 out of 2 092 183 patients diagnosed with bipolar mood disorder, translates to 3.73% of the total claimant population for 2008.

b.   2009

In 2009, 101 863 patients were diagnosed as suffering from bipolar mood disorder. This value is 23 826 more patients than in 2008 and translates to a 23.39% increase in diagnosis of bipolar mood disorder, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

101 863 out of 2 192 129 patients diagnosed with bipolar mood disorder, translates to 4.65% of the total claimant population.

c.   2010

In 2010, 132 191 patients were diagnosed as suffering from bipolar mood disorder. This value is 30 328 more patients than in 2009 and translates to a 22.94% increase in diagnosis of bipolar mood disorder, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

132 191 out of 2 434 220 patients diagnosed with bipolar mood disorder, translates to 5.43% of the total claimant population.

d.   2011

In 2011, 164 882 patients were diagnosed as suffering from bipolar mood disorder. This value is 32 691 more patients than in 2010 and translates to a 19.83% increase in diagnosis of bipolar

mood disorder, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 5.7% growth in claimant population in one year.

164 882 out of 2 581 043 patients diagnosed with bipolar mood disorder, translates to 6.39% of the total claimant population.

e.   2012

In 2012, 194 988 patients were diagnosed as suffering from bipolar mood disorder. This value is 30 106 more patients than in 2011 and translates to a 15.44% increase in diagnosis of bipolar mood disorder, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

194 988 out of 2 711 594 patients diagnosed with bipolar mood disorder, translates to 7.19% of the total claimant population.

f.   2013

In 2013, 220 587 patients were diagnosed as suffering from bipolar mood disorder. This value is 25 599 more patients than in 2012 and translates to a 11.6% increase in diagnosis of bipolar mood disorder, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

220 587 out of 2 822 416 patients diagnosed with bipolar mood disorder, translates to 7.86% of the total claimant population.

g.   2014

In 2014, 240 403 patients were diagnosed as suffering from bipolar mood disorder. This value is 19 816 more patients than in 2013 and translates to an 8.24% increase in diagnosis bipolar mood disorder, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

240 403 out of 2 923 433 patients diagnosed with bipolar mood disorder, translates to 8.22% of the total claimant population.

h.   2015

From January to June of 2015, 127 832 patients were diagnosed as suffering from bipolar mood disorder. By mid-year 2014, the number of patients is 119 034 (according to Table: Database_2008_2015_ Bipolar Mood Disorder). By June 2015, 8798 more patients are recorded when compared to the half-year sum for 2014. This translates to a 6.88% increase in patient diagnosis. Therefore the 6.88% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 256 943 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

256 943 out of 3 031 600 patients diagnosed with bipolar mood disorder, translates to 8.48% of

the total claimant population.

Table LD12

Results summary: Bipolar Mood Disorder

Year	Diagnosis % Increase/Decrease	% Diagnosis with Population
2008	N/A	3.73%
2009	23.39% increase	4.65%
2010	22.94% increase	5.43%
2011	19.83% increase	6.39%
2012	15.44% increase	7.19%
2013	11.60% increase	7.86%
2014	8.24% increase	8.22%
2015	6.88% increase	8.48%

Chart LD12: Disorder Trend: Bipolar Mood Disorder

Disorder Trend: Bipolar Mood Disorder

Year	Value
2008	78037
2009	101863
2010	132191
2011	164882
2012	194988
2013	220587
2014	240403

$R^2 = 0,9999$
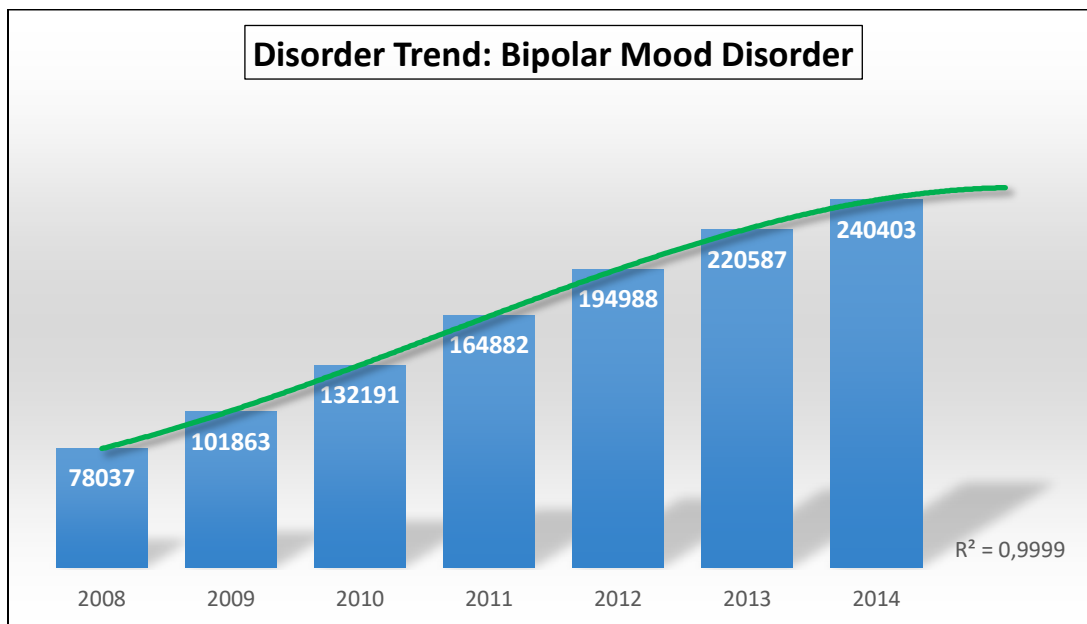
Source: Discovery Health Database

Summary of Table LD12 and Chart LD12. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with bipolar mood disorder is 6.49%, within the entire database. The lowest frequency of bipolar mood disorder is in 2008, with a percentage of 3.73% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 8.48% of the total database population.

The diagnosis trend shows a steady increase in patient numbers across time. The forecast predicts a steep increase in patients diagnosed with bipolar mood disorder going forward. The percentage of patients diagnosed with bipolar mood disorder increased by 56% from 2008 to 2015.

Delusional Disorder

Table LD13 and Chart LD13, summarise the total number of patients diagnosed with delusional disorder per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD13: Longitudinal Data (2008 – 2015): Delusional Disorder
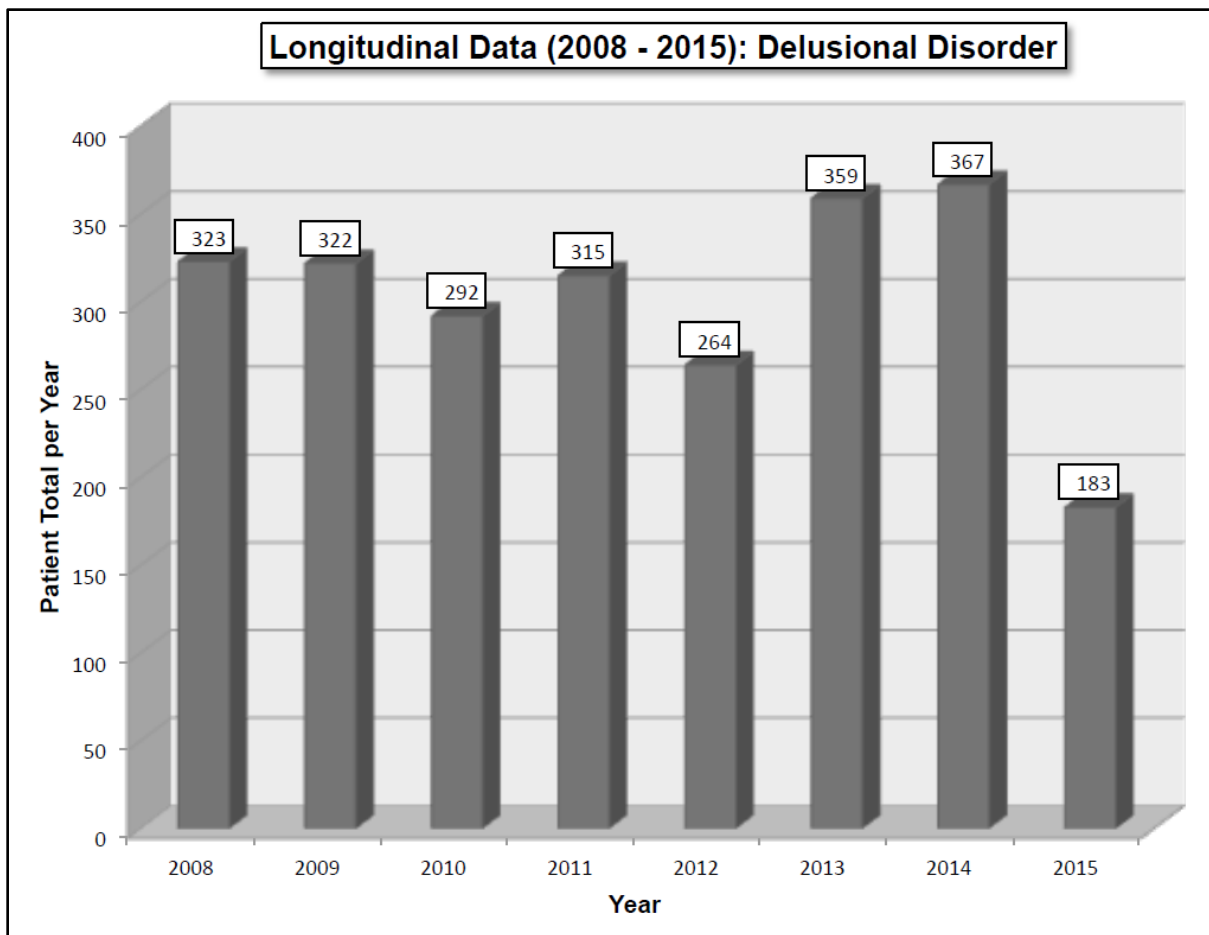
Source: Discovery Health Database

Table LD13

Longitudinal Data (2008 – 2015): Delusional Disorder

Diagnosis	Year	Total Patients	Total DP
Delusional disorder	2008	323	2,092,183
Delusional disorder	2009	322	2,192,129
Delusional disorder	2010	292	2,434,220
Delusional disorder	2011	315	2,581,043
Delusional disorder	2012	264	2,711,594
Delusional disorder	2013	359	2,822,416
Delusional disorder	2014	367	2,923,433
Delusional disorder	2015	183	2,984,103

The results are as follows:

a.   2008

In 2008, 323 patients were diagnosed as suffering from delusional disorder. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. Delusional disorder as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

323 out of 2 092 183 patients diagnosed with delusional disorder, translates to 0.015% of the total claimant population for 2008.

b.   2009

In 2009, 322 patients were diagnosed as suffering from delusional disorder. This value is 1 less patient than in 2008 and translates to a 0.31% decrease in diagnosis of delusional disorder, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

322 out of 2 192 129 patients diagnosed with delusional disorder, translates to 0.015% of the total claimant population.

c.   2010

In 2010, 292 patients were diagnosed as suffering from delusional disorder. This value is 30 less patients than in 2009 and translates to a 9.32% decrease in diagnosis of delusional disorder, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

292 out of 2 434 220 patients diagnosed with delusional disorder, translates to 0.012% of the total claimant population.

d.   2011

In 2011, 315 patients were diagnosed as suffering from delusional disorder. This value is 23 more patients than in 2010 and translates to a 7.3% increase in diagnosis of delusional disorder,

when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 5.7% growth in claimant population in one year.

315 out of 2 581 043 patients diagnosed with delusional disorder, translates to 0.012% of the total claimant population.

e.   2012

In 2012, 264 patients were diagnosed as suffering from delusional disorder. This value is 51 less patients than in 2011 and translates to a 16.2% decrease in diagnosis of delusional disorder, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

264 out of 2 711 594 patients diagnosed with delusional disorder, translates to 0.010% of the total claimant population.

f.   2013

In 2013, 359 patients were diagnosed as suffering from delusional disorder. This value is 95 more patients than in 2012 and translates to a 26.46% increase in diagnosis of delusional disorder, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

359 out of 2 822 416 patients diagnosed with delusional disorder, translates to 0.013% of the total claimant population.

g.   2014

In 2014, 367 patients were diagnosed as suffering from delusional disorder. This value is 8 more patients than in 2013 and translates to a 2.18% increase in diagnosis of delusional disorder, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

367 out of 2 923 433 patients diagnosed with delusional disorder, translates to 0.013% of the total claimant population.

h.   2015

From January to June of 2015, 183 patients were diagnosed as suffering from delusional disorder. By mid-year 2014, the number of patients is 202 (according to Table: Database_2008_2015_ Delusional Disorder). By June 2015, 19 less patients are recorded when compared to the half-year sum for 2014. This translates to a 9.41% decrease in patient diagnosis. Therefore the 9.41% decrease is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 333 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

333 out of 3 031 600 patients diagnosed with delusional disorder, translates to 0.011% of the

total claimant population.

Table LD14

Results summary: Delusional Disorder

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	0.015%
2009	0.31% decrease	0.015%
2010	9.32% decrease	0.012%
2011	7.30% increase	0.012%
2012	16.20% decrease	0.010%
2013	26.46% increase	0.013%
2014	2.18% increase	0.013%
2015	9.41% decrease	0.011%

Chart LD14: Disorder Trend: Delusional Disorder

Disorder Trend: Delusional Disorder

323 | 322 | 292 | 315 | 264 | 359 | 367

2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014

$R^2 = 0,6489$
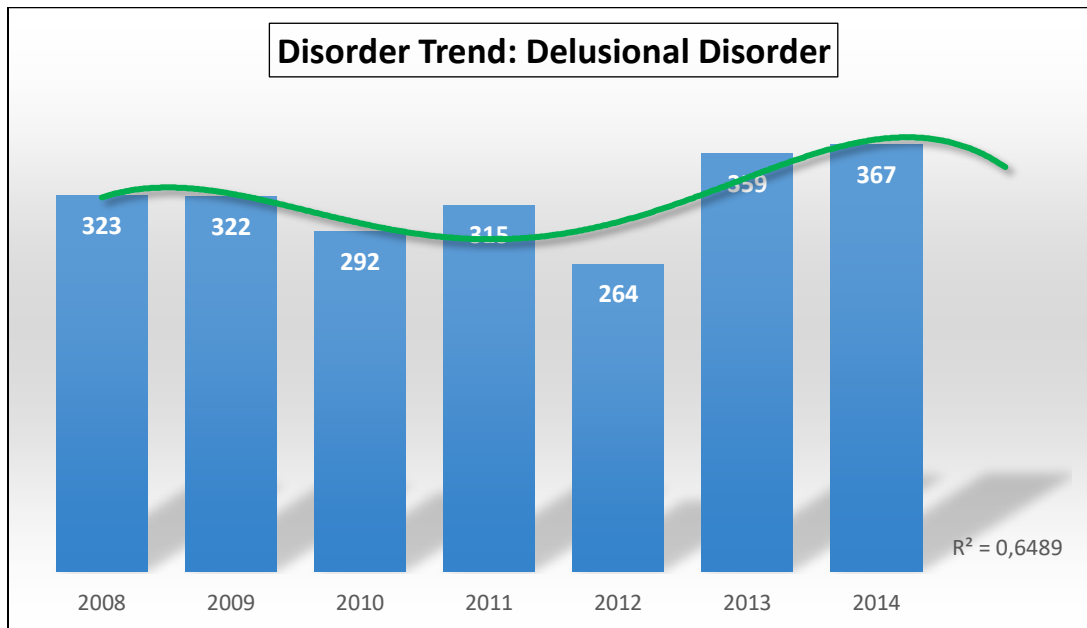
Source: Discovery Health Database

Summary of Table LD14 and Chart LD14. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with delusional disorder is 0.013%, within the entire database. The lowest frequency of delusional disorder is in 2012, with a percentage of 0.010% occurrence within the entire population and the highest frequencies are in 2008 and 2009, with a percentage of 0.015% of the total database population.

The diagnosis trend shows patient numbers are highly fluctuating across time. The order 4 polynomial forecast predicts a downward frequency rate in patients diagnosed with delusional disorder going forward.

Depression

Table LD15 and Chart LD15, summarise the total number of patients diagnosed with depression per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD15: Longitudinal Data (2008 – 2015): Depression
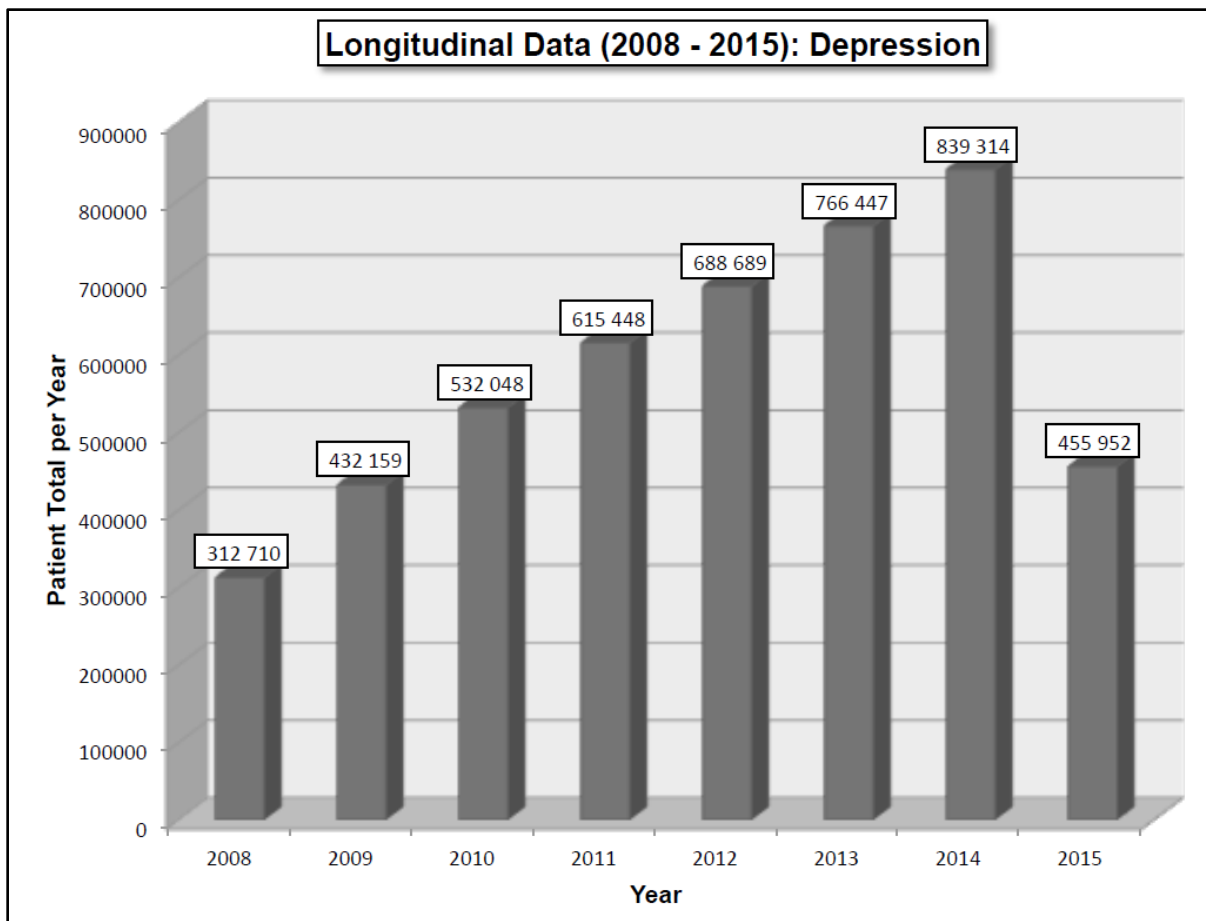
Source: Discovery Health Database

Table LD15

Longitudinal Data (2008 – 2015): Depression

Diagnosis	Year	Total Patients	Total DP
Depression	2008	312 710	2,092,183
Depression	2009	432 159	2,192,129
Depression	2010	532 048	2,434,220
Depression	2011	615 448	2,581,043
Depression	2012	688 689	2,711,594
Depression	2013	766 447	2,822,416
Depression	2014	839 314	2,923,433
Depression	2015	455 952	2,984,103

The results are as follows:

a.   2008

In 2008, 312 710 patients were diagnosed as suffering from depression. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. Depression as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

312 710 out of 2 092 183 patients diagnosed with depression, translates to 14.95% of the total claimant population for 2008.

b.   2009

In 2009, 432 159 patients were diagnosed as suffering from depression. This value is 119 449 more patients than in 2008 and translates to a 27.64% increase in diagnosis of depression, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

432 159 out of 2 192 129 patients diagnosed with depression, translates to 19.71% of the total claimant population.

c.   2010

In 2010, 532 048 patients were diagnosed as suffering from depression. This value is 99 889 more patients than in 2009 and translates to an 18.77% increase in diagnosis of depression, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

532 048 out of 2 434 220 patients diagnosed with depression, translates to 21.86% of the total claimant population.

d.   2011

In 2011, 615 448 patients were diagnosed as suffering from depression. This value is 83 400 more patients than in 2010 and translates to a 13.55% increase in diagnosis of depression, when

compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 5.7% growth in claimant population in one year.

615 448 out of 2 581 043 patients diagnosed with depression, translates to 23.84% of the total claimant population.

e.   2012

In 2012, 688 689 patients were diagnosed as suffering from depression. This value is 73 241 more patients than in 2011 and translates to a 10.63% increase in diagnosis of depression, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

688 689 out of 2 711 594 patients diagnosed with depression, translates to 25.40% of the total claimant population.

f.   2013

In 2013, 766 447 patients were diagnosed as suffering from depression. This value is 77 758 more patients than in 2012 and translates to a 10.14% increase in diagnosis of depression, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

766 447 out of 2 822 416 patients diagnosed with depression, translates to 27.16% of the total claimant population.

g. 2014

In 2014, 839 314 patients were diagnosed as suffering from depression. This value is 72 867 more patients than in 2013 and translates to an 8.68% increase in diagnosis of depression, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

839 314 out of 2 923 433 patients diagnosed with depression, translates to 28.71% of the total claimant population.

h. 2015

From January to June of 2015, 455 952 patients were diagnosed as suffering from depression. By mid-year 2014, the number of patients is 432 864 (according to Table: Database_2008_2015_ Depression). By June 2015, 32 088 more patients are recorded when compared to the half-year sum for 2014. This translates to a 7.04% increase in patient diagnosis. Therefore the 7.04% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 898 402 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

898 402 out of 3 031 600 patients diagnosed with depression, translates to 29.63% of the total

claimant population.

Table LD16

Results summary: Depression

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	14.95%
2009	27.64% increase	19.71%
2010	18.77% increase	21.86%
2011	13.55% increase	23.84%
2012	10.63% increase	25.40%
2013	10.14% increase	27.16%
2014	8.68% increase	28.71%
2015	7.04% increase	29.63%

Chart LD16: Disorder Trend: Depression

Disorder Trend: Depression

312710 — 2008
432159 — 2009
532048 — 2010
615448 — 2011
688689 — 2012
766447 — 2013
839314 — 2014

R² = 0,9999
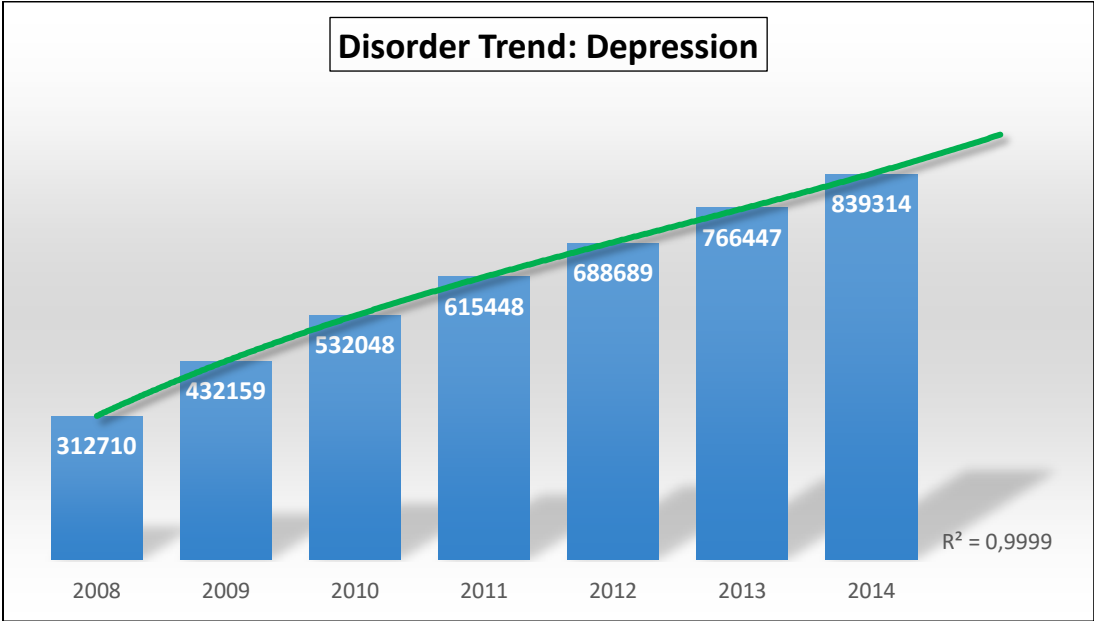
Source: Discovery Health Database

Summary of Table LD16 and Chart LD16. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with depression is 23.91%, within the entire database. The lowest frequency of depression is in 2008, with a percentage of 14.95% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 29.63% of the total database population.

The diagnosis trend shows a steady increase in patient numbers across time. The forecast predicts a steep increase in patients diagnosed with depression going forward. The percentage of patients diagnosed with depression doubled from 2008 to 2015.

Developmental and Learning Disorder

Table LD17 and Chart LD17, summarise the total number of patients diagnosed with developmental and learning disorder per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD17: Longitudinal Data (2008 – 2015): Developmental and Learning Disorder
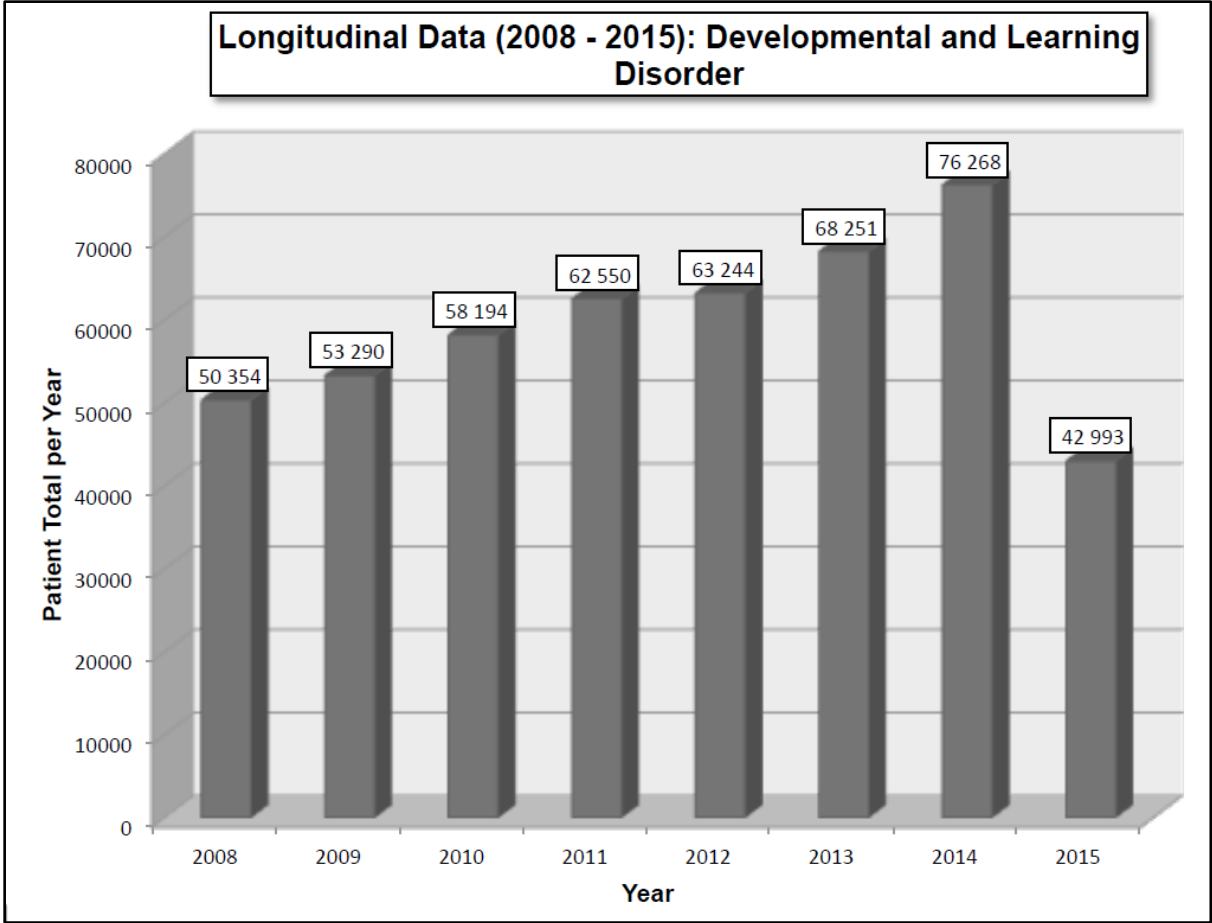
Source: Discovery Health Database

Table LD17

Longitudinal Data (2008 – 2015): Developmental and Learning Disorder

Diagnosis	Year	Total Patients	Total DP
Developmental and learning disorder	2008	50 354	2,092,183
Developmental and learning disorder	2009	53 290	2,192,129
Developmental and learning disorder	2010	58 194	2,434,220
Developmental and learning disorder	2011	62 550	2,581,043
Developmental and learning disorder	2012	63 244	2,711,594
Developmental and learning disorder	2013	68 251	2,822,416
Developmental and learning disorder	2014	76 268	2,923,433
Developmental and learning disorder	2015	42 993	2,984,103

The results are as follows:

a.   2008

In 2008, 312 710 patients were diagnosed as suffering from developmental and learning disorder. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. developmental and learning disorder as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

50 354 out of 2 092 183 patients diagnosed with developmental and learning disorder, translates to 2.41% of the total claimant population for 2008.

b.   2009

In 2009, 53 290 patients were diagnosed as suffering from developmental and learning disorder. This value is 2 936 more patients than in 2008 and translates to a 5.51% increase in diagnosis of developmental and learning disorder, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

53 290 out of 2 192 129 patients diagnosed with developmental and learning disorder, translates to 2.43% of the total claimant population.

c.   2010

In 2010, 58 194 patients were diagnosed as suffering from developmental and learning disorder. This value is 4 904 more patients than in 2009 and translates to an 8.43% increase in diagnosis of developmental and learning disorder, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

58 194 out of 2 434 220 patients diagnosed with developmental and learning disorder, translates to 2.39% of the total claimant population.

d.   2011

In 2011, 62 550 patients were diagnosed as suffering from developmental and learning disorder. This value is 4 356 more patients than in 2010 and translates to a 6.96% increase in diagnosis of

developmental and learning disorder, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 5.7% growth in claimant population in one year.

62 550 out of 2 581 043 patients diagnosed with developmental and learning disorder, translates to 2.42% of the total claimant population.

e.   2012

In 2012, 63 244 patients were diagnosed as suffering from developmental and learning disorder. This value is 694 more patients than in 2011 and translates to a 1.1% increase in diagnosis of developmental and learning disorder, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

63 244 out of 2 711 594 patients diagnosed with developmental and learning disorder, translates to 2.33% of the total claimant population.

f.   2013

In 2013, 68 251 patients were diagnosed as suffering from developmental and learning disorder. This value is 5 007 more patients than in 2012 and translates to a 7.34% increase in diagnosis of developmental and learning disorder, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

68 251 out of 2 822 416 patients diagnosed with developmental and learning disorder, translates to 2.42% of the total claimant population.

g.   2014

In 2014, 76 268 patients were diagnosed as suffering from developmental and learning disorder. This value is 8 017 more patients than in 2013 and translates to a 10.51% increase in diagnosis of developmental and learning disorder, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

76 268 out of 2 923 433 patients diagnosed with developmental and learning disorder, translates to 2.61% of the total claimant population.

h.   2015

From January to June of 2015, 42 993 patients were diagnosed as suffering from developmental and learning disorder. By mid-year 2014, the number of patients is 38 924 (according to Table: Database_2008_2015_Developmental and Learning Disorder). By June 2015, 4 069 more patients are recorded when compared to the half-year sum for 2014. This translates to a 9.46% increase in patient diagnosis. Therefore the 9.46% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 83 483 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

83 483 out of 3 031 600 patients diagnosed with developmental and learning disorder, translates to 2.75% of the total claimant population.

Table LD18

Results summary: Developmental and learning disorder

Year	Diagnosis % Increase/Decrease	% Diagnosis with Population
2008	N/A	2.41%
2009	27.64% increase	2.43%
2010	18.77% increase	2.39%
2011	13.55% increase	2.42%
2012	10.63% increase	2.33%
2013	10.14% increase	2.42%
2014	8.68% increase	2.61%
2015	7.04% increase	2.75%

Chart LD18: Disorder Trend: Development and Learning Disorder

Disorder Trend: Development and Learning

50354 — 2008
53290 — 2009
58194 — 2010
62550 — 2011
63244 — 2012
68251 — 2013
76268 — 2014

$R^2 = 0,9742$
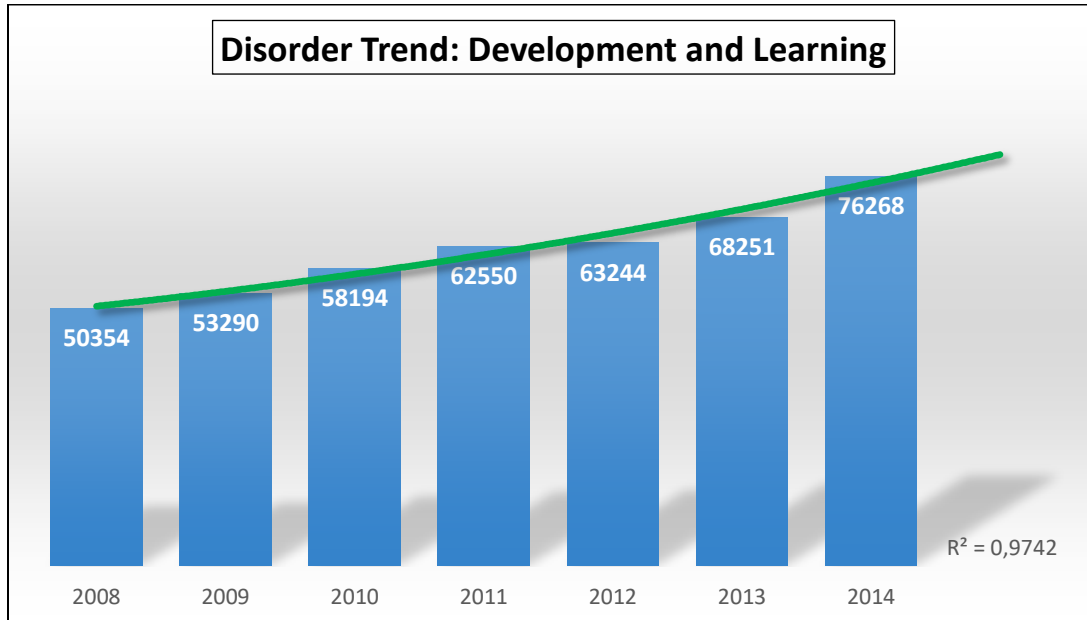
Source: Discovery Health Database

Summary of Table LD18 and Chart LD18. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with development and learning disorder is 2.47%, within the entire database. The lowest frequency of development and learning disorder is in 2012, with a percentage of 2.33% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 2.75% of the total database population.

The diagnosis trend shows an incremental increase in patient numbers across time. The forecast predicts a gradual increase in patients diagnosed with development and learning disorder going forward.

Dissociative Disorder

Table LD19 and Chart LD19, summarise the total number of patients diagnosed with dissociative disorder per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD19: Longitudinal Data (2008 – 2015): Dissociative Disorder
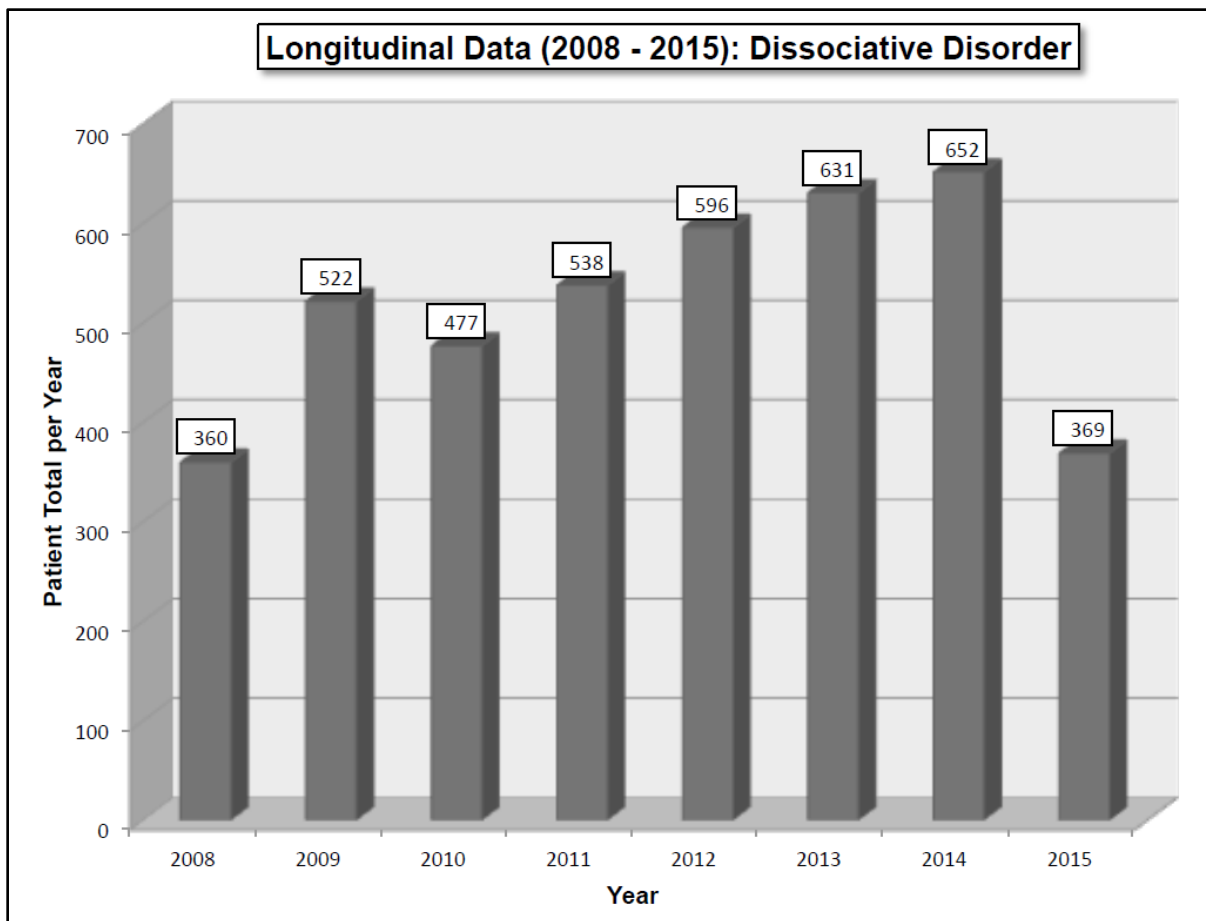
Source: Discovery Health Database

Table LD19

Longitudinal Data (2008 – 2015): Dissociative Disorder

Diagnosis	Year	Total Patients	Total DP
Dissociative disorder	2008	360	2,092,183
Dissociative disorder	2009	522	2,192,129
Dissociative disorder	2010	477	2,434,220
Dissociative disorder	2011	538	2,581,043
Dissociative disorder	2012	596	2,711,594
Dissociative disorder	2013	631	2,822,416
Dissociative disorder	2014	652	2,923,433
Dissociative disorder	2015	369	2,984,103

The results are as follows:

a.   2008

In 2008, 360 patients were diagnosed as suffering from dissociative disorder. This is the total

number of diagnoses, includes both male and female patients. The ratio of male to female

patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all

medical claimants on the dataset. Dissociative disorder as a diagnosis is one of 27 mental illness

disorders, as classified for this specific database. Refer to Table X for a summary of disorders

specified in this dataset.

360 out of 2 092 183 patients diagnosed with dissociative disorder, translates to 0.017% of the

total claimant population for 2008.

b.   2009

In 2009, 522 patients were diagnosed as suffering from dissociative disorder. This value is 162 more patients than in 2008 and translates to a 31.03% increase in diagnosis of dissociative disorder, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

522 out of 2 192 129 patients diagnosed with dissociative disorder, translates to 0.024% of the total claimant population.

c.   2010

In 2010, 477 patients were diagnosed as suffering from dissociative disorder. This value is 45 less patients than in 2009 and translates to an 8.62% decrease in diagnosis of dissociative disorder, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

477 out of 2 434 220 patients diagnosed with dissociative disorder, translates to 0.020% of the total claimant population.

d.   2011

In 2011, 538 patients were diagnosed as suffering from dissociative disorder. This value is 61 more patients than in 2010 and translates to an 11.34% increase in diagnosis of dissociative

disorder, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 5.7% growth in claimant population in one year.

538 out of 2 581 043 patients diagnosed with dissociative disorder, translates to 0.021% of the total claimant population.

e.   2012

In 2012, 596 patients were diagnosed as suffering from dissociative disorder. This value is 58 more patients than in 2011 and translates to a 9.73% increase in diagnosis of dissociative disorder, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

596 out of 2 711 594 patients diagnosed with dissociative disorder, translates to 0.022% of the total claimant population.

f.   2013

In 2013, 631 patients were diagnosed as suffering from dissociative disorder. This value is 35 more patients than in 2012 and translates to a 5.55% increase in diagnosis of dissociative disorder, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

631 out of 2 822 416 patients diagnosed with dissociative disorder, translates to 0.022% of the total claimant population.

g.   2014

In 2014, 652 patients were diagnosed as suffering from dissociative disorder. This value is 21 more patients than in 2013 and translates to a 3.22% increase in diagnosis of dissociative disorder, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

652 out of 2 923 433 patients diagnosed with dissociative disorder, translates to 0.022% of the total claimant population.

h.   2015

From January to June of 2015, 369 patients were diagnosed as suffering from dissociative disorder. By mid-year 2014, the number of patients is 324 (according to Table: Database_2008_2015_ Dissociative Disorder). By June 2015, 45 more patients are recorded when compared to the half-year sum for 2014. This translates to a 12.20% increase in patient diagnosis. Therefore the 12.20% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 732 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

732 out of 3 031 600 patients diagnosed with dissociative disorder, translates to 0.024% of the

total claimant population.

Table LD20

Results summary: Dissociative Disorder

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	0.017%
2009	31.03% increase	0.024%
2010	8.62% decrease	0.020%
2011	11.34% increase	0.021%
2012	9.73% increase	0.022%
2013	5.55% increase	0.022%
2014	3.22% increase	0.022%
2015	12.20% increase	0.024%

Chart LD20: Disorder Trend: Dissociative Disorder
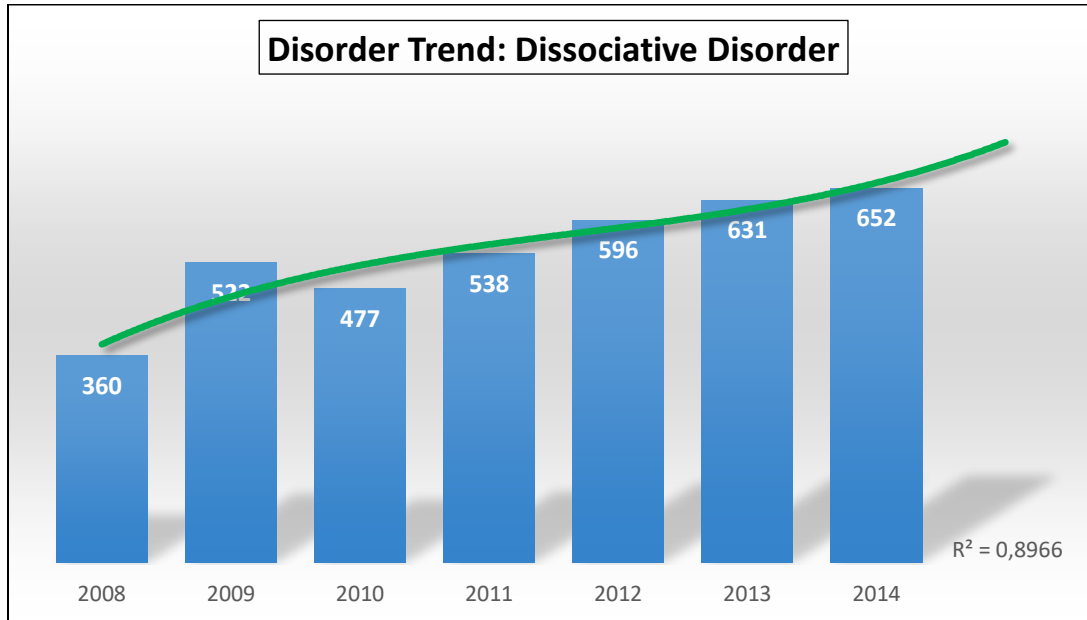
Source: Discovery Health Database

Summary of Table LD20 and Chart LD20. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with dissociative disorder is 0.022%, within the entire database. The lowest frequency of dissociative disorder is in 2008, with a percentage of 0.017% occurrence within the entire population and the highest frequencies are in 2009 and 2015, with a percentage of 0.024% of the total database population.

The diagnosis trend shows a gentle fluctuation in patient numbers across time, followed by a steadily increasing frequency rate for this diagnosis. The forecast predicts a consistent increase in frequency rate of patients diagnosed with dissociative disorder going forward.

Eating Disorder

Table LD21 and Chart LD21, summarise the total number of patients diagnosed with eating disorder per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD21: Longitudinal Data (2008 – 2015): Eating Disorder
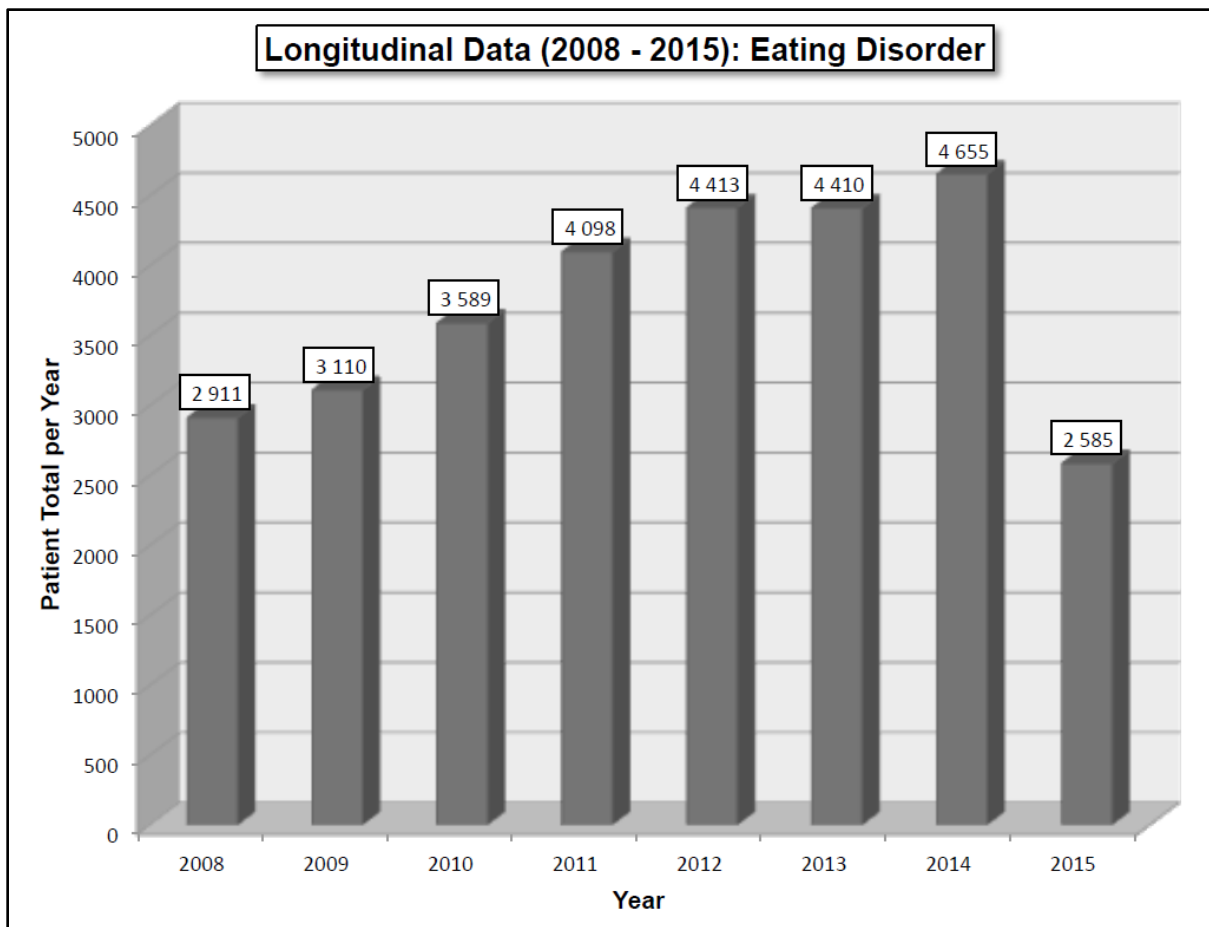
Source: Discovery Health Database

Table LD21

Longitudinal Data (2008 – 2015): Eating Disorder

Diagnosis	Year	Total Patients	Total DP
Eating disorder	2008	2 911	2,092,183
Eating disorder	2009	3 110	2,192,129
Eating disorder	2010	3 589	2,434,220
Eating disorder	2011	4 098	2,581,043
Eating disorder	2012	4 413	2,711,594
Eating disorder	2013	4 410	2,822,416
Eating disorder	2014	4 655	2,923,433
Eating disorder	2015	2 585	2,984,103

The results are as follows:

a.   2008

In 2008, 2911 patients were diagnosed as suffering from eating disorder. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. Eating disorder as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

2199 out of 2 092 183 patients diagnosed with eating disorder, translates to 0.139% of the total claimant population for 2008.

b.   2009

In 2009, 3110 patients were diagnosed as suffering from eating disorder. This value is 199 more patients than in 2008 and translates to a 6.40% increase in diagnosis of eating disorder, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

3110 out of 2 192 129 patients diagnosed with eating disorder, translates to 0.142% of the total claimant population.

c.   2010

In 2010, 3589 patients were diagnosed as suffering from eating disorder. This value is 479 more patients than in 2009 and translates to a 13.35% increase in diagnosis of eating disorder, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

3589 out of 2 434 220 patients diagnosed with eating disorder, translates to 0.147% of the total claimant population.

d.   2011

In 2011, 4098 patients were diagnosed as suffering from eating disorder. This value is 509 more patients than in 2010 and translates to a 12.42% increase in diagnosis of eating disorder, when

compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 5.7% growth in claimant population in one year.

4098 out of 2 581 043 patients diagnosed with eating disorder, translates to 0.159% of the total claimant population.

e.   2012

In 2012, 4413 patients were diagnosed as suffering from eating disorder. This value is 315 more patients than in 2011 and translates to a 7.14% increase in diagnosis of eating disorder, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

4413 out of 2 711 594 patients diagnosed with eating disorder, translates to 0.163% of the total claimant population.

f.   2013

In 2013, 4410 patients were diagnosed as suffering from eating disorder. This value is 3 less patients than in 2012 and translates to a 0.07% decrease in diagnosis of eating disorder, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

4410 out of 2 822 416 patients diagnosed with eating disorder, translates to 0.156% of the total claimant population.

g.   2014

In 2014, 4655 patients were diagnosed as suffering from eating disorder. This value is 245 more patients than in 2013 and translates to a 5.26% increase in diagnosis of eating disorder, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

4655 out of 2 923 433 patients diagnosed with eating disorder, translates to 0.159% of the total claimant population.

h.   2015

From January to June of 2015, 2585 patients were diagnosed as suffering from eating disorder. By mid-year 2014, the number of patients is 2389 (according to Table: Database_2008_2015_ Eating Disorder). By June 2015, 196 more patients are recorded when compared to the half-year sum for 2014. This translates to a 7.58% increase in patient diagnosis. Therefore the 7.58% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 5008 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

5008 out of 3 031 600 patients diagnosed with eating disorder, translates to 0.165% of the total claimant population.

Table LD22

Results summary: Eating Disorder

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	0.139%
2009	6.40% increase	0.142%
2010	13.35% increase	0.147%
2011	12.42% increase	0.159%
2012	7.14% increase	0.163%
2013	0.07% decrease	0.156%
2014	5.26% increase	0.159%
2015	7.58% increase	0.165%

Chart LD22: Disorder Trend: Eating Disorder

Chart LD22: Disorder Trend: Eating Disorder

2911 — 2008
3110 — 2009
3589 — 2010
4098 — 2011
4413 — 2012
4410 — 2013
4655 — 2014

$R^2 = 0,9379$
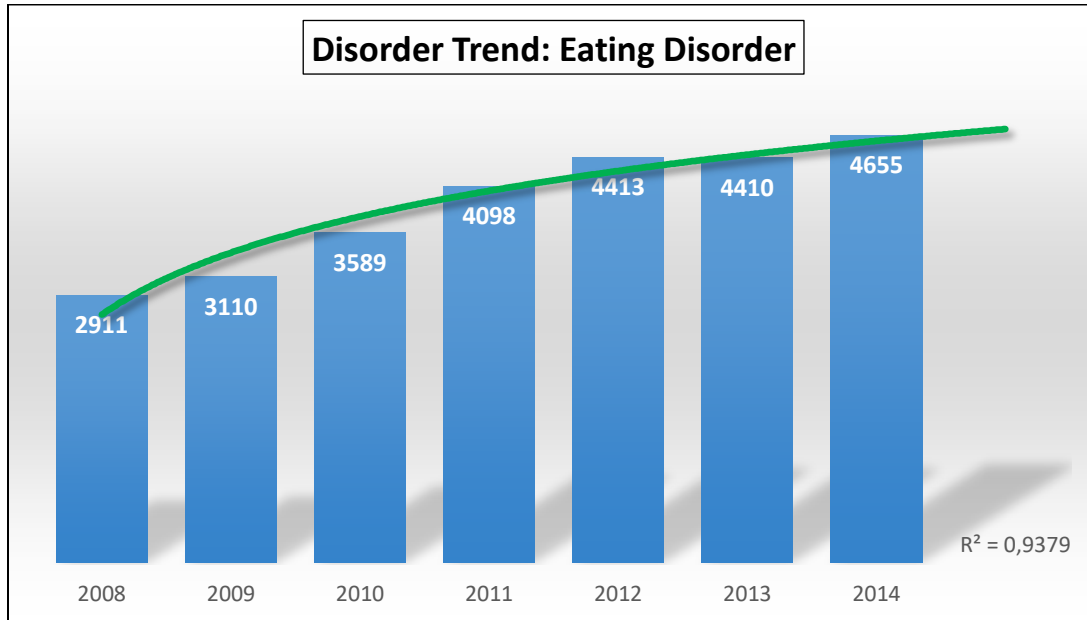
Source: Discovery Health Database

Summary of Table LD22 and Chart LD22. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with eating disorder is 0.154%, within the entire database. The lowest frequency of eating disorder is in 2008, with a percentage of 0.139% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 0.165% of the total database population.

The diagnosis trend shows an initial increase in patient numbers across time, followed by an incremental increase in diagnosis numbers, which approach a constant frequency rate for this diagnosis. The forecast predicts a small increase in frequency rate of patients diagnosed with eating disorder going forward.

Impulse Control Disorder

Table LD23 and Chart LD23, summarise the total number of patients diagnosed with impulse control disorder per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD23: Longitudinal Data (2008 – 2015): Impulse Control Disorder
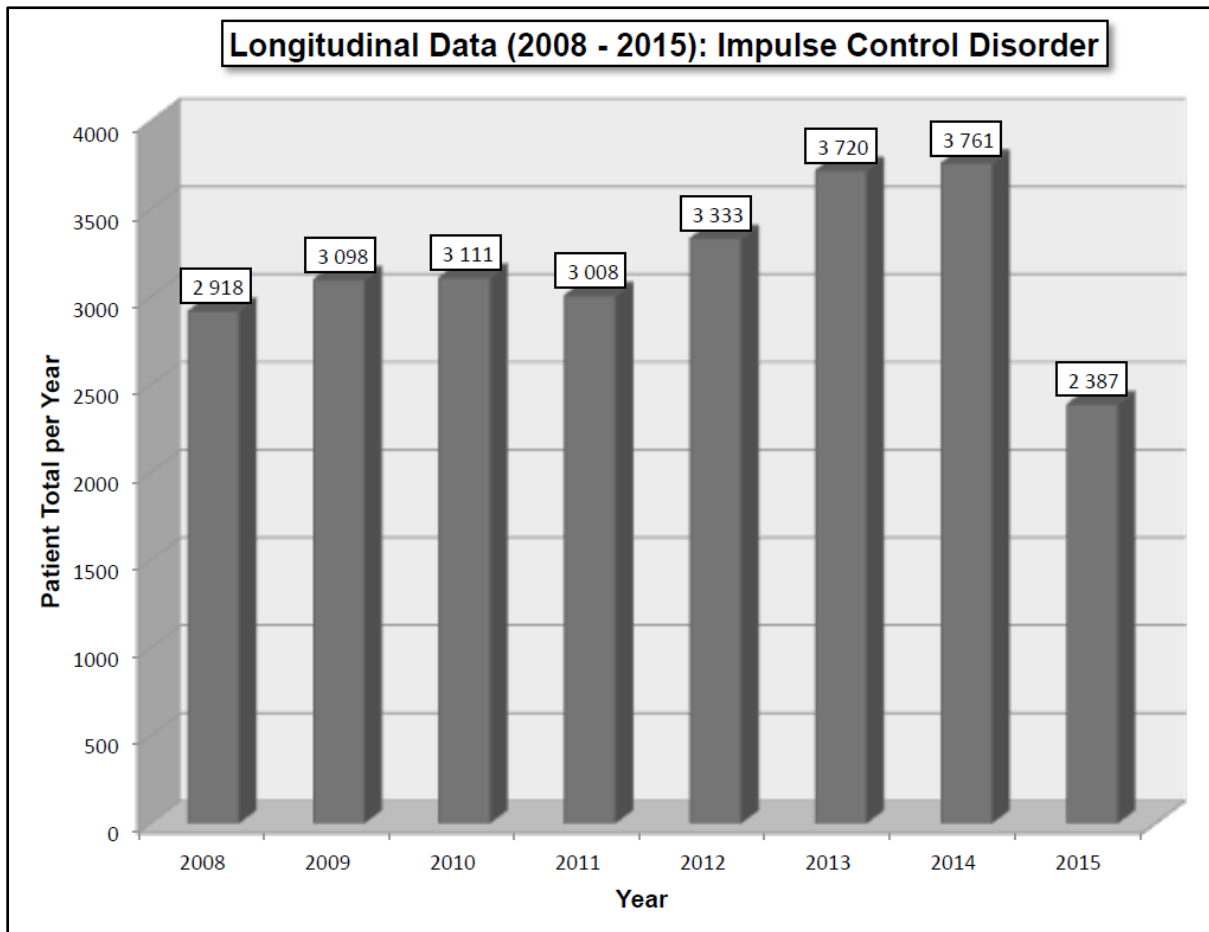
Source: Discovery Health Database

Table LD23

Longitudinal Data (2008 – 2015): Impulse Control Disorder

Diagnosis	Year	Total Patients	Total DP
Impulse control disorder	2008	2 918	2,092,183
Impulse control disorder	2009	3 098	2,192,129
Impulse control disorder	2010	3 111	2,434,220
Impulse control disorder	2011	3 008	2,581,043
Impulse control disorder	2012	3 333	2,711,594
Impulse control disorder	2013	3 720	2,822,416
Impulse control disorder	2014	3 761	2,923,433
Impulse control disorder	2015	2 387	2,984,103

The results are as follows:

a.   2008

In 2008, 2918 patients were diagnosed as suffering from impulse control disorder. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. impulse control disorder as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

2918 out of 2 092 183 patients diagnosed with impulse control disorder, translates to 0.139% of the total claimant population for 2008.

b.   2009

In 2009, 3098 patients were diagnosed as suffering from impulse control disorder. This value is 180 more patients than in 2008 and translates to a 5.81% increase in diagnosis of impulse control disorder, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

3098 out of 2 192 129 patients diagnosed with impulse control disorder, translates to 0.141% of the total claimant population.

c.   2010

In 2010, 3111 patients were diagnosed as suffering from impulse control disorder. This value is 13 more patients than in 2009 and translates to a 0.42% increase in diagnosis of impulse control disorder, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

3111 out of 2 434 220 patients diagnosed with impulse control disorder, translates to 0.128% of the total claimant population.

d.   2011

In 2011, 3008 patients were diagnosed as suffering from impulse control disorder. This value is 103 less patients than in 2010 and translates to a 3.31% decrease in diagnosis of impulse control

disorder, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 5.7% growth in claimant population in one year.

3008 out of 2 581 043 patients diagnosed with impulse control disorder, translates to 0.117% of the total claimant population.

e.   2012

In 2012, 3333 patients were diagnosed as suffering from impulse control disorder. This value is 325 more patients than in 2011 and translates to a 9.75% increase in diagnosis of impulse control disorder, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

3333 out of 2 711 594 patients diagnosed with impulse control disorder, translates to 0.123% of the total claimant population.

f.   2013

In 2013, 3720 patients were diagnosed as suffering from impulse control disorder. This value is 387 more patients than in 2012 and translates to a 10.40% increase in diagnosis of impulse control disorder, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

3720 out of 2 822 416 patients diagnosed with impulse control disorder, translates to 0.132% of the total claimant population.

g.   2014

In 2014, 3761 patients were diagnosed as suffering from impulse control disorder. This value is 41 more patients than in 2013 and translates to a 1.09% increase in diagnosis of impulse control disorder, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

3761 out of 2 923 433 patients diagnosed with impulse control disorder, translates to 0.129% of the total claimant population.

h.   2015

From January to June of 2015, 2387 patients were diagnosed as suffering from impulse control disorder. By mid-year 2014, the number of patients is 2085 (according to Table: Database_2008_2015_ Impulse Control Disorder). By June 2015, 302 more patients are recorded when compared to the half-year sum for 2014. This translates to a 12.65% increase in patient diagnosis. Therefore the 12.65% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 4237 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

4237 out of 3 031 600 patients diagnosed with impulse control disorder, translates to 0.140% of the total claimant population.

Table LD24

Results summary: Impulse Control Disorder

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	0.139%
2009	5.81% increase	0.141%
2010	0.42% increase	0.128%
2011	2.31% decrease	0.117%
2012	9.75% increase	0.123%
2013	10.40% increase	0.132%
2014	1.09% increase	0.129%
2015	12.65% increase	0.140%

Chart LD24: Disorder Trend: Impulse Control Disorder

Disorder Trend: Impulse Control Disorder

2918 (2008), 3098 (2009), 3111 (2010), 3008 (2011), 3333 (2012), 3720 (2013), 3761 (2014)

$R^2 = 0,8915$
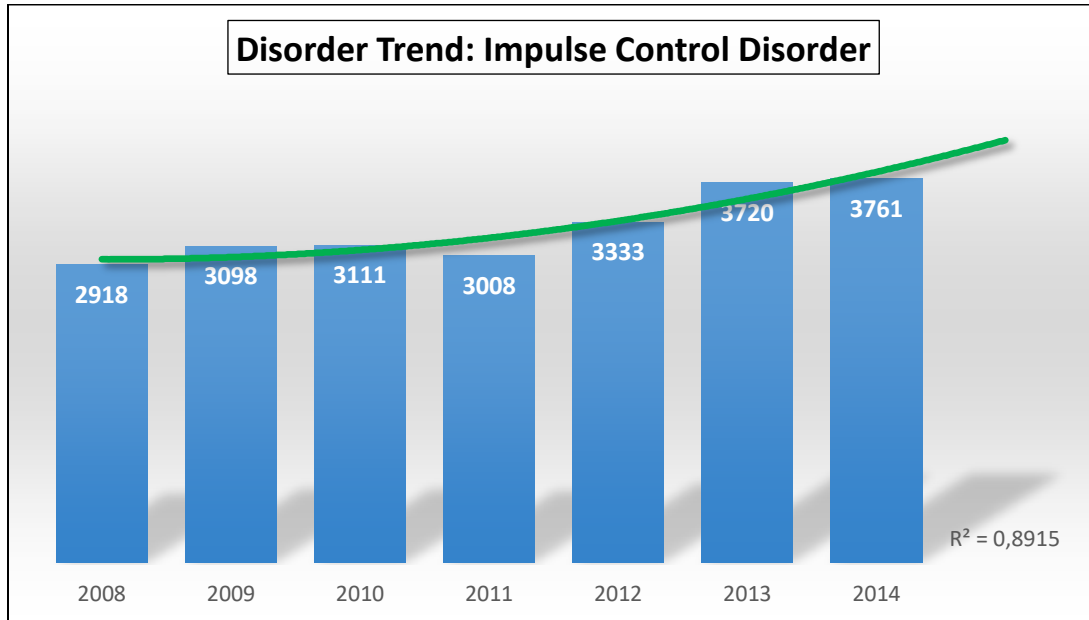
Source: Discovery Health Database

Summary of Table LD24 and Chart LD24. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with impulse control disorder is 0.131%, within the entire database. The lowest frequency of impulse control disorder is in 2011, with a percentage of 0.117% occurrence within the entire population and the highest frequency is in 2009, with a percentage of 0.141% of the total database population.

The diagnosis trend shows a steady increase in patient numbers across time. The forecast predicts a constant increase in frequency rate of patients diagnosed with impulse control disorder going forward.

Mental Retardation

Table LD25 and Chart LD25, summarise the total number of patients diagnosed with mental retardation per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD25: Longitudinal Data (2008 – 2015): Mental Retardation
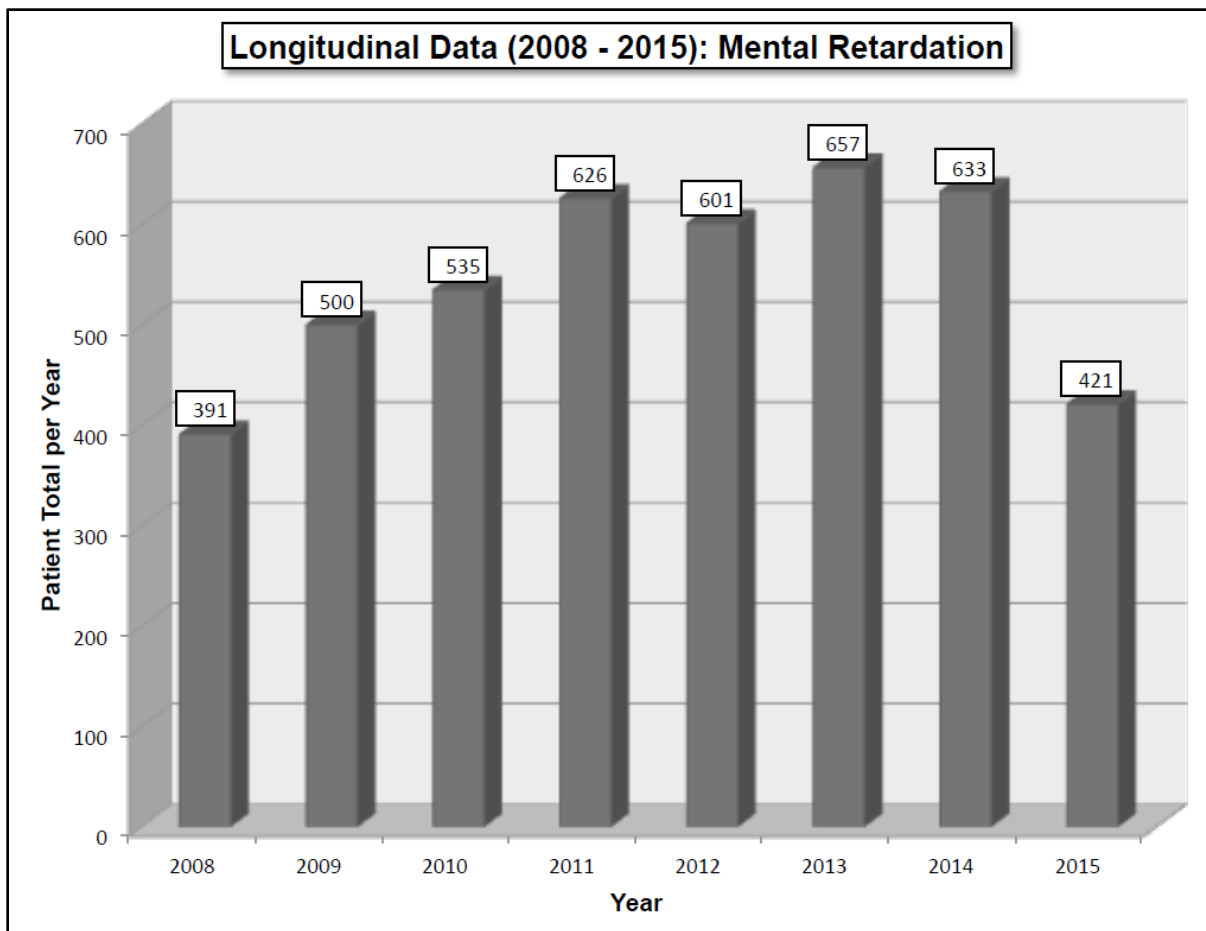
Source: Discovery Health Database

Table LD25

Longitudinal Data (2008 – 2015): Mental Retardation

Diagnosis	Year	Total Patients	Total DP
Mental retardation	2008	391	2,092,183
Mental retardation	2009	500	2,192,129
Mental retardation	2010	535	2,434,220
Mental retardation	2011	626	2,581,043
Mental retardation	2012	601	2,711,594
Mental retardation	2013	657	2,822,416
Mental retardation	2014	633	2,923,433
Mental retardation	2015	421	2,984,103

The results are as follows:

a.   2008

In 2008, 391 patients were diagnosed as suffering from mental retardation. This is the total

number of diagnoses, includes both male and female patients. The ratio of male to female

patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all

medical claimants on the dataset. Mental retardation as a diagnosis is one of 27 mental illness

disorders, as classified for this specific database. Refer to Table X for a summary of disorders

specified in this dataset.

391 out of 2 092 183 patients diagnosed with mental retardation, translates to 0.019% of the

total claimant population for 2008.

b.   2009

In 2009, 500 patients were diagnosed as suffering from mental retardation. This value is 109 more patients than in 2008 and translates to a 21.8% increase in diagnosis of mental retardation, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

500 out of 2 192 129 patients diagnosed with mental retardation, translates to 0.023% of the total claimant population.

c.   2010

In 2010, 535 patients were diagnosed as suffering from mental retardation. This value is 35 more patients than in 2009 and translates to a 6.54% increase in diagnosis of mental retardation, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

535 out of 2 434 220 patients diagnosed with mental retardation, translates to 0.022% of the total claimant population.

d.   2011

In 2011, 626 patients were diagnosed as suffering from mental retardation. This value is 91 more patients than in 2010 and translates to a 14.54% increase in diagnosis of mental

retardation, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 5.7% growth in claimant population in one year.

626 out of 2 581 043 patients diagnosed with mental retardation, translates to 0.024% of the total claimant population.

e.   2012

In 2012, 601 patients were diagnosed as suffering from mental retardation. This value is 25 less patients than in 2011 and translates to a 3.99% decrease in diagnosis of mental retardation, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

601 out of 2 711 594 patients diagnosed with mental retardation, translates to 0.022% of the total claimant population.

f.   2013

In 2013, 657 patients were diagnosed as suffering from mental retardation. This value is 56 more patients than in 2012 and translates to an 8.52% increase in diagnosis of mental retardation, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

657 out of 2 822 416 patients diagnosed with mental retardation, translates to 0.023% of the total claimant population.

g.   2014

In 2014, 633 patients were diagnosed as suffering from mental retardation. This value is 24 less patients than in 2013 and translates to a 3.65% decrease in diagnosis of mental retardation, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

633 out of 2 923 433 patients diagnosed with mental retardation, translates to 0.022% of the total claimant population.

h.   2015

From January to June of 2015, 421 patients were diagnosed as suffering from mental retardation. By mid-year 2014, the number of patients is 273 (according to Table: Database_2008_2015_ Mental Retardation). By June 2015, 148 more patients are recorded when compared to the half-year sum for 2014. This translates to a 35.15% increase in patient diagnosis. Therefore the 35.15% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 855 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

855 out of 3 031 600 patients diagnosed with mental retardation, translates to 0.028% of the

total claimant population.

Table LD26

Results summary: Mental Retardation

Year	Diagnosis % Increase/Decrease	% Diagnosis with Population
2008	N/A	0.019%
2009	21.80% increase	0.023%
2010	6.54% increase	0.022%
2011	14.54% increase	0.024%
2012	3.99% decrease	0.022%
2013	8.52% increase	0.023%
2014	3.65% decrease	0.022%
2015	35.15% increase	0.028%

Chart LD26: Disorder Trend: Mental Retardation

Disorder Trend: Mental Retardation

391, 500, 535, 626, 601, 657, 633

$R^2 = 0,9407$

2008, 2009, 2010, 2011, 2012, 2013, 2014
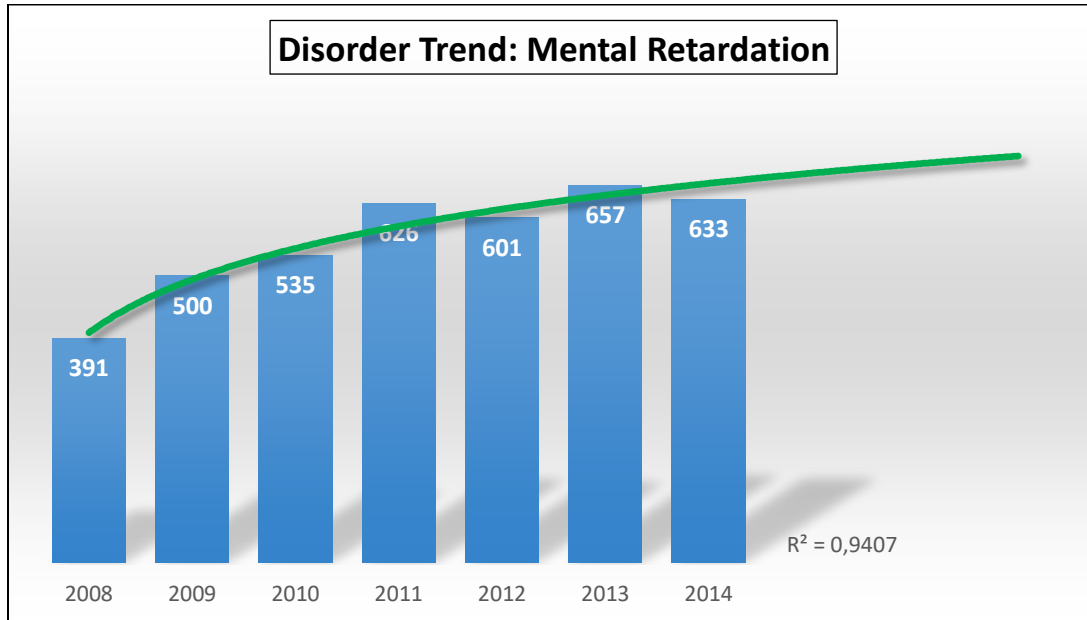
Source: Discovery Health Database

Summary of Table LD26 and Chart LD26. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with mental retardation is 0.023%, within the entire database. The lowest frequency of mental retardation is in 2008, with a percentage of 0.019% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 0.028% of the total database population.

The diagnosis trend shows an initial increase in patient numbers across time, followed by an incremental increase in diagnosis numbers, which approach a constant frequency rate for this diagnosis. The forecast predicts a constant frequency rate of patients diagnosed with mental retardation going forward.

Non-Specific Neuroses

Table LD27 and Chart LD27, summarise the total number of patients diagnosed with non-specific neuroses per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD27: Longitudinal Data (2008 – 2015): Non-Specific Neuroses
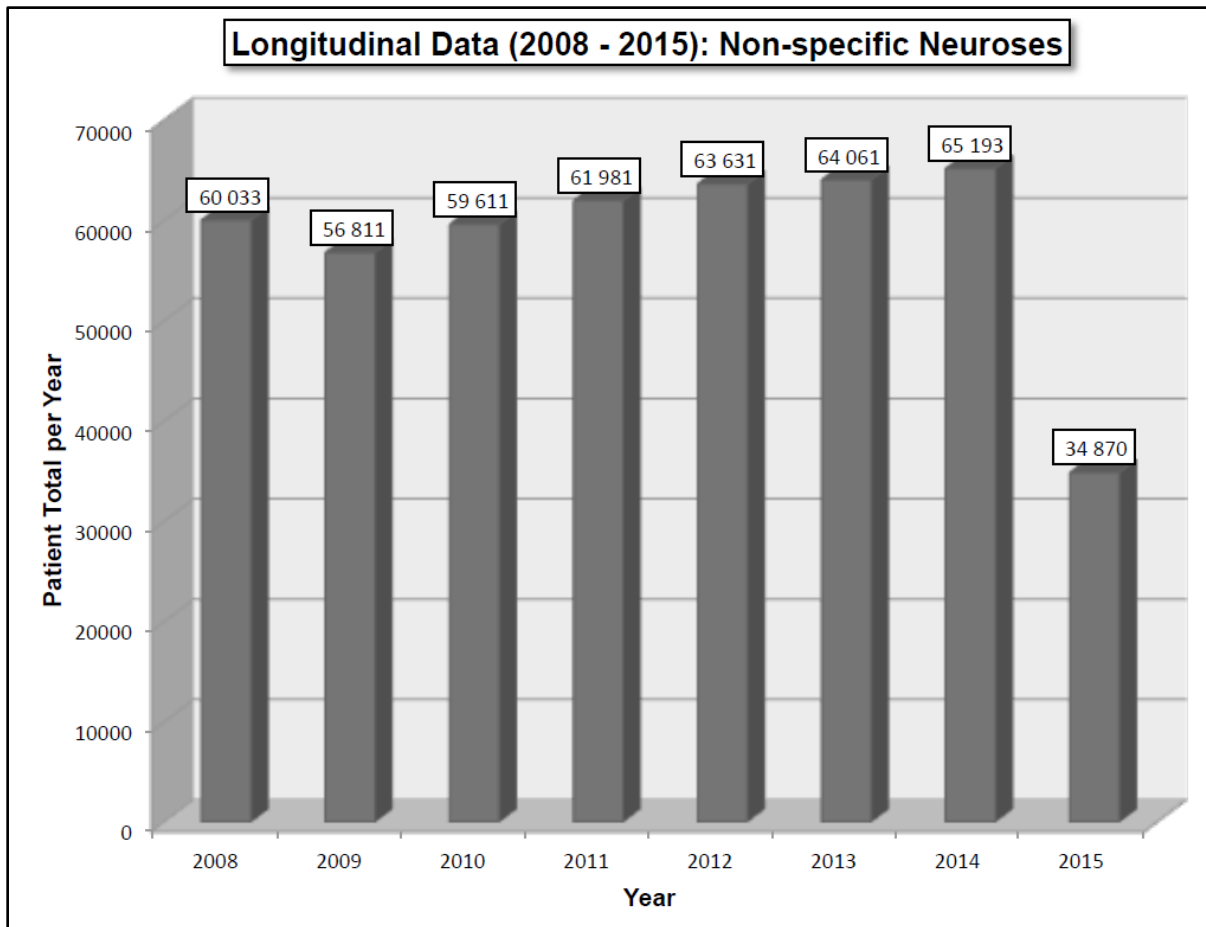
Source: Discovery Health Database

Table LD27

Longitudinal Data (2008 – 2015): Non-Specific Neuroses

Diagnosis	*Year*	*Total Patients*	*Total DP*
Non-specific neuroses	2008	60 033	2,092,183
Non-specific neuroses	2009	56 811	2,192,129
Non-specific neuroses	2010	59 611	2,434,220
Non-specific neuroses	2011	61 981	2,581,043
Non-specific neuroses	2012	63 631	2,711,594
Non-specific neuroses	2013	64 061	2,822,416
Non-specific neuroses	2014	65 193	2,923,433
Non-specific neuroses	2015	34 870	2,984,103

The results are as follows:

a.   2008

In 2008, 60 033 patients were diagnosed as suffering from non-specific neuroses. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. non-specific neuroses as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

60 033 out of 2 092 183 patients diagnosed with non-specific neuroses, translates to 2.870% of the total claimant population for 2008.

b.   2009

In 2009, 56 811 patients were diagnosed as suffering from non-specific neuroses. This value is 3222 less patients than in 2008 and translates to a 5.37% decrease in diagnosis of non-specific neuroses, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

56 811 out of 2 192 129 patients diagnosed with non-specific neuroses, translates to 2.592% of the total claimant population.

c.   2010

In 2010, 59 611 patients were diagnosed as suffering from non-specific neuroses. This value is 2800 more patients than in 2009 and translates to a 4.7% increase in diagnosis of non-specific neuroses, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

59 611 out of 2 434 220 patients diagnosed with non-specific neuroses, translates to 2.449% of the total claimant population.

d.   2011

In 2011, 61 981 patients were diagnosed as suffering from non-specific neuroses. This value is 2370 more patients than in 2010 and translates to a 3.82% increase in diagnosis of non-specific

neuroses, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 5.7% growth in claimant population in one year.

61 981 out of 2 581 043 patients diagnosed with non-specific neuroses, translates to 2.401% of the total claimant population.

e.   2012

In 2012, 63 631 patients were diagnosed as suffering from non-specific neuroses. This value is 1650 more patients than in 2011 and translates to a 2.59% increase in diagnosis of non-specific neuroses, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

63 631 out of 2 711 594 patients diagnosed with non-specific neuroses, translates to 2.347% of the total claimant population.

f.   2013

In 2013, 64 061 patients were diagnosed as suffering from non-specific neuroses. This value is 430 more patients than in 2012 and translates to a 0.67% increase in diagnosis of non-specific neuroses, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

64 061 out of 2 822 416 patients diagnosed with non-specific neuroses, translates to 2.270% of the total claimant population.

g.   2014

In 2014, 65 193 patients were diagnosed as suffering from non-specific neuroses. This value is 1132 more patients than in 2013 and translates to a 1.74% increase in diagnosis of non-specific neuroses, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

65 193 out of 2 923 433 patients diagnosed with non-specific neuroses, translates to 2.23% of the total claimant population.

h.   2015

From January to June of 2015, 34 870 patients were diagnosed as suffering from non-specific neuroses. By mid-year 2014, the number of patients is 34 984 (according to Table: Database_2008_2015_ Non-Specific Neuroses). By June 2015, 114 less patients are recorded when compared to the half-year sum for 2014. This translates to a 0.33% decrease in patient diagnosis. Therefore the 35.15% decrease is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 64 978 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

64 978 out of 3 031 600 patients diagnosed with non-specific neuroses, translates to 2.143% of the total claimant population.

Table LD28

Results summary: Non-Specific Neuroses

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	2.870%
2009	5.37% decrease	2.592%
2010	4.70% increase	2.449%
2011	3.82% increase	2.401%
2012	2.59% decrease	2.347%
2013	0.67% increase	2.270%
2014	1.74% increase	2.230%
2015	0.33% decrease	2.143%

Chart LD28: Disorder Trend: Non-Specific Neuroses

Disorder Trend: Non-Specific Neuroses

R² = 0,9198

Year	2008	2009	2010	2011	2012	2013	2014
Value	60053	56811	59611	61981	63631	64061	65193
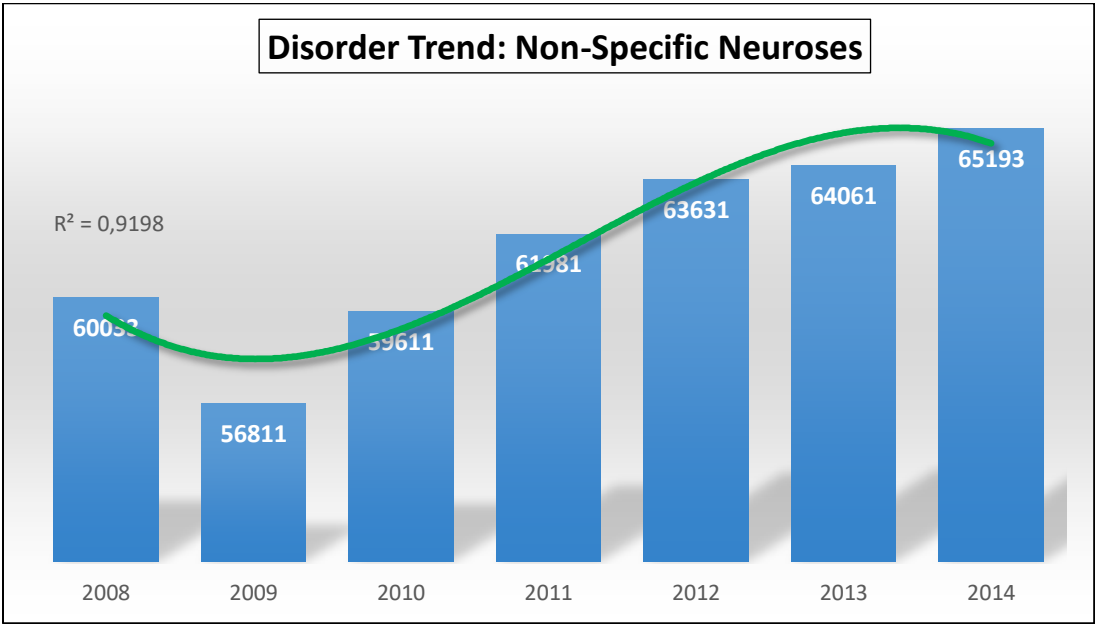
Source: Discovery Health Database

Summary of Table LD28 and Chart LD28. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with non-specific neuroses is 2.413%, within the entire database. The lowest frequency of non-specific neuroses is in 2015, with a percentage of 2.143% occurrence within the entire population and the highest frequency is in 2008, with a percentage of 2.87% of the total database population.

The diagnosis trend shows an initial decrease in patient numbers across time, followed by a steep increase in diagnosis number from 2010 - 2013, but which thereafter approach a constant frequency rate for this diagnosis. The forecast predicts a decline in frequency rate of patients diagnosed with non-specific neuroses going forward.

Non-Specific Psychoses

Table LD29 and Chart LD29, summarise the total number of patients diagnosed with non-specific psychoses per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD29: Longitudinal Data (2008 – 2015): Non-Specific Psychoses
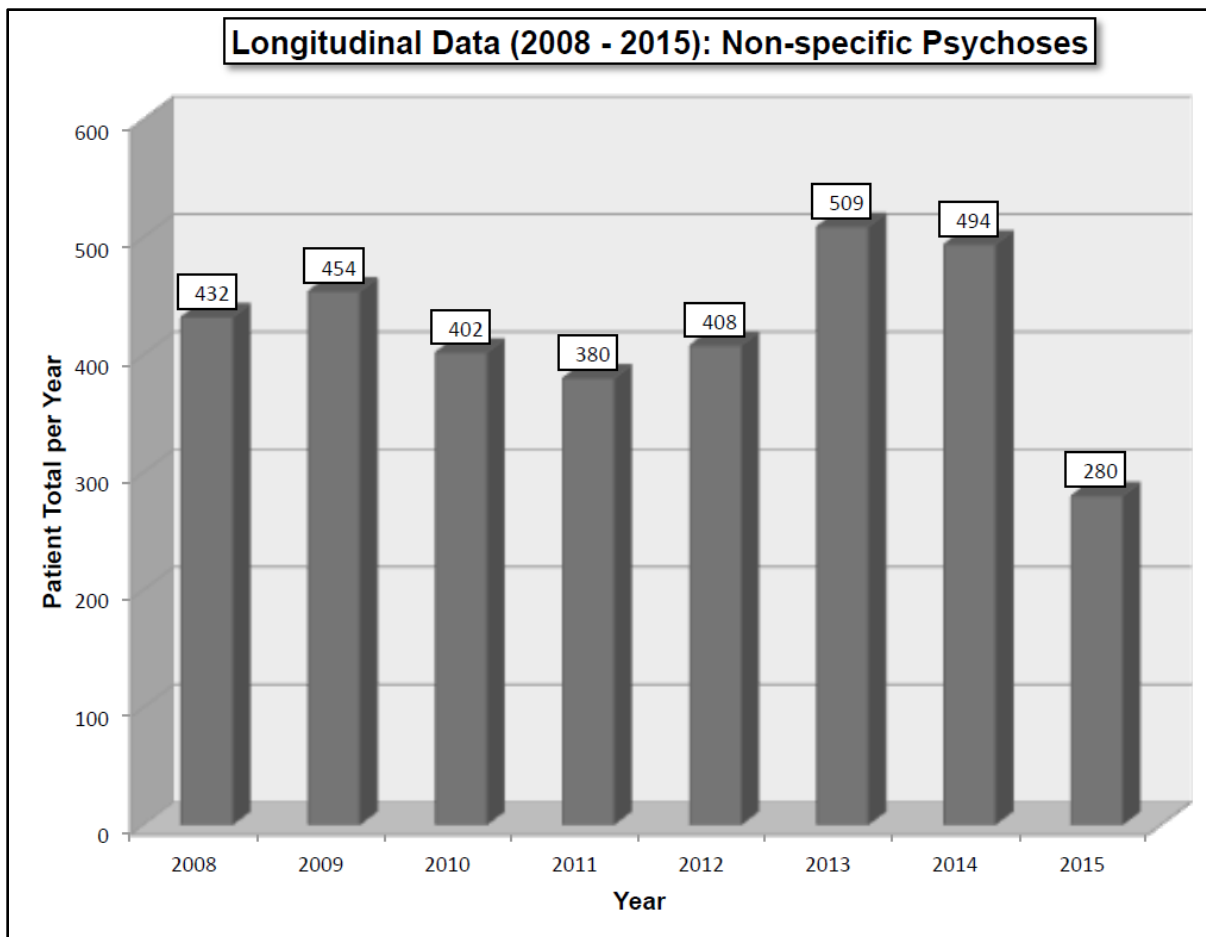
Source: Discovery Health Database

Table LD29

Longitudinal Data (2008 – 2015): Non-Specific Psychoses

Diagnosis	Year	Total Patients	Total DP
Non-specific psychoses	2008	432	2,092,183
Non-specific psychoses	2009	454	2,192,129
Non-specific psychoses	2010	402	2,434,220
Non-specific psychoses	2011	380	2,581,043
Non-specific psychoses	2012	408	2,711,594
Non-specific psychoses	2013	509	2,822,416
Non-specific psychoses	2014	494	2,923,433
Non-specific psychoses	2015	280	2,984,103

The results are as follows:

a.   2008

In 2008, 432 patients were diagnosed as suffering from non-specific psychoses. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. Non-specific psychoses as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

432 out of 2 092 183 patients diagnosed with non-specific psychoses, translates to 0.021% of the total claimant population for 2008.

b. 2009

In 2009, 454 patients were diagnosed as suffering from non-specific psychoses. This value is 22 more patients than in 2008 and translates to a 4.85% increase in diagnosis of non-specific psychoses, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

454 out of 2 192 129 patients diagnosed with non-specific psychoses, translates to 0.021% of the total claimant population.

c. 2010

In 2010, 402 patients were diagnosed as suffering from non-specific psychoses. This value is 2800 less patients than in 2009 and translates to an 11.45% decrease in diagnosis of non-specific psychoses, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

402 out of 2 434 220 patients diagnosed with non-specific psychoses, translates to 0.017% of the total claimant population.

d. 2011

In 2011, 380 patients were diagnosed as suffering from non-specific psychoses. This value is 22 less patients than in 2010 and translates to a 5.47% decrease in diagnosis of non-specific

psychoses, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 5.7% growth in claimant population in one year.

380 out of 2 581 043 patients diagnosed with non-specific psychoses, translates to 0.015% of the total claimant population.

e.   2012

In 2012, 408 patients were diagnosed as suffering from non-specific psychoses. This value is 28 more patients than in 2011 and translates to a 6.86% increase in diagnosis of non-specific psychoses, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

408 out of 2 711 594 patients diagnosed with non-specific psychoses translates to 0.015% of the total claimant population.

f.   2013

In 2013, 509 patients were diagnosed as suffering from non-specific psychoses. This value is 430 more patients than in 2012 and translates to a 19.84% increase in diagnosis of non-specific psychoses, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

509 out of 2 822 416 patients diagnosed with non-specific psychoses, translates to 0.018% of the total claimant population.

g.   2014

In 2014, 494 patients were diagnosed as suffering from non-specific psychoses. This value is 15 less patients than in 2013 and translates to a 2.95% decrease in diagnosis of non-specific psychoses, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

494 out of 2 923 433 patients diagnosed with non-specific psychoses, translates to 0.017% of the total claimant population.

h.   2015

From January to June of 2015, 280 patients were diagnosed as suffering from non-specific psychoses. By mid-year 2014, the number of patients is 254 (according to Table: Database_2008_2015_ Non-Specific Psychoses). By June 2015, 114 more patients are recorded when compared to the half-year sum for 2014. This translates to a 9.29% increase in patient diagnosis. Therefore the 9.29% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 540 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

540 out of 3 031 600 patients diagnosed with non-specific psychoses, translates to 0.018% of the total claimant population.

Table LD30

Results summary: Non-Specific Psychoses

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	0.021%
2009	4.85% increase	0.021%
2010	11.45% decrease	0.017%
2011	5.47% decrease	0.015%
2012	6.86% increase	0.015%
2013	19.84% increase	0.018%
2014	2.95% decrease	0.017%
2015	9.29% increase	0.018%

Chart LD30: Disorder Trend: Non-Specific Psychoses

Disorder Trend: Non-Specific Psychoses

Year	Value
2008	432
2009	454
2010	402
2011	380
2012	408
2013	509
2014	494

$R^2 = 0,979$
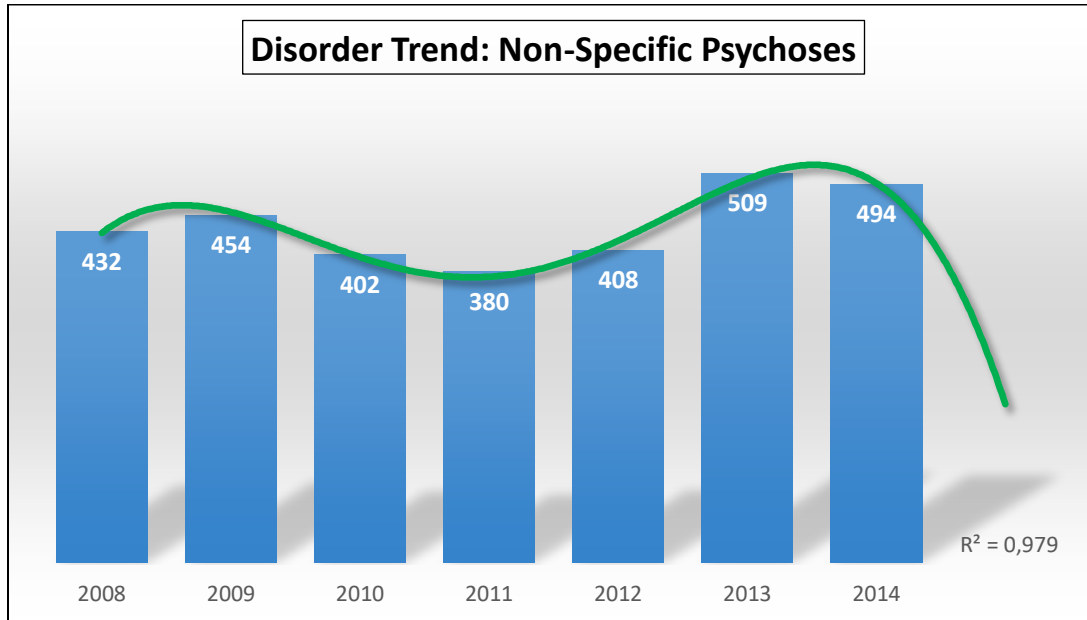
Source: Discovery Health Database

Summary of Table LD30 and Chart LD30. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with non-specific psychoses is 0.018%, within the entire database. The lowest frequencies of non-specific psychoses are in 2011 and 2012, with a percentage of 0.015% occurrence within the entire population and the highest frequencies are in 2008 and 2009, with a percentage of 0.021% of the total database population.

The diagnosis trend shows a significant fluctuating in patient numbers until 2013, but thereafter the trend shows a decline in frequency rate for this diagnosis. The forecast predicts a steep decrease in frequency rate of patients diagnosed with non-specific psychoses going forward.

Obsessive Compulsive Disorder

Table LD31 and Chart LD31, summarise the total number of patients diagnosed with obsessive compulsive disorder per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD31: Longitudinal Data (2008 – 2015): Obsessive Compulsive Disorder
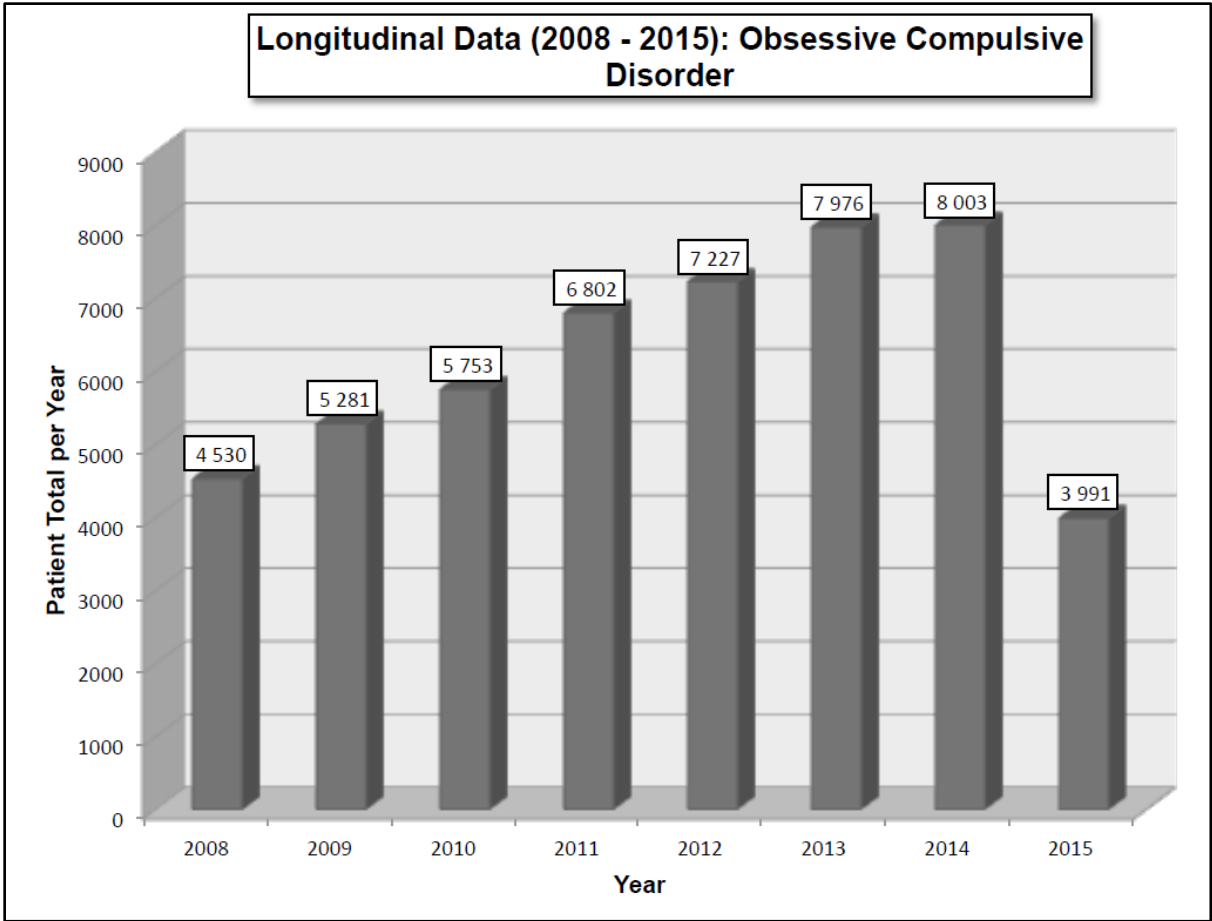
Source: Discovery Health Database

Table LD31

Longitudinal Data (2008 – 2015): Obsessive Compulsive Disorder

Diagnosis	*Year*	*Total Patients*	*Total DP*
Obsessive compulsive disorder	2008	4 530	2,092,183
Obsessive compulsive disorder	2009	5 281	2,192,129
Obsessive compulsive disorder	2010	5 753	2,434,220
Obsessive compulsive disorder	2011	6 802	2,581,043
Obsessive compulsive disorder	2012	7 227	2,711,594
Obsessive compulsive disorder	2013	7 976	2,822,416
Obsessive compulsive disorder	2014	8 003	2,923,433
Obsessive compulsive disorder	2015	3 991	2,984,103

The results are as follows:

a.   2008

In 2008, 4530 patients were diagnosed as suffering from obsessive compulsive disorder. This is

the total number of diagnoses, includes both male and female patients. The ratio of male to

female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all

medical claimants on the dataset. Obsessive compulsive disorder as a diagnosis is one of 27

mental illness disorders, as classified for this specific database. Refer to Table X for a summary

of disorders specified in this dataset.

4530 out of 2 092 183 patients diagnosed with obsessive compulsive disorder, translates to

0.217% of the total claimant population for 2008.

b.   2009

In 2009, 5281 patients were diagnosed as suffering from obsessive compulsive disorder. This value is 751 more patients than in 2008 and translates to a 14.22% increase in diagnosis of obsessive compulsive disorder, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

5281 out of 2 192 129 patients diagnosed with obsessive compulsive disorder, translates to 0.241% of the total claimant population.

c.   2010

In 2010, 5753 patients were diagnosed as suffering from obsessive compulsive disorder. This value is 472 more patients than in 2009 and translates to an 8.20% increase in diagnosis of obsessive compulsive disorder, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

5753 out of 2 434 220 patients diagnosed with obsessive compulsive disorder, translates to 0.236% of the total claimant population.

d.   2011

In 2011, 6802 patients were diagnosed as suffering from obsessive compulsive disorder. This value is 1049 more patients than in 2010 and translates to a 15.42% increase in diagnosis of

obsessive compulsive disorder, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 5.7% growth in claimant population in one year.

6802 out of 2 581 043 patients diagnosed with obsessive compulsive disorder, translates to 0.264% of the total claimant population.

e.   2012

In 2012, 7227 patients were diagnosed as suffering from obsessive compulsive disorder. This value is 425 more patients than in 2011 and translates to a 5.88% increase in diagnosis of obsessive compulsive disorder, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

7227 out of 2 711 594 patients diagnosed with obsessive compulsive disorder translates to 0.267% of the total claimant population.

f.   2013

In 2013, 7976 patients were diagnosed as suffering from obsessive compulsive disorder. This value is 749 more patients than in 2012 and translates to a 9.39% increase in diagnosis of obsessive compulsive disorder, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

7976 out of 2 822 416 patients diagnosed with obsessive compulsive disorder, translates to 0.283% of the total claimant population.

g.   2014

In 2014, 8003 patients were diagnosed as suffering from obsessive compulsive disorder. This value is 27 more patients than in 2013 and translates to a 0.34% increase in diagnosis of obsessive compulsive disorder, when compared to 2013

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

8003 out of 2 923 433 patients diagnosed with obsessive compulsive disorder, translates to 0.274% of the total claimant population.

h.   2015

From January to June of 2015, 3991 patients were diagnosed as suffering from obsessive compulsive disorder. By mid-year 2014, the number of patients is 4148 (according to Table: Database_2008_2015_Obsessive Compulsive Disorder). By June 2015, 157 less patients are recorded when compared to the half-year sum for 2014. This translates to a 3.78% decrease in patient diagnosis. Therefore the 3.78% decrease is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 7700 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

7700 out of 3 031 600 patients diagnosed with obsessive compulsive disorder, translates to 0.254% of the total claimant population.

Table LD32

Results summary: Obsessive Compulsive Disorder

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	0.021%
2009	4.85% increase	0.021%
2010	11.45% decrease	0.017%
2011	5.47% decrease	0.015%
2012	6.86% increase	0.015%
2013	19.84% increase	0.018%
2014	2.95% decrease	0.017%
2015	9.29% increase	0.018%

Chart LD32: Disorder Trend: Obsessive Compulsive Disorder

Disorder Trend: Obsessive Compulsive Disorder

4530 · 5281 · 5753 · 6802 · 7227 · 7976 · 8003

$R^2 = 0{,}9454$

2008 2009 2010 2011 2012 2013 2014
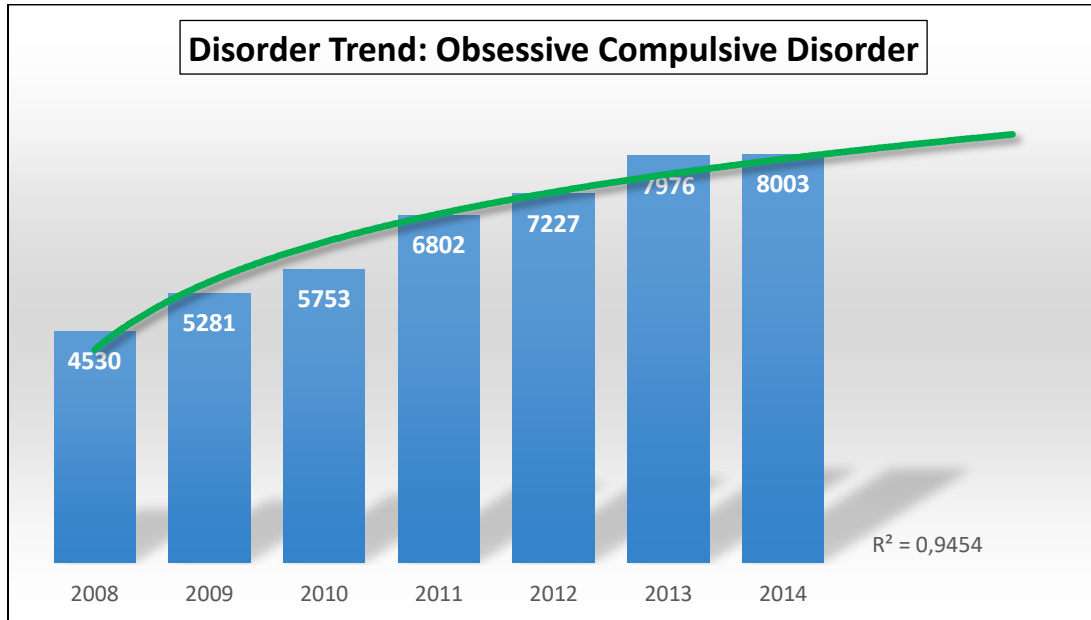
Source: Discovery Health Database

Summary of Table LD32 and Chart LD32. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with obsessive compulsive disorder is 0.018%, within the entire database. The lowest frequencies of obsessive compulsive disorder are in 2011 and 2012, with a percentage of 0.015% occurrence within the entire population and the highest frequencies are in 2008 and 2009, with a percentage of 0.021% of the total database population.

The diagnosis trend shows an increase in patient numbers from 2008 to 2011, but the trend approaches a constant frequency rate for this diagnosis. The forecast predicts a constant frequency rate of patients diagnosed with obsessive compulsive disorder going forward.

Parasomnia or Sleep Disorder

Table LD33 and Chart LD33, summarise the total number of patients diagnosed with parasomnia or sleep disorder per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD33: Longitudinal Data (2008 – 2015): Parasomnia or Sleep Disorder
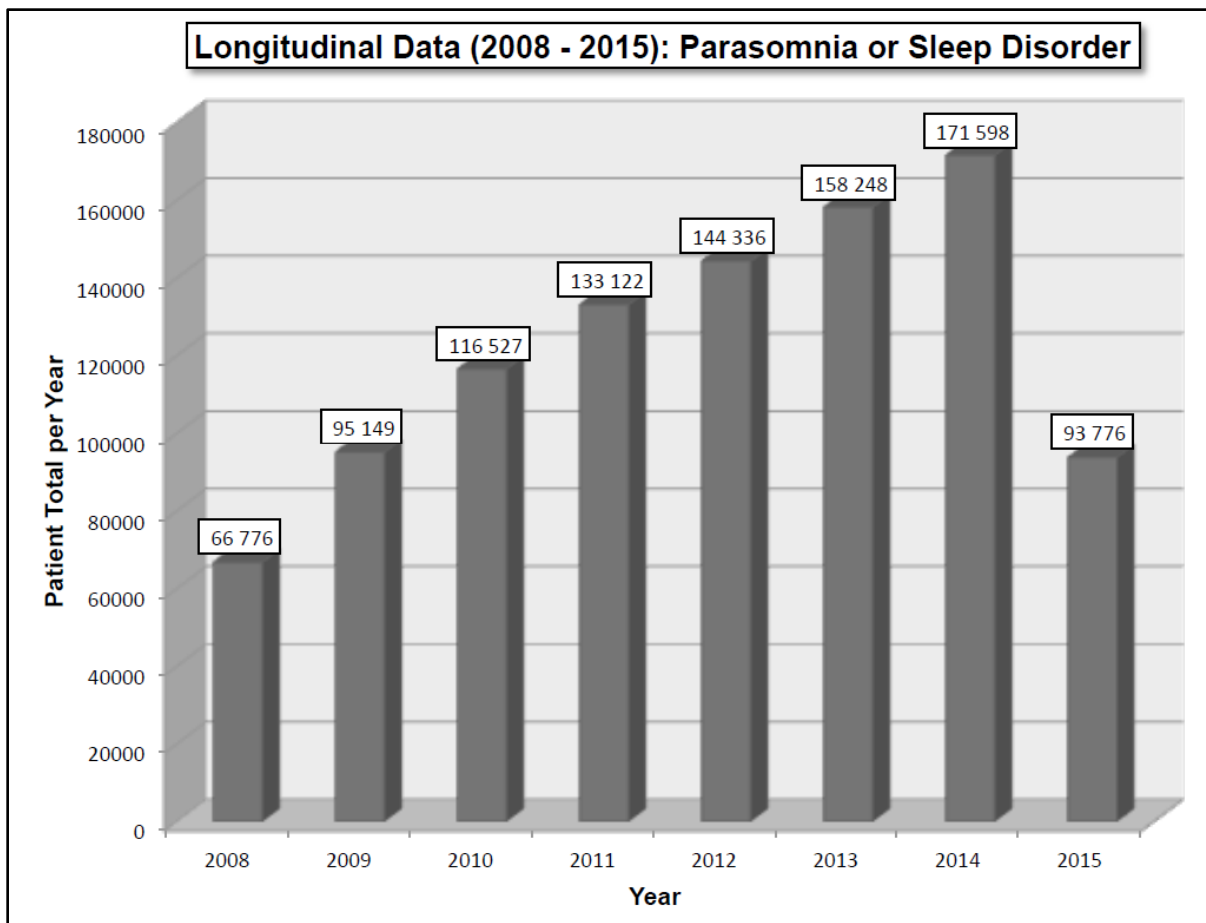
Source: Discovery Health Database

Table LD33

Longitudinal Data (2008 – 2015): Parasomnia or Sleep Disorder

Diagnosis	Year	Total Patients	Total DP
Parasomnia or sleep disorder	2008	66 776	2,092,183
Parasomnia or sleep disorder	2009	95 149	2,192,129
Parasomnia or sleep disorder	2010	116 527	2,434,220
Parasomnia or sleep disorder	2011	133 122	2,581,043
Parasomnia or sleep disorder	2012	144 336	2,711,594
Parasomnia or sleep disorder	2013	158 248	2,822,416
Parasomnia or sleep disorder	2014	171 598	2,923,433
Parasomnia or sleep disorder	2015	93 776	2,984,103

The results are as follows:

a.   2008

In 2008, 66 776 patients were diagnosed as suffering from parasomnia or sleep disorder. This is

the total number of diagnoses, includes both male and female patients. The ratio of male to

female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all

medical claimants on the dataset. Parasomnia or sleep disorder as a diagnosis is one of 27

mental illness disorders, as classified for this specific database. Refer to Table X for a summary

of disorders specified in this dataset.

66 776 out of 2 092 183 patients diagnosed with parasomnia or sleep disorder, translates to

3.19% of the total claimant population for 2008.

b.   2009

In 2009, 95 149 patients were diagnosed as suffering from parasomnia or sleep disorder. This value is 28 373 more patients than in 2008 and translates to a 29.82% increase in diagnosis of parasomnia or sleep disorder, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

95 149 out of 2 192 129 patients diagnosed with parasomnia or sleep disorder, translates to 4.34% of the total claimant population.

c.   2010

In 2010, 116 527 patients were diagnosed as suffering from parasomnia or sleep disorder. This value is 21 378 more patients than in 2009 and translates to an 18.36% increase in diagnosis of parasomnia or sleep disorder, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

116 527 out of 2 434 220 patients diagnosed with parasomnia or sleep disorder, translates to 4.796% of the total claimant population.

d.   2011

In 2011, 133 122 patients were diagnosed as suffering from parasomnia or sleep disorder. This value is 16 595 more patients than in 2010 and translates to a 12.47% increase in diagnosis of

parasomnia or sleep disorder, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 5.7% growth in claimant population in one year.

133 122 out of 2 581 043 patients diagnosed with parasomnia or sleep disorder, translates to 5.16% of the total claimant population.

e.   2012

In 2012, 144 336 patients were diagnosed as suffering from parasomnia or sleep disorder. This value is 11 214 more patients than in 2011 and translates to a 5.88% increase in diagnosis of parasomnia or sleep disorder, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

144 336 out of 2 711 594 patients diagnosed with parasomnia or sleep disorder translates to 5.33% of the total claimant population.

f.   2013

In 2013, 158 248 patients were diagnosed as suffering from parasomnia or sleep disorder. This value is 13 912 more patients than in 2012 and translates to an 8.79% increase in diagnosis of parasomnia or sleep disorder, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

158 248 out of 2 822 416 patients diagnosed with parasomnia or sleep disorder, translates to 5.61% of the total claimant population.

g.   2014

In 2014, 171 598 patients were diagnosed as suffering from parasomnia or sleep disorder. This value is 13 350 more patients than in 2013 and translates to a 7.78% increase in diagnosis of parasomnia or sleep disorder, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

171 598 out of 2 923 433 patients diagnosed with parasomnia or sleep disorder, translates to 5.87% of the total claimant population.

h.   2015

From January to June of 2015, 93 776 patients were diagnosed as suffering from parasomnia or sleep disorder. By mid-year 2014, the number of patients is 98 550 (according to Table: Database_2008_2015_Parasomnia or Sleep Disorder). By June 2015, 4 774 less patients are recorded when compared to the half-year sum for 2014. This translates to a 4.84% decrease in patient diagnosis. Therefore the 4.84% decrease is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 163 910 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

163 910 out of 3 031 600 patients diagnosed with parasomnia or sleep disorder, translates to 5.41% of the total claimant population.

Table LD34

Results summary: Parasomnia or Sleep Disorder

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	3.19%
2009	29.82% increase	4.34%
2010	18.63% increase	4.80%
2011	12.47% increase	5.16%
2012	5.88% increase	5.33%
2013	8.79% increase	5.61%
2014	7.78% increase	5.87%
2015	4.84% decrease	5.14%

Chart LD34: Disorder Trend: Parasomnia or Sleep Disorder

Disorder Trend: Parasomnia or Sleep Disorder

66776	95149	116527	133122	144336	158248	171598
2008	2009	2010	2011	2012	2013	2014

$R^2 = 0,9998$
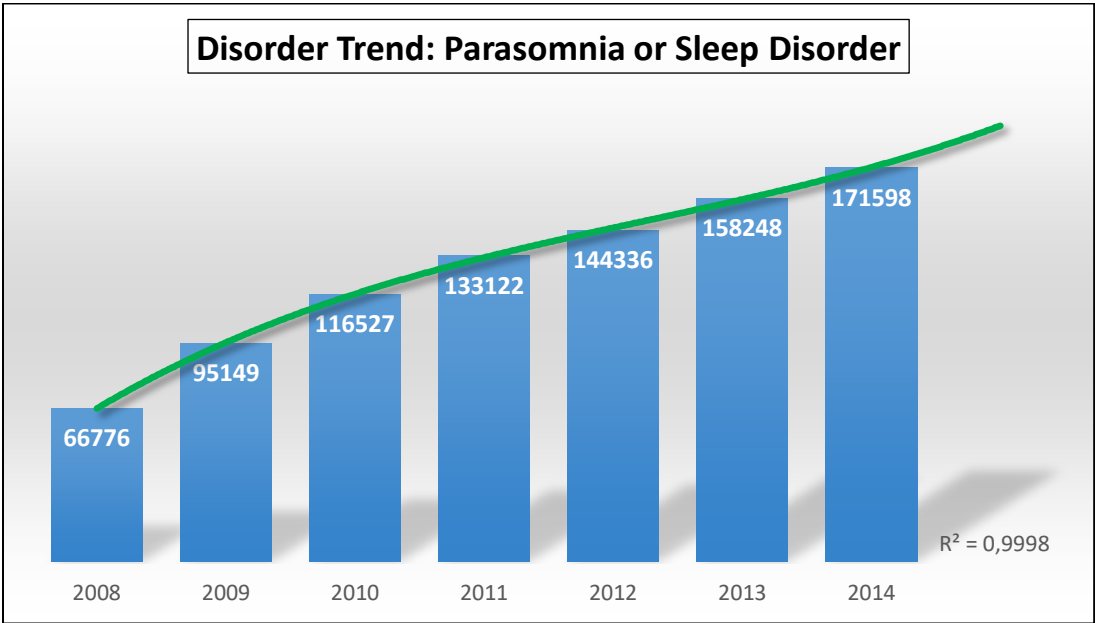
Source: Discovery Health Database

Summary of Table LD34 and Chart LD34. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with parasomnia or sleep disorder is 4.93%, within the entire database. The lowest frequency of parasomnia or sleep disorder is in 2008, with a percentage of 3.19% occurrence within the entire population and the highest frequency is in 2014, with a percentage of 5.87% of the total database population.

The diagnosis trend shows a steep increase in patient numbers across time. The forecast predicts a steep increase in patients diagnosed with parasomnia or sleep disorder going forward.

Personality Disorder

Table LD35 and Chart LD35, summarise the total number of patients diagnosed with personality disorder per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD35: Longitudinal Data (2008 – 2015): Personality Disorder
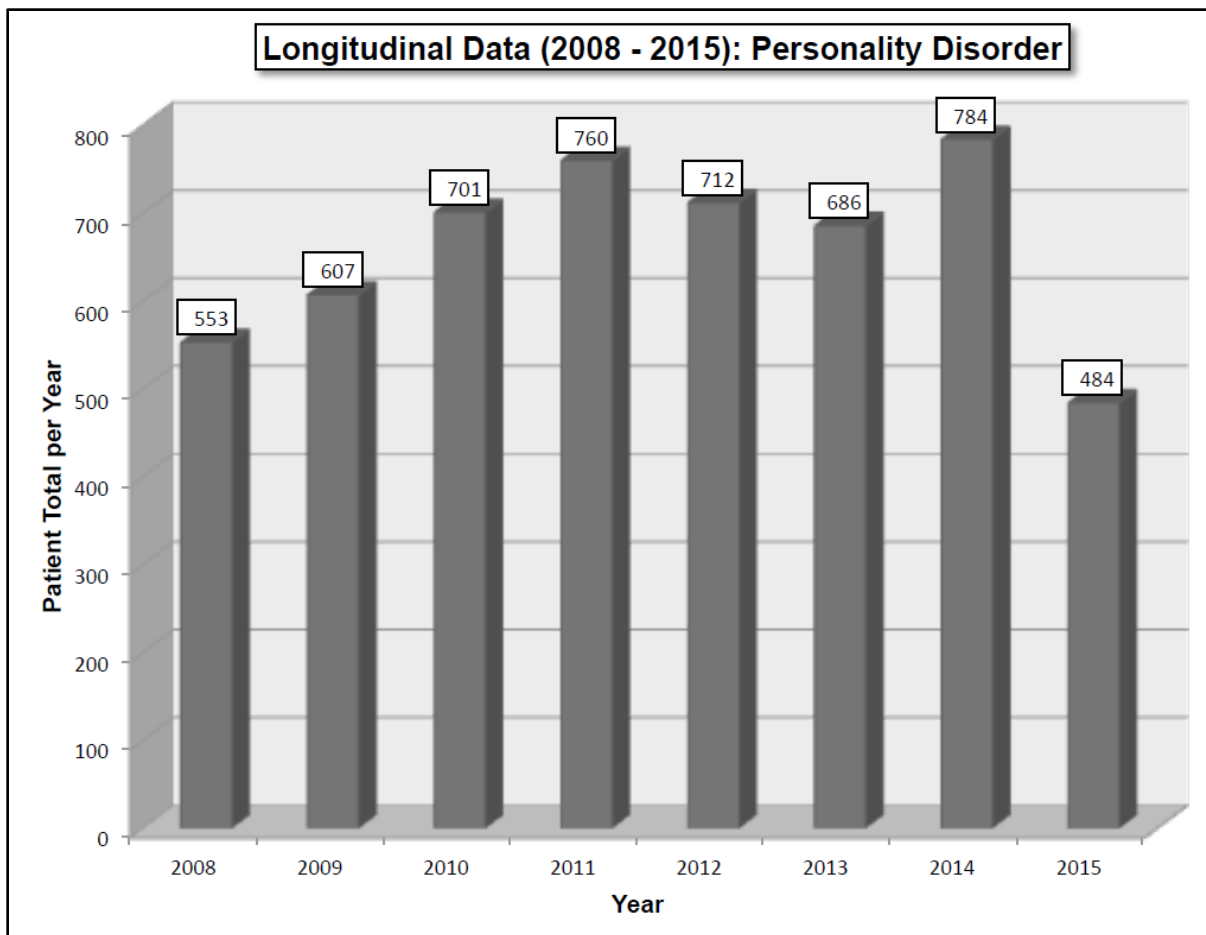
Source: Discovery Health Database

Table LD35

Longitudinal Data (2008 – 2015): Personality Disorder

Diagnosis	Year	Total Patients	Total DP
Personality disorder	2008	553	2,092,183
Personality disorder	2009	607	2,192,129
Personality disorder	2010	701	2,434,220
Personality disorder	2011	760	2,581,043
Personality disorder	2012	712	2,711,594
Personality disorder	2013	686	2,822,416
Personality disorder	2014	784	2,923,433
Personality disorder	2015	484	2,984,103

The results are as follows:

a)   2008

In 2008, 553 patients were diagnosed as suffering from personality disorder. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. personality disorder as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

553 out of 2 092 183 patients diagnosed with personality disorder, translates to 0.03% of the total claimant population for 2008.

b.   2009

In 2009, 607 patients were diagnosed as suffering from personality disorder. This value is 54 more patients than in 2008 and translates to an 8.9% increase in diagnosis of personality disorder, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

607 out of 2 192 129 patients diagnosed with personality disorder, translates to 0.03% of the total claimant population.

c.   2010

In 2010, 701 patients were diagnosed as suffering from personality disorder. This value is 94 more patients than in 2009 and translates to a 13.41% increase in diagnosis of personality disorder, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

701 out of 2 434 220 patients diagnosed with personality disorder, translates to 0.03% of the total claimant population.

d.   2011

In 2011, 760 patients were diagnosed as suffering from personality disorder. This value is 59 more patients than in 2010 and translates to a 12.47% increase in diagnosis of personality

disorder, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 7.76% growth in claimant population in one year.

760 out of 2 581 043 patients diagnosed with personality disorder, translates to 0.03% of the total claimant population.

e.   2012

In 2012, 712 patients were diagnosed as suffering from personality disorder. This value is 48 less patients than in 2011 and translates to a 6.32% decrease in diagnosis of personality disorder, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

712 out of 2 711 594 patients diagnosed with personality disorder translates to 0.03% of the total claimant population.

f.   2013

In 2013, 686 patients were diagnosed as suffering from personality disorder. This value is 26 less patients than in 2012 and translates to a 3.65% decrease in diagnosis of personality disorder, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

686 out of 2 822 416 patients diagnosed with personality disorder, translates to 0.02% of the total claimant population.

g.   2014

In 2014, 784 patients were diagnosed as suffering from personality disorder. This value is 98 more patients than in 2013 and translates to a 12.5% increase in diagnosis of Personality Disorder, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 3.5% growth in claimant population in one year.

784 out of 2 923 433 patients diagnosed with personality disorder, translates to 0.03% of the total claimant population.

h.   2015

From January to June of 2015, 484 patients were diagnosed as suffering from personality disorder. By mid-year 2014, the number of patients is 408 (according to Table: Database_2008_2015_Personality Disorder). By June 2015, 76 more patients are recorded when compared to the half-year sum for 2014. This translates to a 15.7% increase in patient diagnosis. Therefore the 15.7% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 907 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

907 out of 3 031 600 patients diagnosed with personality disorder, translates to 0.03% of the

total claimant population.

Table LD36

Results summary: Personality Disorder

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	0.03%
2009	8.9% increase	0.03%
2010	13.41% increase	0.03%
2011	7.76% increase	0.03%
2012	6.32% decrease	0.03%
2013	3.65% decrease	0.02%
2014	12.50% increase	0.03%
2015	15.70% increase	0.03%

Chart LD36: Disorder Trend: Personality Disorder

Disorder Trend: Personality Disorder

2008	2009	2010	2011	2012	2013	2014
553	607	701	760	712	686	784

R² = 0,8532
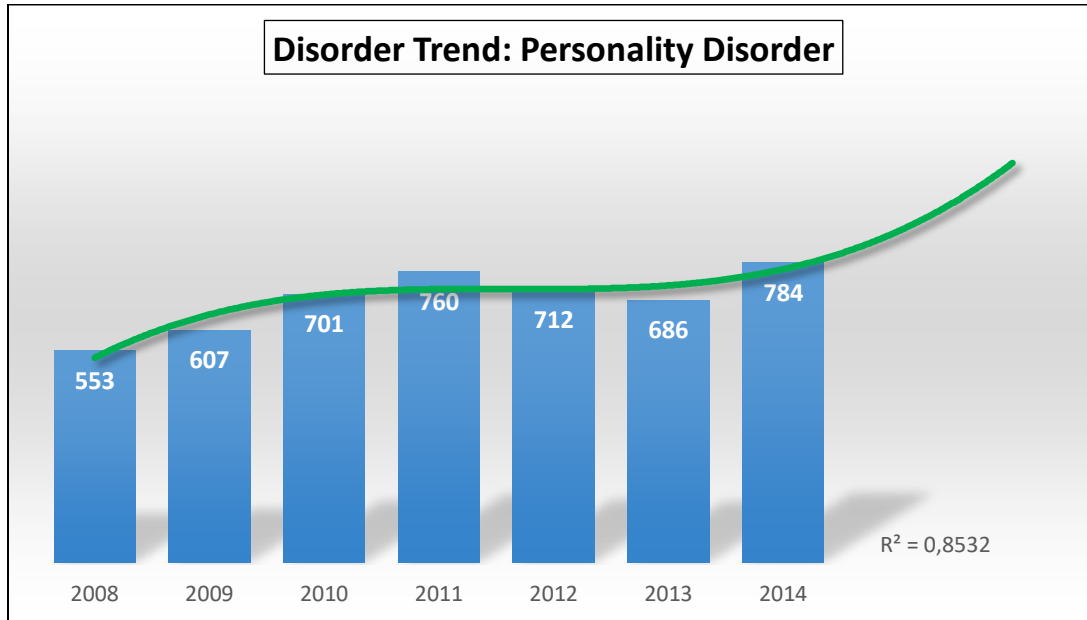
Source: Discovery Health Database

Summary of Table LD36 and Chart LD36. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with personality disorder is 0.03%, within the entire database. The lowest frequency of personality disorder is in 2013, with a percentage of 0.03% occurrence within the entire population and the remaining years have a frequency rate of 0.03% of the total database population.

The diagnosis trend shows patient numbers fluctuate gently across time. The forecast predicts a significant increase in frequency rate in patients diagnosed with personality disorder going forward.

Psychosis due to General Medical Disorder

Table LD37 and Chart LD37, summarise the total number of patients diagnosed with psychosis due to general medical disorder per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD37: Longitudinal Data (2008 – 2015): Psychosis due to General Medical Disorder
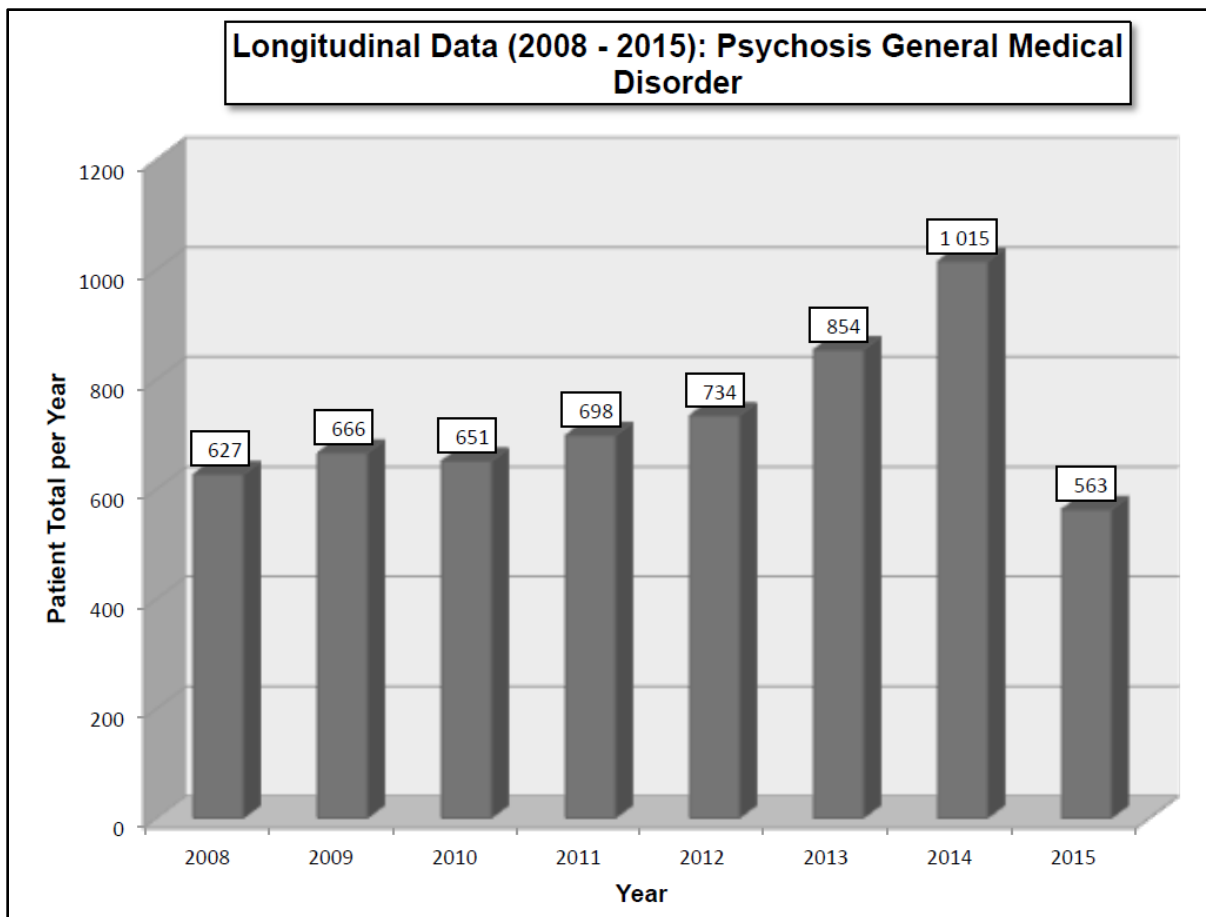
Source: Discovery Health Database

Table LD37

Longitudinal Data (2008 – 2015): Psychosis due to General Medical Disorder

Diagnosis	*Year*	*Total Patients*	*Total DP*
Psychosis due to a general medical disorder	2008	627	2,092,183
Psychosis due to a general medical disorder	2009	666	2,192,129
Psychosis due to a general medical disorder	2010	651	2,434,220
Psychosis due to a general medical disorder	2011	698	2,581,043
Psychosis due to a general medical disorder	2012	734	2,711,594
Psychosis due to a general medical disorder	2013	854	2,822,416
Psychosis due to a general medical disorder	2014	1 015	2,923,433
Psychosis due to a general medical disorder	2015	563	2,984,103

The results are as follows:

a.   2008

In 2008, 627 patients were diagnosed as suffering from psychosis due to general medical disorder. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. Psychosis due to general medical disorder as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

627 out of 2 092 183 patients diagnosed with psychosis due to general medical disorder, translates to 0.03% of the total claimant population for 2008.

b.   2009

In 2009, 666 patients were diagnosed as suffering from psychosis due to general medical disorder. This value is 39 more patients than in 2008 and translates to an 5.86% increase in diagnosis of psychosis due to general medical disorder, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

666 out of 2 192 129 patients diagnosed with psychosis due to general medical disorder, translates to 0.03% of the total claimant population.

c.   2010

In 2010, 651 patients were diagnosed as suffering from psychosis due to general medical disorder. This value is 15 less patients than in 2009 and translates to a 2.25% decrease in diagnosis of psychosis due to general medical disorder, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

651 out of 2 434 220 patients diagnosed with psychosis due to general medical disorder, translates to 0.03% of the total claimant population.

d.   2011

In 2011, 698 patients were diagnosed as suffering from psychosis due to general medical disorder. This value is 47 more patients than in 2010 and translates to a 6.73% increase in

diagnosis of psychosis due to general medical disorder, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 7.76% growth in claimant population in one year.

698 out of 2 581 043 patients diagnosed with psychosis due to general medical disorder, translates to 0.03% of the total claimant population.

e.   2012

In 2012, 734 patients were diagnosed as suffering from psychosis due to general medical disorder. This value is 36 more patients than in 2011 and translates to a 4.9% increase in diagnosis of psychosis due to general medical disorder, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

734 out of 2 711 594 patients diagnosed with psychosis due to general medical disorder translates to 0.03% of the total claimant population.

f.   2013

In 2013, 854 patients were diagnosed as suffering from psychosis due to general medical disorder. This value is 120 more patients than in 2012 and translates to a 14.05% increase in diagnosis of psychosis due to general medical disorder, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

854 out of 2 822 416 patients diagnosed with psychosis due to general medical disorder, translates to 0.03% of the total claimant population.

g. 2014

In 2014, 1 015 patients were diagnosed as suffering from psychosis due to general medical disorder. This value is 161 more patients than in 2013 and translates to a 12.5% increase in diagnosis of psychosis due to general medical disorder, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 15.86% growth in claimant population in one year.

1 015 out of 2 923 433 patients diagnosed with psychosis due to general medical disorder, translates to 0.03% of the total claimant population.

h. 2015

From January to June of 2015, 563 patients were diagnosed as suffering from psychosis due to general medical disorder. By mid-year 2014, the number of patients is 528 (according to Table: Database_2008_2015_Obsessive Compulsive Disorder). By June 2015, 35 more patients are recorded when compared to the half-year sum for 2014. This translates to a 6.22% increase in patient diagnosis. Therefore the 6.22% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 1 078 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

1 078 out of 3 031 600 patients diagnosed with psychosis due to general medical disorder, translates to 0.04% of the total claimant population.

Table LD38

Results summary: Psychosis due to General Medical Disorder

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	0.03%
2009	5.86% increase	0.03%
2010	2.25% decrease	0.03%
2011	6.73% increase	0.03%
2012	4.90% increase	0.03%
2013	14.05% increase	0.03%
2014	15.86% increase	0.03%
2015	6.22% increase	0.04%

Chart LD38: Disorder Trend: Psychosis due to General Medical Disorder

Chart LD38: Disorder Trend: Psychosis: General Medical Disorder

Bar values: 2008: 627, 2009: 666, 2010: 651, 2011: 698, 2012: 734, 2013: 854, 2014: 1015. $R^2 = 0,9748$
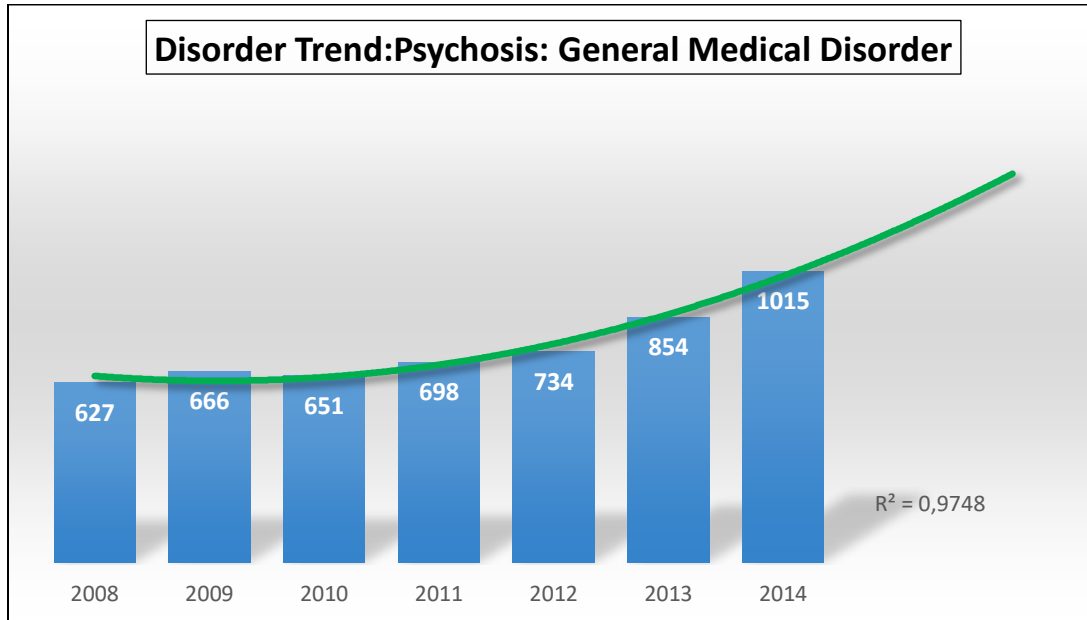
Source: Discovery Health Database

Summary of Table LD38 and Chart LD38. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with psychosis due to general medical disorder is 0.03%, within the entire database. The highest frequency of psychosis due to general medical disorder is in 2015, with a percentage of 0.04% occurrence within the entire population and the remaining years have a frequency rate of 0.03% of the total database population.

The diagnosis trend shows patient numbers reveal a constant increase across time. The forecast predicts a significant increase in frequency rate in patients diagnosed with psychosis due to general medical disorder going forward.

Psycho-Social Disorder of Childhood

Table LD39 and Chart LD39, summarise the total number of patients diagnosed with psycho-social disorder of childhood per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD39: Longitudinal Data (2008 – 2015): Psycho-Social Disorder of Childhood
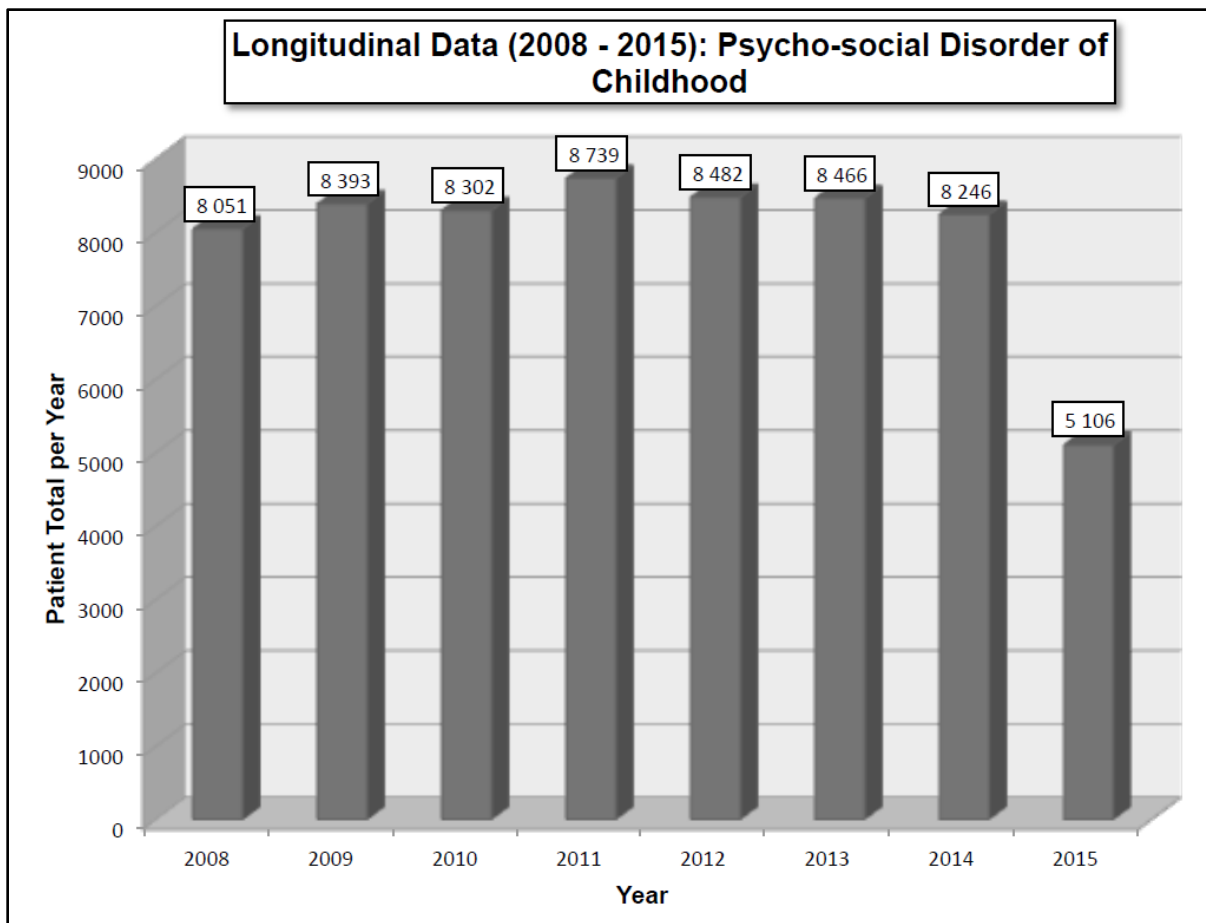
Source: Discovery Health Database

Table LD39

Longitudinal Data (2008 – 2015): Psycho-Social Disorder of Childhood

Diagnosis	Year	Total Patients	Total DP
Psycho-social disorder of childhood	2008	8 051	2,092,183
Psycho-social disorder of childhood	2009	8 393	2,192,129
Psycho-social disorder of childhood	2010	8 302	2,434,220
Psycho-social disorder of childhood	2011	8 739	2,581,043
Psycho-social disorder of childhood	2012	8 482	2,711,594
Psycho-social disorder of childhood	2013	8 466	2,822,416
Psycho-social disorder of childhood	2014	8 246	2,923,433
Psycho-social disorder of childhood	2015	5 106	2,984,103

The results are as follows:

a.   2008

In 2008, 8 051 patients were diagnosed as suffering from psycho-social disorder of childhood. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. Psycho-social disorder of childhood as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

8 051 out of 2 092 183 patients diagnosed with psycho-social disorder of childhood, translates to 0.38% of the total claimant population for 2008.

b.   2009

In 2009, 8 393 patients were diagnosed as suffering from psycho-social disorder of childhood. This value is 342 more patients than in 2008 and translates to a 4.07% increase in diagnosis of psycho-social disorder of childhood, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

8 393 out of 2 192 129 patients diagnosed with psycho-social disorder of childhood, translates to 0.38% of the total claimant population.

c.   2010

In 2010, 8 302 patients were diagnosed as suffering from psycho-social disorder of childhood. This value is 91 less patients than in 2009 and translates to a 1.08% decrease in diagnosis of psycho-social disorder of childhood, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

8 302 out of 2 434 220 patients diagnosed with psycho-social disorder of childhood, translates to 0.34% of the total claimant population.

d.   2011

In 2011, 8 739 patients were diagnosed as suffering from psycho-social disorder of childhood. This value is 437 more patients than in 2010 and translates to a 5% increase in diagnosis of

psycho-social disorder of childhood, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 7.76% growth in claimant population in one year.

8 739 out of 2 581 043 patients diagnosed with psycho-social disorder of childhood, translates to 0.34% of the total claimant population.

e.   2012

In 2012, 8 482 patients were diagnosed as suffering from psycho-social disorder of childhood. This value is 257 less patients than in 2011 and translates to a 2.94% decrease in diagnosis of psycho-social disorder of childhood, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

8 482 out of 2 711 594 patients diagnosed with psycho-social disorder of childhood translates to 0.31% of the total claimant population.

f.   2013

In 2013, 8 466 patients were diagnosed as suffering from psycho-social disorder of childhood. This value is 16 less patients than in 2012 and translates to a 0.19% decrease in diagnosis of psycho-social disorder of childhood, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

8 466 out of 2 822 416 patients diagnosed with psycho-social disorder of childhood, translates to 0.3% of the total claimant population.

g.   2014

In 2014, 8 246 patients were diagnosed as suffering from psycho-social disorder of childhood. This value is 220 less patients than in 2013 and translates to a 2.6% decrease in diagnosis of psycho-social disorder of childhood, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 15.86% growth in claimant population in one year.

8 246 out of 2 923 433 patients diagnosed with psycho-social disorder of childhood, translates to 0.28% of the total claimant population.

h.   2015

From January to June of 2015, 5 106 patients were diagnosed as suffering from psycho-social disorder of childhood. By mid-year 2014, the number of patients is 4 400 (according to Table: Database_2008_2015_Psycho-Social Disorder of Childhood). By June 2015, 706 more patients are recorded when compared to the half-year sum for 2014. This translates to a 13.83% increase in patient diagnosis. Therefore the 13.83% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 9 386 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

9 386 out of 3 031 600 patients diagnosed with psycho-social disorder of childhood, translates to 0.31% of the total claimant population.

Table LD40

Results summary: Psycho-Social Disorder of Childhood

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	0.38%
2009	4.07% increase	0.38%
2010	1.08% decrease	0.34%
2011	5.00% increase	0.34%
2012	2.94% decrease	0.31%
2013	0.19% decrease	0.30%
2014	2.60% decrease	0.28%
2015	13.86% increase	0.31%

Chart LD40: Disorder Trend: Psycho-Social Disorder of Childhood

Disorder Trend: Psycho-social Disorder of Childhood

Year	Value
2008	8051
2009	8593
2010	8302
2011	8739
2012	8482
2013	8466
2014	8246

$R^2 = 0,7297$
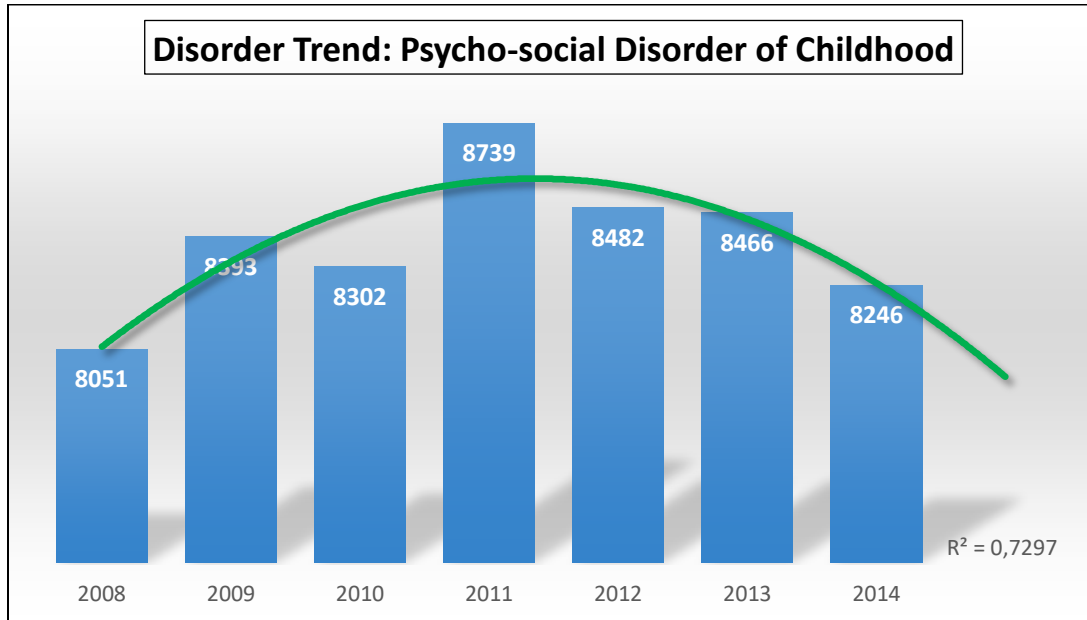
Source: Discovery Health Database

Summary of Table LD40 and Chart LD40. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with psycho-social disorder of childhood is 0.33%, within the entire database. The lowest frequency of psycho-social disorder of childhood is in 2014, with a percentage of 0.28% occurrence within the entire population and the highest frequencies are in 2008 and 2009, with a percentage of 0.38% of the total database population.

The diagnosis trend shows a clear polynomial trend, with an initial increase in patient numbers, peaking in 2011. Thereafter, from 2011 onwards, there is a mirrored equivalent decline in patients diagnosed with psycho-social disorder of childhood.

Schizophrenia

Table LD41 and Chart LD41, summarise the total number of patients diagnosed with schizophrenia per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD41: Longitudinal Data (2008 – 2015): Schizophrenia
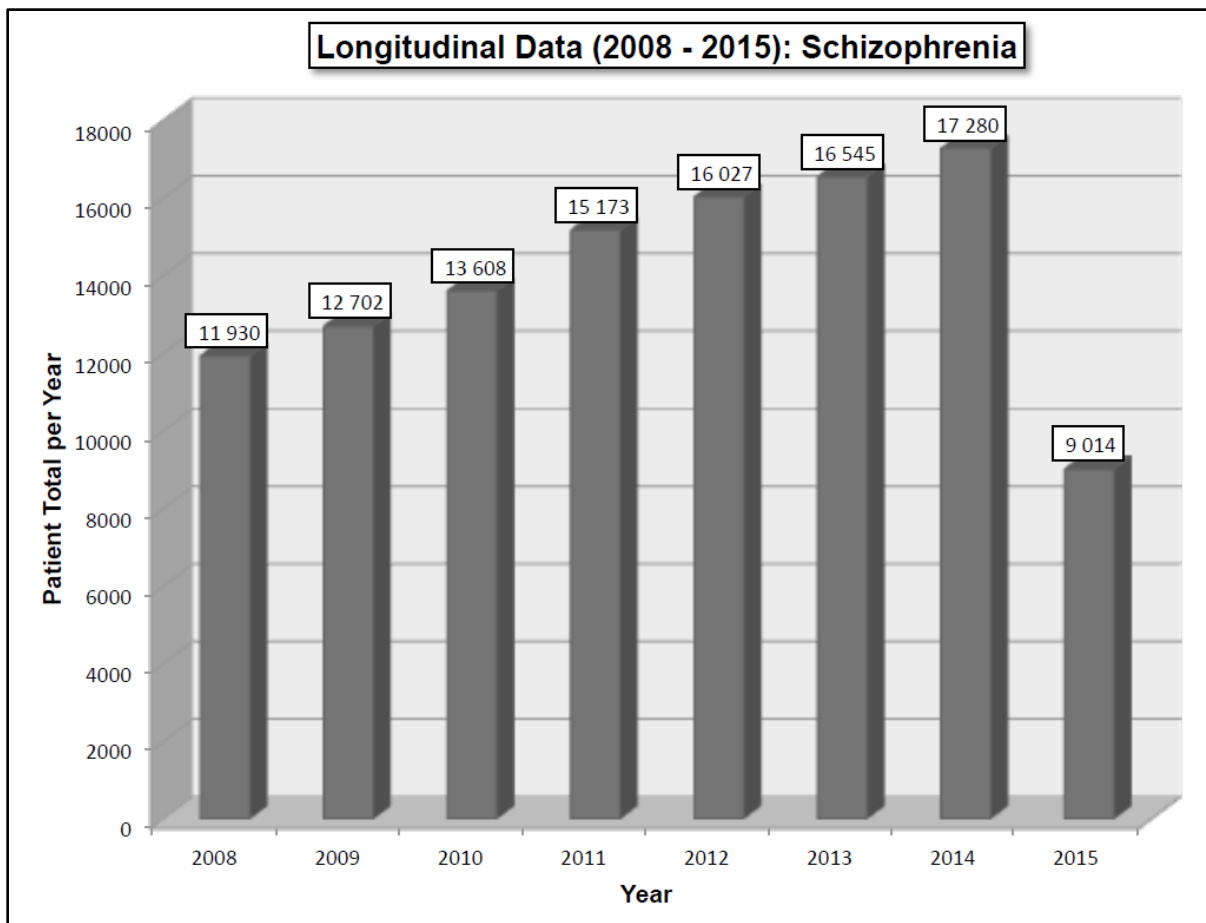
Source: Discovery Health Database

Table LD41

Longitudinal Data (2008 – 2015): Schizophrenia

Diagnosis	Year	Total Patients	Total DP
Schizophrenia	2008	11 930	2,092,183
Schizophrenia	2009	12 702	2,192,129
Schizophrenia	2010	13 608	2,434,220
Schizophrenia	2011	15 173	2,581,043
Schizophrenia	2012	16 027	2,711,594
Schizophrenia	2013	16 545	2,822,416
Schizophrenia	2014	17 280	2,923,433
Schizophrenia	2015	9 014	2,984,103

The results are as follows:

a.   2008

In 2008, 11 930 patients were diagnosed as suffering from schizophrenia. This is the total

number of diagnoses, includes both male and female patients. The ratio of male to female

patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all

medical claimants on the dataset. Schizophrenia as a diagnosis is one of 27 mental illness

disorders, as classified for this specific database. Refer to Table X for a summary of disorders

specified in this dataset.

11 930 out of 2 092 183 patients diagnosed with schizophrenia, translates to 0.57% of the total

claimant population for 2008.

b.   2009

In 2009, 12 702 patients were diagnosed as suffering from schizophrenia. This value is 772 more patients than in 2008 and translates to a 6.08% increase in diagnosis of schizophrenia, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

12 702 out of 2 192 129 patients diagnosed with schizophrenia, translates to 0.58% of the total claimant population.

c.   2010

In 2010, 13 608 patients were diagnosed as suffering from schizophrenia. This value is 906 more patients than in 2009 and translates to a 6.68% increase in diagnosis of schizophrenia, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

13 608 out of 2 434 220 patients diagnosed with schizophrenia, translates to 0.56% of the total claimant population.

d.   2011

In 2011, 15 173 patients were diagnosed as suffering from schizophrenia. This value is 1 565 more patients than in 2010 and translates to a 10.3% increase in diagnosis of schizophrenia,

when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 7.76% growth in claimant population in one year.

15 173 out of 2 581 043 patients diagnosed with schizophrenia, translates to 0.59% of the total claimant population.

e. **2012**

In 2012, 16 027 patients were diagnosed as suffering from schizophrenia. This value is 257 more patients than in 2011 and translates to a 5.33% increase in diagnosis of schizophrenia, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

16 027 out of 2 711 594 patients diagnosed with schizophrenia translates to 0.59% of the total claimant population.

f. **2013**

In 2013, 16 545 patients were diagnosed as suffering from schizophrenia. This value is 518 more patients than in 2012 and translates to a 3.1% increase in diagnosis of schizophrenia, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

16 545 out of 2 822 416 patients diagnosed with schizophrenia, translates to 0.59% of the total claimant population.

g.   2014

In 2014, 17 280 patients were diagnosed as suffering from schizophrenia. This value is 735 more patients than in 2013 and translates to a 4.25% increase in diagnosis of schizophrenia, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 15.86% growth in claimant population in one year.

17 280 out of 2 923 433 patients diagnosed with schizophrenia, translates to 0.59% of the total claimant population.

h.   2015

From January to June of 2015, 9 014 patients were diagnosed as suffering from schizophrenia. By mid-year 2014, the number of patients is 8 608 (according to Table: Database_2008_2015_Schizoprenia). By June 2015, 406 more patients are recorded when compared to the half-year sum for 2014. This translates to a 4.5% increase in patient diagnosis. Therefore the 4.5% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 18 057 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

18 057 out of 3 031 600 patients diagnosed with schizophrenia, translates to 0.6% of the total

claimant population.

Table LD42

Results summary: Schizophrenia

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	0.57%
2009	6.08% increase	0.58%
2010	6.68% increase	0.56%
2011	10.30% increase	0.59%
2012	5.33% increase	0.59%
2013	3.10% increase	0.59%
2014	4.25% increase	0.59%
2015	4.50% increase	0.60%

Chart LD42: Disorder Trend: Schizophrenia

Disorder Trend: Schizophrenia

11930	12702	13608	15173	16027	16545	17280
2008	2009	2010	2011	2012	2013	2014

R² = 0,9344
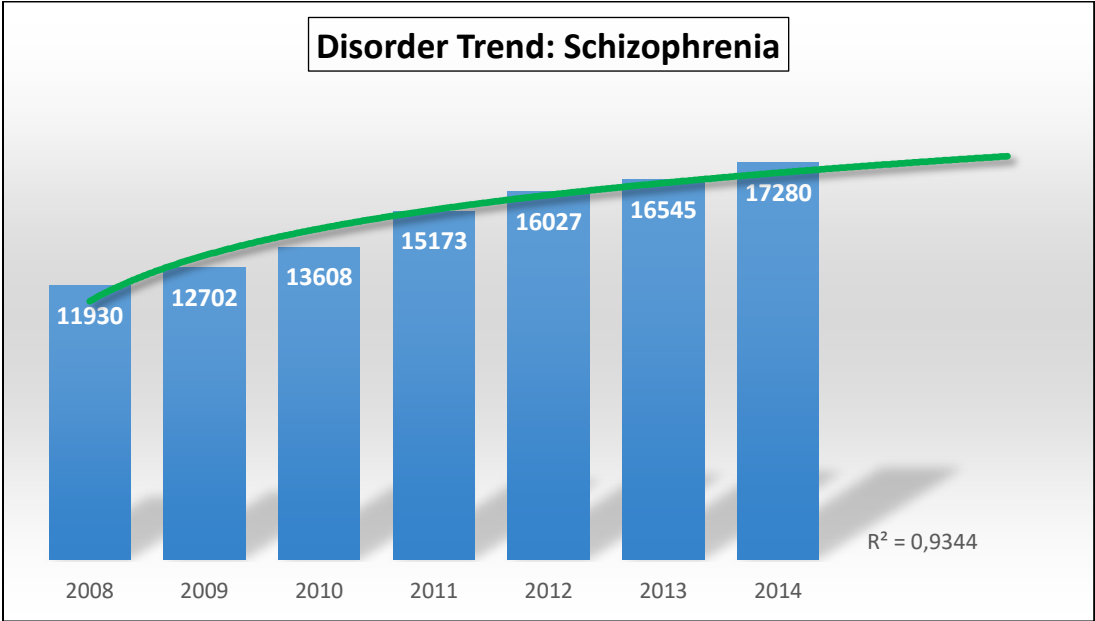
Source: Discovery Health Database

Summary of Table LD42 and Chart LD42. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with schizophrenia is 0.58%, within the entire database. The lowest frequency of schizophrenia is in 2008, with a percentage of 0.57% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 0.6% of the total database population.

The diagnosis trend shows an incremental increase in patient numbers across time, with the trend line approaching a plateau, signally a constant frequency rate for this diagnosis. The forecast predicts a constant frequency rate of patients diagnosed with schizophrenia going forward.

Sexual and Gender Identity Disorder

Table LD43 and Chart LD43, summarise the total number of patients diagnosed with sexual and gender identity disorder per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD43: Longitudinal Data (2008 – 2015): Sexual and Gender Identity Disorder
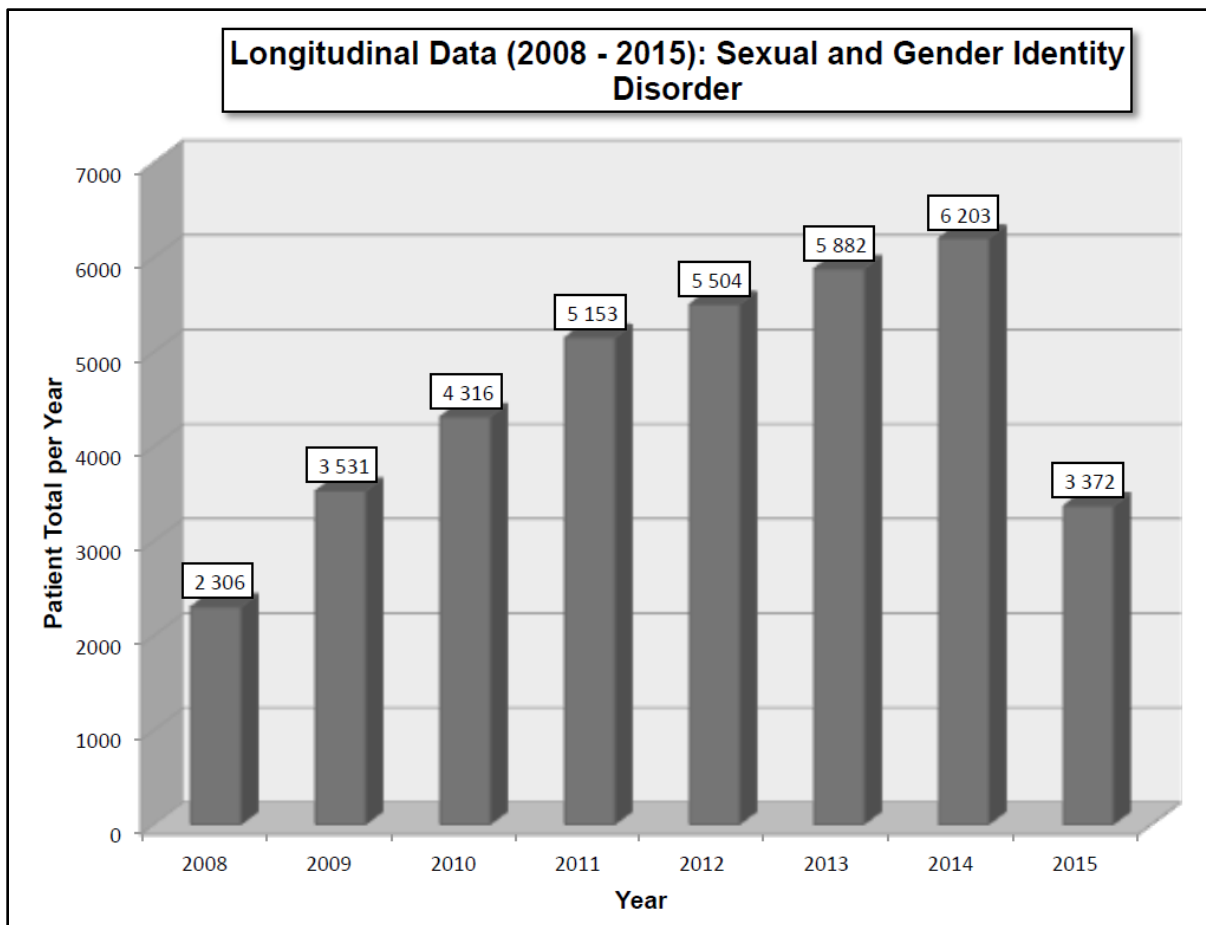
Source: Discovery Health Database

Table LD43

Longitudinal Data (2008 – 2015): Sexual and Gender Identity Disorder

Diagnosis	Year	Total Patients	Total DP
Sexual and gender identity disorder	2008	2 306	2,092,183
Sexual and gender identity disorder	2009	3 531	2,192,129
Sexual and gender identity disorder	2010	4 316	2,434,220
Sexual and gender identity disorder	2011	5 153	2,581,043
Sexual and gender identity disorder	2012	5 504	2,711,594
Sexual and gender identity disorder	2013	5 882	2,822,416
Sexual and gender identity disorder	2014	6 203	2,923,433
Sexual and gender identity disorder	2015	3 372	2,984,103

The results are as follows:

a.   2008

In 2008, 2 306 patients were diagnosed as suffering from sexual and gender identity disorder. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. sexual and gender identity disorder as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

2 306 out of 2 092 183 patients diagnosed with sexual and gender identity disorder, translates to 0.11% of the total claimant population for 2008.

b.   2009

In 2009, 3 531 patients were diagnosed as suffering from sexual and gender identity disorder. This value is 1 225 more patients than in 2008 and translates to a 34.69% increase in diagnosis of sexual and gender identity disorder, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

3 531 out of 2 192 129 patients diagnosed with sexual and gender identity disorder, translates to 0.16% of the total claimant population.

c.   2010

In 2010, 4 316 patients were diagnosed as suffering from sexual and gender identity disorder. This value is 785 more patients than in 2009 and translates to a 18.19% increase in diagnosis of sexual and gender identity disorder, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

4 316 out of 2 434 220 patients diagnosed with sexual and gender identity disorder, translates to 0.18% of the total claimant population.

d.   2011

In 2011, 5 153 patients were diagnosed as suffering from sexual and gender identity disorder. This value is 837 more patients than in 2010 and translates to a 16.24% increase in diagnosis of

sexual and gender identity disorder, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 7.76% growth in claimant population in one year.

5 153 out of 2 581 043 patients diagnosed with sexual and gender identity disorder, translates to 0.2% of the total claimant population.

e.   2012

In 2012, 5 504 patients were diagnosed as suffering from sexual and gender identity disorder. This value is 351 more patients than in 2011 and translates to a 6.4% increase in diagnosis of sexual and gender identity disorder, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

5 504 out of 2 711 594 patients diagnosed with sexual and gender identity disorder translates to 0.2% of the total claimant population.

f.   2013

In 2013, 5 882 patients were diagnosed as suffering from sexual and gender identity disorder. This value is 378 more patients than in 2012 and translates to a 6.43% increase in diagnosis of sexual and gender identity disorder, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

5 882 out of 2 822 416 patients diagnosed with sexual and gender identity disorder, translates to 0.21% of the total claimant population.

g.   2014

In 2014, 6 203 patients were diagnosed as suffering from sexual and gender identity disorder. This value is 321 more patients than in 2013 and translates to a 5.17% increase in diagnosis of sexual and gender identity disorder, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 15.86% growth in claimant population in one year.

6 203 out of 2 923 433 patients diagnosed with sexual and gender identity disorder, translates to 0.21% of the total claimant population.

h.   2015

From January to June of 2015, 3 372 patients were diagnosed as suffering from sexual and gender identity disorder. By mid-year 2014, the number of patients is 3 160 (according to Table: Database_2008_2015_Sexual and Gender Identity Disorder). By June 2015, 212 more patients are recorded when compared to the half-year sum for 2014. This translates to a 6.29% increase in patient diagnosis. Therefore the 6.29% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 6 593 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

6 593 out of 3 031 600 patients diagnosed with sexual and gender identity disorder, translates to 0.22% of the total claimant population.

Table LD44

Results summary: Sexual and Gender Identity Disorder

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	0.11%
2009	34.69% increase	0.16%
2010	18.19% increase	0.18%
2011	16.24% increase	0.2%
2012	6.40% increase	0.2%
2013	6.43% increase	0.21%
2014	5.17% increase	0.21%
2015	6.29% increase	0.22%

Chart LD44: Disorder Trend: Sexual and Gender Identity Disorder

Disorder Trend: Sexual and Gender Identity Disorder

Year	Value
2008	2306
2009	3531
2010	4316
2011	5153
2012	5504
2013	5882
2014	6203

$R^2 = 0,9985$
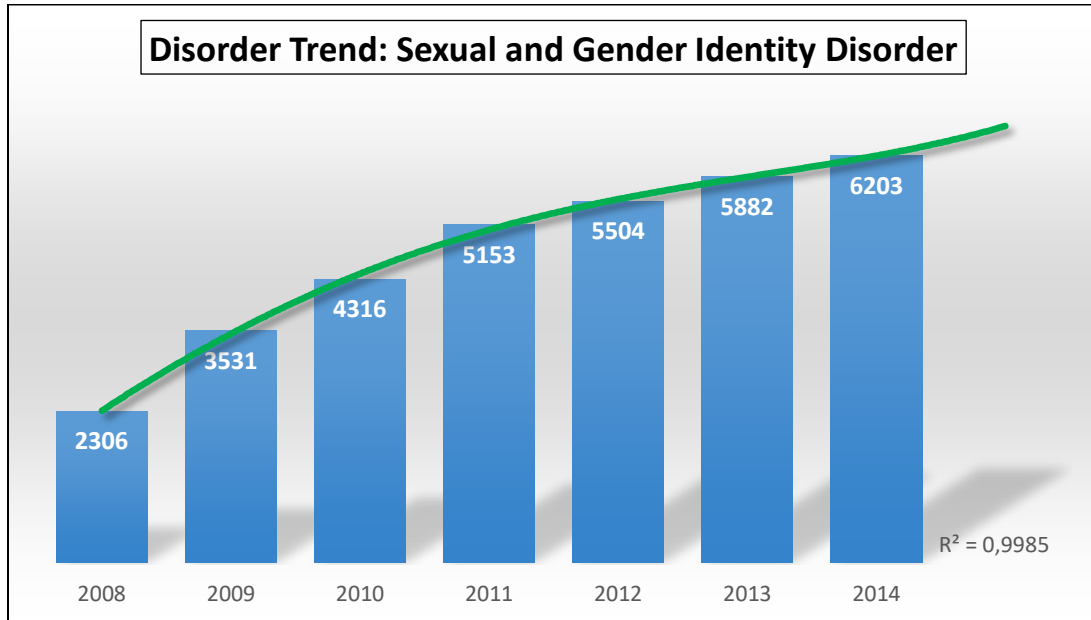
Source: Discovery Health Database

Summary of Table LD44 and Chart LD44. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with sexual and gender identity disorder is 0.19%, within the entire database. The lowest frequency of sexual and gender identity disorder is in 2008, with a percentage of 0.11% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 0.22% of the total database population.

The diagnosis trend shows a steady increase in patient numbers across time. The forecast predicts a steep increase in patients diagnosed with sexual and gender identity disorder going forward.

Somatoform Disorder

Table LD45 and Chart LD45, summarise the total number of patients diagnosed with somatoform disorder per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD45: Longitudinal Data (2008 – 2015): Somatoform Disorder
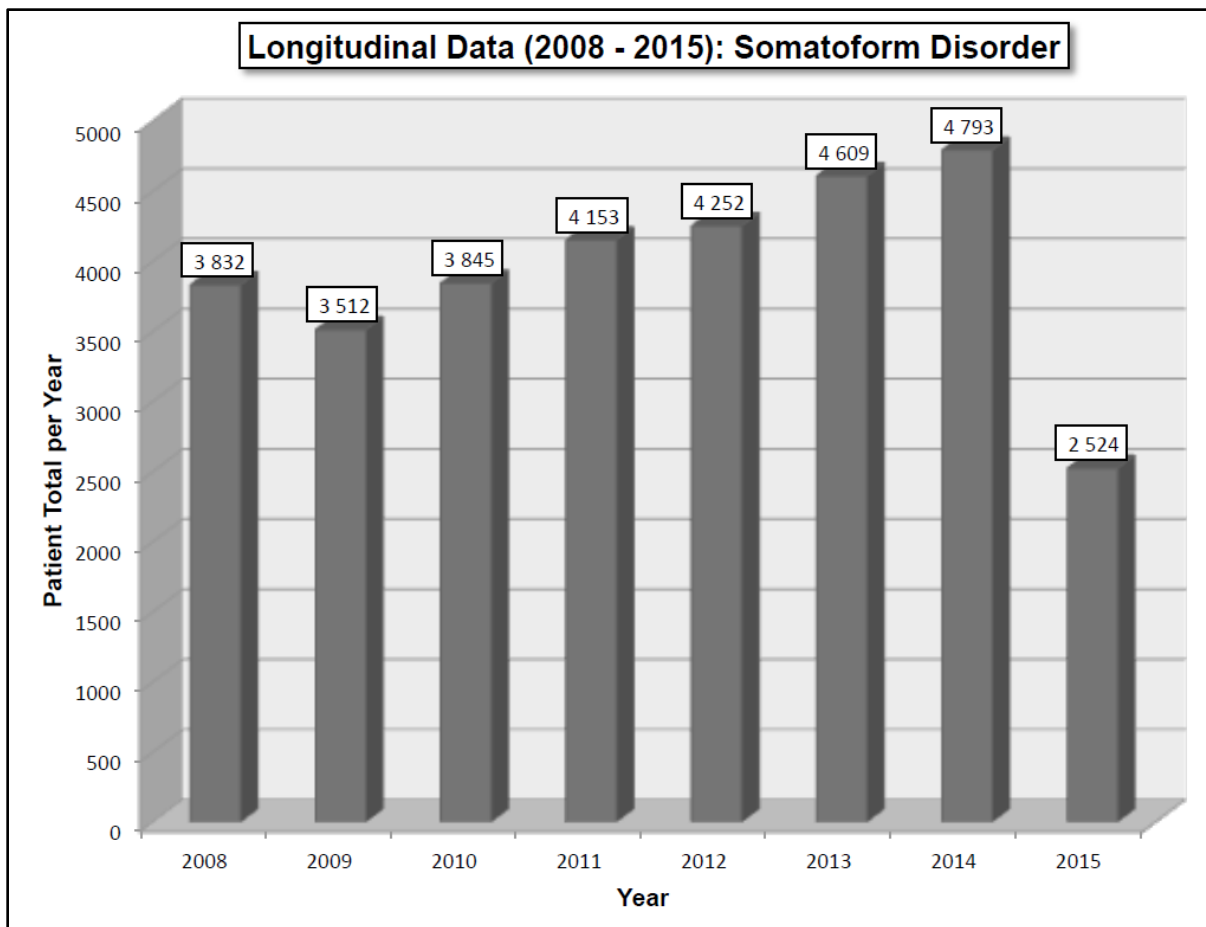
Source: Discovery Health Database

Table LD45

Longitudinal Data (2008 – 2015): Somatoform Disorder

Diagnosis	Year	Total Patients	Total DP
Somatoform disorder	2008	3 832	2,092,183
Somatoform disorder	2009	3 512	2,192,129
Somatoform disorder	2010	3 845	2,434,220
Somatoform disorder	2011	4 153	2,581,043
Somatoform disorder	2012	4 252	2,711,594
Somatoform disorder	2013	4 609	2,822,416
Somatoform disorder	2014	4 793	2,923,433
Somatoform disorder	2015	2 524	2,984,103

The results are as follows:

a.   2008

In 2008, 3 832 patients were diagnosed as suffering from somatoform disorder. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. Somatoform disorder as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

3 832 out of 2 092 183 patients diagnosed with somatoform disorder, translates to 0.18% of the total claimant population for 2008.

b.   2009

In 2009, 3 512 patients were diagnosed as suffering from somatoform disorder. This value is 320 less patients than in 2008 and translates to an 8.35% decrease in diagnosis of somatoform disorder, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

3 512 out of 2 192 129 patients diagnosed with somatoform disorder, translates to 0.16% of the total claimant population.

c.   2010

In 2010, 3 845 patients were diagnosed as suffering from somatoform disorder. This value is 333 more patients than in 2009 and translates to an 8.66% increase in diagnosis of somatoform disorder, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

3 845 out of 2 434 220 patients diagnosed with somatoform disorder, translates to 0.16% of the total claimant population.

d.   2011

In 2011, 4 153 patients were diagnosed as suffering from somatoform disorder. This value is 308 more patients than in 2010 and translates to a 7.42% increase in diagnosis of somatoform

disorder, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 7.76% growth in claimant population in one year.

4 153 out of 2 581 043 patients diagnosed with somatoform disorder, translates to 0.16% of the total claimant population.

e.   2012

In 2012, 4 252 patients were diagnosed as suffering from somatoform disorder. This value is 99 more patients than in 2011 and translates to a 2.3% increase in diagnosis of somatoform disorder, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

4 252 out of 2 711 594 patients diagnosed with somatoform disorder translates to 0.16% of the total claimant population.

f.   2013

In 2013, 4 609 patients were diagnosed as suffering from somatoform disorder. This value is 357 more patients than in 2012 and translates to a 7.75% increase in diagnosis of somatoform disorder, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

4 609 out of 2 822 416 patients diagnosed with somatoform disorder, translates to 0.16% of the total claimant population.

g.   2014

In 2014, 4 793 patients were diagnosed as suffering from somatoform disorder. This value is 184 more patients than in 2013 and translates to a 3.84% increase in diagnosis of somatoform disorder, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 15.86% growth in claimant population in one year.

4 793 out of 2 923 433 patients diagnosed with somatoform disorder, translates to 0.16% of the total claimant population.

h.   2015

From January to June of 2015, 2 524 patients were diagnosed as suffering from somatoform disorder. By mid-year 2014, the number of patients is 2 461 (according to Table: Database_2008_2015_Somatoform Disorder). By June 2015, 63 more patients are recorded when compared to the half-year sum for 2014. This translates to a 2.5% increase in patient diagnosis. Therefore the 2.5% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 4 912 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

4 912 out of 3 031 600 patients diagnosed with somatoform disorder, translates to 0.16% of the

total claimant population.

Table LD46

Results summary: Somatoform Disorder

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	0.18%
2009	8.35% decrease	0.16%
2010	8.66% increase	0.16%
2011	7.42% increase	0.16%
2012	2.30% increase	0.16%
2013	7.75% increase	0.16%
2014	3.84% Increase	0.16%
2015	2.50% increase	0.16%

Chart LD46: Disorder Trend: Somatoform Disorder
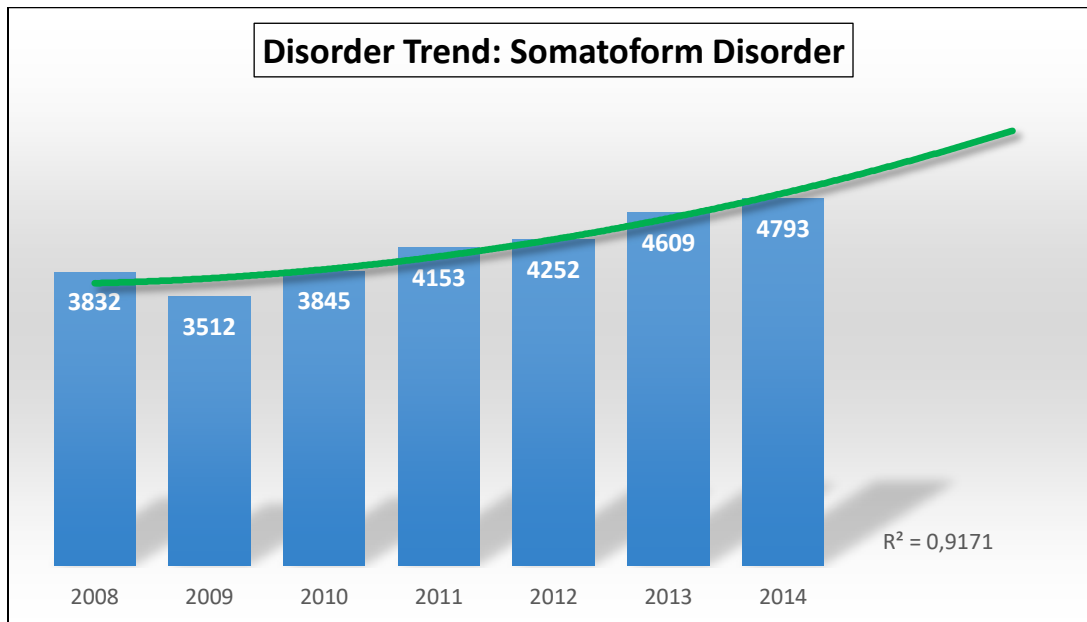
Source: Discovery Health Database

Summary of Table LD46 and Chart LD46. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with somatoform disorder is 0.16%, within the entire database. The highest frequency of somatoform disorder is in 2008, with a percentage of 0.18% occurrence within the entire population and the remaining years have a frequency rate of 0.16% of the total database population.

The diagnosis trend shows patient numbers are constantly increasing across time. The forecast predicts a steady increase in frequency rate in patients diagnosed with somatoform disorder going forward.

Substance Abuse or Dependence Behaviour

Table LD47 and Chart LD47, summarise the total number of patients diagnosed with substance abuse or dependence behaviour per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD47: Longitudinal Data (2008 – 2015): Substance Abuse or Dependence Behaviour
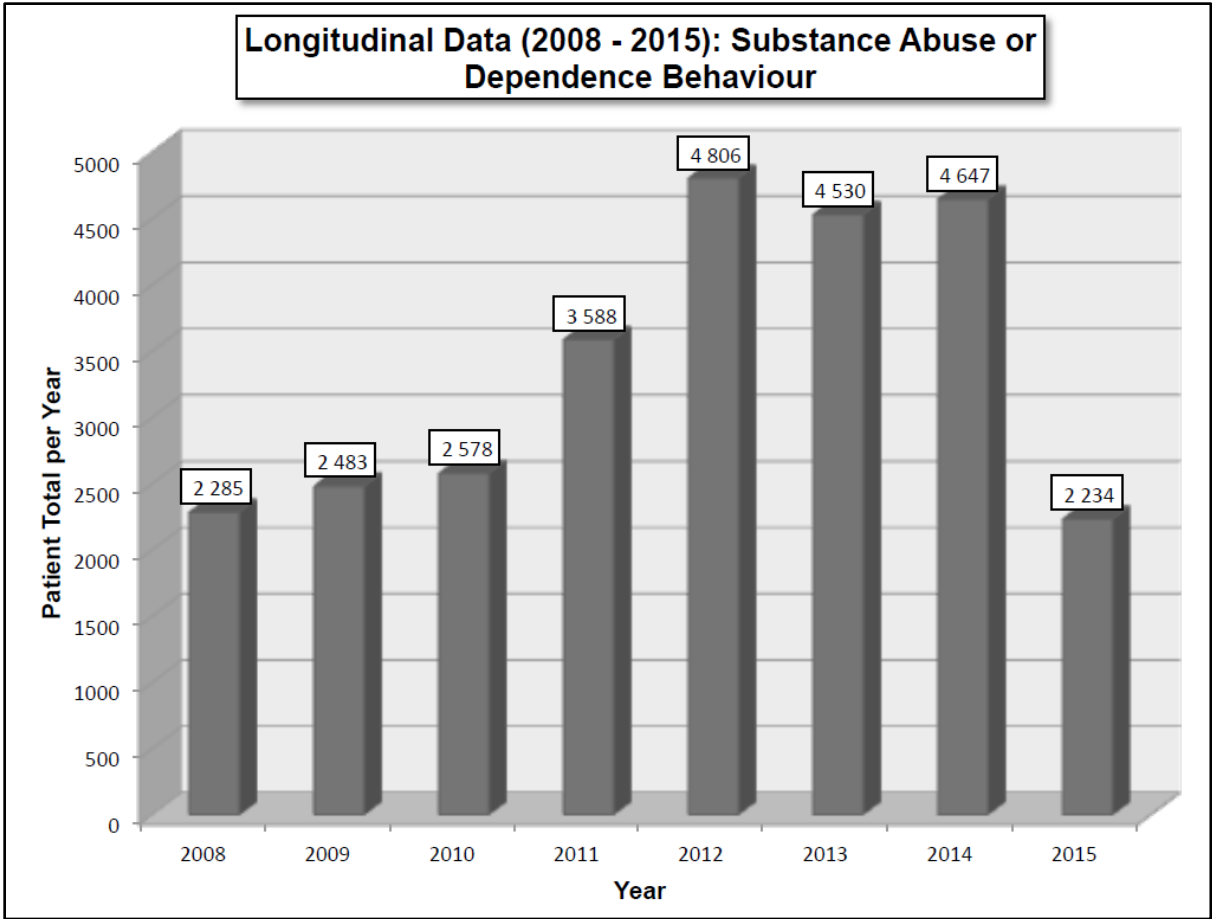
Source: Discovery Health Database

Table LD47

Longitudinal Data (2008 – 2015): Substance Abuse or Dependence Behaviour

Diagnosis	*Year*	*Total Patients*	*Total DP*
Substance abuse or dependence behaviour	2008	2 285	2,092,183
Substance abuse or dependence behaviour	2009	2 483	2,192,129
Substance abuse or dependence behaviour	2010	2 578	2,434,220
Substance abuse or dependence behaviour	2011	3 588	2,581,043
Substance abuse or dependence behaviour	2012	4 806	2,711,594
Substance abuse or dependence behaviour	2013	4 530	2,822,416
Substance abuse or dependence behaviour	2014	4 647	2,923,433
Substance abuse or dependence behaviour	2015	2 234	2,984,103

The results are as follows:

a.   2008

In 2008, 2 285 patients were diagnosed as suffering from substance abuse or dependence behaviour. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. Substance abuse or dependence behaviour as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

2 285 out of 2 092 183 patients diagnosed with substance abuse or dependence behaviour, translates to 0.11% of the total claimant population for 2008.

**b.	2009**

In 2009, 2 483 patients were diagnosed as suffering from substance abuse or dependence behaviour. This value is 198 more patients than in 2008 and translates to a 7.97% increase in diagnosis of substance abuse or dependence behaviour, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

2 483 out of 2 192 129 patients diagnosed with substance abuse or dependence behaviour, translates to 0.11% of the total claimant population.

**c.	2010**

In 2010, 2 578 patients were diagnosed as suffering from substance abuse or dependence behaviour. This value is 95 more patients than in 2009 and translates to a 3.69% increase in diagnosis of substance abuse or dependence behaviour, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

2 578 out of 2 434 220 patients diagnosed with substance abuse or dependence behaviour, translates to 0.11% of the total claimant population.

**d.	2011**

In 2011, 3 588 patients were diagnosed as suffering from substance abuse or dependence behaviour. This value is 1 010 more patients than in 2010 and translates to a 28.12% increase in

diagnosis of substance abuse or dependence behaviour, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 7.76% growth in claimant population in one year.

3 588 out of 2 581 043 patients diagnosed with substance abuse or dependence behaviour, translates to 0.14% of the total claimant population.

e.   2012

In 2012, 4 806 patients were diagnosed as suffering from substance abuse or dependence behaviour. This value is 1 218 more patients than in 2011 and translates to a 25.34% increase in diagnosis of substance abuse or dependence behaviour, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

4 806 out of 2 711 594 patients diagnosed with substance abuse or dependence behaviour translates to 0.18% of the total claimant population.

f.   2013

In 2013, 4 530 patients were diagnosed as suffering from substance abuse or dependence behaviour. This value is 276 less patients than in 2012 and translates to a 5.74% decrease in diagnosis of substance abuse or dependence behaviour, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

4 530 out of 2 822 416 patients diagnosed with substance abuse or dependence behaviour, translates to 0.16% of the total claimant population.

g.   2014

In 2014, 4 647 patients were diagnosed as suffering from substance abuse or dependence behaviour. This value is 117 more patients than in 2013 and translates to a 2.52% increase in diagnosis of substance abuse or dependence behaviour, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 15.86% growth in claimant population in one year.

4 647 out of 2 923 433 patients diagnosed with substance abuse or dependence behaviour, translates to 0.16% of the total claimant population.

h.   2015

From January to June of 2015, 2 234 patients were diagnosed as suffering from substance abuse or dependence behaviour. By mid-year 2014, the number of patients is 2 553 (according to Table: Database_2008_2015_ Substance Abuse or Dependence Behaviour). By June 2015, 319 less patients are recorded when compared to the half-year sum for 2014. This translates to a 12.5% decrease in patient diagnosis. Therefore the 12.5% decrease is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 4 066 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database

population of 3 031 600. This is 108 167 more claimants than in 2014.

4 066 out of 3 031 600 patients diagnosed with substance abuse or dependence behaviour, translates to 0.13% of the total claimant population.

Table LD48

Results summary: Substance Abuse or Dependence Behaviour

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	0.11%
2009	7.97% increase	0.11%
2010	3.69% increase	0.11%
2011	28.12% increase	0.14%
2012	25.34% increase	0.18%
2013	5.74% decrease	0.16%
2014	2.52% increase	0.16%
2015	12.50% decrease	0.13%

Chart LD48: Disorder Trend: Substance Abuse or Dependence Behaviour
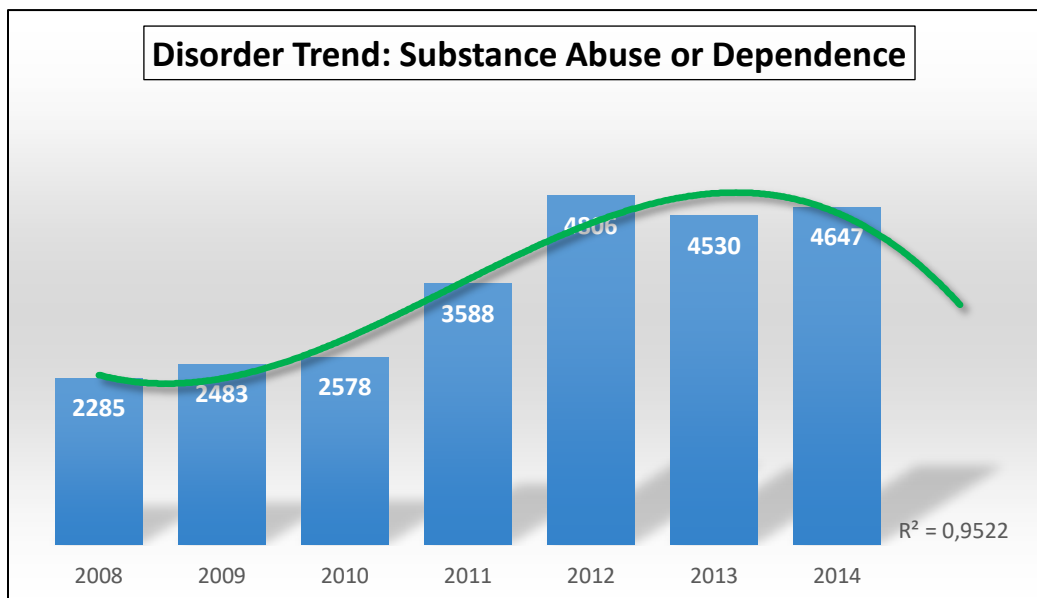
Source: Discovery Health Database

Summary of Table LD48 and Chart LD48. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with substance abuse or dependence behaviour is 0.14%, within the entire database. The lowest frequencies of substance abuse or dependence behaviour are in 2008, 2009 and 2010, with a percentage of 0.11% occurrence within the entire population and the highest frequency is in 2012, with a percentage of 0.18% of the total database population.

The diagnosis trend shows a steep increase in patient numbers from 2008 to 2011, with the frequency rate peaking in 2012. Thereafter, there is a steady decline in frequency rate. The forecast predicts a steady decrease in patients diagnosed with substance abuse or dependence behaviour going forward.

Tic Disorder

Table LD49 and Chart LD49, summarise the total number of patients diagnosed with tic disorder per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD49: Longitudinal Data (2008 – 2015): Tic Disorder
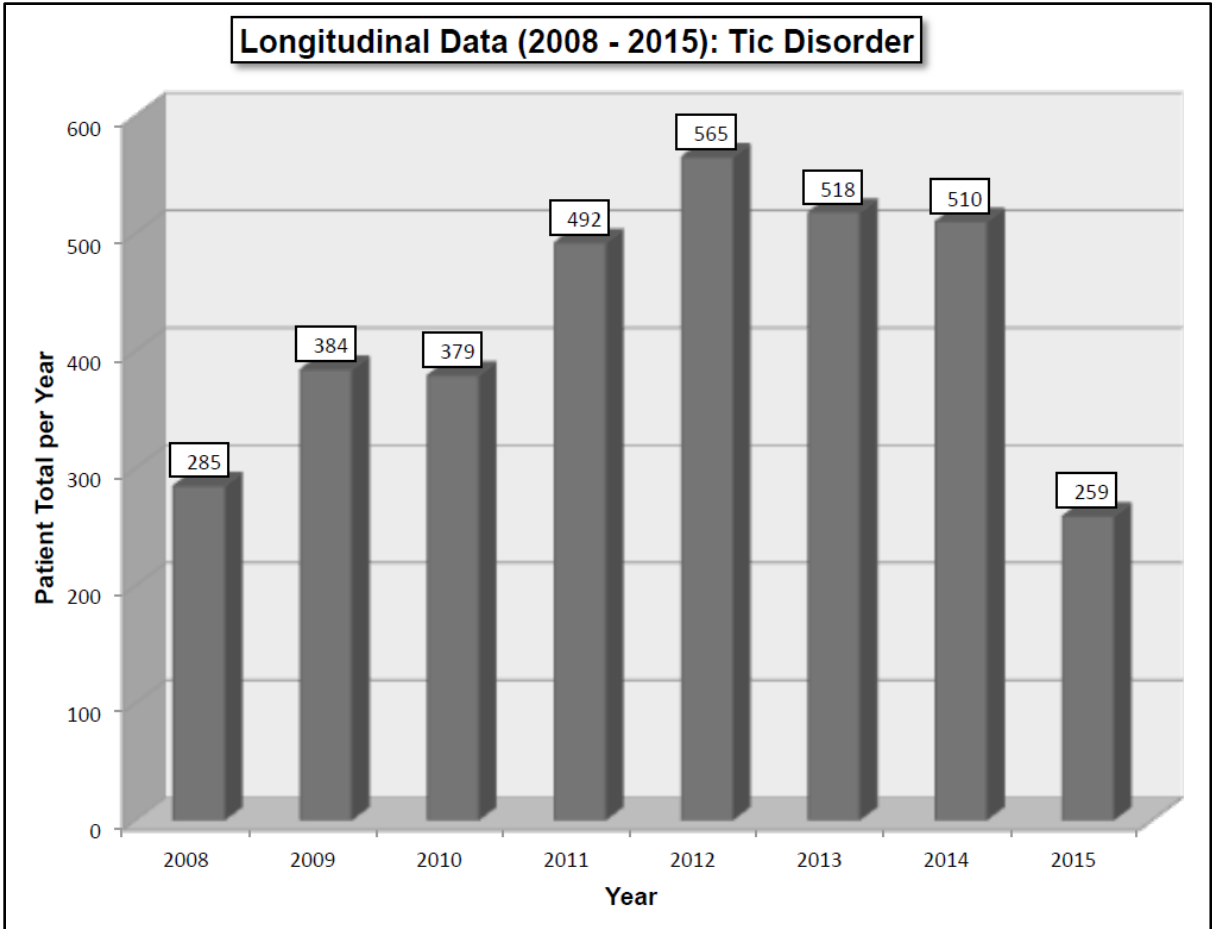
Source: Discovery Health Database

Table LD49

Longitudinal Data (2008 – 2015): Tic Disorder

Diagnosis	Year	Total Patients	Total DP
Tic disorder	2008	285	2,092,183
Tic disorder	2009	384	2,192,129
Tic disorder	2010	379	2,434,220
Tic disorder	2011	492	2,581,043
Tic disorder	2012	565	2,711,594
Tic disorder	2013	518	2,822,416
Tic disorder	2014	510	2,923,433
Tic disorder	2015	259	2,984,103

The results are as follows:

a.   2008

In 2008, 285 patients were diagnosed as suffering from tic disorder. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. Tic disorder as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

285 out of 2 092 183 patients diagnosed with tic disorder, translates to 0.01% of the total claimant population for 2008.

b.   2009

In 2009, 384 patients were diagnosed as suffering from tic disorder. This value is 99 more patients than in 2008 and translates to a 25.78% increase in diagnosis of tic disorder, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

384 out of 2 192 129 patients diagnosed with tic disorder, translates to 0.02% of the total claimant population.

c.   2010

In 2010, 379 patients were diagnosed as suffering from tic disorder. This value is 5 less patients than in 2009 and translates to a 1.3% decrease in diagnosis of tic disorder, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

379 out of 2 434 220 patients diagnosed with tic disorder, translates to 0.02% of the total claimant population.

d.   2011

In 2011, 492 patients were diagnosed as suffering from tic disorder. This value is 113 more patients than in 2010 and translates to a 22.98% increase in diagnosis of tic disorder, when

compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 7.76% growth in claimant population in one year.

492 out of 2 581 043 patients diagnosed with tic disorder, translates to 0.02% of the total claimant population.

e.   2012

In 2012, 565 patients were diagnosed as suffering from tic disorder. This value is 73 more patients than in 2011 and translates to a 12.92% increase in diagnosis of tic disorder, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

565 out of 2 711 594 patients diagnosed with tic disorder translates to 0.02% of the total claimant population.

f.   2013

In 2013, 518 patients were diagnosed as suffering from tic disorder. This value is 47 less patients than in 2012 and translates to an 8.3% decrease in diagnosis of tic disorder, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

518 out of 2 822 416 patients diagnosed with tic disorder, translates to 0.02% of the total claimant population.

g. 2014

In 2014, 510 patients were diagnosed as suffering from tic disorder. This value is 8 less patients than in 2013 and translates to a 1.5% decrease in diagnosis of tic disorder, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 15.86% growth in claimant population in one year.

510 out of 2 923 433 patients diagnosed with tic disorder, translates to 0.02% of the total claimant population.

h. 2015

From January to June of 2015, 259 patients were diagnosed as suffering from tic disorder. By mid-year 2014, the number of patients is 268 (according to Table: Database_2008_2015_ Tic Disorder). By June 2015, 9 less patients are recorded when compared to the half-year sum for 2014. This translates to a 3.4% decrease in patient diagnosis. Therefore the 3.4% decrease is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 492 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

492 out of 3 031 600 patients diagnosed with tic disorder, translates to 0.02% of the total

claimant population.

Table LD50

Results summary: Tic Disorder

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	0.01%
2009	25.78% increase	0.02%
2010	1.30% decrease	0.02%
2011	22.98% increase	0.02%
2012	12.92% increase	0.02%
2013	8.30% decrease	0.02%
2014	1.50% decrease	0.02%
2015	3.40% decrease	0.02%

Chart LD50: Disorder Trend: Tic Disorder

Disorder Trend: Tic Disorder

	2008	2009	2010	2011	2012	2013	2014
	285	384	379	492	565	518	510

$R^2 = 0,8531$
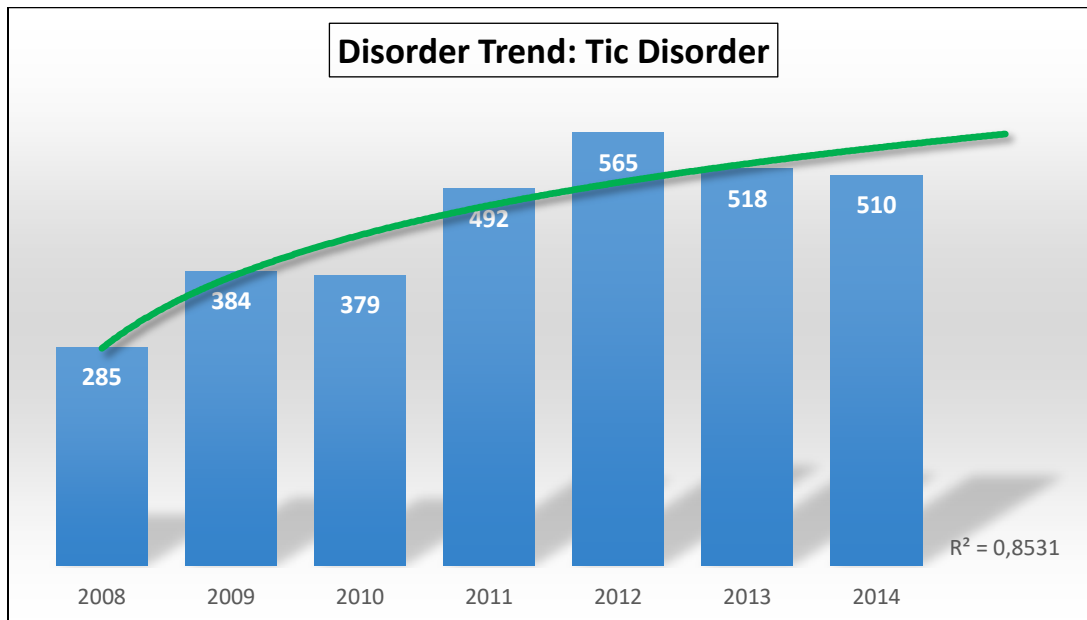
Source: Discovery Health Database

Summary of Table LD50 and Chart LD50. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with tic disorder is 0.02%, within the entire database. The lowest frequency of tic disorder is in 2008, with a percentage of 0.01% occurrence within the entire population and the remaining years have a frequency rate of 0.02% of the total database population.

The diagnosis trend shows patient numbers steadily increasing, with the polynomial forecast predicts a gradual increase in frequency rate in patients diagnosed with tic disorder going forward.

Unconfirmed Psychology Disorder

Table LD51 and Chart LD51, summarise the total number of patients diagnosed with unconfirmed psychology disorder per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD51: Longitudinal Data (2008 – 2015): Unconfirmed Psychology Disorder
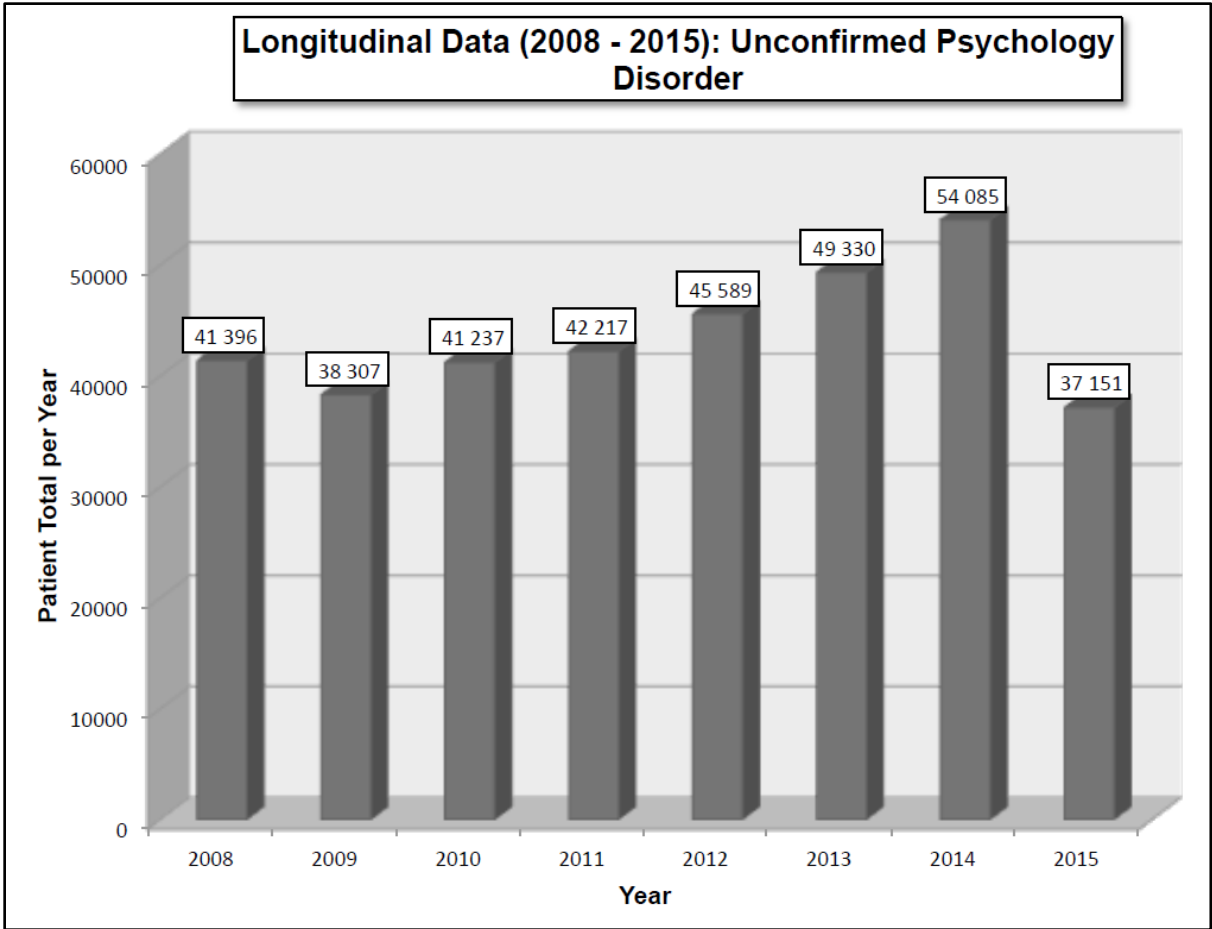
Source: Discovery Health Database

Table LD51

Longitudinal Data (2008 – 2015): Unconfirmed Psychology Disorder

Diagnosis	Year	Total Patients	Total DP
Unconfirmed psychology disorder	2008	41 396	2,092,183
Unconfirmed psychology disorder	2009	38 307	2,192,129
Unconfirmed psychology disorder	2010	41 237	2,434,220
Unconfirmed psychology disorder	2011	42 217	2,581,043
Unconfirmed psychology disorder	2012	45 589	2,711,594
Unconfirmed psychology disorder	2013	49 330	2,822,416
Unconfirmed psychology disorder	2014	54 085	2,923,433
Unconfirmed psychology disorder	2015	37 151	2,984,103

The results are as follows:

a.   2008

In 2008, 41 396 patients were diagnosed as suffering from unconfirmed psychology disorder. This is the total number of diagnoses, includes both male and female patients. The ratio of male to female patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all medical claimants on the dataset. Unconfirmed psychology disorder as a diagnosis is one of 27 mental illness disorders, as classified for this specific database. Refer to Table X for a summary of disorders specified in this dataset.

41 396 out of 2 092 183 patients diagnosed with unconfirmed psychology disorder, translates to 1.98% of the total claimant population for 2008.

b.   2009

In 2009, 38 307 patients were diagnosed as suffering from unconfirmed psychology disorder. This value is 3 089 less patients than in 2008 and translates to a 7.46% decrease in diagnosis of unconfirmed psychology disorder, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

38 307 out of 2 192 129 patients diagnosed with unconfirmed psychology disorder, translates to 1.75% of the total claimant population.

c.   2010

In 2010, 41 237 patients were diagnosed as suffering from unconfirmed psychology disorder. This value is 2 930 more patients than in 2009 and translates to a 7.11% increase in diagnosis of unconfirmed psychology disorder, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009, and translates to a 9.9% growth in claimant population in one year.

41 237 out of 2 434 220 patients diagnosed with unconfirmed psychology disorder, translates to 1.69% of the total claimant population.

d.   2011

In 2011, 42 217 patients were diagnosed as suffering from unconfirmed psychology disorder. This value is 980 more patients than in 2010 and translates to a 2.32% increase in diagnosis of

unconfirmed psychology disorder, when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 7.76% growth in claimant population in one year.

42 217 out of 2 581 043 patients diagnosed with unconfirmed psychology disorder, translates to 1.64% of the total claimant population.

e.   2012

In 2012, 45 589 patients were diagnosed as suffering from unconfirmed psychology disorder. This value is 3 372 more patients than in 2011 and translates to a 7.4% increase in diagnosis of unconfirmed psychology disorder, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

45 589 out of 2 711 594 patients diagnosed with unconfirmed psychology disorder translates to 1.68% of the total claimant population.

f.   2013

In 2013, 49 330 patients were diagnosed as suffering from unconfirmed psychology disorder. This value is 3 741 more patients than in 2012 and translates to a 7.58% increase in diagnosis of unconfirmed psychology disorder, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

49 330 out of 2 822 416 patients diagnosed with unconfirmed psychology disorder, translates to 1.75% of the total claimant population.

g.   2014

In 2014, 54 085 patients were diagnosed as suffering from unconfirmed psychology disorder. This value is 4 755 more patients than in 2013 and translates to an 8.79% increase in diagnosis of unconfirmed psychology disorder, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 15.86% growth in claimant population in one year.

54 085 out of 2 923 433 patients diagnosed with unconfirmed psychology disorder, translates to 1.85% of the total claimant population.

h.   2015

From January to June of 2015, 37 151 patients were diagnosed as suffering from unconfirmed psychology disorder. By mid-year 2014, the number of patients is 27 163 (according to Table: Database_2008_2015_ Unconfirmed Psychology Disorder). By June 2015, 9 988 more patients are recorded when compared to the half-year sum for 2014. This translates to a 26.88% increase in patient diagnosis. Therefore the 26.88% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 68 623 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

68 623 out of 3 031 600 patients diagnosed with unconfirmed psychology disorder, translates to 2.26% of the total claimant population.

Table LD52

Results summary: Unconfirmed Psychology Disorder

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	1.98%
2009	7.47% decrease	1.75%
2010	7.11% increase	1.69%
2011	2.32% increase	1.64%
2012	7.40% increase	1.68%
2013	7.58% increase	1.75%
2014	8.79% increase	1.85%
2015	26.88% increase	2.26%

Chart LD52: Disorder Trend: Unconfirmed Psychology Disorder

Disorder Trend: Unconfirmed Psychology Disorder

41396 38307 41237 42217 45589 49330 54085

R² = 0,983

2008 2009 2010 2011 2012 2013 2014
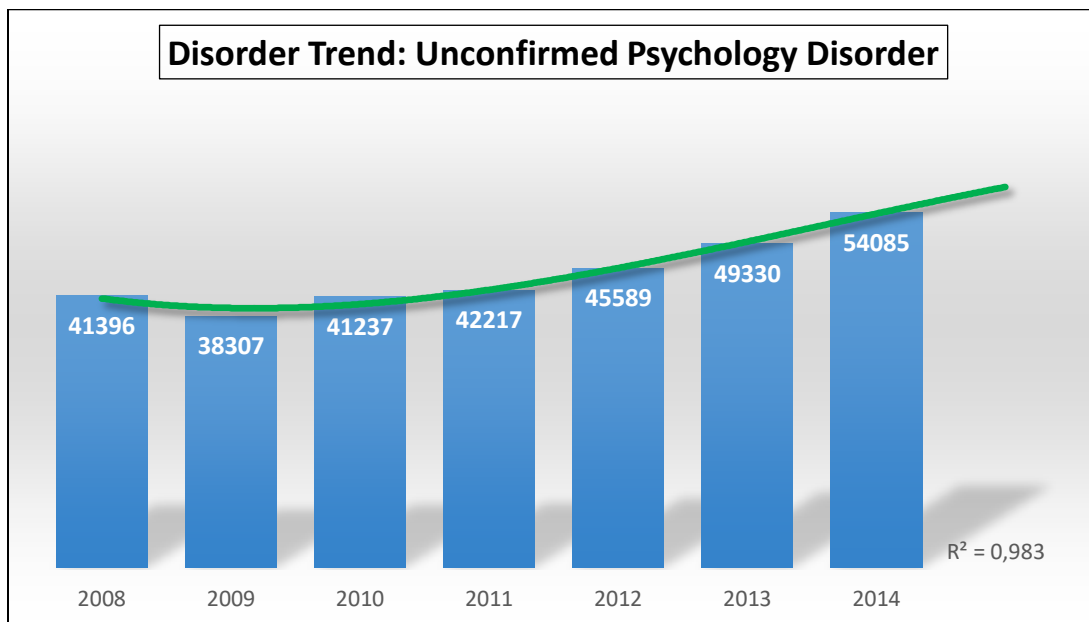
Source: Discovery Health Database

Summary of Table LD52 and Chart LD52. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with unconfirmed psychology disorder is 1.83%, within the entire database. The lowest frequency of unconfirmed psychology disorder is in 2011, with a percentage of 1.64% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 2.26% of the total database population.

The diagnosis trend shows an initial decrease in patient numbers but followed by a steady increase in frequency rate for this diagnosis. The forecast predicts an increase in frequency rate of patients diagnosed with unconfirmed psychology disorder going forward.

Vascular Dementia

Table LD53 and Chart LD53, summarise the total number of patients diagnosed with vascular dementia per year (from 2008 – 2015). The total number of diagnoses per year are shown against the total database population per year.

Chart LD53: Longitudinal Data (2008 – 2015): Vascular Dementia
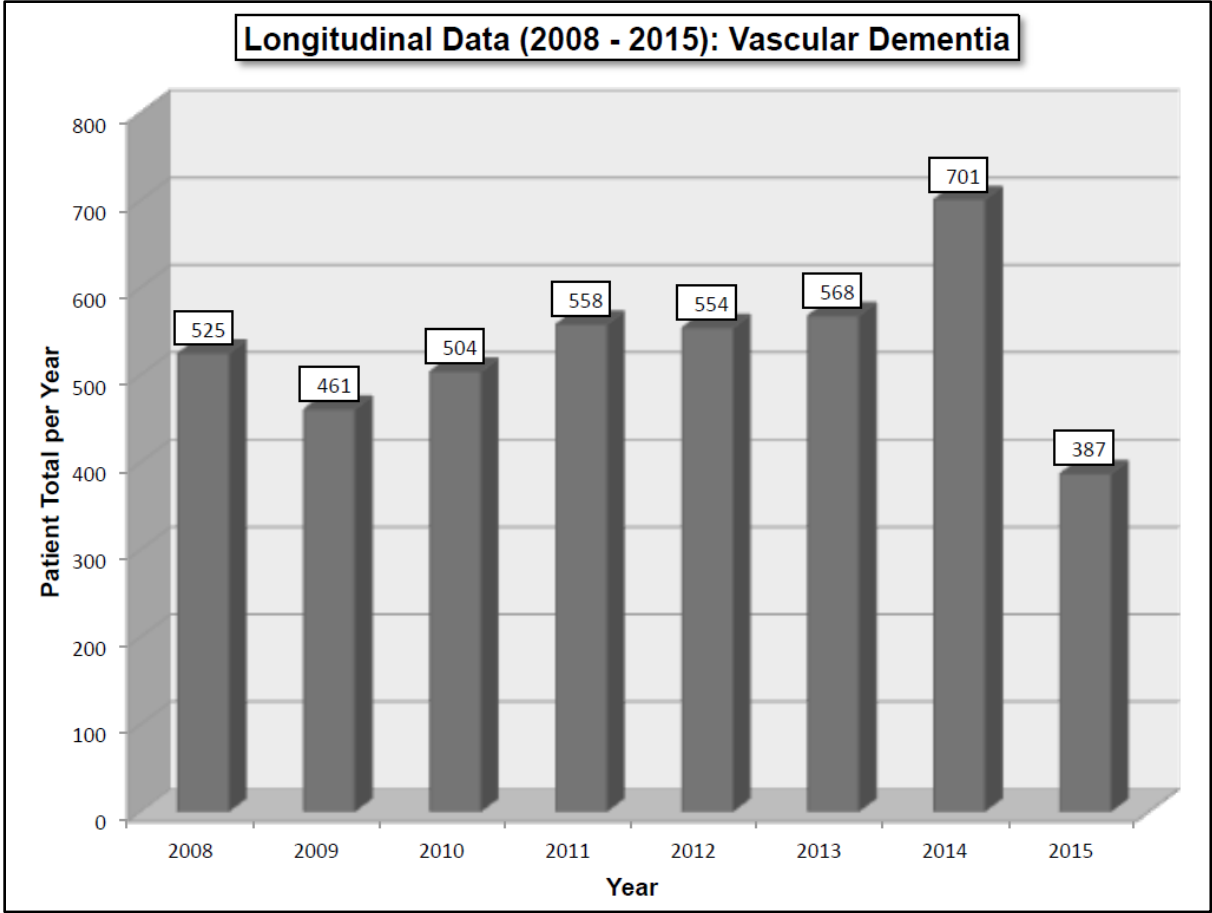
Source: Discovery Health Database

Table LD53

Longitudinal Data (2008 – 2015): Vascular Dementia

Diagnosis	Year	Total Patients	Total DP
Vascular dementia	2008	525	2,092,183
Vascular dementia	2009	461	2,192,129
Vascular dementia	2010	504	2,434,220
Vascular dementia	2011	558	2,581,043
Vascular dementia	2012	554	2,711,594
Vascular dementia	2013	568	2,822,416
Vascular dementia	2014	701	2,923,433
Vascular dementia	2015	387	2,984,103

The results are as follows:

a.   2008

In 2008, 525 patients were diagnosed as suffering from vascular dementia. This is the total

number of diagnoses, includes both male and female patients. The ratio of male to female

patients will be discussed in Section II: Gender Focus databases.

The total database population in 2008 is 2 092 183 people and this number is the sum of all

medical claimants on the dataset. Vascular dementia as a diagnosis is one of 27 mental illness

disorders, as classified for this specific database. Refer to Table X for a summary of disorders

specified in this dataset.

525 out of 2 092 183 patients diagnosed with vascular dementia, translates to 0.03% of the total

claimant population for 2008.

b.   2009

In 2009, 461 patients were diagnosed as suffering from vascular dementia. This value is 64 less patients than in 2008 and translates to a 12.19% decrease in diagnosis of vascular dementia, when compared to 2008.

The total database population in 2009 is 2 192 129 people. This is 99 946 more claimants than in 2008 and translates to a 4.6% growth in claimant population in one year.

461 out of 2 192 129 patients diagnosed with vascular dementia, translates to 0.02% of the total claimant population.

c.   2010

In 2010, 504 patients were diagnosed as suffering from vascular dementia. This value is 43 more patients than in 2009 and translates to an 8.53% increase in diagnosis of vascular dementia, when compared to 2009.

The total database population in 2010 is 2 434 220 people. This is 242 091 more claimants than in 2009 and translates to a 9.9% growth in claimant population in one year.

504 out of 2 434 220 patients diagnosed with vascular dementia, translates to 0.02% of the total claimant population.

d.   2011

In 2011, 558 patients were diagnosed as suffering from vascular dementia. This value is 54 more patients than in 2010 and translates to a 9.68% increase in diagnosis of vascular dementia,

when compared to 2010.

The total database population in 2011 is 2 581 043 people. This is 146 823 more claimants than in 2010 and translates to a 7.76% growth in claimant population in one year.

558 out of 2 581 043 patients diagnosed with vascular dementia, translates to 0.02% of the total claimant population.

e.   2012

In 2012, 554 patients were diagnosed as suffering from vascular dementia. This value is 4 less patients than in 2011 and translates to a 0.72% decrease in diagnosis of vascular dementia, when compared to 2011.

The total database population in 2012 is 2 711 594 people. This is 130 551 more claimants than in 2011 and translates to a 4.8% growth in claimant population in one year.

554 out of 2 711 594 patients diagnosed with vascular dementia translates to 0.02% of the total claimant population.

f.   2013

In 2013, 568 patients were diagnosed as suffering from vascular dementia. This value is 14 more patients than in 2012 and translates to a 2.46% increase in diagnosis of vascular dementia, when compared to 2012.

The total database population in 2013 is 2 822 416 people. This is 110 822 more claimants than in 2012 and translates to a 12.9% growth in claimant population in one year.

568 out of 2 822 416 patients diagnosed with vascular dementia, translates to 0.02% of the total claimant population.

g.   2014

In 2014, 701 patients were diagnosed as suffering from vascular dementia. This value is 133 more patients than in 2013 and translates to a 18.97% increase in diagnosis of vascular dementia, when compared to 2013.

The total database population in 2014 is 2 923 433 people. This is 101 017 more claimants than in 2013 and translates to a 15.86% growth in claimant population in one year.

701 out of 2 923 433 patients diagnosed with vascular dementia, translates to 0.02% of the total claimant population.

h.   2015

From January to June of 2015, 387 patients were diagnosed as suffering from vascular dementia. By mid-year 2014, the number of patients is 355 (according to Table: Database_2008_2015_ Vascular Dementia). By June 2015, 32 more patients are recorded when compared to the half-year sum for 2014. This translates to an 8.27% increase in patient diagnosis. Therefore the 8.27% increase is extrapolated for the remaining (unrecorded) subsequent 6 months, to give an estimated patient number of 767 for 2015.

The database population for 2015 is 2 984 103 people. The average growth between 2014 and 2013 (at 3.5% and 3.9% respectively) is 3.7%. This translates to a projected total database population of 3 031 600. This is 108 167 more claimants than in 2014.

767 out of 3 031 600 patients diagnosed with vascular dementia, translates to 0.03% of the total

claimant population.

Table LD54

Results summary: Vascular Dementia

Year	Diagnosis % Increase/Decrease	% Diagnosis within Population
2008	N/A	0.03%
2009	12.19% decrease	0.02%
2010	8.53% increase	0.02%
2011	9.68% increase	0.02%
2012	0.72% decrease	0.02%
2013	2.46% increase	0.02%
2014	18.97% increase	0.02%
2015	8.27% increase	0.02%

Chart LD54: Disorder Trend: Vascular Dementia

Disorder Trend: Vascular Dementia

525 461 504 558 554 568 701

2008 2009 2010 2011 2012 2013 2014

$R^2 = 0,8473$
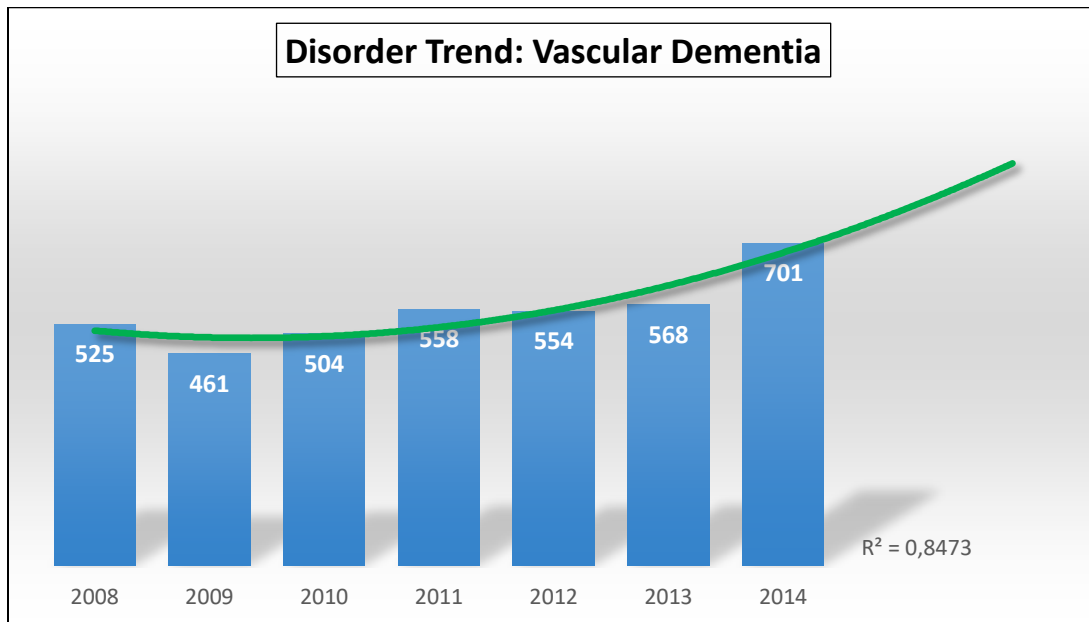
Source: Discovery Health Database

Summary of Table LD54 and Chart LD54. This summary table shows a year-on-year increase or decrease (when compared to the previous year), in the percentage of patients diagnosed with the disorder, with the adjacent column displaying the overall percentage frequency, year on year, within the entire database population. The half year values provided for 2015, were extrapolated to present a full year. The disorder trend chart shows the fluctuating pattern of the frequency increase or decrease of diagnosis over time. This chart includes a single period forecast on the diagnosis frequency going forward. Patient numbers for 2015, were excluded from this chart, because these numbers are representative of half a year (January to June). Including this in the trend chart would have erroneously skewed the trend result.

Factoring in the increase in database population size year on year, the average percentage of patients diagnosed with vascular dementia is 0.02%, within the entire database. The highest frequency of vascular dementia is in 2008, with a percentage of 0.03% occurrence within the entire population and the remaining years have a frequency rate of 0.02% of the total database population.

The diagnosis trend shows patient numbers show a constancy until the end of 2011, where after there is a steep increase in patient numbers across time. The forecast predicts a steep increase in frequency rate in patients diagnosed with vascular dementia going forward.

Chapter 3: Results

Section II: Gender Focus

The aim of the results discussion on gender focus data is to provide the analysis to determine whether a bias exists towards a specific gender, with regards to certain mental illnesses. Should a bias exist, the question then is, to what extent is there a propensity for a specific illness to favour a gender? And is there an increase or decrease in this bias over time? Or perhaps, has there been a shift in bias from male to female (or vice versa), regarding certain mental illnesses?

Source for Gender Focus (GF) charts: Discovery Health Database

Results: Abuse, Dependence and Overdose of Opioids

Table GF[3]1

Gender Focus: Abuse, Dependence and Overdose of Opioids

DIAGNOSIS DATABASE: GENDER FOCUS   **ABUSE, DEPENDENCE**

DIAGNOSIS	*YEAR*	*DATABASE POPULATION (DP)*			
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Abuse, dependence, overdose of opioids	2008	**99**	**154**	1062296	1029887
Abuse, dependence, overdose of opioids	2009	**80**	**151**	1116307	1075822
Abuse, dependence, overdose of opioids	2010	**121**	**204**	1245149	1189071
Abuse, dependence, overdose of opioids	2011	**122**	**215**	1320350	1260693
Abuse, dependence, overdose of opioids	2012	**118**	**266**	1389025	1322569
Abuse, dependence, overdose of opioids	2013	**145**	**257**	1444105	1378311
Abuse, dependence, overdose of opioids	2014	**139**	**233**	1498868	1424565
Abuse, dependence, overdose of opioids	2015	**84**	**153**	1533223	1450880

---

[3] GF = Gender Focus

From Table GF1 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with abuse/dependence/overdose of opioids is 99:154, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with abuse/dependence/overdose of opioid, 2 males are diagnosed with the same disorder.

2009: The ratio of female to male patients diagnosed with abuse/dependence/overdose of opioids is 80:151, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with abuse/dependence/overdose of opioid, 2 males are diagnosed with the same disorder.

2010: The ratio of female to male patients diagnosed with abuse/dependence/overdose of opioids is 121:204, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with abuse/dependence/overdose of opioids, 2 males are diagnosed with the same disorder.

2011: The ratio of female to male patients diagnosed with abuse/dependence/overdose of opioids is 122:219, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with abuse/dependence/overdose of opioids, 2 males are diagnosed with the same disorder.

2012: The ratio of female to male patients diagnosed with abuse/dependence/overdose of opioid is 118:266, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with abuse/dependence/overdose of opioids, 2 males are diagnosed with the same disorder.

2013: The ratio of female to male patients diagnosed with abuse/dependence/overdose of opioids is 145:257, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with abuse/dependence/overdose of opioids, 2 males are diagnosed with the same disorder.

2014: The ratio of female to male patients diagnosed with abuse/dependence/overdose of opioids is 139:233, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with abuse/dependence/overdose of opioids, 2 males are diagnosed with the same disorder.

2015: The ratio of female to male patients diagnosed with abuse/dependence/overdose of opioids is 84:153, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with abuse/dependence/overdose of opioid, 2 males are diagnosed with the same disorder.

The longitudinal data shows that consistently, there are twice as many males, than female patients diagnosed with abuse/dependence/overdose of opioids.

Chart GF1: Gender Focus: Abuse, Dependence and Overdose of Opioids
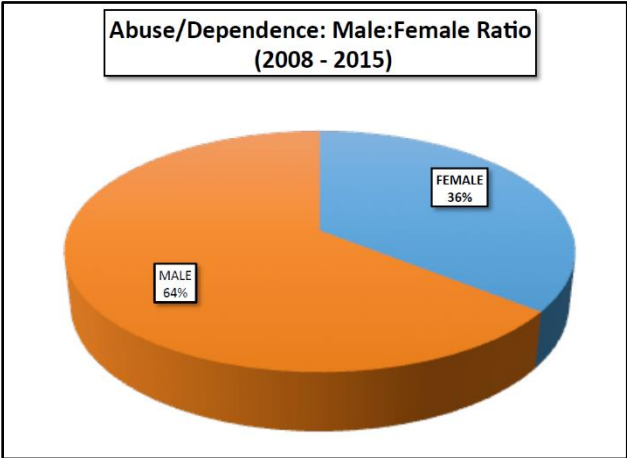
Chart GF1 above, is a summary of gender representation for abuse/dependence/overdose of

opioids between and including 2008 to June 2015. The ratio presented provides an average over

7 years of male to female demographics for this disorder. For abuse/dependence/overdose of

opioid, the ratio is 64:36%, which translates to 64 males will be diagnosed over 36 females for

every 100 patients, or more simply 23 males for every 10 females.

Results: Alcoholism

Table GF2

Gender Focus: Alcoholism

DIAGNOSIS DATABASE: GENDER FOCUS   **ALCOHOLISM**

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Alcoholism	2008	**664**	**1110**	1062296	1029887
Alcoholism	2009	**832**	**1537**	1116307	1075822
Alcoholism	2010	**832**	**1487**	1245149	1189071
Alcoholism	2011	**990**	**1815**	1320350	1260693
Alcoholism	2012	**1063**	**1883**	1389025	1322569
Alcoholism	2013	**1188**	**1848**	1444105	1378311
Alcoholism	2014	**1290**	**2060**	1498868	1424565
Alcoholism	2015	**714**	**1122**	1533223	1450880

From Table GF2 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with alcoholism is 664:1110, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with alcoholism, 2 males are diagnosed with the same disorder.

2009: The ratio of female to male patients diagnosed with alcoholism is 832:1537, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with alcoholism, 2 males are diagnosed with the same disorder.

2010: The ratio of female to male patients diagnosed with alcoholism is 832:1487, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with alcoholism, 2 males are diagnosed with the same disorder.

2011: The ratio of female to male patients diagnosed with alcoholism is 990:1815, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with alcoholism, 2 males are diagnosed with the same disorder.

2012: The ratio of female to male patients diagnosed with alcoholism is 1063:1883, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with alcoholism, 2 males are diagnosed with the same disorder.

2013: The ratio of female to male patients diagnosed with alcoholism is 1188:1848, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with alcoholism, 2 males are diagnosed with the same disorder.

2014: The ratio of female to male patients diagnosed with alcoholism is 1290:2060, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with alcoholism, 2 males are diagnosed with the same disorder.

2015: The ratio of female to male patients diagnosed with alcoholism is 714:1122, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with alcoholism, 2 males are diagnosed with the same disorder.

The longitudinal data shows that consistently, there are twice as many males, than female patients diagnosed with alcoholism.

Chart GF2

Gender Focus: Alcoholism
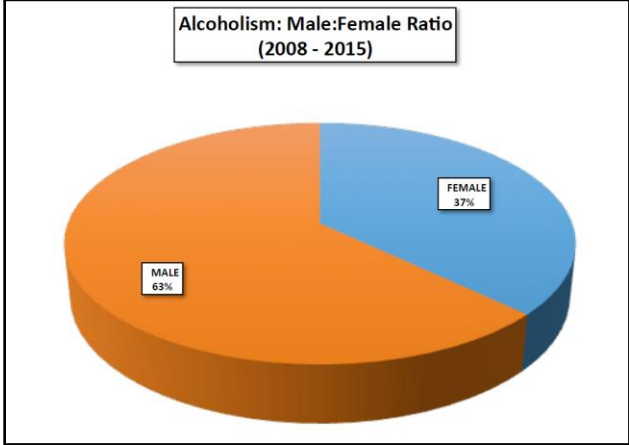
Chart GF2 above, is a summary of gender representation for alcoholism between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For alcoholism, the ratio is 63:37%, which translates to 63 males will be diagnosed over 37 females for every 100 patients, or more simply 17 males for every 10 females.

Results: Anxiety Disorder

Table GF3

Gender Focus: Anxiety Disorder

DIAGNOSIS	*YEAR*	*DATABASE POPULATION (DP)*			
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Anxiety disorder	2008	**32578**	**18151**	1062296	1029887
Anxiety disorder	2009	**31435**	**17920**	1116307	1075822
Anxiety disorder	2010	**32748**	**18785**	1245149	1189071
Anxiety disorder	2011	**34090**	**19647**	1320350	1260693
Anxiety disorder	2012	**36173**	**20644**	1389025	1322569
Anxiety disorder	2013	**37328**	**21582**	1444105	1378311
Anxiety disorder	2014	**39386**	**23323**	1498868	1424565
Anxiety disorder	2015	**23160**	**13020**	1533223	1450880

From Table GF3 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with anxiety disorder is 32 576:18 151, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with anxiety disorder, 2 females are diagnosed with the same disorder.

2009: The ratio of female to male patients diagnosed with anxiety disorder is 31 435:17 920, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with anxiety disorder, 2 females are diagnosed with the same disorder.

2010: The ratio of female to male patients diagnosed with anxiety disorder is 32 748:18 785, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with anxiety disorder, 2 females are diagnosed with the same disorder.

2011: The ratio of female to male patients diagnosed with anxiety disorder is 34 090:19 647, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with anxiety disorder, 2 females are diagnosed with the same disorder.

2012: The ratio of female to male patients diagnosed with anxiety disorder is 36 317:20 644, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with anxiety disorder, 2 females are diagnosed with the same disorder.

2013: The ratio of female to male patients diagnosed with anxiety disorder is 37 326:21 582, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with anxiety disorder, 2 females are diagnosed with the same disorder.

2014: The ratio of female to male patients diagnosed with anxiety disorder is 39 386:23 323, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with anxiety disorder, 2 females are diagnosed with the same disorder.

2015: The ratio of female to male patients diagnosed with anxiety disorder is 23 160:13 020, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with anxiety disorder, 2 females are diagnosed with the same disorder.

The longitudinal data shows that consistently, there are twice as many females, than male patients diagnosed with anxiety disorder.

Chart GF3

Gender Focus: Anxiety Disorder

Chart GF3 above, is a summary of gender representation for anxiety disorder between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For anxiety disorder, the ratio is 36:64%, which translates to 36 males will be diagnosed over 64 females for every 100 patients, or more simply 10 males for every 17 females.

Results: Attention Deficit Hyperactivity Disorder

Table GF4:

Gender Focus: Attention Deficit Hyperactivity Disorder

DIAGNOSIS DATABASE: GENDER FOCUS   **ATTENTION DEFICIT HYPERACTIVITY DISORDER**

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Attention deficit hyperactivity disorder	2008	**19853**	**49451**	1062296	1029887
Attention deficit hyperactivity disorder	2009	**26868**	**65554**	1116307	1075822
Attention deficit hyperactivity disorder	2010	**33756**	**80508**	1245149	1189071
Attention deficit hyperactivity disorder	2011	**41076**	**94827**	1320350	1260693
Attention deficit hyperactivity disorder	2012	**47945**	**109130**	1389025	1322569
Attention deficit hyperactivity disorder	2013	**55978**	**122866**	1444105	1378311
Attention deficit hyperactivity disorder	2014	**62282**	**132436**	1498868	1424565
Attention deficit hyperactivity disorder	2015	**34888**	**72572**	1533223	1450880

From Table GF4 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with attention deficit hyperactivity disorder is 19 853:49 451, which is a ratio of 1:2.5 (rounded off). This means that for every female patient diagnosed with attention deficit hyperactivity disorder, 2.5 males are diagnosed with the same disorder. This translates to two females diagnosed for every five males diagnosed with the disorder.

2009: The ratio of female to male patients diagnosed with attention deficit hyperactivity disorder is 26 868:65 554, which is a ratio of 1:2.4 (rounded off). This means that for every female patient diagnosed with attention deficit hyperactivity disorder, 2.4 males are diagnosed

with the same disorder. This translates to ten females diagnosed for every twenty-four males diagnosed with the disorder.

2010: The ratio of female to male patients diagnosed with attention deficit hyperactivity disorder is 33 756:80 508, which is a ratio of 1:2.4 (rounded off). This means that for every female patient diagnosed with attention deficit hyperactivity disorder, 2.4 males are diagnosed with the same disorder. This translates to ten females diagnosed for every twenty-four males diagnosed with the disorder.

2011: The ratio of female to male patients diagnosed with attention deficit hyperactivity disorder is 41 076:94 827, which is a ratio of 1:2.3 (rounded off). This means that for every female patient diagnosed with attention deficit hyperactivity disorder, 2.3 males are diagnosed with the same disorder. This translates to ten females diagnosed for every twenty-three males diagnosed with the disorder.

2012: The ratio of female to male patients diagnosed with attention deficit hyperactivity disorder is 47 945:109 130, which is a ratio of 1:2.3 (rounded off). This means that for every female patient diagnosed with attention deficit hyperactivity disorder, 2.3 males are diagnosed with the same disorder. This translates to ten females diagnosed for every twenty-three males diagnosed with the disorder.

2013: The ratio of female to male patients diagnosed with attention deficit hyperactivity disorder is 55 978:122 866, which is a ratio of 1:2.2 (rounded off). This means that for every female patient diagnosed with attention deficit hyperactivity disorder, 2.2 males are diagnosed with the same disorder. This translates to five females diagnosed for every eleven males diagnosed with the disorder.

2014: The ratio of female to male patients diagnosed with attention deficit hyperactivity disorder is 62 282:132 436, which is a ratio of 1:2.1 (rounded off). This means that for every female patient diagnosed with attention deficit hyperactivity disorder, 2.1 males are diagnosed with the same disorder. This translates to ten females diagnosed for every twenty-one males diagnosed with the disorder.

2015: The ratio of female to male patients diagnosed with attention deficit hyperactivity disorder is 34 686:72 542, which is a ratio of 1:2.1 (rounded off). This means that for every female patient diagnosed with attention deficit hyperactivity disorder, 2.1 males are diagnosed with the same disorder. This translates to ten females diagnosed for every twenty-one males diagnosed with the disorder.

The longitudinal data shows that consistently, there are more than twice as many males, than female patients diagnosed with attention deficit hyperactivity disorder. Interestingly, there is a steady decrease in the numbers of male patients, relative to female patients from 2008 – 2015. The decrease shows a trend that was approaching a ratio of 1 female for every 3 male patients in 2008, to approaching a ratio of 1 female for every 2 male patients. This translates to a steady increase in the number of female patients diagnosed with attention deficit hyperactivity disorder.

Chart GF4

Gender Focus: Attention Deficit Hyperactivity Disorder

Chart GF4 above, is a summary of gender representation for attention deficit hyperactivity disorder between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For attention deficit hyperactivity disorder, the ratio is 69:31%, which translates to 69 males will be diagnosed over 31 females for every 100 patients, or more simply 22 males for every 10 females.

Results: Behavioural Disorder

Table GF5

Gender Focus: Behavioural Disorder

DIAGNOSIS DATABASE: GENDER FOCUS   BEHAVIOURAL DISORDER

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	MALE	FEMALE	MALE
		TOTAL	TOTAL	TOTAL	TOTAL
Behavioural Disorder	2008	721	511	1062296	1029887
Behavioural Disorder	2009	1047	718	1116307	1075822
Behavioural Disorder	2010	1178	758	1245149	1189071
Behavioural Disorder	2011	1233	793	1320350	1260693
Behavioural Disorder	2012	1454	915	1389025	1322569
Behavioural Disorder	2013	1504	985	1444105	1378311
Behavioural Disorder	2014	1584	1228	1498868	1424565
Behavioural Disorder	2015	934	737	1533223	1450880

From Table GF5 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with behavioural disorder is 721:611, which is a ratio of 1.2:1 (rounded off). This means that for every male patient diagnosed with behavioural disorder, 1.2 females are diagnosed with the same disorder. This translates to six female patients for every five males.

2009: The ratio of female to male patients diagnosed with behavioural disorder is 1 047:718, which is a ratio of 1.5:1 (rounded off). This means that for every male patient diagnosed with behavioural disorder, 1.5 females are diagnosed with the same disorder. This translates to three female patients for every two males.

2010: The ratio of female to male patients diagnosed with behavioural disorder is 1 178:758, which is a ratio of 1.6:1 (rounded off). This means that for every male patient diagnosed with behavioural disorder, 1.6 females are diagnosed with the same disorder. This translates to eight female patients for every five males.

2011: The ratio of female to male patients diagnosed with behavioural disorder is 1 233:793, which is a ratio of 1.6:1 (rounded off). This means that for every male patient diagnosed with behavioural disorder, 1.6 females are diagnosed with the same disorder. This translates to eight female patients for every five males.

2012: The ratio of female to male patients diagnosed with behavioural disorder is 1 454:915, which is a ratio of 1.6:1 (rounded off). This means that for every male patient diagnosed with behavioural disorder, 1.6 females are diagnosed with the same disorder. This translates to eight female patients for every five males.

2013: The ratio of female to male patients diagnosed with behavioural disorder is 1 504:985, which is a ratio of 1.5:1 (rounded off). This means that for every male patient diagnosed with behavioural disorder, 1.5 females are diagnosed with the same disorder. This translates to three female patients for every two males.

2014: The ratio of female to male patients diagnosed with behavioural disorder is 1 584:1 228, which is a ratio of 1.3:1 (rounded off). This means that for every male patient diagnosed with behavioural disorder, 1.3 females are diagnosed with the same disorder. This translates to thirteen female patients for every ten males.

2015: The ratio of female to male patients diagnosed with behavioural disorder is 934:737, which is a ratio of 1.3:1 (rounded off). This means that for every male patient diagnosed with behavioural disorder, 1.3 females are diagnosed with the same disorder. This translates to thirteen female patients for every ten males.

The longitudinal data shows fluctuating ratios of male:female representation between 2008 – 2015, however within that fluctuation, female numbers are always higher than male diagnosis numbers. Consistency is shown from 2010 – 2012, with a ratio of eight females diagnosed with behavioural disorder, for every five males diagnosed.

Chart GF5

Gender Focus: Behavioural Disorder

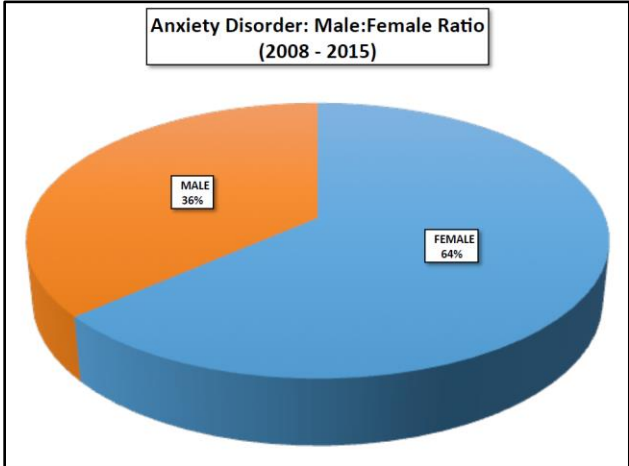Chart GF5 above, is a summary of gender representation for behavioural disorder between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For behavioural disorder, the ratio is 41:59%, which translates to 41 males will be diagnosed over 59 females for every 100 patients, or more simply 10 males for every 14 females.

Results: Bipolar Mood Disorder

Table GF6

Gender Focus: Bipolar Mood Disorder

DIAGNOSIS DATABASE: GENDER FOCUS   *BIPOLAR MOOD DISORDER*

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Bipolar mood disorder	2008	**53023**	**24386**	1062296	1029887
Bipolar mood disorder	2009	**69094**	**31945**	1116307	1075822
Bipolar mood disorder	2010	**90334**	**40705**	1245149	1189071
Bipolar mood disorder	2011	**112560**	**51152**	1320350	1260693
Bipolar mood disorder	2012	**133088**	**60560**	1389025	1322569
Bipolar mood disorder	2013	**150189**	**69021**	1444105	1378311
Bipolar mood disorder	2014	**162166**	**76870**	1498868	1424565
Bipolar mood disorder	2015	**86138**	**41090**	1533223	1450880

From Table GF6 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with bipolar mood disorder is 53 023:24 386, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with bipolar mood disorder, 2 females are diagnosed with the same disorder.

2009: The ratio of female to male patients diagnosed with bipolar mood disorder is 69 094:31 945, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with bipolar mood disorder, 2 females are diagnosed with the same disorder.

2010: The ratio of female to male patients diagnosed with bipolar mood disorder is 90 334:40 705, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with bipolar mood disorder, 2 females are diagnosed with the same disorder.

2011: The ratio of female to male patients diagnosed with bipolar mood disorder is 112 560:51 152, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with bipolar mood disorder, 2 females are diagnosed with the same disorder.

2012: The ratio of female to male patients diagnosed with bipolar mood disorder is 133 086:60 560, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with bipolar mood disorder, 2 females are diagnosed with the same disorder.

2013: The ratio of female to male patients diagnosed with bipolar mood disorder is 150 189:69 021, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with bipolar mood disorder, 2 females are diagnosed with the same disorder.

2014: The ratio of female to male patients diagnosed with bipolar mood disorder is 162 166:76 870, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with bipolar mood disorder, 2 females are diagnosed with the same disorder.

2015: The ratio of female to male patients diagnosed with bipolar mood disorder is 86 138:41 090, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with bipolar mood disorder, 2 females are diagnosed with the same disorder.

The longitudinal data shows that consistently, there are twice as many females, than male patients diagnosed with bipolar mood disorder.

Chart GF6

Gender Focus: Bipolar Mood Disorder
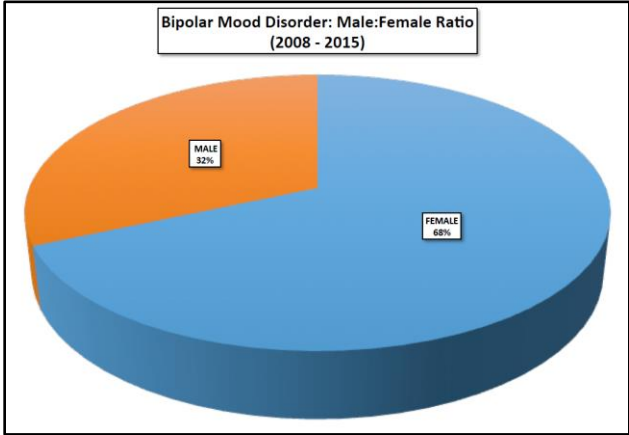
Chart GF6 above, is a summary of gender representation for bipolar mood disorder between

and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male

to female demographics for this disorder. For bipolar mood disorder, the ratio is 32:68%, which

translates to 32 males will be diagnosed over 68 females for every 100 patients, or more simply

10 males for every 21 females.

Results: Delusional Disorder

Table GF7

Gender Focus: Delusional Disorder

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Delusional disorder	2008	**173**	**149**	1062296	1029887
Delusional disorder	2009	**191**	**131**	1116307	1075822
Delusional disorder	2010	**202**	**90**	1245149	1189071
Delusional disorder	2011	**180**	**135**	1320350	1260693
Delusional disorder	2012	**123**	**141**	1389025	1322569
Delusional disorder	2013	**202**	**157**	1444105	1378311
Delusional disorder	2014	**219**	**148**	1498868	1424565
Delusional disorder	2015	**84**	**99**	1533223	1450880

From Table GF7 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with delusional disorder is 173:149, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2009: The ratio of female to male patients diagnosed with delusional disorder is 191:131, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2010: The ratio of female to male patients diagnosed with delusional disorder is 202:90, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with Delusional Disorder, 2 females are diagnosed with the same disorder.

2011: The ratio of female to male patients diagnosed with delusional disorder is 180:135, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2012: The ratio of female to male patients diagnosed with delusional disorder is 123:141, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2013: The ratio of female to male patients diagnosed with delusional disorder is 202:157, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2014: The ratio of female to male patients diagnosed with delusional disorder is 219:148, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with delusional disorder, 2 females are diagnosed with the same disorder.

2015: The ratio of female to male patients diagnosed with Delusional Disorder is 84:99, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

Male and female patients diagnosed with delusional disorder, show equal representation for most years represented in this database. However, in 2010 and 2014, there are twice as many female patients to male patients diagnosed with the disorder.

Chart GF7

Gender Focus: Delusional Disorder
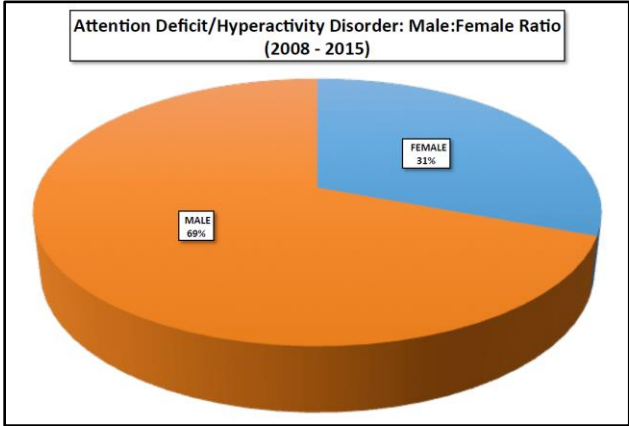

Chart GF7 above, is a summary of gender representation for delusional disorder between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For delusional disorder, the ratio is 43:57%, which translates to 43 males will be diagnosed over 57 females for every 100 patients, or more simply 10 males for every 13 females.

Results: Depression

Table GF8

Gender Focus: Depression

DIAGNOSIS DATABASE: GENDER FOCUS *DEPRESSION*

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Depression	2008	**222705**	**87612**	1062296	1029887
Depression	2009	**309375**	**119734**	1116307	1075822
Depression	2010	**380947**	**146930**	1245149	1189071
Depression	2011	**439807**	**171424**	1320350	1260693
Depression	2012	**490742**	**193448**	1389025	1322569
Depression	2013	**544896**	**217123**	1444105	1378311
Depression	2014	**596181**	**238600**	1498868	1424565
Depression	2015	**323946**	**129880**	1533223	1450880

From Table GF8 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with depression is 222 705:87 612, which is a ratio of 3:1 (rounded off). This means that for every male patient diagnosed with depression, 3 female patients are diagnosed with the same disorder.

2009: The ratio of female to male patients diagnosed with depression is 309 375:119 734, which is a ratio of 3:1 (rounded off). This means that for every male patient diagnosed with depression, 3 female patients are diagnosed with the same disorder.

2010: The ratio of female to male patients diagnosed with depression is 380 947:146 930, which is a ratio of 3:1 (rounded off). This means that for every male patient diagnosed with depression, 3 female patients are diagnosed with the same disorder.

2011: The ratio of female to male patients diagnosed with depression is 439 807:171 424, which is a ratio of 3:1 (rounded off). This means that for every male patient diagnosed with depression, 3 female patients are diagnosed with the same disorder.

2012: The ratio of female to male patients diagnosed with depression is 490 742:193 448, which is a ratio of 3:1 (rounded off). This means that for every male patient diagnosed with depression, 3 female patients are diagnosed with the same disorder.

2013: The ratio of female to male patients diagnosed with depression is 544 896:217 123, which is a ratio of 3:1 (rounded off). This means that for every male patient diagnosed with depression, 3 female patients are diagnosed with the same disorder.

2014: The ratio of female to male patients diagnosed with depression is 596 181:238 600, which is a ratio of 3:1 (rounded off). This means that for every male patient diagnosed with depression, 3 female patients are diagnosed with the same disorder.

2015: The ratio of female to male patients diagnosed with depression is 323 946:129 880, which is a ratio of 3:1 (rounded off). This means that for every male patient diagnosed with depression, 3 female patients are diagnosed with the same disorder.

The longitudinal data shows that consistently, there are three times as many females, than male patients diagnosed with depression.

Chart GF8

Gender Focus: Depression
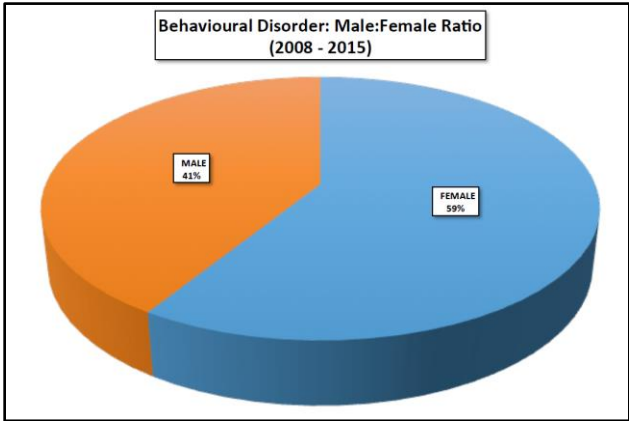

Chart GF8 above, is a summary of gender representation for depression between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For depression, the ratio is 28:72%, which translates to 28 males will be diagnosed over 72 females for every 100 patients, or more simply 10 males for every 26 females.

Results: Developmental and Learning Disorder

Table GF9

Gender Focus: Developmental and Learning Disorder

DIAGNOSIS DATABASE: GENDER FOCUS   *DEVELOPMENTAL AND LEARNING DISORDER*

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Developmental and learning disorder	2008	**18603**	**30945**	1062296	1029887
Developmental and learning disorder	2009	**20032**	**32456**	1116307	1075822
Developmental and learning disorder	2010	**22119**	**35249**	1245149	1189071
Developmental and learning disorder	2011	**24112**	**37685**	1320350	1260693
Developmental and learning disorder	2012	**23784**	**38819**	1389025	1322569
Developmental and learning disorder	2013	**25890**	**41918**	1444105	1378311
Developmental and learning disorder	2014	**28248**	**47321**	1498868	1424565
Developmental and learning disorder	2015	**15514**	**27226**	1533223	1450880

From Table GF9 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with developmental and learning disorder is 18 603:30 945, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with developmental and learning disorder, 2 male patients are diagnosed with the same disorder.

2009: The ratio of female to male patients diagnosed with developmental and learning disorder is 20 032:32 456, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with developmental and learning disorder, 2 male patients are diagnosed with the same disorder.

2010: The ratio of female to male patients diagnosed with developmental and learning disorder is 22 119:35 249, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with developmental and learning disorder, 2 male patients are diagnosed with the same disorder.

2011: The ratio of female to male patients diagnosed with developmental and learning disorder is 24 112:37 685, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with Developmental and Learning Disorder, 2 male patients are diagnosed with the same disorder.

2012: The ratio of female to male patients diagnosed with developmental and learning disorder is 23 784:38 819, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with developmental and learning disorder, 2 male patients are diagnosed with the same disorder.

2013: The ratio of female to male patients diagnosed with developmental and learning disorder is 25 690:41 918, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with developmental and learning disorder, 2 male patients are diagnosed with the same disorder.

2014: The ratio of female to male patients diagnosed with developmental and learning disorder is 28 248:47 321, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with developmental and learning disorder, 2 male patients are diagnosed with the same disorder.

2015: The ratio of female to male patients diagnosed with developmental and learning disorder is 15 514:27 226, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with developmental and learning disorder, 2 male patients are diagnosed with the same disorder.

The longitudinal data shows that consistently, there are twice as many males, than female patients diagnosed with developmental and learning disorder.

Chart GF9

Gender Focus: Developmental and Learning Disorder

Chart GF9 above, is a summary of gender representation for developmental and learning disorder between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For developmental and learning disorder, the ratio is 62:38%, which translates to 62 males will be diagnosed over 38 females for every 100 patients, or more simply 16 males for every 10 females.

Results: Dissociative Disorder

Table GF10

Gender Focus: Dissociative Disorder

DIAGNOSIS DATABASE: GENDER FOCUS   *DISSOCIATIVE DISORDER*

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Dissociative disorder	2008	**179**	**178**	1062296	1029887
Dissociative disorder	2009	**210**	**310**	1116307	1075822
Dissociative disorder	2010	**257**	**219**	1245149	1189071
Dissociative disorder	2011	**277**	**259**	1320350	1260693
Dissociative disorder	2012	**318**	**275**	1389025	1322569
Dissociative disorder	2013	**340**	**287**	1444105	1378311
Dissociative disorder	2014	**322**	**330**	1498868	1424565
Dissociative disorder	2015	**202**	**166**	1533223	1450880

From Table GF10 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with dissociative disorder is 179:178, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2009: The ratio of female to male patients diagnosed with dissociative disorder is 210:310, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2010: The ratio of female to male patients diagnosed with dissociative disorder is 257:219, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2011: The ratio of female to male patients diagnosed with dissociative disorder is 277:259, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2012: The ratio of female to male patients diagnosed with dissociative disorder is 318:275, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2013: The ratio of female to male patients diagnosed with dissociative disorder is 340:287, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2014: The ratio of female to male patients diagnosed with dissociative disorder is 322:330, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2015: The ratio of female to male patients diagnosed with dissociative disorder is 202:166, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

Male and female patients diagnosed with dissociative disorder, show equal representation.

Chart GF10
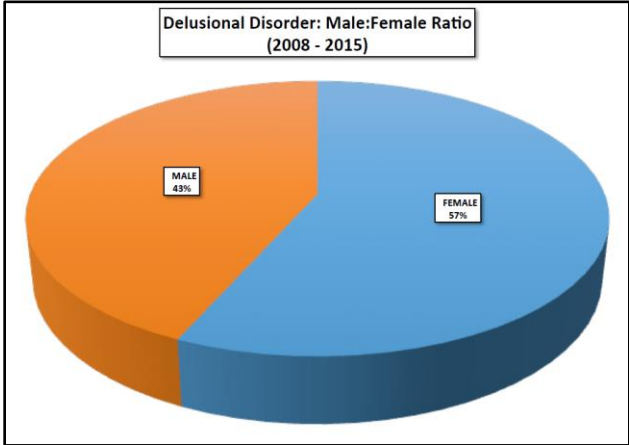
Gender Focus: Dissociative Disorder

Chart GF10 above, is a summary of gender representation for dissociative disorder between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For dissociative disorder, the ratio is 49:51%, which translates to 49 males will be diagnosed over 51 females for every 100 patients, or more simply 1 male for every female.

Results: Eating Disorder

Table GF11

Gender Focus: Eating Disorder

DIAGNOSIS DATABASE: GENDER FOCUS   *EATING DISORDER*

DIAGNOSIS	*YEAR*	DATABASE POPULATION (DP)			
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Eating disorder	2008	**2397**	**462**	1062296	1029887
Eating disorder	2009	**2562**	**503**	1116307	1075822
Eating disorder	2010	**2921**	**622**	1245149	1189071
Eating disorder	2011	**3241**	**830**	1320350	1260693
Eating disorder	2012	**3495**	**878**	1389025	1322569
Eating disorder	2013	**3534**	**856**	1444105	1378311
Eating disorder	2014	**3761**	**871**	1498868	1424565
Eating disorder	2015	**2082**	**499**	1533223	1450880

From Table GF11 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with eating disorder is 2397:462, which is a ratio of 5:1 (rounded off). This means that for every male patient diagnosed with eating disorder, 5 female patients are diagnosed with the same disorder.

2009: The ratio of female to male patients diagnosed with eating disorder is 2562:503, which is a ratio of 5:1 (rounded off). This means that for every male patient diagnosed with eating disorder, 5 female patients are diagnosed with the same disorder.

2010: The ratio of female to male patients diagnosed with eating disorder is 2921:622, which is a ratio of 5:1 (rounded off). This means that for every male patient diagnosed with eating disorder, 5 female patients are diagnosed with the same disorder.

2011: The ratio of female to male patients diagnosed with eating disorder is 3241:830, which is a ratio of 4:1 (rounded off). This means that for every male patient diagnosed with eating disorder, 4 female patients are diagnosed with the same disorder.

2012: The ratio of female to male patients diagnosed with eating disorder is 3495:878, which is a ratio of 4:1 (rounded off). This means that for every male patient diagnosed with eating eisorder, 4 female patients are diagnosed with the same disorder.

2013: The ratio of female to male patients diagnosed with eating disorder is 3534:856, which is a ratio of 4:1 (rounded off). This means that for every male patient diagnosed with eating disorder, 4 female patients are diagnosed with the same disorder.

2014: The ratio of female to male patients diagnosed with eating disorder is 3761:871, which is a ratio of 4:1 (rounded off). This means that for every male patient diagnosed with eating disorder, 4 female patients are diagnosed with the same disorder.

2015: The ratio of female to male patients diagnosed with eating disorder is 2082:499, which is a ratio of 4:1 (rounded off). This means that for every male patient diagnosed with eating disorder, 4 female patients are diagnosed with the same disorder.

The longitudinal data shows that up until the end of 2010, there are five times as many females, than male patients diagnosed with an eating disorder. Thereafter, consistently, there are four times as many females, than male patients. This is indicative of an increase in male patients suffering from an eating disorder, but still, the values are sharply inclined to a female bias for this disorder.

Chart GF11

Gender Focus: Eating Disorder

Eating Disorder: Male:Female Ratio
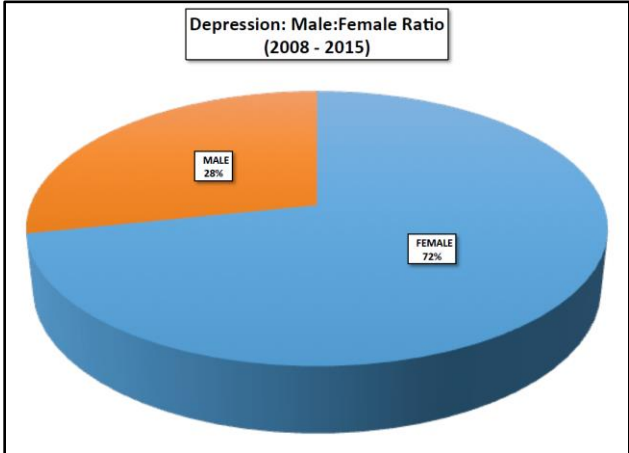2008 - 2015

MALE 19%
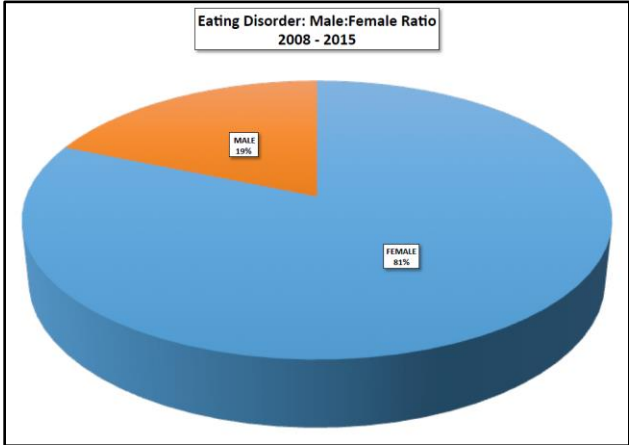
FEMALE 81%

Chart GF11 above, is a summary of gender representation for eating disorder between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For eating disorder, the ratio is 19:81%, which translates to 19 males will be diagnosed over 81 females for every 100 patients, or more simply 10 males for every 43 females.

Results: Impulse Control Disorder

Table GF12

Gender Focus: Impulse Control Disorder

DIAGNOSIS DATABASE: GENDER FOCUS   *IMPULSE CONTROL DISORDER*

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Impulse control disorder	2008	**1220**	**1629**	1062296	1029887
Impulse control disorder	2009	**1434**	**1606**	1116307	1075822
Impulse control disorder	2010	**1451**	**1622**	1245149	1189071
Impulse control disorder	2011	**1322**	**1661**	1320350	1260693
Impulse control disorder	2012	**1445**	**1833**	1389025	1322569
Impulse control disorder	2013	**1567**	**2118**	1444105	1378311
Impulse control disorder	2014	**1573**	**2374**	1498868	1424565
Impulse control disorder	2015	**986**	**1382**	1533223	1450880

From Table GF12 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with impulse control disorder is

1220:1629, which is a ratio of 1:1 (rounded off). This means that male and female patients

show equal representation with this disorder.

2009: The ratio of female to male patients diagnosed with impulse control disorder is

1434:1606, which is a ratio of 1:1 (rounded off). This means that male and female patients

show equal representation with this disorder.

2010: The ratio of female to male patients diagnosed with impulse control disorder is

1451:1622, which is a ratio of 1:1 (rounded off). This means that male and female patients

show equal representation with this disorder.

2011: The ratio of female to male patients diagnosed with impulse control disorder is 1322:1661, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2012: The ratio of female to male patients diagnosed with impulse control disorder is 1445:1833, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2013: The ratio of female to male patients diagnosed with impulse control disorder is 1567:2118, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2014: The ratio of female to male patients diagnosed with impulse control disorder is 1573:2374, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2015: The ratio of female to male patients diagnosed with impulse control disorder is 986:1382, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

Male and female patients diagnosed with impulse control disorder, show equal representation from a diagnosis perspective.
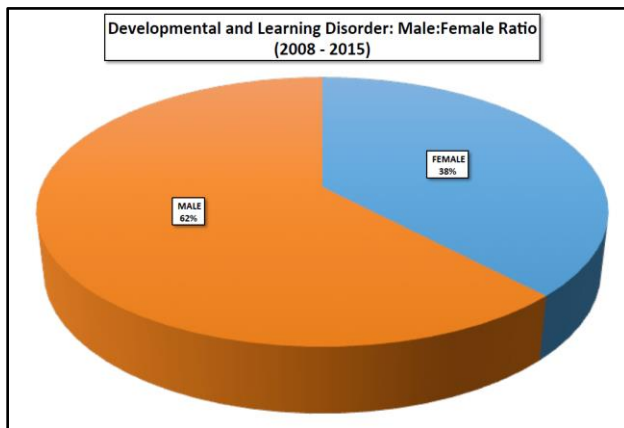
Chart GF12

Gender Focus: Impulse Control Disorder

Chart GF12 above, is a summary of gender representation for impulse control disorder between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For impulse control disorder, the ratio is 56:44%, which translates to 56 males will be diagnosed over 44 females for every 100 patients, or more simply 13 males for every 10 females.

Results: Mental Retardation

Table GF13

Gender Focus: Mental Retardation

DIAGNOSIS DATABASE: GENDER FOCUS   *MENTAL RETARDATION*

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Mental retardation	2008	**221**	**170**	1062296	1029887
Mental retardation	2009	**266**	**228**	1116307	1075822
Mental retardation	2010	**258**	**266**	1245149	1189071
Mental retardation	2011	**308**	**315**	1320350	1260693
Mental retardation	2012	**278**	**318**	1389025	1322569
Mental retardation	2013	**258**	**398**	1444105	1378311
Mental retardation	2014	**288**	**335**	1498868	1424565
Mental retardation	2015	**203**	**218**	1533223	1450880

From Table GF13 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with mental retardation is 221:170, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2009: The ratio of female to male patients diagnosed with mental retardation is 226:228, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2010: The ratio of female to male patients diagnosed with mental retardation is 258:266, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2011: The ratio of female to male patients diagnosed with mental retardation is 308:315, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2012: The ratio of female to male patients diagnosed with mental retardation is 278:318, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2013: The ratio of female to male patients diagnosed with mental retardation is 258:398, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2014: The ratio of female to male patients diagnosed with mental retardation is 288:335, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2015: The ratio of female to male patients diagnosed with mental retardation is 203:218, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

Male and female patients diagnosed with mental retardation, show equal representation.
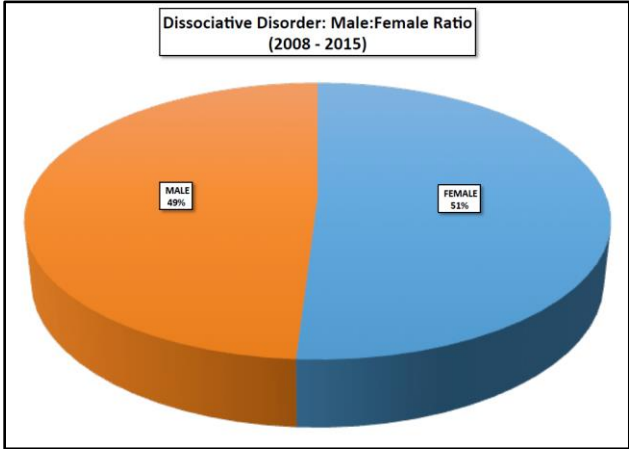
Chart GF13

Gender Focus: Mental Retardation

Chart GF13 above, is a summary of gender representation for mental retardation between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For mental retardation, the ratio is 52:48%, which translates to 52 males will be diagnosed over 48 females for every 100 patients, or more simply 11 males for every 10 females.

Results: Non-specific Neuroses

Table GF14

Gender Focus: Non-specific Neuroses

DIAGNOSIS DATABASE: GENDER FOCUS *NON-SPECIFIC NEUROSES*

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Non-specific neuroses	2008	**35456**	**23699**	1062296	1029887
Non-specific neuroses	2009	**33216**	**22828**	1116307	1075822
Non-specific neuroses	2010	**34953**	**23929**	1245149	1189071
Non-specific neuroses	2011	**35753**	**25535**	1320350	1260693
Non-specific neuroses	2012	**36735**	**26254**	1389025	1322569
Non-specific neuroses	2013	**36900**	**26574**	1444105	1378311
Non-specific neuroses	2014	**37926**	**26761**	1498868	1424565
Non-specific neuroses	2015	**20330**	**14319**	1533223	1450880

From Table GF14 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with non-specific neuroses is 35 456:23 699, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with non-specific neuroses, 2 females are diagnosed with the same disorder.

2009: The ratio of female to male patients diagnosed with non-specific neuroses is 33 216:22 828, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with non-specific neuroses, 2 females are diagnosed with the same disorder.

2010: The ratio of female to male patients diagnosed with non-specific neuroses is 34 953:23 929, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with non-specific neuroses, 2 females are diagnosed with the same disorder.

2011: The ratio of female to male patients diagnosed with non-specific neuroses is 35 753:25 535, which is a ratio of 1.4:1 (rounded off). This means that for every male patient diagnosed with non-specific neuroses, 1.4 females are diagnosed with the same disorder. This translates to five males diagnosed for every seven females diagnosed with the disorder.

2012: The ratio of female to male patients diagnosed with non-specific neuroses is 36 735:26 254, which is a ratio of 1.4:1 (rounded off). This means that for every male patient diagnosed with non-specific neuroses, 1.4 females are diagnosed with the same disorder. This translates to five males diagnosed for every seven females diagnosed with the disorder.

2013: The ratio of female to male patients diagnosed with non-specific neuroses is 36 900:26 574, which is a ratio of 1.4:1 (rounded off). This means that for every male patient diagnosed with non-specific neuroses, 1.4 females are diagnosed with the same disorder. This translates to five males diagnosed for every seven females diagnosed with the disorder.

2014: The ratio of female to male patients diagnosed with non-specific neuroses is 37 926:26 761, which is a ratio of 1.4:1 (rounded off). This means that for every male patient diagnosed with non-specific neuroses, 1.4 females are diagnosed with the same disorder. This translates to five males diagnosed for every seven females diagnosed with the disorder.

2015: The ratio of female to male patients diagnosed with non-specific neuroses is 20 330:14 319an, which is a ratio of 1.4:1 (rounded off). This means that for every male patient diagnosed with non-specific neuroses, 1.4 females are diagnosed with the same disorder. This translates to five males diagnosed for every seven females diagnosed with the disorder.

The longitudinal data shows that from 2008 – 2010, there are more than twice as many females, than male patients diagnosed with non-specific neuroses. Thereafter, the ratio alters, and shows a constant ratio approaching a ratio of 1.4 females for every male patient. This translates to a decrease in the number of male patients diagnosed with Non-specific Neuroses from 2011 onwards.

Chart GF14

Gender Focus: Non-specific Neuroses
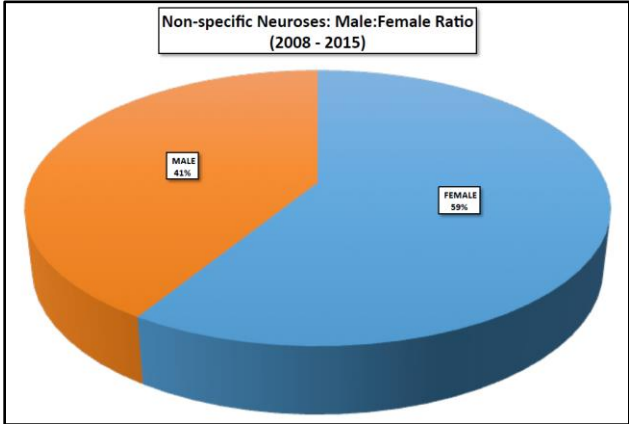
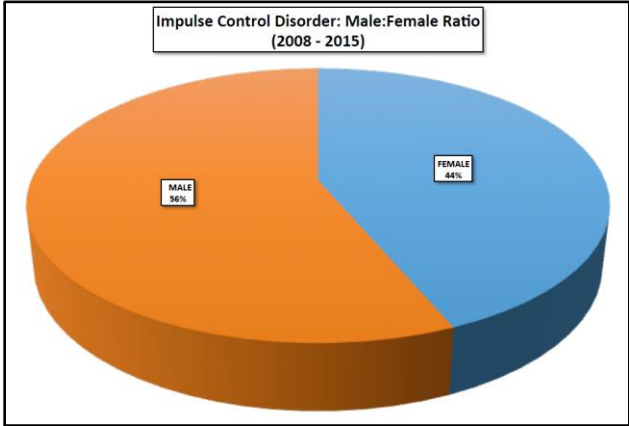Chart GF14 above, is a summary of gender representation for non-specific neuroses between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For non-specific neuroses, the ratio is 41:59%, which translates to 41 males will be diagnosed over 59 females for every 100 patients, or more simply 10 males for every 14 females.

Results: Non-specific Psychoses

Table GF15

Gender Focus: Non-specific Psychoses

DIAGNOSIS DATABASE: GENDER FOCUS   *NON-SPECIFIC PSYCHOSES*

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Non-specific psychoses	2008	**198**	**219**	1062296	1029887
Non-specific psychoses	2009	**237**	**207**	1116307	1075822
Non-specific psychoses	2010	**201**	**194**	1245149	1189071
Non-specific psychoses	2011	**159**	**217**	1320350	1260693
Non-specific psychoses	2012	**195**	**210**	1389025	1322569
Non-specific psychoses	2013	**259**	**241**	1444105	1378311
Non-specific psychoses	2014	**179**	**311**	1498868	1424565
Non-specific psychoses	2015	**127**	**151**	1533223	1450880

From Table GF15 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with non-specific psychoses is 198:219, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2009: The ratio of female to male patients diagnosed with non-specific psychoses is 237:207, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2010: The ratio of female to male patients diagnosed with non-specific psychoses is 201:194, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2011: The ratio of female to male patients diagnosed with non-specific psychoses is 159:217, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2012: The ratio of female to male patients diagnosed with non-specific psychoses is 195:210, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2013: The ratio of female to male patients diagnosed with non-specific psychoses is 259:241, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2014: The ratio of female to male patients diagnosed with non-specific psychoses is 179:311, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2015: The ratio of female to male patients diagnosed with non-specific psychoses is 127:151, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

Male and female patients diagnosed with non-specific psychoses, show equal representation.

Chart GF15

Gender Focus: Non-specific Psychoses

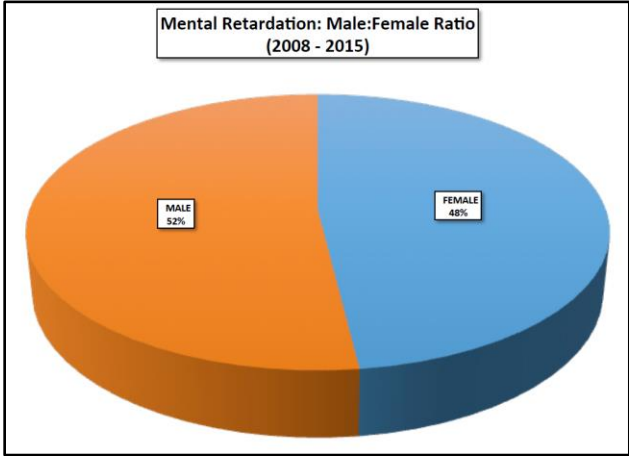Chart GF15 above, is a summary of gender representation for non-specific psychoses between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For non-specific psychoses, the ratio is 53:47%, which translates to 53 males will be diagnosed over 47 females for every 100 patients, or more simply 11 males for every 10 females.

Results: Obsessive Compulsive Disorder

Table GF16

Gender Focus: Obsessive Compulsive Disorder

DIAGNOSIS DATABASE: GENDER FOCUS   *OBSESSIVE COMPULSIVE DISORDER*

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Obsessive compulsive disorder	2008	**2285**	**2195**	1062296	1029887
Obsessive compulsive disorder	2009	**2705**	**2531**	1116307	1075822
Obsessive compulsive disorder	2010	**2775**	**2914**	1245149	1189071
Obsessive compulsive disorder	2011	**3324**	**3415**	1320350	1260693
Obsessive compulsive disorder	2012	**3656**	**3535**	1389025	1322569
Obsessive compulsive disorder	2013	**4125**	**3825**	1444105	1378311
Obsessive compulsive disorder	2014	**4114**	**3868**	1498868	1424565
Obsessive compulsive disorder	2015	**2092**	**1885**	1533223	1450880

From Table GF16 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with obsessive compulsive disorder is 2285:2195, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2009: The ratio of female to male patients diagnosed with obsessive compulsive disorder is 2705:2531, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2010: The ratio of female to male patients diagnosed with obsessive compulsive disorder is 2775:2914, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2011: The ratio of female to male patients diagnosed with obsessive compulsive disorder is 3324:3415, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2012: The ratio of female to male patients diagnosed with obsessive compulsive disorder is 3656:3535, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2013: The ratio of female to male patients diagnosed with obsessive compulsive disorder is 4125:3825, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2014: The ratio of female to male patients diagnosed with obsessive compulsive disorder is 4114:3868, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2015: The ratio of female to male patients diagnosed with obsessive compulsive disorder is 2092:1885, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

Male and female patients diagnosed with obsessive compulsive disorder, show equal representation.

Chart GF16

Gender Focus: Obsessive Compulsive Disorder
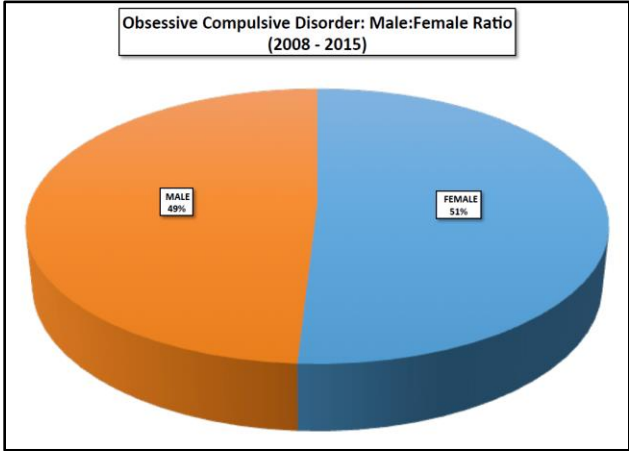
Chart GF16 above, is a summary of gender representation for obsessive compulsive disorder between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For obsessive compulsive disorder, the ratio is 49:51%, which translates to 49 males will be diagnosed over 51 females for every 100 patients, or more simply 1 male for every female.

Results: Parasomnia or Sleep Disorder

Table GF17

Gender Focus: Parasomnia or Sleep Disorder

DIAGNOSIS DATABASE: GENDER FOCUS   *PARASOMNIA OR SLEEP DISORDER*

DIAGNOSIS	*YEAR*	*DATABASE POPULATION (DP)*			
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Parasomnia or sleep disorder	2008	**39815**	**26348**	1062296	1029887
Parasomnia or sleep disorder	2009	**57669**	**36813**	1116307	1075822
Parasomnia or sleep disorder	2010	**69814**	**45839**	1245149	1189071
Parasomnia or sleep disorder	2011	**79466**	**52935**	1320350	1260693
Parasomnia or sleep disorder	2012	**85623**	**58018**	1389025	1322569
Parasomnia or sleep disorder	2013	**92978**	**64618**	1444105	1378311
Parasomnia or sleep disorder	2014	**99807**	**71177**	1498868	1424565
Parasomnia or sleep disorder	2015	**54248**	**39136**	1533223	1450880

From Table GF17 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with parasomnia or sleep disorder is 39 815:26 348, which is a ratio of 1.5:1 (rounded off). This means that for every male patient diagnosed with parasomnia or sleep disorder, 1.5 females are diagnosed with the same disorder. This translates to two male patients for every three female patients diagnosed with the disorder.

2009: The ratio of female to male patients diagnosed with parasomnia or sleep disorder is 57 669:36 813, which is a ratio of 1.6:1 (rounded off). This means that for every male patient diagnosed with parasomnia or sleep disorder, 1.6 females are diagnosed with the same disorder. This translates to five male patients for every eight female patients diagnosed with the disorder.

2010: The ratio of female to male patients diagnosed with parasomnia or sleep disorder is 69 814:45 839, which is a ratio of 1.5:1 (rounded off). This means that for every male patient diagnosed with parasomnia or sleep disorder, 1.5 females are diagnosed with the same disorder. This translates to two male patients for every three female patients diagnosed with the disorder.

2011: The ratio of female to male patients diagnosed with parasomnia or sleep disorder is 79 466:52 935, which is a ratio of 1.5:1 (rounded off). This means that for every male patient diagnosed with parasomnia or sleep disorder, 1.5 females are diagnosed with the same disorder. This translates to two male patients for every three female patients diagnosed with the disorder.

2012: The ratio of female to male patients diagnosed with parasomnia or sleep disorder is 85 623:58 018, which is a ratio of 1.5:1 (rounded off). This means that for every male patient diagnosed with parasomnia or sleep disorder, 1.5 females are diagnosed with the same disorder. This translates to two male patients for every three female patients diagnosed with the disorder.

2013: The ratio of female to male patients diagnosed with parasomnia or sleep disorder is 92 978:64 618, which is a ratio of 1.4:1 (rounded off). This means that for every male patient diagnosed with parasomnia or sleep disorder, 1.4 females are diagnosed with the same disorder. This translates to two male patients for every three female patients diagnosed with the disorder.

2014: The ratio of female to male patients diagnosed with parasomnia or sleep disorder is 99 807:71 177, which is a ratio of 1.4:1 (rounded off). This means that for every male patient diagnosed with parasomnia or sleep disorder, 1.4 females are diagnosed with the same disorder. This translates to five male patients for every seven female patients diagnosed with the disorder.

2015: The ratio of female to male patients diagnosed with parasomnia or sleep disorder is 54 248:39 136, which is a ratio of 1.4:1 (rounded off). This means that for every male patient diagnosed with parasomnia or sleep disorder, 1.4 females are diagnosed with the same disorder. This translates to five male patients for every seven female patients diagnosed with the disorder.

The longitudinal data shows that between 2008 and 2012, there are more female, than male patients diagnosed with parasomnia or sleep disorder, to the order of 3 female patients for every two male patients. Interestingly, the number of female patients diagnosed from 2008 to 2009 increases by 30%. From 2013 to 2015, the trend is 1 male for every 1.4 female patients, which translates to five male patients for every seven female patients. This signifies a decrease in male patient numbers.

Chart GF17

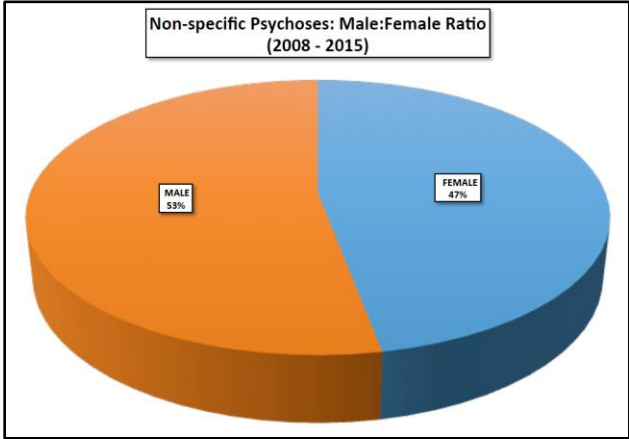*Gender Focus: Parasomnia or Sleep Disorder*
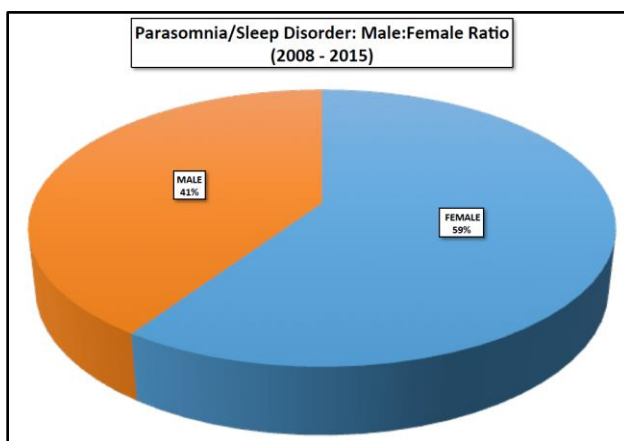
Chart GF17 above, is a summary of gender representation for parasomnia or sleep disorder between and including 2008 to June 2015. The ratio presented provides an average over 7

years, of male to female demographics for this disorder. For parasomnia or sleep disorder, the ratio is 41:59%, which translates to 41 males will be diagnosed over 59 females for every 100 patients, or more simply 10 males for every 14 females.

Results: Personality Disorder

Table GF18

Gender Focus: Personality Disorder

PERSONALITY DISORDER

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Personality disorder	2008	**282**	**259**	1062296	1029887
Personality disorder	2009	**313**	**286**	1116307	1075822
Personality disorder	2010	**366**	**331**	1245149	1189071
Personality disorder	2011	**376**	**382**	1320350	1260693
Personality disorder	2012	**416**	**292**	1389025	1322569
Personality disorder	2013	**366**	**302**	1444105	1378311
Personality disorder	2014	**468**	**309**	1498868	1424565
Personality disorder	2015	**293**	**185**	1533223	1450880

From Table GF18 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with personality disorder is 282:259, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2009: The ratio of female to male patients diagnosed with personality disorder is 313:286, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2010: The ratio of female to male patients diagnosed with personality disorder is 366:331, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2011: The ratio of female to male patients diagnosed with personality disorder is 376:382, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2012: The ratio of female to male patients diagnosed with personality disorder is 416:292, which is a ratio of 1.4:1 (rounded off). This means that for every male patient diagnosed with personality disorder, 1.4 females are diagnosed with the same disorder. This translates to five male patients for every seven female patients diagnosed with the disorder.

2013: The ratio of female to male patients diagnosed with personality disorder is 366:302, which is a ratio of 1.2:1 (rounded off). This means that for every male patient diagnosed with personality disorder, 1.2 females are diagnosed with the same disorder. This translates to five male patients for every six female patients diagnosed with the disorder.

2014: The ratio of female to male patients diagnosed with personality disorder is 468:309, which is a ratio of 1.5:1 (rounded off). This means that for every male patient diagnosed with personality disorder, 1.5 females are diagnosed with the same disorder. This translates to two male patients for every three female patients diagnosed with the disorder.

2015: The ratio of female to male patients diagnosed with personality disorder is 293:185, which is a ratio of 1.6:1 (rounded off). This means that for every male patient diagnosed with

personality disorder, 1.6 females are diagnosed with the same disorder. This translates to five

male patients for every six female patients diagnosed with the disorder.

The longitudinal data shows that between 2008 and 2011, there is equal representation between

male and female patients diagnosed with personality disorder. Thereafter, the trend alters, and

reveals a steady increase in the number of female patients relative to male patients. By 2015 the

ratio is 1.6 to 1, which translates to eight female patients for every five male patients.

Chart GF18

Gender Focus: Personality Disorder
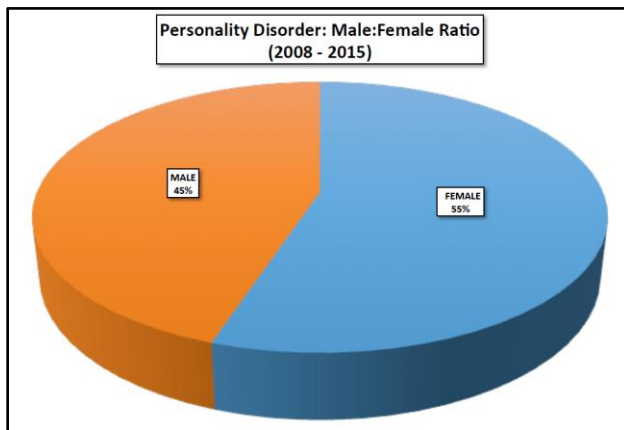
Chart GF18 above, is a summary of gender representation for personality disorder between and

including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to

female demographics for this disorder. For personality disorder, the ratio is 45:55%, which

translates to 45 males will be diagnosed over 55 females for every 100 patients, or more simply

10 males for every 12 females.

Results: Psychosis General Medical Disorder

Table GF19:

Gender Focus: Psychosis General Medical Disorder

PSYCHOSIS GENERAL MEDICAL DISORDER

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Psychosis general medical disorder	2008	**183**	**436**	1062296	1029887
Psychosis general medical disorder	2009	**204**	**451**	1116307	1075822
Psychosis general medical disorder	2010	**157**	**482**	1245149	1189071
Psychosis general medical disorder	2011	**203**	**495**	1320350	1260693
Psychosis general medical disorder	2012	**188**	**539**	1389025	1322569
Psychosis general medical disorder	2013	**206**	**638**	1444105	1378311
Psychosis general medical disorder	2014	**272**	**739**	1498868	1424565
Psychosis general medical disorder	2015	**130**	**429**	1533223	1450880

From Table GF19 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with psychosis due to general medical disorder is 183:436, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with psychosis due to general medical disorder, two males are diagnosed with the same disorder.

2009: The ratio of female to male patients diagnosed with psychosis due to general medical disorder is 204:451, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with psychosis due to general medical disorder, two males are diagnosed with the same disorder.

2010: The ratio of female to male patients diagnosed with psychosis due to general medical disorder is 157:482, which is a ratio of 1:3 (rounded off). This means that for every female patient diagnosed with psychosis due to general medical disorder, three males are diagnosed with the same disorder.

2011: The ratio of female to male patients diagnosed with psychosis due to general medical disorder is 203:495, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with psychosis due to general medical disorder, two males are diagnosed with the same disorder.

2012: The ratio of female to male patients diagnosed with psychosis due to general medical disorder is 188:539, which is a ratio of 1:3 (rounded off). This means that for every female patient diagnosed with psychosis due to general medical disorder, three males are diagnosed with the same disorder.

2013: The ratio of female to male patients diagnosed with psychosis due to general medical disorder is 206:638, which is a ratio of 1:3 (rounded off). This means that for every female patient diagnosed with psychosis due to general medical disorder, three males are diagnosed with the same disorder.

2014: The ratio of female to male patients diagnosed with psychosis due to general medical disorder is 272:739, which is a ratio of 1:3 (rounded off). This means that for every female patient diagnosed with psychosis due to general medical disorder, three males are diagnosed with the same disorder.

2015: The ratio of female to male patients diagnosed with psychosis due to general medical disorder is 130:429, which is a ratio of 1:3 (rounded off). This means that for every female patient diagnosed with psychosis due to general medical disorder, three males are diagnosed with the same disorder.

The longitudinal data shows that for five of the eight years reflective of the database, there are three times as many males, than female patients diagnosed with psychosis due to general medical disorder. In 2008, 2009 and 2011, the ratio discrepancy is lower, and reflects a ratio of two male patients for every female patient. These ratio's present a significantly higher number of male patients with this disorder, than female patients.

Chart GF19

Gender Focus: Psychosis General Medical Disorder

Chart GF19 above, is a summary of gender representation for psychosis due to general medical disorder between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For psychosis due to general

medical disorder, the ratio is 73:27%, which translates to 73 males will be diagnosed over 27

females for every 100 patients, or more simply 27 males for every 10 females.

Results: Psycho-Social Disorder of Childhood

Table GF20

Gender Focus: Psycho-Social Disorder of Childhood

DIAGNOSIS DATABASE: GENDER FOCUS   *PSYCHO-SOCIAL DISORDER OF CHILDHOOD*

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Psycho-social disorder of childhood	2008	**3455**	**4401**	1062296	1029887
Psycho-social disorder of childhood	2009	**3779**	**4430**	1116307	1075822
Psycho-social disorder of childhood	2010	**3815**	**4360**	1245149	1189071
Psycho-social disorder of childhood	2011	**3993**	**4656**	1320350	1260693
Psycho-social disorder of childhood	2012	**3798**	**4562**	1389025	1322569
Psycho-social disorder of childhood	2013	**3641**	**4724**	1444105	1378311
Psycho-social disorder of childhood	2014	**3706**	**4455**	1498868	1424565
Psycho-social disorder of childhood	2015	**2272**	**2786**	1533223	1450880

From Table GF20 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with psycho-social disorder of childhood

is 3455:4401, which is a ratio of 1:1.2 (rounded off). This means that for every female patient

diagnosed with psycho-social disorder of childhood, 1.2 males are diagnosed with the same

disorder. This translates to 6 male patients for every 5 female patients.

2009: The ratio of female to male patients diagnosed with psycho-social disorder of childhood

is 3779:4430, which is a ratio of 1:1.2 (rounded off). This means that for every female patient

diagnosed with psycho-social disorder of childhood, 1.2 males are diagnosed with the same disorder. This translates to 6 male patients for every 5 female patients.

2010: The ratio of female to male patients diagnosed with psycho-social disorder of childhood is 3815:4360, which is a ratio of 1:1.2 (rounded off). This means that for every female patient diagnosed with psycho-social disorder of childhood, 1.2 males are diagnosed with the same disorder. This translates to 6 male patients for every 5 female patients.

2011: The ratio of female to male patients diagnosed with psycho-social disorder of childhood is 3993:4656, which is a ratio of 1:1.2 (rounded off). This means that for every female patient diagnosed with psycho-social disorder of childhood, 1.2 males are diagnosed with the same disorder. This translates to 6 male patients for every 5 female patients.

2012: The ratio of female to male patients diagnosed with psycho-social disorder of childhood is 3798:4562, which is a ratio of 1:1.2 (rounded off). This means that for every female patient diagnosed with psycho-social disorder of childhood, 1.2 males are diagnosed with the same disorder. This translates to 6 male patients for every 5 female patients.

2013: The ratio of female to male patients diagnosed with psycho-social disorder of childhood is 3641:4724, which is a ratio of 1:1.2 (rounded off). This means that for every female patient diagnosed with psycho-social disorder of childhood, 1.2 males are diagnosed with the same disorder. This translates to 6 male patients for every 5 female patients.

2014: The ratio of female to male patients diagnosed with psycho-social disorder of childhood is 3706:4455, which is a ratio of 1:1.2 (rounded off). This means that for every female patient

diagnosed with psycho-social disorder of childhood, 1.2 males are diagnosed with the same disorder. This translates to 6 male patients for every 5 female patients.

2015: The ratio of female to male patients diagnosed with psycho-social disorder of childhood is 2272:2786, which is a ratio of 1:1.2 (rounded off). This means that for every female patient diagnosed with psycho-social disorder of childhood, 1.2 males are diagnosed with the same disorder. This translates to 6 male patients for every 5 female patients.

The longitudinal data shows that consistently, there are slightly more male, than female patients diagnosed with psycho-social disorder of childhood. The ratio of 1.2 males for every 1 female patient, translates to a ratio of 6 male patients for every 5 female patients.

Chart GF20

Gender Focus: Psycho-Social Disorder of Childhood
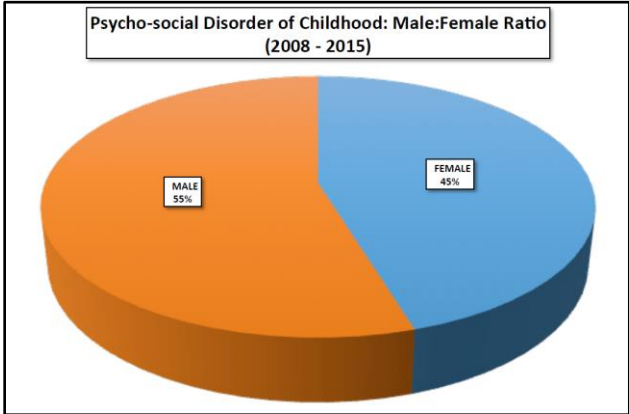
Chart GF20 above, is a summary of gender representation for psycho-social disorder of childhood between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For psycho-social disorder of

childhood, the ratio is 55:45%, which translates to 55 males will be diagnosed over 45 females for every 100 patients, or more simply 12 males for every 10 females.

Results: Schizophrenia

Table GF21:

Gender Focus: Schizophrenia

DIAGNOSIS DATABASE: GENDER FOCUS   *SCHIZOPHRENIA*

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Schizophrenia	2008	**6123**	**5755**	1062296	1029887
Schizophrenia	2009	**6463**	**6180**	1116307	1075822
Schizophrenia	2010	**6817**	**6718**	1245149	1189071
Schizophrenia	2011	**7724**	**7391**	1320350	1260693
Schizophrenia	2012	**8227**	**7719**	1389025	1322569
Schizophrenia	2013	**8419**	**8048**	1444105	1378311
Schizophrenia	2014	**8798**	**8383**	1498868	1424565
Schizophrenia	2015	**4642**	**4341**	1533223	1450880

From Table GF21 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with schizophrenia is 6123:5755, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2009: The ratio of female to male patients diagnosed with schizophrenia is 6463:6180, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2010: The ratio of female to male patients diagnosed with schizophrenia is 6817:6718, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2011: The ratio of female to male patients diagnosed with schizophrenia is 7724:7391, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2012: The ratio of female to male patients diagnosed with schizophrenia is 8227:7719, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2013: The ratio of female to male patients diagnosed with schizophrenia is 8419:8048, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2014: The ratio of female to male patients diagnosed with schizophrenia is 8798:8383, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2015: The ratio of female to male patients diagnosed with schizophrenia is 4642:4341, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

Male and female patients diagnosed with schizophrenia, show equal representation.

Chart GF21

Gender Focus: Schizophrenia
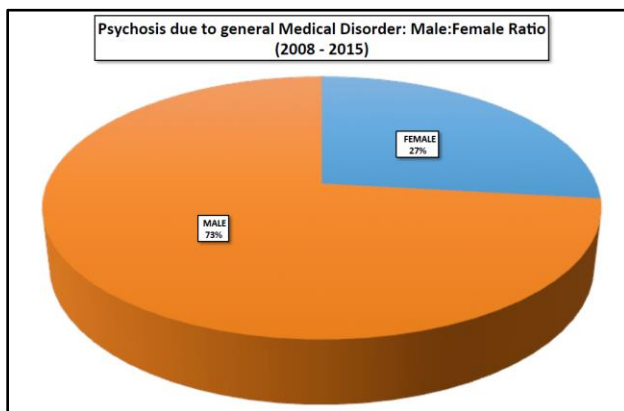

Chart GF21 above, is a summary of gender representation for schizophrenia between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For schizophrenia, the ratio is 49:51%, which translates to 49 males will be diagnosed over 51 females for every 100 patients, or more simply 1 male for every female.

Results: Sexual and Gender Identity Disorder

Table GF22

Gender Focus: Sexual and Gender Identity Disorder

DIAGNOSIS DATABASE: GENDER FOCUS   *SEXUAL AND GENDER IDENTITY DISORDER*

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Sexual and gender identity disorder	2008	**481**	**1815**	1062296	1029887
Sexual and gender identity disorder	2009	**915**	**2583**	1116307	1075822
Sexual and gender identity disorder	2010	**1212**	**3081**	1245149	1189071
Sexual and gender identity disorder	2011	**1345**	**3768**	1320350	1260693
Sexual and gender identity disorder	2012	**1349**	**4113**	1389025	1322569
Sexual and gender identity disorder	2013	**1281**	**4569**	1444105	1378311
Sexual and gender identity disorder	2014	**1353**	**4834**	1498868	1424565
Sexual and gender identity disorder	2015	**729**	**2638**	1533223	1450880

From Table GF22 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with sexual and gender identity disorder is 481:1815, which is a ratio of 1:4 (rounded off). This means that for every female patient diagnosed with sexual and gender identity disorder, four males are diagnosed with the same disorder.

2009: The ratio of female to male patients diagnosed with sexual and gender identity disorder is 915:2583, which is a ratio of 1:3 (rounded off). This means that for every female patient diagnosed with sexual and gender identity disorder, three males are diagnosed with the same disorder.

2010: The ratio of female to male patients diagnosed with sexual and gender identity disorder is 1212:3081, which is a ratio of 1:3 (rounded off). This means that for every female patient diagnosed with sexual and gender identity disorder, three males are diagnosed with the same disorder.

2011: The ratio of female to male patients diagnosed with sexual and gender identity disorder is 1345:3768, which is a ratio of 1:3 (rounded off). This means that for every female patient diagnosed with sexual and gender identity disorder, three males are diagnosed with the same disorder.

2012: The ratio of female to male patients diagnosed with sexual and gender identity disorder is 1349:4113, which is a ratio of 1:3 (rounded off). This means that for every female patient diagnosed with sexual and gender identity disorder, three males are diagnosed with the same disorder.

2013: The ratio of female to male patients diagnosed with sexual and gender identity disorder is 1281:4569, which is a ratio of 1:4 (rounded off). This means that for every female patient diagnosed with sexual and gender identity disorder, four males are diagnosed with the same disorder.

2014: The ratio of female to male patients diagnosed with sexual and gender identity disorder is 1353:4834, which is a ratio of 1:4 (rounded off). This means that for every female patient diagnosed with sexual and gender identity disorder, four males are diagnosed with the same disorder.

2015: The ratio of female to male patients diagnosed with sexual and gender identity disorder is 729:2638, which is a ratio of 1:4 (rounded off). This means that for every female patient diagnosed with sexual and gender identity disorder, four males are diagnosed with the same disorder.

The longitudinal data shows that for four of the eight years reflective of the database, there are four times as many males, than female patients diagnosed with sexual and gender identity disorder. In 2009 - 2012, the ratio discrepancy is lower, and reflects a ratio of three male patients for every female patient. These ratio's present a significantly higher number of male patients with this disorder, than female patients.

Chart GF22

Gender Focus: Sexual and Gender Identity Disorder
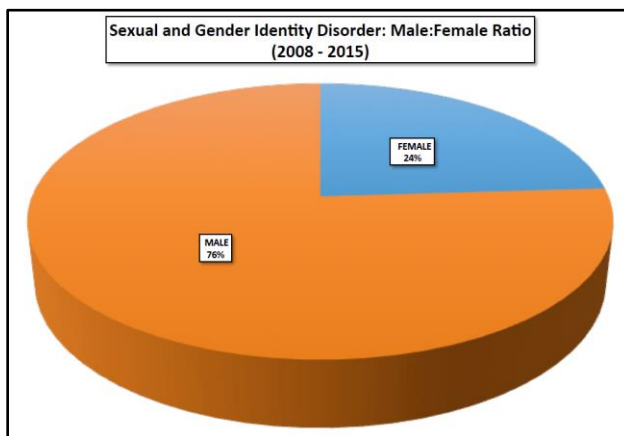
Chart GF22 above, is a summary of gender representation for sexual and gender identity disorder between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For sexual and gender identity

disorder, the ratio is 76:24%, which translates to 76 males will be diagnosed over 24 females

for every 100 patients, or more simply 32 males for every 10 females.

Results: Somatoform Disorder

Table GF23

Gender Focus: Somatoform Disorder

DIAGNOSIS DATABASE: GENDER FOCUS   *SOMATOFORM DISORDER*

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Somatoform disorder	2008	**2432**	**1355**	1062296	1029887
Somatoform disorder	2009	**2187**	**1294**	1116307	1075822
Somatoform disorder	2010	**2429**	**1375**	1245149	1189071
Somatoform disorder	2011	**2671**	**1456**	1320350	1260693
Somatoform disorder	2012	**2756**	**1459**	1389025	1322569
Somatoform disorder	2013	**3005**	**1568**	1444105	1378311
Somatoform disorder	2014	**3128**	**1639**	1498868	1424565
Somatoform disorder	2015	**1694**	**824**	1533223	1450880

From Table GF23 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with somatoform disorder is 2432:1355,

which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with

somatoform disorder, two females are diagnosed with the same disorder.

2009: The ratio of female to male patients diagnosed with somatoform disorder is 2187:1294,

which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with

somatoform disorder, two females are diagnosed with the same disorder.

2010: The ratio of female to male patients diagnosed with somatoform disorder is 2429:1375, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with somatoform disorder, two females are diagnosed with the same disorder.

2011: The ratio of female to male patients diagnosed with somatoform disorder is 2671:1456, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with somatoform disorder, two females are diagnosed with the same disorder.

2012: The ratio of female to male patients diagnosed with somatoform disorder is 2756:1459, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with somatoform disorder, two females are diagnosed with the same disorder.

2013: The ratio of female to male patients diagnosed with somatoform disorder is 3005:1368, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with somatoform disorder, two females are diagnosed with the same disorder.

2014: The ratio of female to male patients diagnosed with somatoform disorder is 3128:1639, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with somatoform disorder, two females are diagnosed with the same disorder.

2015: The ratio of female to male patients diagnosed with somatoform disorder is 1694:824, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with somatoform disorder, two females are diagnosed with the same disorder.

The longitudinal data shows that consistently, there are twice as many females, than male patients diagnosed with somatoform disorder.

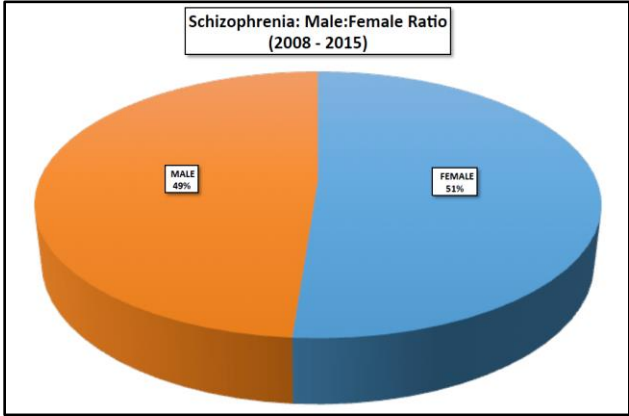**Chart GF23**

Gender Focus: Somatoform Disorder

Chart GF23 above, is a summary of gender representation for somatoform disorder between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For somatoform disorder, the ratio is 35:65%, which translates to 35 males will be diagnosed over 65 females for every 100 patients, or more simply 10 males for every 19 females.

Results: Substance Abuse or Dependence Behaviour

Table GF24

Gender Focus: Substance Abuse or Dependence Behaviour

DIAGNOSIS DATABASE: GENDER FOCUS *SUBSTANCE ABUSE OR DEPENDENCE BEHAVIOUR*

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Substance abuse or dependence behaviour	2008	**991**	**1259**	1062296	1029887
Substance abuse or dependence behaviour	2009	**1053**	**1389**	1116307	1075822
Substance abuse or dependence behaviour	2010	**1024**	**1532**	1245149	1189071
Substance abuse or dependence behaviour	2011	**1320**	**2251**	1320350	1260693
Substance abuse or dependence behaviour	2012	**1900**	**2873**	1389025	1322569
Substance abuse or dependence behaviour	2013	**1646**	**2840**	1444105	1378311
Substance abuse or dependence behaviour	2014	**1686**	**2926**	1498868	1424565
Substance abuse or dependence behaviour	2015	**761**	**1471**	1533223	1450880

From Table GF24 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with substance abuse or dependence behaviour is 991:1259, which is a ratio of 1:1.3 (rounded off). This means that for every female patient diagnosed with substance abuse or dependence behaviour, 1.3 males are diagnosed with the same disorder. This translates to ten females diagnosed with substance abuse or dependence behaviour, for every thirteen males diagnosed.

2009: The ratio of female to male patients diagnosed with substance abuse or dependence behaviour is 1053:1389, which is a ratio of 1:1.3 (rounded off). This means that for every female patient diagnosed with substance abuse or dependence behaviour, 1.3 males are diagnosed with the same disorder. This translates to ten females diagnosed with substance abuse or dependence behaviour, for every thirteen males diagnosed.

2010: The ratio of female to male patients diagnosed with substance abuse or dependence behaviour is 1024:1532, which is a ratio of 1:1.5 (rounded off). This means that for every female patient diagnosed with substance abuse or dependence behaviour, 1.5 males are diagnosed with the same disorder. This translates to two females diagnosed with substance abuse or dependence behaviour, for every three males diagnosed.

2011: The ratio of female to male patients diagnosed with substance abuse or dependence behaviour is 1320:2251, which is a ratio of 1:1.7 (rounded off). This means that for every female patient diagnosed with substance abuse or dependence behaviour, 1.7 males are diagnosed with the same disorder. This translates to ten females diagnosed with substance abuse or dependence behaviour, for every seventeen males diagnosed.

2012: The ratio of female to male patients diagnosed with substance abuse or dependence behaviour is 1900:2873, which is a ratio of 1:1.5 (rounded off). This translates to two females diagnosed with substance abuse or dependence behaviour, for every three males diagnosed.

2013: The ratio of female to male patients diagnosed with substance abuse or dependence behaviour is 1646:2840, which is a ratio of 1:1.7 (rounded off). This means that for every female patient diagnosed with substance abuse or dependence behaviour, 1.7 males are diagnosed with the same disorder. This translates to ten females diagnosed with substance abuse or dependence behaviour, for every seventeen males diagnosed.

2014: The ratio of female to male patients diagnosed with substance abuse or dependence behaviour is 1686:2926, which is a ratio of 1:1.7 (rounded off). This means that for every female patient diagnosed with substance abuse or dependence behaviour, 1.7 males are

diagnosed with the same disorder. This translates to ten females diagnosed with substance abuse or dependence behaviour, for every seventeen males diagnosed.

2015: The ratio of female to male patients diagnosed with substance abuse or dependence behaviour is 761:1471, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with substance abuse or dependence behaviour, 2 males are diagnosed with the same disorder.

The longitudinal data shows that the number of male patients is consistently higher than female patient numbers. From 2010 onwards, the pattern is consistent with incrementally increasing numbers of males, than female patients diagnosed with the disorder.

Chart GF24

Gender Focus: Substance Abuse or Dependence Behaviour
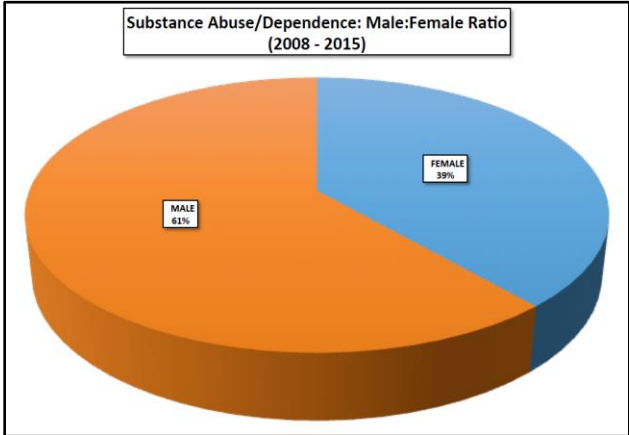
Chart GF24 above, is a summary of gender representation for substance abuse or dependence behaviour between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For substance abuse or

dependence behaviour, the ratio is 61:39%, which translates to 61 males will be diagnosed over 39 females for every 100 patients, or more simply 16 males for every 10 females.

Results: Tic Disorder

Table GF25

Gender Focus: Tic Disorder

DIAGNOSIS DATABASE: GENDER FOCUS   *TIC DISORDER*

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Tic disorder	2008	**58**	**227**	1062296	1029887
Tic disorder	2009	**91**	**284**	1116307	1075822
Tic disorder	2010	**110**	**267**	1245149	1189071
Tic disorder	2011	**147**	**344**	1320350	1260693
Tic disorder	2012	**176**	**389**	1389025	1322569
Tic disorder	2013	**161**	**356**	1444105	1378311
Tic disorder	2014	**168**	**341**	1498868	1424565
Tic disorder	2015	**68**	**190**	1533223	1450880

From Table GF25 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with tic disorder is 58:227, which is a ratio of 1:4 (rounded off). This means that for every female patient diagnosed with tic disorder, four males are diagnosed with the same disorder.

2009: The ratio of female to male patients diagnosed with tic disorder is 91:284, which is a ratio of 1:3 (rounded off). This means that for every female patient diagnosed with tic disorder, three males are diagnosed with the same disorder.

384

2010: The ratio of female to male patients diagnosed with tic disorder is 110:267, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with tic disorder, two males are diagnosed with the same disorder.

2011: The ratio of female to male patients diagnosed with tic disorder is 147:344, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with tic disorder, two males are diagnosed with the same disorder.

2012: The ratio of female to male patients diagnosed with tic disorder is 176:389, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with tic disorder, two males are diagnosed with the same disorder.

2013: The ratio of female to male patients diagnosed with tic disorder is 161:356, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with tic disorder, two males are diagnosed with the same disorder.

2014: The ratio of female to male patients diagnosed with tic disorder is 168:341, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with tic disorder, two males are diagnosed with the same disorder.

2015: The ratio of female to male patients diagnosed with tic disorder is 68:190, which is a ratio of 1:2 (rounded off). This means that for every female patient diagnosed with tic disorder, two males are diagnosed with the same disorder.

The ratio of 1:4 in 2008, shows a significant disproportion in female:male diagnosis numbers, with one female patient for every four males diagnosed with the disorder. In 2009 there is a 36% increase in the number of females diagnosed with tic disorder, lessening the proportion to

1 in 3. Thereafter, the ratio remains at one female for every two males diagnosed with the disorder.

Chart GF25

Gender Focus: Tic Disorder

Tic Disorder: Male:Female Ratio (2008 - 2015)

FEMALE 29%

MALE 71%

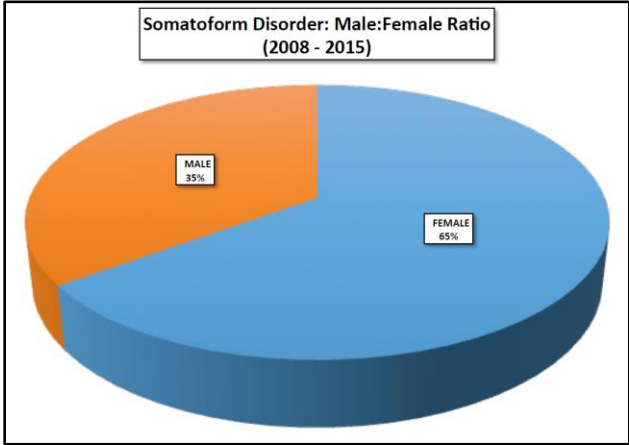Chart GF25 above, is a summary of gender representation for tic disorder between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For tic disorder, the ratio is 71:29%, which translates to 71 males will be diagnosed over 29 females for every 100 patients, or more simply 24 males for every 10 females.

Results: Unconfirmed Psychology Disorder

Table GF26

Gender Focus: Unconfirmed Psychology Disorder

DIAGNOSIS DATABASE: GENDER FOCUS   *UNCONFIRMED PSYCHOLOGY DISORDER*

DIAGNOSIS	*YEAR*			*DATABASE POPULATION (DP)*	
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Unconfirmed psychology disorder	2008	**24511**	**15872**	1062296	1029887
Unconfirmed psychology disorder	2009	**22568**	**14907**	1116307	1075822
Unconfirmed psychology disorder	2010	**24402**	**15935**	1245149	1189071
Unconfirmed psychology disorder	2011	**25083**	**16491**	1320350	1260693
Unconfirmed psychology disorder	2012	**27314**	**17637**	1389025	1322569
Unconfirmed psychology disorder	2013	**29495**	**19157**	1444105	1378311
Unconfirmed psychology disorder	2014	**32195**	**21176**	1498868	1424565
Unconfirmed psychology disorder	2015	**22185**	**14483**	1533223	1450880

From Table GF26 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with unconfirmed psychology disorder is 24 511:15 872, which is a ratio of 1.5:1 (rounded off). This means that for every male patient diagnosed with unconfirmed psychology disorder, 1.5 females are diagnosed with the same disorder. This translates to three female patients for every two male patients.

2009: The ratio of female to male patients diagnosed with unconfirmed psychology disorder is 22 568:14 907, which is a ratio of 1.5:1 (rounded off). This means that for every male patient diagnosed with unconfirmed psychology disorder, 1.5 females are diagnosed with the same disorder. This translates to three female patients for every two male patients.

2010: The ratio of female to male patients diagnosed with unconfirmed psychology disorder is 24 402:15 935, which is a ratio of 1.5:1 (rounded off). This means that for every male patient diagnosed with unconfirmed psychology disorder, 1.5 females are diagnosed with the same disorder. This translates to three female patients for every two male patients.

2011: The ratio of female to male patients diagnosed with unconfirmed psychology disorder is 25 083:16 491, which is a ratio of 1.5:1 (rounded off). This means that for every male patient diagnosed with unconfirmed psychology disorder, 1.5 females are diagnosed with the same disorder. This translates to three female patients for every two male patients.

2012: The ratio of female to male patients diagnosed with unconfirmed psychology disorder is 27 314:17 637, which is a ratio of 1.5:1 (rounded off). This means that for every male patient diagnosed with unconfirmed psychology disorder, 1.5 females are diagnosed with the same disorder. This translates to three female patients for every two male patients.

2013: The ratio of female to male patients diagnosed with unconfirmed psychology disorder is 29 495:19 157, which is a ratio of 1.5:1 (rounded off). This means that for every male patient diagnosed with unconfirmed psychology disorder, 1.5 females are diagnosed with the same disorder. This translates to three female patients for every two male patients.

2014: The ratio of female to male patients diagnosed with unconfirmed psychology disorder is 32 195:21 176, which is a ratio of 1.5:1 (rounded off). This means that for every male patient diagnosed with unconfirmed psychology disorder, 1.5 females are diagnosed with the same disorder. This translates to three female patients for every two male patients.

2015: The ratio of female to male patients diagnosed with unconfirmed psychology disorder is 22 185:14 483, which is a ratio of 1.5:1 (rounded off). This means that for every male patient diagnosed with unconfirmed psychology disorder, 1.5 females are diagnosed with the same disorder. This translates to three female patients for every two male patients.

The ratio of males to females for unconfirmed psychology disorder is consistently 1:1.5, translating to three female patients for every two male patients.

Chart GF26

Gender Focus: Unconfirmed Psychology Disorder
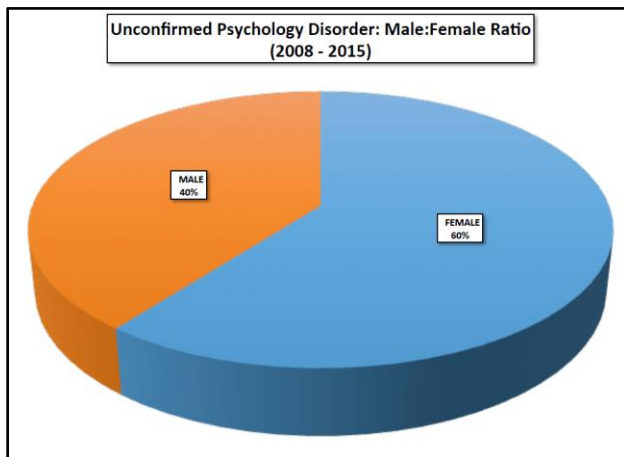
Chart GF26 above, is a summary of gender representation for unconfirmed psychology disorder between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For unconfirmed psychology disorder, the ratio is 40:60%, which translates to 40 males will be diagnosed over 60 females for every 100 patients, or more simply 10 males for every 15 females.

Results: Vascular Dementia

Table GF27

Gender Focus: Vascular Dementia

DIAGNOSIS DATABASE: GENDER FOCUS *VASCULAR DEMENTIA*

DIAGNOSIS	*YEAR*	DATABASE POPULATION (DP)			
		FEMALE	**MALE**	**FEMALE**	**MALE**
		TOTAL	**TOTAL**	**TOTAL**	**TOTAL**
Vascular dementia	2008	**277**	**245**	1062296	1029887
Vascular dementia	2009	**228**	**231**	1116307	1075822
Vascular dementia	2010	**259**	**241**	1245149	1189071
Vascular dementia	2011	**337**	**221**	1320350	1260693
Vascular dementia	2012	**332**	**219**	1389025	1322569
Vascular dementia	2013	**288**	**280**	1444105	1378311
Vascular dementia	2014	**447**	**254**	1498868	1424565
Vascular dementia	2015	**221**	**166**	1533223	1450880

From Table GF27 above, the following is deduced:

2008: The ratio of female to male patients diagnosed with vascular dementia is 227:245, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2009: The ratio of female to male patients diagnosed with vascular dementia is 228:231, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2010: The ratio of female to male patients diagnosed with vascular dementia is 259:241, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2011: The ratio of female to male patients diagnosed with vascular dementia is 337:221, which is a ratio of 1.5:1 (rounded off). This means that for every male patient diagnosed with vascular dementia, 1.5 females are diagnosed with the same disorder. This translates to two male patients for every three females.

2012: The ratio of female to male patients diagnosed with vascular dementia is 337:221, which is a ratio of 1.5:1 (rounded off). This means that for every male patient diagnosed with vascular dementia, 1.5 females are diagnosed with the same disorder. This translates to two male patients for every three females.

2013: The ratio of female to male patients diagnosed with vascular dementia is 288:280, which is a ratio of 1:1 (rounded off). This means that male and female patients show equal representation with this disorder.

2014: The ratio of female to male patients diagnosed with vascular dementia is 447:254, which is a ratio of 2:1 (rounded off). This means that for every male patient diagnosed with vascular dementia, 2 females are diagnosed with the same disorder.

2015: The ratio of female to male patients diagnosed with vascular dementia is 221:166, which is a ratio of 1.3:1 (rounded off). This means that for every male patient diagnosed with vascular dementia, 1.3 females are diagnosed with the same disorder. This translates to ten male patients for every thirteen females.

From 2008 – 2010 the number of males to females diagnosed with vascular dementia, is equal. In 2011 – 2012, there is an increase of female patients over male patients, in the ratio of 1.5:1, which translates to three female patients for every 2 male patients. From 2013 – 2015, the ratios

fluctuate, ranging from equal (2013), to double the number of females over males (2014), to 1.3:1 female to males in 2015, which translates to thirteen female patients for every 10 male patients.

Chart GF27

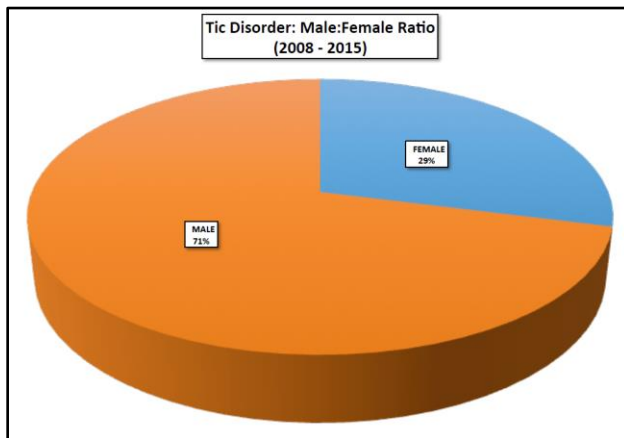*Gender Focus: Vascular Dementia*
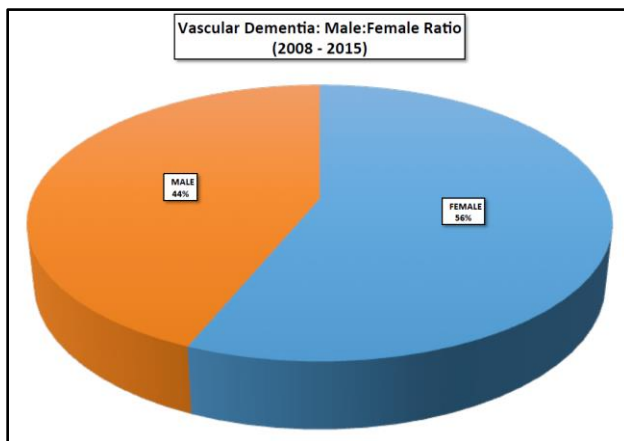
Chart GF27 above, is a summary of gender representation for vascular dementia between and including 2008 to June 2015. The ratio presented provides an average over 7 years, of male to female demographics for this disorder. For vascular dementia, the ratio is 44:56%, which translates to 44 males will be diagnosed over 56 females for every 100 patients, or more simply 10 males for every 13 females.

Chapter 3: Results

Section III: Data analysis: Patient numbers, gender analysis, disorder frequency and comparison.

What follows below is an over-arching graphic analysis of the study database, showing trends in mental disorders, split by gender as well as mode of treatment (inpatient or outpatient). The trends highlight the key differences at gender and treatment levels. An additional objective of the analysis is to establish any correlations that may be apparent at mental disorder, gender and/or treatment level.

Chart A1: *Graphic representation of the study database, showing total number of patients per mental disorder (A = Analysis)*

Total number of patients classified by mental disorder
(2008 to 2014)
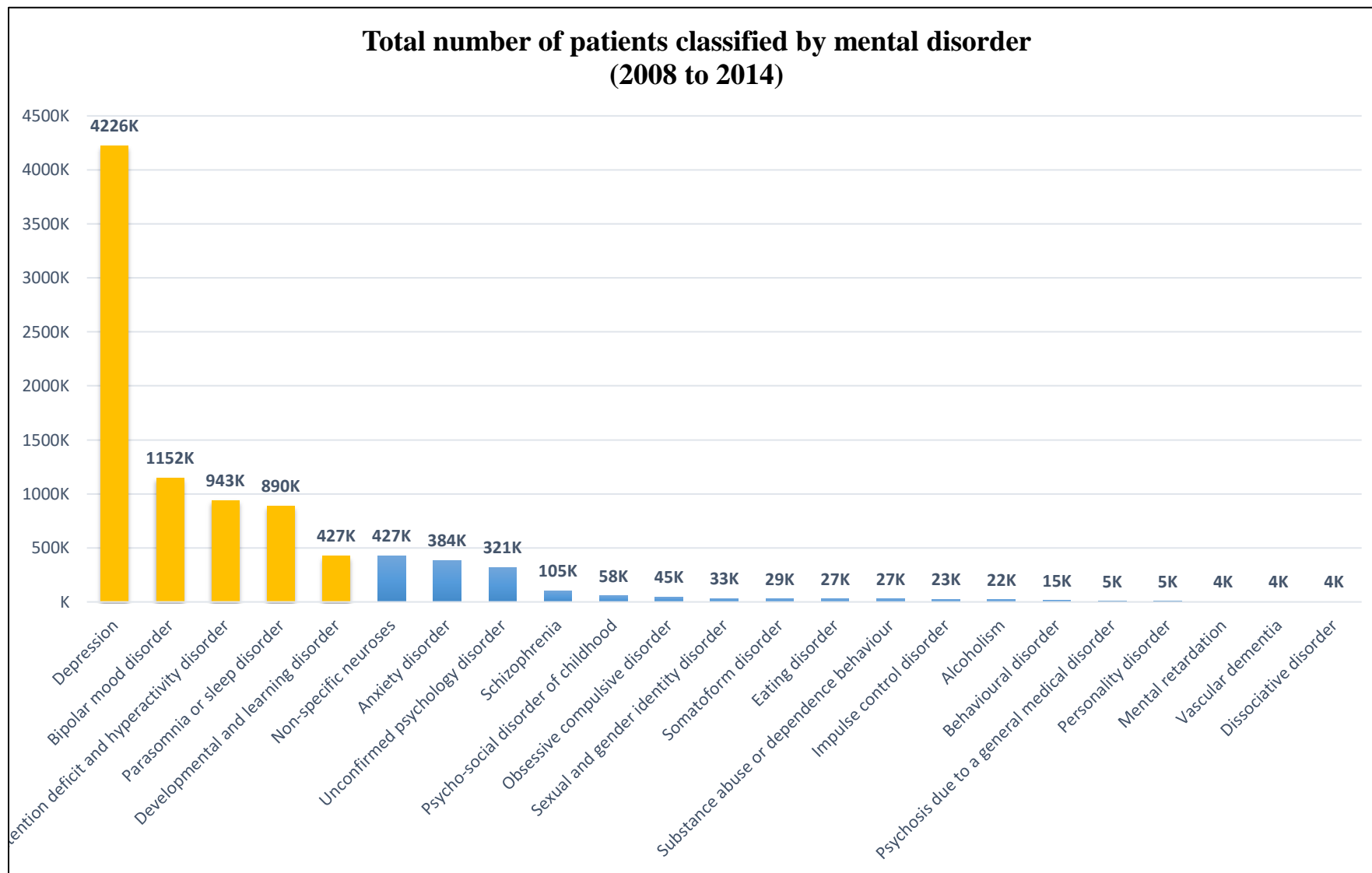
Source: Discovery Health Database

From Chart A1 above, the five mental disorder frequencies, listed below, make up 84% of the volume of mentally ill patients in the study database. These are:

1. Depression: 46%

2. Bipolar mood disorder: 13%

3. Attention deficit and hyperactivity disorder: 10%

4. Parasomnia or sleep disorder: 10%

5. Developmental and learning disorder: 5%

Table A1 below, displays of the frequency of a diagnosis, expressed as a percentage of occurrence across all mental illnesses listed in the study database:

Table A1

Frequency of a diagnosis, expressed as a percentage of occurrence across all mental illnesses

Mental Disorder	Patients as % of Database Population
Depression	23.71%
Bipolar mood disorder	6.42%
Attention deficit and hyperactivity disorder	5.27%
Parasomnia or sleep disorder	5.01%
Developmental and learning disorder	2.44%
Non-specific neuroses	2.47%
Anxiety disorder	2.21%
Unconfirmed psychology disorder	1.84%
Schizophrenia	0.60%
Psycho-social disorder of childhood	0.34%
Obsessive compulsive disorder	0.26%
Sexual and gender identity disorder	0.18%
Somatoform disorder	0.17%
Eating disorder	0.15%
Substance abuse or dependence behaviour	0.15%
Impulse control disorder	0.13%
Alcoholism	0.12%
Behavioural disorder	0.08%
Psychosis due to a general medical disorder	0.03%
Personality disorder	0.03%
Mental retardation	0.02%
Vascular dementia	0.02%
Dissociative disorder	0.02%

Chart A2 displays the total number of patients, per mental disorder, that were treated in hospital between 2008 to 2015. IH denotes in-hospital treatment.

Chart A2: *In-patient mental disorder frequencies*
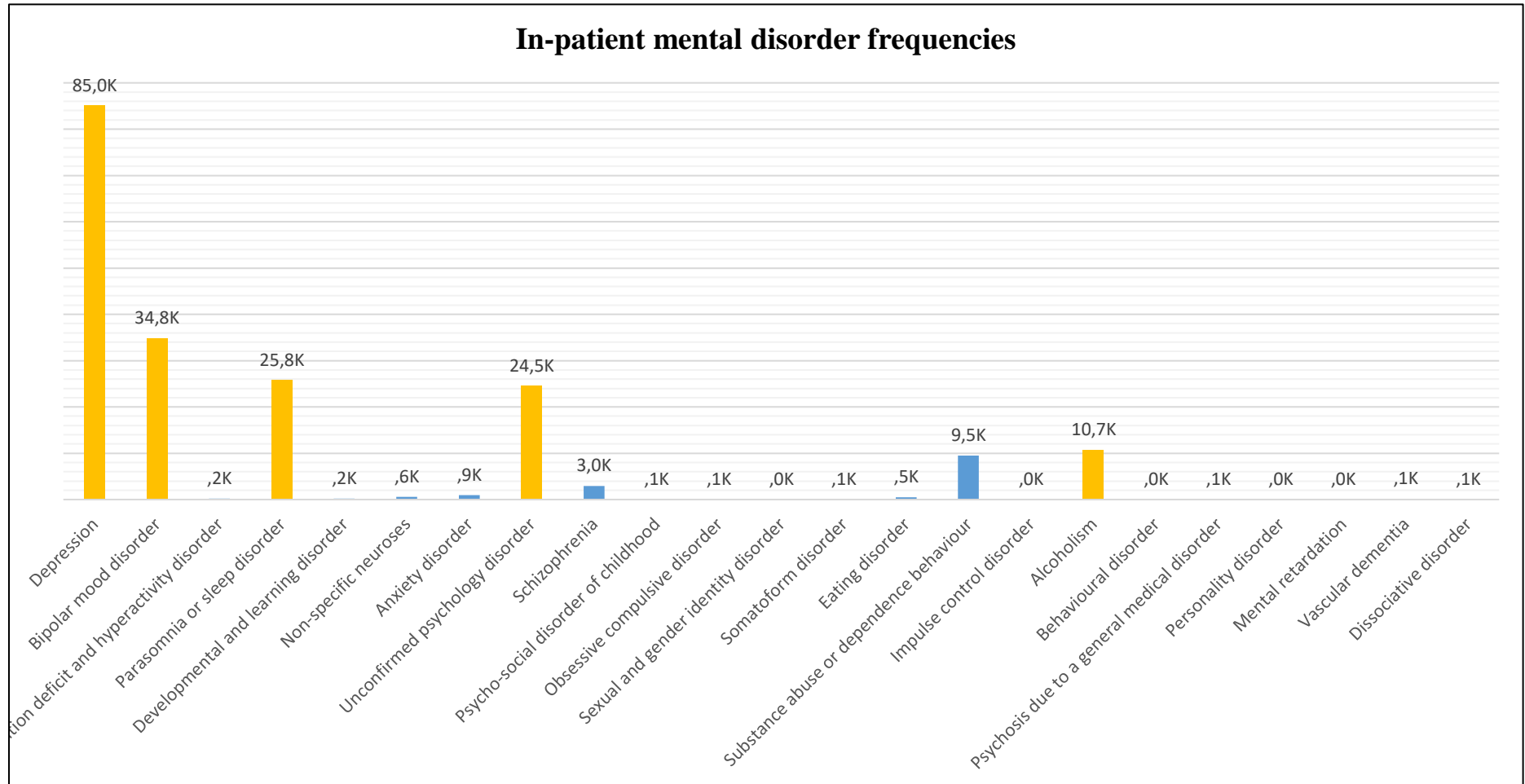
Chart A3 displays the total number of patients, per mental disorder, that were treated as out-patients between 2008 to 2015.

Chart A3: *Out-patient mental disorder frequencies*

Out-patient mental disorder frequencies

Depression: 4148K
Bipolar mood disorder: 1121K
Attention deficit and hyperactivity disorder: 942K
Parasomnia or sleep disorder: 867K
Developmental and learning disorder: 427K
Non-specific neuroses: 426K
Anxiety disorder: 384K
Unconfirmed psychology disorder: 299K
Schizophrenia: 102K
Psycho-social disorder of childhood: 58K
Obsessive compulsive disorder: 45K
Sexual and gender identity disorder: 33K
Somatoform disorder: 29K
Eating disorder: 27K
Substance abuse or dependence behaviour: 18K
Impulse control disorder: 23K
Alcoholism: 12K
Behavioural disorder: 15K
Psychosis due to a general medical disorder: 5K
Personality disorder: 5K
Mental retardation: 4K
Vascular dementia: 4K
Dissociative disorder: 4K

Source: Discovery Health Database

From Chart A2, the top five most common mental disorders that are treated *in hospital* are listed below. The accompanying percentage denotes the frequency of that diagnosis, relative to the other disorders on the database. They are:

1. Depression: 43%

2. Bipolar mood disorder: 18%

3. Parasomnia or sleep disorder: 13%

4. Unconfirmed psychology disorder: 10%

5. Alcoholism: 5%

From Chart A3, the top five most common mental disorders that are treated as an *out-patient* option are listed below. The accompanying percentage denotes the frequency of that diagnosis, relative to the other disorders on the database. They are:

1. Depression: 46%

2. Bipolar mood disorder: 13%

3. Attention deficit and hyperactivity disorder: 11%

4. Parasomnia or sleep disorder: 10%

5. Developmental and learning disorder: 5%

Chart A4: *Female*: *Mental disorder frequencies*

Female: Mental disorder frequencies

3032K

790K

528K

288K

163K 251K 244K 194K 54K 26K 23K 8K 19K 22K 10K 10K 8K 9K 1K 3K 2K 2K 2K

Depression
Bipolar mood disorder
Attention deficit and...
Parasomnia or sleep disorder
Developmental and learning...
Non-specific neuroses
Anxiety disorder
Unconfirmed psychology disorder
Schizophrenia
Psycho-social disorder of childhood
Obsessive compulsive disorder
Sexual and gender identity disorder
Somatoform disorder
Eating disorder
Substance abuse or dependence...
Impulse control disorder
Alcoholism
Behavioural disorder
Psychosis due to a general...
Personality disorder
Vascular dementia
Mental retardation
Dissociative disorder

Source: Discovery Health Database

400

Chart A5: *Male*: *Mental disorder frequencies*

Male: Mental disorder frequencies

1194K
655K
362K 363K
264K
176K 140K 127K
51K 32K 22K 25K 10K 5K 17K 13K 14K 6K 4K 2K 2K 2K 2K

Depression
Bipolar mood disorder
Attention deficit and hyperactivity...
Parasomnia or sleep disorder
Developmental and learning...
Non-specific neuroses
Anxiety disorder
Unconfirmed psychology disorder
Schizophrenia
Psycho-social disorder of childhood
Obsessive compulsive disorder
Sexual and gender identity disorder
Somatoform disorder
Eating disorder
Substance abuse or dependence...
Impulse control disorder
Alcoholism
Behavioural disorder
Psychosis due to a general...
Personality disorder
Vascular dementia
Mental retardation
Dissociative disorder

Source: Discovery Health Database

From Chart A4, the top five most commonly occurring female mental disorder diagnoses. The accompanying percentage denotes the frequency of that diagnosis, relative to the other disorders on the database. They are:

Table A2

Top 5 female mental disorders

Disorder	% Female patients
Depression	53%
Bipolar mood disorder	14%
Attention deficit and hyperactivity disorder	5%
Parasomnia or sleep disorder	9%
Non-specific neuroses	4%

From Chart A5, the top five most commonly occurring male mental disorder diagnoses. The accompanying percentage denotes the frequency of that diagnosis, relative to the other disorders on the database. They are:

Table A3

Top 5 male mental disorders

Disorder	% Male patients
Depression	34%
Bipolar mood disorder	10%
Attention deficit and hyperactivity disorder	19%
Parasomnia or sleep disorder	10%
Developmental and learning disorder	8%

Chart A6, presents an overview of selected mental disorders that display increasing frequency rates year-on-year.

Chart A6: *Mental disorders with increasing frequency rates over time*

Mental disorders showing increased frequency over time

	Depression	Bipolar mood disorder	Attention deficit and hyperactivity disorder	Parasomnia or sleep disorder	Obsessive compulsive disorder	Sexual and gender identity disorder	Eating disorder	Substance abuse or dependence behaviour	Alcoholism	Behavioural disorder
2008	15.36%	3.82%	3.35%	3.24%	0.22%	0.11%	0.14%	0.12%	0.11%	0.06%
2009	20.34%	4.80%	4.30%	4.44%	0.24%	0.16%	0.14%	0.12%	0.13%	0.08%
2010	22.60%	5.65%	4.81%	4.92%	0.24%	0.18%	0.15%	0.12%	0.11%	0.08%
2011	24.54%	6.64%	5.38%	5.29%	0.27%	0.20%	0.16%	0.15%	0.13%	0.08%
2012	26.08%	7.46%	5.90%	5.45%	0.27%	0.21%	0.17%	0.19%	0.13%	0.09%
2013	27.77%	8.06%	6.43%	5.72%	0.29%	0.21%	0.16%	0.18%	0.13%	0.09%
2014	29.30%	8.48%	6.74%	5.98%	0.28%	0.21%	0.16%	0.18%	0.14%	0.10%

Source: Discovery Health Database

From Chart A6, the top four highest ranking mental disorders in terms of dominance, are the same mental disorders depicting the greatest increase of frequency year-on-year. The following four mental disorders almost doubled in terms of frequency (patient numbers) from 2008 to 2014:

1. Depression

2. Bipolar mood disorder

3. Attention deficit and hyperactivity disorder

4. Parasomnia or sleep disorder

Chart A7: *Female: Mental disorders with increasing frequencies over time*

Female: mental disorders with increasing frequencies over time

	Depression	Bipolar mood disorder	Parasomnia or sleep disorder	Attention deficit and hyperactivity disorder	Substance abuse or dependence behaviour	Behavioural disorder	Sexual and gender identity disorder
2008	21.70%	5.16%	3.81%	1.89%	0.10%	0.07%	0.05%
2009	28.84%	6.47%	5.30%	2.46%	0.10%	0.10%	0.08%
2010	31.90%	7.64%	5.77%	2.78%	0.09%	0.10%	0.10%
2011	34.49%	8.93%	6.17%	3.17%	0.11%	0.10%	0.10%
2012	36.54%	10.02%	6.32%	3.52%	0.15%	0.11%	0.10%
2013	38.79%	10.80%	6.56%	3.93%	0.13%	0.11%	0.09%
2014	40.83%	11.23%	6.78%	4.21%	0.13%	0.11%	0.09%

Source: Discovery Health Database

Chart A8: *Male: Mental disorders with increasing frequencies over time*

Male: Mental disorders with increasing frequencies over time

	Depression	Attention deficit and hyperactivity disorder	Parasomnia or sleep disorder	Bipolar mood disorder	Sexual and gender identity disorder	Substance abuse or dependence behaviour	Behavioural disorder
2008	8.81%	4.85%	2.66%	2.44%	0.18%	0.13%	0.06%
2009	11.54%	6.20%	3.56%	3.08%	0.24%	0.14%	0.07%
2010	12.87%	6.93%	4.02%	3.57%	0.27%	0.14%	0.07%
2011	14.10%	7.68%	4.37%	4.24%	0.31%	0.20%	0.06%
2012	15.12%	8.40%	4.55%	4.77%	0.32%	0.24%	0.07%
2013	16.22%	9.04%	4.84%	5.19%	0.34%	0.24%	0.07%
2014	17.19%	9.40%	5.14%	5.58%	0.34%	0.24%	0.09%

■ 2008 ■ 2009 ■ 2010 ■ 2011 ■ 2012 ■ 2013 ■ 2014

Source: Discovery Health Database

Table A4

Table showing degrees of correlation between mental disorders

Diseases	Alcoholism	Anxiety disorder	Attention deficit and hyperactivity disorder	Behavioural disorder	Bipolar mood disorder	Depression	Developmental and learning disorder	Dissociative disorder	Eating disorder	Impulse control disorder	Mental retardation
Alcoholism	1										
Anxiety disorder	0.74	1.00									
Attention deficit and hyperactivity	0.82	0.82	1.00								
Behavioural disorder	0.74	0.70	0.84	1.00							
Bipolar mood disorder	0.79	0.64	0.90	0.84	1.00						
Depression	0.82	0.68	0.93	0.85	0.99	1.00					
Developmental and learning disor	0.64	0.86	0.84	0.66	0.60	0.64	1.00				
Dissociative disorder	0.53	0.49	0.57	0.54	0.47	0.51	0.58	1.00			
Eating disorder	0.76	0.71	0.82	0.65	0.78	0.81	0.57	0.37	1.00		
Impulse control disorder	0.65	0.89	0.80	0.70	0.62	0.65	0.88	0.55	0.56	1.00	
Mental retardation	0.59	0.64	0.78	0.55	0.68	0.72	0.63	0.41	0.71	0.60	1.00
Non-specific neuroses	0.56	0.87	0.65	0.44	0.34	0.40	0.84	0.38	0.56	0.76	0.51
Obsessive compulsive disorder	0.81	0.68	0.93	0.77	0.95	0.97	0.65	0.49	0.84	0.63	0.73
Parasomnia or sleep disorder	0.83	0.70	0.94	0.84	0.98	1.00	0.67	0.54	0.82	0.66	0.74
Personality disorder	0.34	0.32	0.30	0.13	0.15	0.22	0.32	0.16	0.45	0.23	0.32
Psychosis due to a general medica	0.60	0.77	0.71	0.63	0.64	0.66	0.72	0.48	0.52	0.76	0.55
Psycho-social disorder of childhoo	0.32	0.68	0.43	0.20	0.06	0.13	0.74	0.38	0.32	0.64	0.41
Schizophrenia	0.80	0.65	0.91	0.82	0.98	0.98	0.62	0.49	0.81	0.62	0.70
Sexual and gender identity disorde	0.82	0.66	0.91	0.80	0.97	0.98	0.62	0.53	0.81	0.62	0.73
Somatoform disorder	0.68	0.81	0.72	0.61	0.54	0.58	0.72	0.39	0.61	0.76	0.54
Substance abuse or dependence b	0.81	0.72	0.86	0.74	0.88	0.89	0.61	0.44	0.85	0.63	0.67
Unconfirmed psychology disorder	0.73	0.95	0.81	0.75	0.66	0.68	0.83	0.42	0.67	0.87	0.62
Vascular dementia	0.15	0.41	0.29	0.19	0.17	0.18	0.38	0.08	0.20	0.45	0.33

Source: Discovery Health Database

Table A5:

Table showing degrees of correlation between mental disorders.

Diseases	Non-specific neuroses	Obsessive compulsive disorder	Parasomnia or sleep disorder	Personality disorder	Psychosis due to a general medical	Psycho-social disorder of childhood	Schizophrenia	Sexual and gender identity disorder
Non-specific neuroses	1.00							
Obsessive compulsive disorder	0.46	1.00						
Parasomnia or sleep disorder	0.44	0.97	1.00					
Personality disorder	0.36	0.30	0.27	1.00				
Psychosis due to a general medical dis	0.61	0.63	0.67	0.15	1.00			
Psycho-social disorder of childhood	0.89	0.20	0.18	0.36	0.47	1.00		
Schizophrenia	0.38	0.96	0.98	0.23	0.61	0.11	1.00	
Sexual and gender identity disorder	0.40	0.96	0.98	0.25	0.63	0.15	0.97	1.00
Somatoform disorder	0.74	0.57	0.60	0.36	0.60	0.58	0.56	0.57
Substance abuse or dependence beha	0.53	0.89	0.89	0.20	0.64	0.27	0.88	0.90
Unconfirmed psychology disorder	0.82	0.65	0.69	0.23	0.74	0.61	0.65	0.64
Vascular dementia	0.38	0.19	0.19	0.14	0.37	0.35	0.18	0.18

Source: Discovery Health Database

All correlations were found to be significant ($p < 0.05$). The value in each cell is the correlation coefficient. Key to Tables A4 and A5 (Correlation Tables) (Bakan, 1966).

1. Yellow cells (.9-1): Very strong correlation

2. Green cells (0.8-0.9): Strong correlation

3. White cells (<0.8): Mild or no correlation

Chapter 4: Discussion

Chapter 4: Discussion

The discussion chapter begins with detailing the composition of the mental health landscape of the study database. Composition is examined from a gender perspective as well as actual numbers of sufferers against the total database population. What follows is an analysis of the trends observed in mental disorder frequencies, split by gender as well as mode of treatment.

An additional aim of the discussion chapter is to elaborate on correlations apparent in the database.

Thereafter the discussion will centre on the comparison of these findings against the broader South African and even broader global mental health context.

Finally, the question of mental illness incorporated within the confines of a cost-effective equation is discussed in the concluding section.

A summary of the South African mental health landscape

This study is a cross-section of an aspect of South African society, which concerns mental health. The Discovery Medical Aid Scheme database used in this study comprises its full population of members from 2008 to midway through 2015. For this study, the focus was on those members diagnosed with one of the 27 mental disorders listed in the database. The percentage of the database population diagnosed with each mental disorder is significant for this discussion, when looked at against the landscape of the high numbers of sufferers of mental disorders in South Africa. The South African Stress and Health (SASH) Study of 2009 (Herman, Stein, Seedat, Heeringa, Moomal & Williams, 2009; Stein, Williams & Kessler, 2009) presents an analysis of mental disorders in South Africa that provides a solid context of how these high numbers of sufferers are distributed.

In South Africa, approximately 4.5 to 5 million people suffer from a mental disorder (Ngui, Khasakhala, Ndetei & Roberts, 2010). If alcohol and drug abuse are included in the classification of mental disorders, the number of sufferers' spikes to a staggering 15 million people (Robinson & Adinoff, 2016). This means that 16.5% of adults in South Africa suffer from a mental disorder, ranking mental disorders as third in their contribution to the burden of disease, after HIV, AIDS and other infectious diseases (Lund, Stein, Corrigall, Bradshaw, Schneider & Flisher, 2008).

The sections that follow, discuss the findings in the results chapter (Chapter 3) with the aim of providing a composition of the mental health landscape of private (medical aid) patients in the Discovery Health Medical Aid Scheme database. Thereafter the discussion will centre on the comparison of these findings against the broader South African and even broader global mental health context.

Approximately 15% of the South African population belong to a medical aid scheme, with Discovery Health Medical Aid Scheme being the largest open medical aid scheme in South Africa (with 2 819 139 beneficiaries and a current market share of 56.6% of the open market) (Discovery Integrated Annual Report, 2018). The dominance of the medical aid allows for frequencies of disorders within the database to be extrapolated and compared to the broader South African context. This means comparing the mental health statistics in this dissertation (that represent private health care figures), against the South African mental health landscape and even global statistics.

Discussion on Discovery Health Medical Aid Scheme database

The results on gender focus show significant differences at gender level regarding certain mental disorders. When a bias is apparent, the extent to which there is a propensity for a

specific illness to favour a gender is shown. The results also show if there was an increase or decrease in bias over time.

There are significant differences at gender level regarding certain mental disorders:

- Depression is the most prevalent mental disorder in both genders but the prevalence rates of depression among females is almost three times that of male sufferers.
- More males are diagnosed with attention deficit and hyperactivity disorder than females, but interestingly the growth in numbers of females diagnosed with the disorder is higher among females than males.
- The number of female patients diagnosed with bipolar mood disorder is more than double the number of males; however, growth in the number of males diagnosed with the disorder over time is higher in males than females.
- Sexuality and gender identity disorder as well as substance abuse or dependent behaviour is significantly higher among males than females.
- Growth in male patient numbers over for time, for those diagnosed with substance abuse or dependent behaviour is more than double that of female numbers over time.

Analysis of gender specific longitudinal data for each diagnosis reveals seven distinct groups. They are:

1. Twice as many *males* than females for certain disorders.
2. Twice as many *females* than males for certain disorders.
3. Fluctuating ratios across time, but always with *higher female* numbers for certain disorders.
4. Fluctuating ratios across time, but always with *higher male* numbers for certain disorders.

5. Significantly higher *female* numbers for certain disorders.

6. Significantly higher *male* numbers for certain disorders.

7. Equal representation of male and female numbers for certain disorders.

Gender bias, and the extent to which there is a propensity for a specific illness to favour a gender has clear implications for developing or modifying medical policies and services, to ensure that they are gender sensitive. Incorporating gender sensitivity into medical and hospital policy is crucial for adequate provision. Adequate provision begins with the fundamentals of enough beds and accommodation to gender and culturally sensitive practitioners. Studies have shown that, on average, men receive less psychiatric treatment than women (Lee, Kim, Lee, Jeong, Lim, Lee & Rhee, 1998; Kim, 2000), which may be related to gender bias for different mental disorders. For example, women tend to have a higher frequency of mood and/or anxiety disorders that are more likely to respond to psychiatric treatment than men (Rhodes, Goering & Williams, 2002; Hauenstein, Petterson, Merwin, Rovnyak, Heise & Wagner, 2006). However, a study in the United States reported that men had higher rates of hospitalisation than women for alcohol and drug disorders (Mark, Levit, Buck, Coffey & Vandivort-Warren, 2007).

The diagnoses in this study are categorised into the following seven groups:

1. **Twice as many *males* than females for the following disorders:**

   a. Abuse, dependence and/or overdose of opioids

   b. Alcoholism

   c. Attention deficit and hyperactivity disorder

   d. Developmental and learning disorder

2. **Twice as many *females* than males for the following disorders:**

    a. Anxiety disorder

    b. Bipolar mood disorder

    c. Somatoform disorder

3. **Fluctuating ratios across time, but always with *higher female* numbers for the following disorders:**

    a. Behavioural disorder

    b. Eating disorder

    c. Non-specific neuroses

    d. Parasomnia or sleep disorder

    e. Personality disorder

    f. Vascular dementia

4. **Fluctuating ratios across time, but always with *higher male* numbers for the following disorders:**

    a. Psychosis due to general medical disorder

    b. Tic disorder

5. **Significantly higher *female* numbers for the following disorders:**

    a. Depression

    b. Unconfirmed psychology disorder

6. **Significantly higher *male* numbers for the following disorders:**

    a. Sexual and gender identity disorder

    b. Substance abuse or dependence disorder

7. **Equal representation of male and female numbers for the following disorders:**

    a. Delusional disorder

    b. Dissociative disorder

    c. Impulse control disorder

    d. Mental retardation

    e. Non-specific psychoses

    f. Obsessive compulsive disorder

    g. Psycho-social disorder of childhood

    h. Schizophrenia

Discussion around diagnoses per group:

Twice as many *males* than females for the following disorders:

Abuse Dependence and or overdose of opioids

By 2015, the Discovery Health Medical Aid Scheme database listed 414 patients out of a total population of 3 031 600 members diagnosed with abuse, dependence and or overdose of opioids. This translates to 0.014% of the total database population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with abuse/dependence, and/or overdose of opioid is 0.013%, within the entire database. The lowest frequency of abuse/dependence, and/or overdose of opioids is in 2009, with a percentage of 0.011% occurrence within the entire population and the highest frequency is in 2015, with 0.014% of the total database population.

Alcoholism

By 2015, the Discovery Health Medical Aid Scheme database listed 3702 patients out of a total population of 3 031 600 members diagnosed with alcoholism. This translates to 0.122% of the total database population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with alcoholism is 0.107%, within the entire database. The lowest frequency of alcoholism is in 2008, with a percentage of 0.086% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 0.122% of the total database population.

Attention Deficit and Hyperactivity Disorder

By 2015, the Discovery Health Medical Aid Scheme database listed 207 149 patients out of a total population of 3 031 600 members diagnosed with attention deficit hyperactivity disorder. This translates to 6.83% of the total database population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with attention deficit and hyperactivity disorder is 5.44%, within the entire database. The lowest frequency of attention deficit and hyperactivity disorder is in 2008, with a percentage of 3.36% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 6.83% of the total database population.

Developmental and Learning Disorder

By 2015, the Discovery Health Medical Aid Scheme database listed 83 483 patients out of a total population of 3 031 600 members diagnosed with developmental and learning disorder. This translates to 2.75% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with development and learning disorder is 2.47%, within the entire database. The lowest frequency of development and learning disorder is in 2012, with a percentage of 2.33% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 2.75% of the total database population.

Twice as many *females* than males for the following disorders:

Anxiety

By 2015, the Discovery Health Medical Aid Scheme database listed 69 916 patients out of a total population of 3 031 600 members diagnosed with anxiety disorder. This translates to 2.31% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with anxiety disorder is 2.2%, within the entire database. The lowest frequency of anxiety disorder is in 2011, with a percentage of 2.01% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 2.46% of the total database population.

Bipolar Mood disorder

By 2015, the Discovery Health Medical Aid Scheme database listed 256 943 patients out of a total population of 3 031 600 members diagnosed with bipolar mood disorder. This translates to 8.48% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with bipolar mood disorder is 6.49%, within the entire database. The lowest frequency of bipolar mood disorder is in 2008, with a percentage of 3.73% occurrence

within the entire population and the highest frequency is in 2015, with a percentage of 8.48% of the total database population.

Somatoform Disorder

By 2015, the Discovery Health Medical Aid Scheme database listed 4 912 patients out of a total population of 3 031 600 members diagnosed with somatoform disorder. This translates to 0.16% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with somatoform disorder is 0.16%, within the entire database. The highest frequency of somatoform disorder is in 2008, with a percentage of 0.18% occurrence within the entire population and the remaining years have a frequency rate of 0.16% of the total database population.

Fluctuating ratios across time, but always with *higher female* numbers for the following disorders:

Behavioural Disorder

By 2015, the Discovery Health Medical Aid Scheme database listed 3232 patients out of a total population of 3 031 600 members diagnosed with behavioural disorder. This translates to 0.107% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with behavioural disorder is 0.09%, within the entire database. The lowest frequency of behavioural disorder is in 2008, with a percentage of 0.064% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 0.107% of the total database population.

Eating Disorder

By 2015, the Discovery Health Medical Aid Scheme database listed 5008 patients out of a total population of 3 031 600 members diagnosed with eating disorder. This translates to 0.165% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with eating disorder is 0.154%, within the entire database. The lowest frequency of eating disorder is in 2008, with a percentage of 0.139% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 0.165% of the total database population.

Non-specific Neuroses

By 2015, the Discovery Health Medical Aid Scheme database listed 64 978 patients out of a total population of 3 031 600 members diagnosed with non-specific neuroses. This translates to 2.143% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with non-specific neuroses is 2.413%, within the entire database. The lowest frequency of non-specific neuroses is in 2015, with a percentage of 2.143% occurrence within the entire population and the highest frequency is in 2008, with a percentage of 2.87% of the total database population.

Parasomnia or Sleep Disorder

By 2015, the Discovery Health Medical Aid Scheme database listed 163 910 patients out of a total population of 3 031 600 members diagnosed with parasomnia or sleep disorder. This translates to 5.41% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with parasomnia or sleep disorder is 4.93%, within the entire database. The lowest frequency of parasomnia or sleep disorder is in 2008, with a percentage of 3.19% occurrence within the entire population and the highest frequency is in 2014, with a percentage of 5.87% of the total database population.

Personality Disorder

By 2015, the Discovery Health Medical Aid Scheme database listed 907 patients out of a total population of 3 031 600 members diagnosed with personality disorder. This translates to 0.03% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with personality disorder is 0.03%, within the entire database. The lowest frequency of personality disorder is in 2013, with a percentage of 0.03% occurrence within the entire population and the remaining years have a frequency rate of 0.03% of the total database population.

Vascular Dementia

By 2015, the Discovery Health Medical Aid Scheme database listed 767 patients out of a total population of 3 031 600 members diagnosed with vascular dementia. This translates to 0.03% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with vascular dementia is 0.02%, within the entire database. The highest frequency of vascular dementia is in 2008, with a percentage of 0.03% occurrence within the entire population and the remaining years have a frequency rate of 0.02% of the total database population.

Fluctuating ratios across time, but always with *higher male* numbers for the following disorders:

Psychosis due to General Medical Disorder

By 2015, the Discovery Health Medical Aid Scheme database listed 1 078 patients out of a total population of 3 031 600 member diagnosed with psychosis due to a general medical disorder. This translates to 0.04% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with psychosis due to general medical disorder is 0.03%, within the entire database. The highest frequency of psychosis due to general medical disorder is in 2015, with a percentage of 0.04% occurrence within the entire population and the remaining years have a frequency rate of 0.03% of the total database population.

Tic Disorder

By 2015, the Discovery Health Medical Aid Scheme database listed 492 patients out of a total population of 3 031 600 members diagnosed with tic disorder. This translates to 0.02% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with tic disorder is 0.02%, within the entire database. The lowest frequency of tic disorder is in 2008, with a percentage of 0.01% occurrence within the entire population and the remaining years have a frequency rate of 0.02% of the total database population.

Significantly higher *female* numbers for the following disorders:

Depression

By 2015, the Discovery Health Medical Aid Scheme database listed 898 402 patients out of a total population of 3 031 600 members diagnosed with depression. This translates to 29.63% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with depression is 23.91%, within the entire database. The lowest frequency of depression is in 2008, with a percentage of 14.95% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 29.63% of the total database population.

Unconfirmed Psychology Disorder

By 2015, the Discovery Health Medical Aid Scheme database listed 68 623 patients out of a total population of 3 031 600 members diagnosed with unconfirmed psychology disorder. This translates to 2.26% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with unconfirmed psychology disorder is 1.83%, within the entire database. The lowest frequency of unconfirmed psychology disorder is in 2011, with a percentage of 1.64% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 2.26% of the total database population.

Significantly higher *male* numbers for the following disorders:

Sexual and Gender Identity Disorder

By 2015, the Discovery Health Medical Aid Scheme database listed 6 593 patients out of a total population of 3 031 600 members diagnosed with sexual and gender identity disorder. This translates to 0.22% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with sexual and gender identity disorder is 0.19%, within the entire database. The lowest frequency of sexual and gender identity disorder is in 2008, with a percentage of 0.11% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 0.22% of the total database population.

Substance Abuse or Dependence Behaviour

By 2015, the Discovery Health Medical Aid Scheme database listed 4 066 patients out of a total population of 3 031 600 members diagnosed with substance abuse or dependence behaviour. This translates to 0.13% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with substance abuse or dependence behaviour is 0.14%, within the entire database. The lowest frequencies of substance abuse or dependence behaviour are in 2008, 2009 and 2010, with a percentage of 0.11% occurrence within the entire population and the highest frequency is in 2012, with a percentage of 0.18% of the total database population.

Equal representation for male and female numbers for the following disorders:

Delusional Disorder

By 2015, the Discovery Health Medical Aid Scheme database listed 333 patients out of a total population of 3 031 600 members diagnosed with delusional disorder. This translates to 0.011% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with delusional Disorder is 0.013%, within the entire database. The lowest frequency of delusional disorder is in 2012, with a percentage of 0.010% occurrence within the entire population and the highest frequencies are in 2008 and 2009, with a percentage of 0.015% of the total database population.

Dissociative Disorder

By 2015, the Discovery Health Medical Aid Scheme database listed 732 patients out of a total population of 3 031 600 members diagnosed with dissociative disorder. This translates to 0.024% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with dissociative disorder is 0.022%, within the entire database. The lowest frequency of dissociative disorder is in 2008, with a percentage of 0.017% occurrence within the entire population and the highest frequencies are in 2009 and 2015, with a percentage of 0.024% of the total database population.

Impulse Control Disorder

By 2015, the Discovery Health Medical Aid Scheme database listed 4237 patients out of a total population of 3 031 600 members diagnosed with impulse control disorder. This

translates to 0.140% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with impulse control disorder is 0.131%, within the entire database. The lowest frequency of impulse control disorder is in 2011, with a percentage of 0.117% occurrence within the entire population and the highest frequency is in 2009, with a percentage of 0.141% of the total database population.

Mental Retardation

By 2015, the Discovery Health Medical Aid Scheme database listed 855 patients out of a total population of 3 031 600 members diagnosed with mental retardation. This translates to 0.028% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with mental retardation is 0.023%, within the entire database. The lowest frequency of mental retardation is in 2008, with a percentage of 0.019% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 0.028% of the total database population.

Non-specific Psychoses

By 2015, the Discovery Health Medical Aid Scheme database listed 540 patients out of a total population of 3 031 600 members diagnosed with non-specific psychoses. This translates to 0.018% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with non-specific psychoses is 0.018%, within the entire database. The lowest frequencies of non-specific psychoses are in 2011 and 2012, with a percentage of

0.015% occurrence within the entire population and the highest frequencies are in 2008 and 2009, with a percentage of 0.021% of the total database population.

Obsessive Compulsive Disorder

By 2015, the Discovery Health Medical Aid Scheme database listed 7700 patients out of a total of 3 031 600 members diagnosed with obsessive compulsive disorder. This translates to 0.254% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with obsessive compulsive disorder is 0.018%, within the entire database. The lowest frequencies of obsessive-compulsive disorder are in 2011 and 2012, with a percentage of 0.015% occurrence within the entire population and the highest frequencies are in 2008 and 2009, with a percentage of 0.021% of the total database population.

Psycho-social Disorder of Childhood

By 2015, the Discovery Health Medical aid scheme database listed 9 386 patients out of a total population of 3 031 600 members diagnosed with psycho-social disorder of childhood. This translates to 0.31% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with psycho-social disorder of childhood is 0.33%, within the entire database. The lowest frequency of psycho-social disorder of childhood is in 2014, with a percentage of 0.28% occurrence within the entire population and the highest frequencies are in 2008 and 2009, with a percentage of 0.38% of the total database population.

Schizophrenia

By 2015, the Discovery Health Medical Aid Scheme database listed 18 057 patients out of a total population of 3 031 600 members diagnosed with schizophrenia. This translates to 0.6% of the total claimant population.

Factoring in the increase in database population size year-on-year, the average percentage of patients diagnosed with schizophrenia is 0.58%, within the entire database. The lowest frequency of schizophrenia is in 2008, with a percentage of 0.57% occurrence within the entire population and the highest frequency is in 2015, with a percentage of 0.6% of the total database population.

Table 2

Prevalence of disorder within database population

Mental disorder	% Prevalence in population
Abuse, dependence/overdose of opioids	0.013
Alcoholism	0.107
Anxiety disorder	2.2
Attention deficit and hyperactivity disorder	5.44
Behavioural disorder	0.09
Bipolar mood disorder	6.49
Delusional disorder	0.013
Depression	23.91
Developmental and learning disorder	2.47
Dissociative disorder	0.022
Eating disorder	0.154
Impulse control disorder	0.131
Mental retardation	0.023
Non-specific neuroses	2.413
Non-specific psychosis	0.018
Obsessive compulsive disorder	0.018
Parasomnia or sleep disorder	4.93
Personality disorder	0.03
Psychosis due to a general medical disorder	0.03
Psycho-social disorder of childhood	0.33
Schizophrenia	0.58
Sexual and gender identity disorder	0.19
Somatoform disorder	0.16
Substance abuse or dependence behaviour	0.14
Tic disorder	0.02
Unconfirmed psychology disorder	1.83
Vascular dementia	0.02

Discussion around data analysis

Section III (in Chapter 3: Results) is a graphic analysis of the study database. Trends are observed in mental disorder frequencies, split by gender as well as mode of treatment (in-patient or out-patient), highlighting key differences at gender and treatment levels. An additional objective of the analysis is to establish any correlations that may be apparent at mental disorder, gender and/or treatment level.

From Chart A1, the five mental disorders, listed below, make up 84% of the volume of mentally ill patients in the study database. These are:

1. Depression: 46%

2. Bipolar mood disorder: 13%

3. Attention deficit and hyperactivity disorder: 10%

4. Parasomnia or sleep disorder: 10%

5. Developmental and learning disorder: 5%

Chart A2 displays the total number of patients, per mental disorder, that were treated in hospital and Chart A3 displays the total number of patients, per mental disorder, that were treated as out-patients. From this analysis, the majority (98%) of patients are treated as out-patients, with in-hospital treatment administered to approximately 2% of patients.

From Chart A2, the top five most common mental disorders that are treated *in hospital* are listed below. The accompanying percentage denotes the frequency of that diagnosis, relative to the other disorders on the database. They are:

1. Depression: 43%

2. Bipolar mood disorder: 18%

3. Parasomnia or sleep disorder: 13%

4. Unconfirmed psychology disorder: 10%

5. Alcoholism: 5%

From Chart A3, the top five most common mental disorders that are treated as an *out-patient* option are listed below. The accompanying percentage denotes the frequency of that diagnosis, relative to the other disorders on the database. They are:

1. Depression: 46%

2. Bipolar mood disorder: 13%

3. Attention deficit and hyperactivity disorder: 11%

4. Parasomnia or sleep disorder: 10%

5. Developmental and learning disorder: 5%

Chart A4 displays the top five most commonly occurring female mental disorder diagnoses. The accompanying percentage denotes the frequency of that diagnosis, relative to the other disorders on the database. They are:

1. Depression: 53%

2. Bipolar mood disorder: 14%

3. Attention deficit and hyperactivity disorder: 5%

4. Parasomnia or sleep disorder: 9%

5. Non-specific neuroses: 4%

Chart A5 displays the top five most commonly occurring male mental disorder diagnoses. The accompanying percentage denotes the frequency of that diagnosis, relative to the other disorders on the database. They are:

1. Depression: 34%

2. Bipolar mood disorder: 10%

3. Attention deficit and hyperactivity disorder: 19%

4. Parasomnia or sleep disorder: 10%

5. Developmental and learning disorder: 8%

Female patients are dominant with 62% of total mental disorder diagnoses with male patients comprise the remaining 38% of patients diagnosed with a mental disorder.

Chart A6, presents an overview of selected mental disorders that show increasing frequency rates year-on-year. What is displayed is the top four highest-ranking mental disorders in terms of dominance. These are the same mental disorders showing the greatest increase in frequency year-on-year. The following four mental disorders almost doubled in frequency (patient numbers) from 2008 to 2014:

1. Depression

2. Bipolar mood disorder

3. Attention deficit and hyperactivity disorder

4. Parasomnia or sleep disorder

Depression is the most prevalent mental illness for both genders but the prevalence rate of depression among female patients is more than double that of male patients: 33% (female) compared to 14% (male).

More than double the number of male patients are diagnosed with attention deficit and hyperactivity disorder compared to female patients, but the increase in frequency of diagnosis is higher in females than males.

More than double the number of females are diagnosed with bipolar mood disorder than males, but growth in the number of male diagnoses is higher than females.

The order of 2nd, 3rd and 4th most prevalent mental disorders along with prevalent and growth in frequency rates are shown below:

Rank	Male			Female		
	Mental disorder	**Growth**	**Prevalence**	**Mental disorder**	**Growth**	**Prevalence**
2	Attention deficit and hyperactivity disorder	94%	7.5%	Bipolar mood disorder	118%	8.6%
3	Parasomnia or sleep disorder	93%	4.2%	Parasomnia or sleep disorder	78%	5.8%
4	Bipolar mood disorder	129%	4.1%	Attention deficit and hyperactivity disorder	123%	3.1%

The four most common mental disorders, in terms of patient numbers and patient number growth rate are listed below. They are:

1. Depression: 88% growth in prevalence from 2008 to 2014.

2. Bipolar mood disorder: 118% growth in prevalence from 2008 to 2014.

3. Attention deficit and hyperactivity disorder: 123% growth in prevalence from 2008 to 2014.

4. Parasomnia or sleep disorder: 78% growth in prevalence from 2008 to 2014.

Analysis shows that there is a significantly high prevalence growth rate in patients diagnosed with sexual and gender identity disorder, substance abuse or dependence behaviour and behavioural disorder. The prevalence of sexual and gender identity disorder in 2014, is approximately double that of its frequency in 2008. The list below shows these mental disorders, that although they contain lower patient numbers, reveal high growth rates. The percentages indicate the rate of growth of patient numbers across time:

1. Substance abuse or dependence behaviour: 30% (2008 to 2014).

2. Behavioural disorder: 56% (2008 to 2014).

3. Sexual and gender identity disorder: 100% (2008 to 2014).

The remaining mental disorders show a constancy in frequency rates, which implies no significant increase in patient numbers. From Chart A6, these diagnoses have remained either constant or fluctuated fractionally across seven years.

Chart A7 (Female: Mental disorders with increasing frequencies over time) shows that mental disorder trends for female patients correspond to overall mental disorder trends. The mental disorders that have the highest numbers of female patients, together with the greatest year-on-year growth rates, are also the mental disorders with the highest growth rates and patient numbers overall (Refer to Chart A6).

Mental disorders showing significant increases in male patient numbers (Chart A8) correspond to female and overall patient numbers, apart from a difference in the order of ranking of the highest four mental illnesses. With female patients, the disorders showing the greatest patient increases across time are:

1. Depression. Then,

2. Bipolar mood disorder. Followed by

3. Parasomnia or sleep disorder. And lastly,

4. Attention deficit and hyperactivity disorder.

With male patients, the disorders showing the greatest patient increases across time are:

1. Depression. Then,

2. Attention deficit and hyperactivity disorder. Followed by

3. Parasomnia or sleep disorder. And lastly

4. Bipolar mood disorder.

The range of correlations depicted in tables A4 and A5 is based on the foundational work of Bakan (1966). All correlations are found to be significant (p<0.05). From Table A4 (p.407) and Table A5 (p.408), a significant correlation exists between *bipolar mood disorder* and the following five mental disorders (listed in descending degree of correlation):

1. Depression: 0.99

2. Parasomnia or sleep disorder: 0.98

3. Schizophrenia: 0.98

4. Sexual and gender identity disorder: 0.97

5. Obsessive compulsive disorder: 0.95

Discussion around correlation between mental illnesses

Table A4 (p.407) and Table A5 (p.408), show degrees of correlation between specific mental illnesses. The correlations that exist are shown either to be a very strong correlation, a strong correlation or a mild to no correlation. The statistical term 'correlation' is translated as (from a psychology perspective) to the probability of a comorbidity existing between mental illnesses. A strong correlation then, points to a high probability for a comorbidity of illnesses manifest in a patient. A mild, to no correlation points to a specific mental illness presenting in isolation. From Tables A4 and A5, the following correlation patterns were revealed:

Very strong correlation

1. Bipolar mood disorder and *Attention deficit and hyperactivity disorder*

2. Depression and *Attention deficit and hyperactivity disorder*

3. Obsessive-compulsive disorder and *Attention deficit and hyperactivity disorder*

4. Parasomnia or sleep disorder and *Attention deficit and hyperactivity disorder*

5. Schizophrenia and *Attention deficit and hyperactivity disorder*

6. Sexual and gender identity disorder and *Attention deficit and hyperactivity disorder*

7. Unconfirmed psychology disorder and *Anxiety*

8. Depression and *Bipolar mood disorder*

9. Obsessive-compulsive disorder and *Bipolar mood disorder*

10. Parasomnia or sleep disorder and *Bipolar mood disorder*

11. Schizophrenia and *Bipolar mood disorder*

12. Sexual and gender identity disorder and *Bipolar mood disorder*

13. Obsessive-compulsive disorder and *Depression*

14. Parasomnia or sleep disorder and *Depression*

15. Schizophrenia and *Depression*

16. Sexual and gender identity disorder and *Depression*

17. Parasomnia or sleep disorder and *Obsessive-compulsive disorder*

18. Schizophrenia and *Obsessive-compulsive disorder*

19. Sexual and gender identity disorder and *Obsessive-compulsive disorder*

20. Schizophrenia and *Parasomnia or sleep disorder*

21. Sexual and gender identity disorder and *Parasomnia or sleep disorder*

22. Sexual and gender identity disorder and *Schizophrenia*

Strong correlation

1. Attention deficit and hyperactivity disorder and *Alcoholism*

2. Depression and *Alcoholism*

3. Obsessive-compulsive disorder and *Alcoholism*

4. Parasomnia or sleep disorder and *Alcoholism*

5. Sexual and gender identity disorder and *Alcoholism*

6. Substance abuse or dependence disorder and *Alcoholism*

7. Attention deficit and hyperactivity disorder and *Anxiety disorder*

8. Developmental and learning disorder and *Anxiety disorder*

9. Impulse control disorder and *Anxiety disorder*

10. Non-specific neuroses and *Anxiety disorder*

11. Somatoform disorder and *Anxiety disorder*

12. Behavioural disorder and *Attention deficit and hyperactivity disorder*

13. Developmental and learning disorder and *Attention deficit and hyperactivity disorder*

14. Eating disorder and *Attention deficit and hyperactivity disorder*

15. Substance abuse or dependence disorder and *Attention deficit and hyperactivity disorder*

16. Unconfirmed psychology disorder and *Attention deficit and hyperactivity disorder*

17. Bipolar mood disorder and *Behavioural disorder*

18. Depression and *Behavioural disorder*

19. Parasomnia or sleep disorder and *Behavioural disorder*

20. Schizophrenia and *Behavioural disorder*

21. Sexual and gender identity disorder and *Behavioural disorder*

22. Substance abuse or dependence disorder and *Bipolar mood disorder*

23. Eating disorder and *Depression*

24. Substance abuse or dependence disorder and *Depression*

25. Impulse control disorder and *Developmental and learning disorder*

26. Non-specific neuroses and *Developmental and learning disorder*

27. Unconfirmed psychology disorder and *Developmental and learning disorder*

28. Obsessive-compulsive disorder and *Eating disorder*

29. Parasomnia or sleep disorder and *Eating disorder*

30. Schizophrenia and *Eating disorder*

31. Sexual and gender identity disorder and *Eating disorder*

32. Substance abuse or dependence disorder and *Eating disorder*

33. Unconfirmed psychology disorder and *Impulse control disorder*

34. Psycho-social disorder of childhood and *Non-specific neuroses*

35. Unconfirmed psychology disorder and *Non-specific neuroses*

36. Substance abuse or dependence disorder and *Obsessive-compulsive disorder*

37. Substance abuse or dependence disorder and *Parasomnia or sleeping disorder*

38. Substance abuse or dependence disorder and *Schizophrenia*

39. Substance abuse or dependence disorder and *Sexual and gender identity disorder*

No correlation

1. Abuse, dependence/overdose of opioids

2. Alcoholism

3. Anxiety disorder

4. Delusional disorder

5. Dissociative disorder

6. Mental retardation

7. Non-specific psychosis

8. Personality disorder

9. Psychosis due to a general medical disorder

10. Psycho-social disorder of childhood

11. Tic disorder

12. Vascular dementia

Comorbidity

Comorbidity, from the perspective of mental illness, means the co-occurrence of one or more disorders in an individual. Each presenting disorder is defined in terms of its characteristic symptoms rather than the underlying cause (Ollendick & King, 1994; Kessler, 1995). Comorbidity exhibits in different patterns, from mental disorders co-occurring with each other, as well as with substance abuse disorders, with anxiety disorders commonly co-occurring, but also with affective (mood) disorders for example.

Heterotypic comorbidity is defined as comorbidity between different classes of mental disorders. A general example would be the co-occurrence of substance use and other mental disorders (Angold, Costello & Erkanli, 1999).

Homotypic comorbidity is defined as comorbidity between different members of a general class of mental disorder. Examples would be the co-occurrence of phobia and generalised anxiety disorder, or between alcohol and other drug abuse disorders. Interestingly, Kendler (1996) established that generalised anxiety and depression share a genetic vulnerability.

Concurrent comorbidity is two or more disorders present at the same time. A typical example would be schizophrenia and alcoholism (Hall, 1998).

Successive comorbidity is disorders present at different times in an individual, in ways that may or may not be causally related to each other (Hall, 1998).

Why focus on comorbidity?

1. The occurrence of comorbidity in an individual patient is more common than a single diagnosis. This is shown in Figure 3 below, where the total incidence of comorbidity in the study database is 55%, compared to a 45% diagnosis of a single disorder in an

individual. Furthermore, several studies support this finding (Hall, 1996; Merikangas, Mehta & Molnar, 1998; Andrews, Hall, Teesson, & Henderson, 1999; Valderas, Starfield, Sibbald, Salisbury & Roland, 2009).

2. Comorbidity must be considered when studying individual mental disorders, since the attributes of the disorder under study, may instead be the features of the comorbid condition (Kessler, 1995; Valderas et al., 2009).

3. Understanding why disorders co-occur can provide vital insight for prevention approaches.

4. Understanding which disorders co-occur can provide vital insight for treatment approaches.
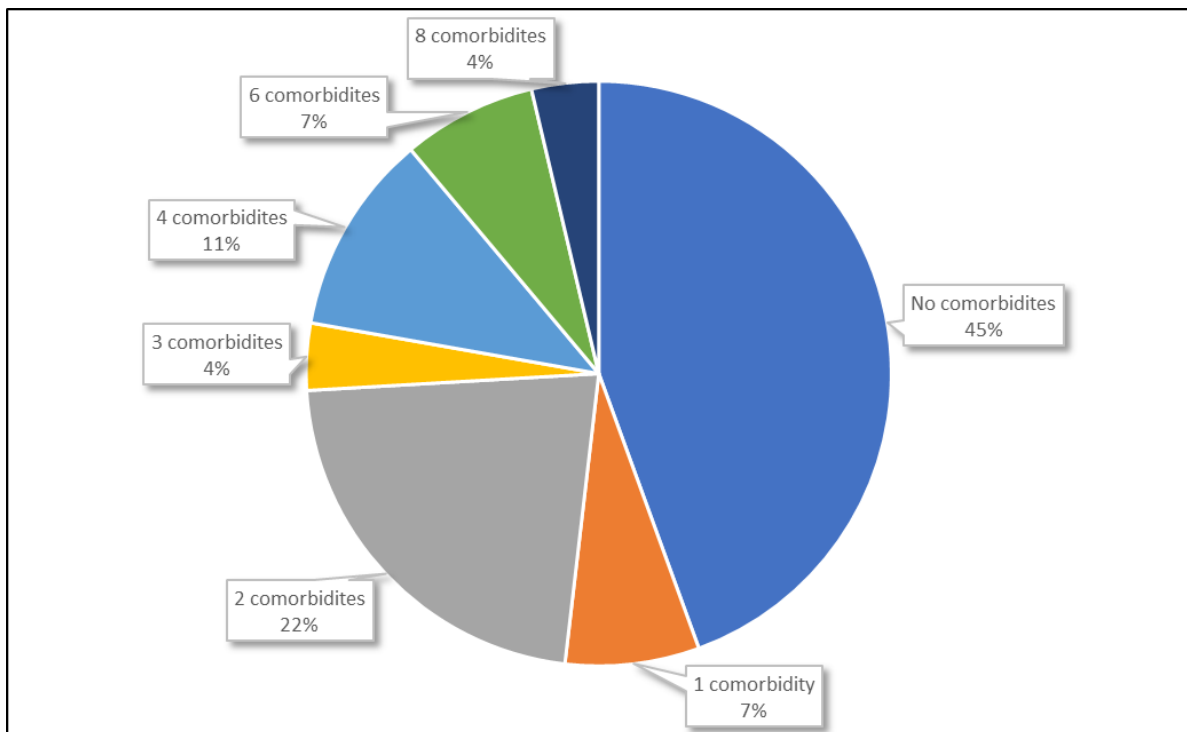
Figure 3: Incidence of comorbidities within study database

The causes of comorbidity

A main criticism in the classification of mental disorders as defined in the Diagnostic and Statistical Manual or the WHO's International Classification of Diseases, is that there are no clear breaks in the symptom distributions for most mental disorders. Andrews et al. (1999) show that there is no distinguishable discontinuity in the symptom distributions of anxiety, affective or substance abuse disorders. What this means is that comorbidity may simply be the result of the indiscriminate division of disorders and that mental disorders are not always mutually exclusive illnesses. If diagnoses have been splintered into separate diagnoses, then our thinking around comorbidity may be an artefact, requiring change (Caron and Rutter, 1991; Andrews et al., 1990).

That the classification of mental disorders may be result (in some instances) of an artificial subdivision, is a plausible explanation for the occurrence of comorbidity in homotypic comorbidity. It explains comorbidity between different anxiety disorders, and perhaps between certain anxiety and affective disorders.

Artificial illness classification, however, is not a catch-all explanation for comorbidity, because it cannot explain comorbidity between substance abuse disorders and anxiety and affective disorders for example. If the comorbidity between substance abuse and anxiety and affective disorders is not an artefact, the following arguments may provide explanation (Kessler, 1995; Kessler, Berglund, Demler, Jin, Merikangas & Walters, 2005):

Argument 1: One mental disorder may directly cause another. Certain substance abuse disorders can directly induce other mental disorders. For example, heavy amphetamine use can produce a schizophreniform psychosis, which differs from schizophrenia (Angrist, 1983; Winklbaur, Ebner, Sachs, Thau, & Fischer, 2006). A similar argument can be made for

alcohol-induced depression in alcoholics (Raimo & Schuckit, 1998; Kuria, Ndetei, Obot, Khasakhala, Bagaka, Mbugua & Kamau, 2012).

Argument 2: One mental disorder may indirectly increase the risk of a substance use disorder. For example, individuals with anxiety and affective disorders may use alcohol and other drugs to self-medicate (Kessler, 1995; Turner, Mota, Bolton & Sareen, 2018). Similarly, it is common for children diagnosed with conduct disorders to initiate alcohol and other drug use earlier than their peers (Kandel, Davies, Karus & Yamaguchi, 1986; Vaillant, 1995; Kendall, Flannery-Schroeder, Panichelli-Mindel & Southam-Gerow, 1997; Masroor, Patel, Bhimanadham, Raveendran, Ahmad, Queeneth, Pankaj & Mansuri, 2019). This is so prevalent that Kessler (1995) showed that almost 60% of those with a lifetime diagnosis of conduct disorder also had at least one lifetime diagnosis of an addictive disorder. Several studies have shown that symptoms of anxiety commonly precede and are risk factors for depressive disorders (Angst, Vollrath, Merikangas & Ernst, 1990; Hagnell & Graesbeck, 1990; Cole, Peeke, Martin, Truglio & Seroczynski, 1998; Kessler et al.,2005).

As discussed, comorbidities are found within members of the same class (category) as well as across categories. The axis classification system was removed in the DSM-5 but is now of historical significance. On May 18, 2013 the DSM-5 was published, superseding the DSM-IV-TR, which was published in 2000 (American Psychiatric Association, 2013). Because the study database was populated between 2008 – 2015, the criteria for categorising mental disorders was modelled on the DSM-IV-TR. For this reason, the mental disorders listed in the database, were assigned to a relevant category adopted from the main categories of disorders in the DSM-IV-TR. This is shown in Table 4 (p.445).

Implications for health policy

Comorbidities have important repercussions for treatment and prevention. Patients with comorbidities have a poorer treatment response and a greater chance of a negative outcome than those diagnosed with a single disorder (Kessler, 1995; Drake, Mueser, Clark & Wallach, 1996; Worthington, Fava, Agustin, Alpert, Nierenberg, Pava & Rosenbaum, 1996; Pedrelli, Nyer, Yeung, Zulauf & Wilens, 2015). This has been verified in schizophrenia (Drake et al., 1996), but also in comorbid depression and anxiety (Kranzler, Del Boca & Rousaville, 1996). This could be because comorbid disorders are not diagnosed and treated and/or because patients with more than one mental disorder are more difficult to treat.

Substance abuse disorders in schizophrenics are a markedly serious concern (Bartels, Drake, & McHugo, 1992; Volkow, 2009), as well as the comorbidity of substance abuse disorders with anxiety, mood and other substance abuse disorders (Hall, Lynskey & Teesson, 2001; Brady, Haynes, Hartwell & Killeen, 2013). These comorbidities are common and therefore have significant medical aid, health insurance and public health implications as well as consequences for the individual.

Comorbidity can only be treated effectively with an integrated, person-centred approach to health policy and services (Zulman, Asch, Martins, Kerr, Hoffman & Goldstein, 2014). Integrating health services improves the success of adherence to treatment and overall health outcomes. There is strong evidence for the effectiveness of collaborative care in the management of common mental health conditions (Hall et al., 2001; Goodrich, Kilbourne, Nord & Bauer, 2013). This calls for a rework of current medical aid healthcare policy, where outcome is measured only by a reduction in symptoms. An integrated, person-centred approach instead, measures outcome by not only a reduction in symptoms, but also a healthy

integration back into the day-to-day happenings in community and society. This means work,

awareness, contribution and relationships.

Table 3

DSM-IV categories of disorder, with the mental disorders listed in the database, assigned to the relevant category.

DSM-IV Group	Mental disorders listed in study database
Developmental disorders	Mental retardation, Attention deficit & hyperactivity disorder, Developmental and learning disorder, Psycho-social disorder of childhood, Behavioural disorder, Tic disorder
Cognitive disorders	Vascular dementia
Mental disorders due to a general medical condition	Psychosis due to a general medical disorder
Substance-related disorders	Alcoholism, Abuse, dependence/overdose of opioids, Substance abuse or dependence behaviour
Schizophrenia and other psychotic disorders	Delusional disorder, Non-specific psychosis, Schizophrenia
Mood disorders	Depression, Bipolar mood disorder
Anxiety disorders	Anxiety disorder, Obsessive compulsive disorder, Non-specific neuroses
Somatoform disorders	Somatoform disorder
Factitious disorders	None specified in database
Dissociative disorders	Dissociative disorder
Sexual and gender identity disorders	Sexual and gender identity disorder
Eating disorders	Eating disorder
Sleep disorders	Parasomnia or sleep disorder
Impulse control disorders	Impulse control disorder
Adjustment disorders	None specified in database
Personality disorders	Personality disorder

Table 4

List of mental disorders with associated comorbid disorders

Mental disorder	Comorbid disorders in association with listed mental disorder			
Attention deficit and hyperactivity disorder	Alcoholism	Anxiety disorder		
Behavioural disorder	Attention deficit and hyperactivity disorder			
Bipolar mood disorder	Attention deficit and hyperactivity disorder	Behavioural disorder		
Depression	Attention deficit and hyperactivity disorder	Bipolar mood disorder	Alcoholism	Behavioural disorder
Developmental and learning disorder	Anxiety	Attention deficit and hyperactivity disorder		
Eating disorder	Attention deficit and hyperactivity disorder	Depression		
Impulse control disorder	Anxiety	Developmental and learning disorder		
Non-specific neuroses	Anxiety	Developmental and learning disorder		

Obsessive compulsive disorder	Attention deficit and hyperactivity disorder	Bipolar mood disorder	Depression	Alcoholism			
Parasomnia or sleep disorder	Attention deficit and hyperactivity disorder	Bipolar mood disorder	Depression	Alcoholism	Obsessive compulsive disorder	Behavioural disorder	
Schizophrenia	Attention deficit and hyperactivity disorder	Bipolar mood disorder	Depression	Parasomnia or sleeping disorder	Obsessive compulsive disorder	Behavioural disorder	
Sexual and gender identity disorder	Attention deficit and hyperactivity disorder	Bipolar mood disorder	Depression	Parasomnia or sleeping disorder	Obsessive compulsive disorder	Behavioural disorder	Alcoholism	Schizophrenia
Somatoform disorder	Anxiety						
Substance abuse or dependence behaviour	Alcoholism	Attention deficit and hyperactivity disorder	Bipolar mood disorder	Depression			
Unconfirmed psychology disorder	Anxiety	Attention deficit and hyperactivity disorder	Developmental and learning disorder				

Comparing findings with the broader mental health landscape

The Discovery Health Medical Aid Scheme database represents a cross-section of the South African population. That 15% (1 in 6) South Africans belong to a medical aid scheme and that Discovery Medical Aid Scheme retains 56.6% of the open market share) (Discovery Integrated Annual Report, 2018), means that the database reflects 8.3% of the South African population. The medical aid scheme is inclusive of those individuals that afford the membership fees on a personal level, those that are members by virtue of employment benefits, or those that are members by virtue of being a dependent. Regardless, membership is determined by payment. Medical aid schemes in South Africa may not (Erasmus, 2016):

1. Turn down an application.

2. Refuse to admit a dependent.

3. Cancel membership.

4. Force the use of network hospitals or doctors (designated service providers).

5. Change benefits or contributions in the middle of the year.

6. Give pensioners a contribution discount.

7. Load a contribution if a member is a high claimer.

8. Not pay for Prescribed Minimum Benefits.

9. Pay out medical savings accounts in cash.

10. Wait more than 30 days to pay out a claim.

Based on the rules above, it can be inferred that the database used in this study is a fair cross-

section of South African society. This means that the prevalence of illnesses recorded in the database should be reflective of prevalence rates in South Africa. Extending this further, for global epidemiological studies, prevalence rates for specific illnesses are calculated using extensive datasets. That there may be differing prevalence's in different geographical regions, is equalised by the calculation of a global average for the prevalence of specific mental illnesses.

Because of the calculation of these averages, it is statistically improbable that South Africa, with its small population, relative to the rest of the global population, should exhibit illness prevalence rates exponentially higher or lower than global or national averages. Should such outlying values be apparent, it is important to provide possible reasons or arguments for this.

The discussion below groups examples of mental illnesses that veer significantly away from national or global prevalence rates. The two groups are those illnesses that are significantly under-represented or those that are significantly over-represented when compared to national or international prevalence rates. The discussion that follows, argues for possible reasons for such out-lying values.

Examples of significantly *under-represented* mental disorders in the database compared to national/international percentages

Abuse of substances

According to Discovery Health Medical Aid Scheme (Refer to Table 2), from 2008 – 2015, the average percentage of the total population diagnosed with abuse, dependence/overdose of opioids is 0.013%. Substance abuse or dependence behaviour averages at 0.14% of the total population. Adding the prevalence of these disorders together equates to 0.15% of the total population.

According to Discovery Health Medical Aid Scheme, from 2008 – 2015 (Refer to Table 2), the average percentage of the total population diagnosed with alcoholism is 0.107%.

If the prevalence of abuse, dependence/overdose of opioids, substance abuse or dependence behaviour and alcoholism are added together, it equates to 0.26% of the population on Discovery health medical aid scheme with a substance abuse disorder.

South Africa ranks among the top 10 drug and alcohol abusers in the world, with a degree of sufferers that are double the global average. According to him, at least 15% of South Africans have a drug abuse problem, with this percentage predicted to increase further (Health24, 2017). According to Meyers (Health24, 2013), 11% (5.7million people) of the South African population suffer from an addiction disorder.

Erring on the side of caution, if the result of Meyers is used, then the prevalence rate of 0.26% in the database shows a 98% gross under-representation of substance disorders when compared to the realities of the South African landscape.

The prevalence rates in the database, are under-represented even further if the conclusions presented by Van Heerden, Grimsrud, Seedat, Myer, Williams & Stein (2009), on substance abuse in South Africa are considered. Van Heerden et al. (2009) present an estimate for alcohol abuse at 38.7%, cannabis use at 8.4%, other drug use at 2.0% and extra-medical psychoactive drug use at 19.3%.

There is no 'quick-fix' solution to treating substance abuse disorders. Treatments involve intensive rehabilitation programmes (Substance Abuse and Mental Health Services Administration (US), Office of the Surgeon General (US), 2016). These programmes offer a multidisciplinary approach to treating the patient. They involve care that includes individual

and group therapy sessions, specialised sessions, family meetings, after-care support, medical intervention and behavioural therapies.

Mental retardation

Learning difficulties are a common mental disorder, with incidences of severe mental retardation calculated at approximately 3.5 per 1000 people in wealthier countries and between 3 and 22 per 1000 in impoverished countries (Institute of Medicine Neurological, Psychiatric, and Developmental Disorders, 2001). Inferring from the mix of both the wealthier and impoverished facets of South Africa, the mean for the prevalence of mental retardation for South Africa would be approximately 1.28% of the population.

According to Discovery Health Medical Aid Scheme, from 2008 – 2015 (Refer to Table 2), the average percentage of the total population diagnosed with mental retardation is 0.023%. This prevalence reflects only 1.8% of national figures and is therefore a 98% gross under-representation of the occurrence of mental retardation when compared to the realities of the South African landscape.

There is no standard treatment for mental retardation, except that for all treatment regimes, there is no instant solution (Blacher, 2001). Treatment plans will depend on the identification of the cause and takes place over a long period, allowing the patient to reach their highest possible level of function. Treatment may involve therapy, family therapy, medication, learning support systems, appropriate individualised education and skills training, social programs, early intervention agendas and training in independent living. Moderate to profoundly retarded persons usually require supervised community living in a group home or other residential setting (Esteban, Navas, Verdugo & Arias, 2021).

Vascular dementia

Vascular dementia is a common type of dementia caused by reduced blood flow to the brain and for which there is no cure (Venkat, Chopp & Chen, 2015). The resultant brain damage is irreversable, but treatment can help prevent further damage to the brain and may slow down its progression. Treatment agendas involve drug and non-drug treatment, support and activities (Venkat et al., 2015: NHS., 2017).

The treatment for vascular dementia is largely centred on non-drug approaches that involve identifying areas that require assistance, such as social interaction, support in the form of a carer or whether a nursing home is a better option (Brooke, 2016). The treatment of vascular dementia continues throughout the duration of the illness. There is no short-term treatment option, but rather an investment in the patient to slow down the progression of the disease.

It has been shown that progressive biological diseases of the brain (such as dementia) affect approximately 5% of people over 65 years of age in certain Asian and Latin American countries, while significantly lower rates of between 1% and 3% (average = 2%) have been reported in India and Sub-Saharan Africa (Kalaria, Maestre, Arizaga, Friedland, Galasko, Hall, Luchsinger, Ogunniyi, Perry, Potocnik, Prince, Stewart, Wimo, Zhang & Antuono, 2008).

According to Discovery Health Medical Aid Scheme, from 2008 – 2015 (Refer to Table 2), the average percentage of the total population diagnosed with vascular dementia is 0.02%. This prevalence represents 1% of the average of national figures and is therefore a 99% gross under-representation of vascular dementia when compared to the realities of the South African landscape.

Anxiety disorders

Anxiety disorders are ranked sixth (3.4%) by the World Health Organisation, as contributors to disability on a worldwide scale (Mughal, Devadas, Ardman, Levis, Go & Gaynes, 2020). The total estimated global number of people living with anxiety disorders is 264 million, which translated in 2015 to approximately 3.6% of people world-wide (Alonso, Liu, Evans-Lacko, Sadikova, Sampson, Chatterji, Abdulmalik, Aguilar-Gaxiola, Al-Hamzawi, Andrade, Bruffaerts, Cardoso, Cia, Florescu, de Girolamo, Gureje, Haro, He, de Jonge & Karam, 2018). South Africa presents with an extraordinarily high number of sufferers of anxiety disorders, where the Medical Research Council estimates 15.8% of South Africans suffer from an anxiety disorder (Herman et al., 2009). This value is used for comparison with the study database because of the South African context.

By 2015, the Discovery Health Medical Aid Scheme database listed 69 916 patients out of a total population of 3 031 600 members diagnosed with anxiety disorder. This translates to 2.31% of the total claimant population. The database then only reflects 15% of the national prevalence rate for anxiety disorders and is therefore an 85% gross under-representation of anxiety disorders when compared to the realities of the South African landscape.

When initiating treatment for anxiety disorders, many patients can experience meaningful symptom relief and improvement in their quality of life, but treatment success varies. Some people respond to treatment after a few weeks or months while others may take longer. If people have more than one anxiety disorder or if they suffer from other co-existing conditions, treatment may take longer (ADAA, 2017).

A well-established and highly effective treatment is Cognitive-Behavioural Therapy (CBT). Benefits are usually seen in 12 to 16 weeks, depending on the individual. Additional therapies include (ADAA, 2017):

a. Exposure therapy

b. Acceptance and commitment therapy (ACT)

c. Dialectical behavioural therapy (DBT)

d. Interpersonal therapy (IPT)

e. Eye movement desensitisation and reprocessing (EMDR)

Four classes of medications used in the treatment of anxiety disorders are (ADAA, 2017):

a. Selective serotonin reuptake inhibitors (SSRI's)

b. Serotonin-norepinephrine reuptake inhibitors (SNRI's)

c. Benzodiazepines

d. Tricyclic antidepressants

The course of treatment is time intensive, and for meaningful recovery, does involve a multidisciplinary approach.

Schizophrenia

Schizophrenia is a severe and chronic mental disorder, affecting about 25 million people worldwide (about one out of every 285) (Myers, 2010). According to the Diagnostic and Statistic Manual of Mental Disorders (1994) and Bhugra (2005), approximately 1% of the global population is diagnosed with schizophrenia.

According to Discovery Health Medical Aid Scheme, from 2008 – 2015 (Refer to Table 2), the average percentage of the total population diagnosed with schizophrenia is 0.58%. The database prevalence rate reflects 58% of global figures and is therefore a 42% under-representation of schizophrenia when compared to the global landscape.

The DSM-IV describes schizophrenia as an illness defined by a long duration, high relapse

rate (>70%) (Diagnostic and Statistical Manual of Mental Disorders.4th ed., 1994).

There are different treatment strategies for patients at different stages of the illness. The use of antipsychotics alone does not manage the frequently occurring negative symptoms and cognitive impairments (Patel, Cherian, Gohil & Atkinson, 2014). Best practice recommends combination of treatment modalities that can meet the complex health needs of people with schizophrenia. This multifaceted illness management would include different combinations of physical, psychological, social interventions and rehabilitation in the later stages of the illness (Bilder, 1997; Jablensky, 2000; Pfammatter, Junghan & Brenner, 2006; Chien & Yip, 2013).

Behavioural disorder

An expanding literature base indicates the incidence and prevalence of emotional/behavioural problems in young children is increasing (Brauner & Stephens, 2006). Prevalence rates of behavioural and emotional problems (8.3% for pre-schoolers, 12.2% for pre-adolescents and 15.0% for adolescents) have been reported as a global overview (Ginige, Tennakoon, Wijesinghe, Liyanage, Herath & Bandara, 2014). Because the database does not distinguish between age cohorts, the average between pre-schoolers, pre-adolescents and adolescents is calculated at 11.8%. This percentage is used as the comparison value with the Discovery Health Medical Aid Scheme database.

According to Discovery Health Medical Aid Scheme, from 2008 – 2015 (Refer to Table 2), the average percentage of the total population diagnosed with behavioural disorder is 0.09%. The database prevalence rate reflects 0.8% of global figures and is therefore a gross 99.2% under-representation of behavioural disorder when compared to the global landscape.

Cognitive behavioural therapy treatment (CBT) is the most commonly used modality for managing the symptoms of behavioural disorders (Gaudiano, 2008). CBT is usually

administered in hour-long sessions by a single therapist who will engage the patient on a deep level (Butler, Chapman, Forman & Beck, 2006). In addition, behavioural treatment through parent management training and family therapy can be remarkably effective for managing behavioural disorders, with medication used as treatment for underlying or co-occurring disorders (SickKids staff, 2018).

The treatment options for behavioural disorder all involve intensive therapy, and time-intensive dedication to the choice of therapy, provides hope for effective recovery.

Obsessive compulsive disorder

Epidemiological studies show that obsessive compulsive disorder (OCD) is a common mental illness (Jaisoorya, Janardhan Reddy, Nair, Rani, Menon, Revamma, Jeevan, Radhakrishnan, Jose & Thennarasu, 2017). Prevalence estimates vary slightly between major studies, with Karno, Golding, Sorenson & Burnam (1998) reporting a lifetime prevalence of between 1.9%–3.3% (2.6% average), the Cross-National Collaborative Group reporting a 12-month prevalence of 1.1%–1.8%, (Weissman, Bland, Canino, Greenwald, Hwu, Lee, Newman, Oakley-Browne, Rubio-Stipec & Wickramaratne, 1994) and the National Comorbidity Survey Replication reporting a lifetime prevalence of 2.3% (Ruscio, Stein, Chiu & Kessler, 2010; Jaisoorya, et al., 2017). If the lifetime prevalence study values (above) of 2.6% (average) and 2.3% are considered, the average prevalence rate between these two studies is 2.5%. This value is used for comparison with the study database.

The database in this study does not specify whether the diagnosis of obsessive-compulsive disorder is a lifetime or 12-month prevalence, and so erring on the side of caution, I have assumed a lifetime prevalence rate.

According to Discovery Health Medical Aid Scheme, from 2008 – 2015 (Refer to Table 2),

the average percentage of the total population diagnosed with obsessive-compulsive disorder is 0.018%. The database prevalence rate reflects 0.7% of standard figures and is therefore a gross 99.3% gross under-representation of obsessive-compulsive disorder when compared to the average of peer-reviewed studies.

Obsessive compulsive disorder is characterised by the presentation of obsessions and compulsions. Obsessions are repetitive, unwanted, intrusive thoughts, images or urges that cause extreme distress or anxiety (Brock & Hany, 2020). The compulsions (rituals) that follow, in response to the obsessions are repetitive behaviours or mental acts that are performed to reduce anxiety/distress or prevent a dreaded consequence (Foa, Kozak, Goodman, Hollander, Jenike & Rasmussen, 1995). Interestingly, the displays of obsessive compulsive disorder are significantly similar across cultures and geographic locations (Janardhan Reddy, Sundar, Narayanaswamy & Math, 2017).

Obsessive compulsive disorder is often comorbid with other psychiatric disorders (Kessler et al., 2005; Pallanti, Grassi, Sarrecchia, Cantisani & Pellegrini, 2011). Depression and anxiety disorders are present in over 50% of patients being treated for obsessive compulsive disorder, with those with onset in childhood presenting with high rates of attention deficit hyperactivity disorder, oppositional defiant disorder and tic disorders (Murphy, Timpano, Wheaton, Greenberg & Miguel, 2010). While obsessive compulsive disorder is equally present in males and females in adulthood, the disorder is predominantly male in patients that are children (Geller, 2006).

The most effective treatment for obsessive-compulsive disorder, in both adults and children, that is superior to medications alone (and supported by numerous clinical trials), is cognitive-behavioural therapy (Foa, Steketee, Grayson, Turner & Latimer, 1984; Abramowitz, Franklin & Foa, 2002; Pediatric OCD Treatment Study (POTS) Team, 2004). Lack (2012) shows that

there are excessively high relapse rates when treated with medications alone.

Eating disorders

Eating disorders describe illnesses that are characterised by severe disturbances in eating habits and extreme anxiety or apprehension about body weight or shape (American Psychiatric Association, 2017). A minority of people are treated in mental healthcare for eating disorders (particularly bulimia nervosa) (Hoek, 2006; Hart, Granillo, Jorm & Paxton, 2011; Smink & van Hoeken, 2012). For those that receive treatment, the evidence-based treatments listed below have been found to be effective for eating disorders (National Eating Disorders Collaboration, 2018):

    a.   Cognitive behavioural therapy (CBT)

    b.   Dialectical behavioural therapy (DBT)

    c.   Family based psychotherapies

    d.   Self-help approaches

    e.   Nutritional management

Medication based approaches are introduced in conjunction with the above treatment options, when a patient presents with co-morbidity (such as depression, anxiety or insomnia) (National Eating Disorders Collaboration, 2018).

Approximately 1 to 4.2% of women suffer from anorexia nervosa in their lifetime (The Renfrew Center Foundation for Eating Disorders, 2003). The average prevalence rate calculated at 2.6%. Anorexia nervosa has the highest fatality rate of any mental illness (Sullivan, 1995; Arcelus, Mitchell, Wales & Nielsen, 2011), where shockingly, 4% of anorexic individuals die from complications of the disease (Crow, Peterson, Swanson, Raymond, Specker, Eckert & Mitchell, 2009).

It is estimated that up to 4% of females in the United States will have bulimia during their lifetime (The National Institute of Mental Health [Eating Disorders], 2002) and the disorder will be fatal for 3.9% of those diagnosed (Crow et al., 2009). On a global scale, between 1.1% and 4.6% of females will develop bulimia (Stice, Marti, Shaw & Jaconis, 2009), with the average then calculated at 2.85%. Disturbingly, 13.5% of athletes suffering from sub-clinical to clinical eating disorders (Sundgot-Borgen & Torstveit, 2004).

The Discovery Health Medical Aid Scheme database does not distinguish between anorexia nervosa and bulimia nervosa, and so the average between the two global prevalence's (2.6% and 2.85%) from the references above are calculated at 2.72%. The dire percentage of athletes with eating disorders is not included, because it would skew average prevalence rates because for this study there is no way to determine whether patients are athletes or not.

According to Discovery Health Medical Aid Scheme, from 2008 – 2015 (Refer to Table 2), the average percentage of the total population diagnosed with eating disorder is 0.154%. The database prevalence rate reflects 5.7% of global figures and is therefore a 94.3% under-representation of eating disorders when compared to the global landscape.

Developmental and learning disorders

Learning disorders rate among the most commonly diagnosed developmental disorders in childhood (Moll, Kunze, Neuhoff, Bruder & Schulte-Körne, 2014). They are not pure syndromes but are developmental disorders that are characteristically multi-dimensional (John, 2010 (a)), coupled with a high degree of co-morbidity with disorders such as attention deficit and hyperactivity disorder and obsessive-compulsive/obsessive spectrum disorder (Philip, 2003).

There is no cure for learning disorders, but early intervention can lessen their effects, build on

strengths, compensate for weaknesses and can impart effective coping mechanisms (National Institute of Neurological Disorders and Stroke, 2017). Leaving learning disorders untreated, may lead to low self-esteem and other problems (Learning Disabilities Association of America, 2018).

The most effective treatment programmes for developmental disorders are those that are individualised and include a team of multidisciplinary medical professionals. The plan is centres around the severity of the disability and must involve the patient, family and medical professionals, taking into account both the immediate needs as well as the long-term prognosis for development (My Child without Limits, 2018).

The evidence-based treatments listed below have been found to assistant developmental disorders and differ depending on the nature and scope of the disability. (Institute of Medicine (US). Committee on Nervous System Disorders in Developing Countries. Neurological, Psychiatric, and Developmental Disorders: Meeting the Challenge in the Developing World, 2001); My Child without Limits, 2018):

a. Cognitive behavioural therapy (CBT)

b. Dialectical behavioural therapy (DBT)

c. Physical therapy

d. Speech therapy

e. Occupational therapy

f. Medication therapy

A study in India, with over five thousand children assessed for poor school performance revealed that 12.8% of them were 'positive cases.' A positive case means that the child in question was diagnosed with either dyslexia, dyscalculia, dysgraphia or mixed learning disorder (Dhanda & Jagawat, 2013; John, 2010(a); John, 2010(b)).

Epidemiological studies present prevalence rates of between 4 and 9% for deficits in reading and between 3 and 7% for deficits in mathematics (American Psychiatric Association, 2013; Moll et al., 2014). Furthermore, studies show that children experiencing challenges in one learning area commonly show deficits in other areas (Lewis, Hitch & Walker, 1994; Dirks, Spyer, van Lieshout & de Sonneville, 2008; Landerl & Moll, 2010).

The average prevalence rate for reading deficits based on the epidemiological studies above is 6.5%, and the average for deficits in mathematics is 5%. The Discovery Health Medical Aid Scheme database does not distinguish between learning and developmental disorder types, and so the average between the two average prevalence's cited above, as well as considering the large Indian cohort study is 9.3%.

According to Discovery Health Medical Aid Scheme, from 2008 – 2015 (Refer to Table 2), the average percentage of the total population diagnosed with developmental and learning disorders is 2.47%. The database prevalence rate reflects 26.6% of average figures and is therefore a 73.4% under-representation of developmental and learning disorders when compared to the average of extensive prevalence studies.

Attention deficit and hyperactivity disorder

Analyses provide an estimate of global attention deficit and hyperactivity disorder prevalence at between 5.29% (Polanczyk, de Lima & Horta, 2007) and 7.1% (Willcutt, 2012). The average for the studies above was calculated at 6.2% as the global middling for the prevalence of attention deficit and hyperactivity disorder.

Compiling the findings in 86 studies in children and adolescents, 11 studies in adults, and a methodical examination of 102 global studies found no significant differences between countries in attention deficit and hyperactivity disorder prevalence rates (Polanczyk, et al.,

2007; Willcutt, 2012; Polanczyk, Willcutt & Salum, 2014). Therefore, it was concluded that attention deficit and hyperactivity disorder is not a cultural paradigm bounded by a specific geographical location.

According to Discovery Health Medical Aid Scheme, from 2008 – 2015 (Refer to Table 2), the average percentage of the total population diagnosed with attention deficit and hyperactivity disorder is 5.44%. The database prevalence rate reflects 87.74% of average figures and is therefore a 12.26% under-representation of attention deficit and hyperactivity disorder when compared to global prevalence's.

South Africa has one of the highest rates globally of prescribing medication for attention deficit and hyperactivity disorder (Schoeman & de Klerk, 2017). Up until recently, medication was the only intervention approach adopted for attention deficit and hyperactivity disorder, but international trends now reveal a distinct change to this approach. Internationally, there is far greater emphasis on investigating the symptoms of attention deficit and hyperactivity disorder, uncovering the reasons behind behaviours and providing treatments that may not include medication (Health 24, 2017).

The active ingredient, a central nervous system stimulant, used to medically treat attention deficit and hyperactivity disorder is Methylphenidate. This is sold under several trade names, with Ritalin being one of the most commonly known (Markowitz, Straughn & Patrick, 2003). A prescription for Ritalin in South Africa can be as low as R355.82 per month (South African Health News Service, 2018).

Examples of significantly *over-represented* mental disorders in the database compared to national/international percentages

Depression

Globally, the number of people suffering from depression in 2015, was estimated to surpass 300 million (translating to 4.4% of the world's population) (WHO., 2018(a)). Depression is ranked globally as the single largest contributor to disability (7.5% in 2015) and is also a major contributor to suicide deaths, which approach 800 000 per annum (Greden, 2001; WHO., 2018(a); WHO., 2018(b)).

The frequency of depression fluctuates by region, from, for example, 2.6% among males in the Western Pacific to 5.9% among females in Africa and when viewed globally, is more common among females (5.1%) than males (3.6%) (Kessler & Bromet, 2013; WHO., 2018(a)).

According to Discovery Health Medical Aid Scheme, from 2008 – 2015 (Refer to Table 2), the average percentage of the total population diagnosed depression is 23.91%. This prevalence is an 82% over-representation of average global figures and reveals a gross over-depiction of depression when compared to the realities of the world.

Mild and moderate depression and anxiety can be treated effectively with behavioural therapies, but only with intensive supervision (Clark, 2011). Developing countries do not have enough human resources to provide this level supervision against the number of sufferers (Gureje & Alem, 2000). On average a primary care centre of 10 000 people will present with 100 patients with psychosis, 300 with severe depression and 300 with epilepsy, of whom at least half of these serious illnesses listed would need active rehabilitation (Jenkins et al., 2011).

Antidepressants are prescribed extensively to treat depression, along with psychological support through, for example, cognitive behavioural or interpersonal therapies (Cipriani, Furukawa & Salanti, 2018; NHS [National Institute for Health Research], 2018).

In direct contradiction to the practice of prescribing antidepressants for effective treatment of depression, studies show a mounting uncertainty about the efficacy of antidepressants. Their chemical action is poorly understood, and enhancement in mood is inclined to a modest result (Cipriani et al., 2018; NHS [National Institute for Health Research], 2018; Parikh & Kennedy, 2018). The comment by Chris Williams, Emeritus Professor of Psychosocial Psychiatry and President of the British Association for Behavioural and Cognitive Psychotherapies (NHS [National Institute for Health Research], 2018) summarises this stance by saying that medication does not directly tackle important external or internal challenges. Talking therapies can be effective, but not if they are not adhered to. Maximal response is likely to be individualised, selecting appropriate psychological, biological and social interventions that the individual wishes to use, and which lead to recovery.

Bipolar mood disorder

Bipolar mood disorder affects about 60 million people worldwide. Estimates of the lifetime prevalence of bipolar II (BP-II) disorder reported a median lifetime prevalence of 1.2% (Bauer & Pfennig, 2005). However, a recent international review, supporting the original finding, of both DSM-IV bipolar I and II disorders in population studies yielded an aggregate cross-study lifetime prevalence estimate of 1.2%, ranging from 0.1% in Nigeria to 3.3% in the U.S. (Grant, Stinson & Hasin, 2005; Gureje, Lasebikan, Kola & Makanjuola, 2006; Merikangas & Pato, 2009).

According to Discovery Health Medical Aid Scheme, from 2008 – 2015 (Refer to Table 2), the average percentage of the total population diagnosed with bipolar mood disorder is

6.49%. This prevalence is an 82% over-representation of the average global figures and is therefore a gross over-representation of bipolar mood disorder when compared to the realities of the world.

Relapse of bipolar mood disorder is avoidable with the use of by lithium, but this needs regular monitoring of drug levels in the blood and is therefore not available in primary care (Goodwin, Haddad, Ferrier, Aronson, Barnes, Cipriani, Coghill, Fazel, Geddes, Grunze, Holmes, Howes, Hudson, Hunt, Jones, Macmillan, McAllister-Williams, Miklowitz, Morriss, Munafò & Young, 2016). What this translates to, is rather than focusing on the provision of newer more costly medications, it would be of greater value in developing countries, to establish regular continuing professional development (CPD) for primary and secondary care practitioners, to efficiently and effectively deliver existing medications and psychological therapies (Ranis, Stewart & Samman, 2005).

Parasomnia or sleep disorder

Parasomnias have been reported in approximately 4% of the adult population (Avidan & Kaplish, 2013). Epidemiological studies show that up to 50% of children experience sleep problem (Owens, Spirito, McGuinn & Nobile, 2000; Liu, Liu, Owens & Kaplan, 2005; Pagel, Forister & Kwiatkowki, 2007), with approximately 4% of these, diagnosed with a formal sleep disorder (Meltzer, Johnson, Crosette, Ramos & Mindell, 2010).

According to Discovery Health Medical Aid Scheme, from 2008 – 2015 (Refer to Table 2), the average percentage of the total population diagnosed with parasomnia is 4.93%. The database prevalence rate reflects 81.13% of average figures and is therefore an 18.87% over-representation of parasomnia when compared to the global prevalence averages.

The common classes of drugs used for the treatment of parasomnias are benzodiazepines

(Pagel & Parnes, 2001). The general aim of drug treatment is to prevent arousal out of sleep or to suppress REM sleep (Sharma, 2018). Benzodiazepines are available at significantly low cost (Good, 2018).

Table 5

Summary of examples of under/overrepresented disorders in the study database, when compared to global/South African prevalence rates.

Mental disorder	Global/National prevalence rate	Database prevalence rate	Percentage of under/over representation within database (compared to global/national percentages)
Examples of under-represented disorders in the study database			
Abuse of substances	11%	0.26%	98%
Anxiety disorder	15.8%	2.3%	85%
Attention deficit and behavioural disorder	6.2%	5.44%	12.26%
Behavioural disorder	11.8%	0.09%	99.2%
Developmental and learning disorder	9.3%	2.47%	73.4%
Eating disorder	2.72%	0.154%	94.3%
Mental retardation	1.28%	0.023%	98%
Obsessive compulsive disorder	2.5%	0.7%	99.3%
Schizophrenia	1%	0.58%	42%
Vascular dementia	2%	0.02%	99%

Examples of over-represented disorders in the study database

Bipolar mood disorder	1.2%	6.49%	82%
Depression	4.4%	23.91%	82%
Parasomnia	4%	4.93%	18.87%

The diagnosis of mental illness as a cost-effective equation

Mental illness in society is clouded by ignorance and judgement. The mentally ill are stigmatised in their communities. Such ignorance is partly due to a fear of what we cannot see. A broken arm is visible, but not a broken chain of neurotransmitters.

Actively trying to destigmatise illness and create an awareness of different mental illnesses will go a long way to ease the daily assault faced by the mentally ill. However, this is not what this thesis is about: Instead, discussion centres on investigating the actuals within a database owned by a medical aid scheme. The database is examined to find clues that could build a picture of the mental illness landscape for medical aid paying South Africans. It is found that:

1. There are changes in prevalence rates of mental disorders over time.

2. The values of the fluctuations in prevalence rates of mental disorders over time are given in the results chapter.

3. These fluctuation trends are attributed to an economic factor within medical aid scheme cost-driven policy.

4. The predicted effect of this is discussed below.

The primary obligation of a medical aid provider is to allow for the provision of adequate treatment of the member. For those members (diagnosed or incorrectly diagnosed with a mental disorder), this is not the case.

The effective treatment of mental disorders is usually intensive and prolonged (Carey & Carey, 1999; Wakefield, 2007). Ideally, treatment should be a multidisciplinary approach. Effective

treatment means that the individual gets to perform an active and productive role in society, but, of course, such treatment is costly.

One assumes that medical aid cover will be an adequate support, regardless of the illness because the individual pays for it. However, diagnoses of disorders are in part, determined by economic structures rather than being clinically objective and neutral, the result is that medical support is inadequate (Cartwright, Lasser & Gottlieb, 2017).

A mandate of a medical aid provider is to minimise the outlay of costs in the treatment of its members. How then, do medical aid providers circumvent paying for these costly treatment programmes? From the results and discussion in this study, costs for mental illness treatment programmes are curtailed in three ways:

1. By radically under-diagnosing various mental illnesses: Costs for treatment are curtailed by keeping patient numbers significantly low.

2. By radically over-diagnosing certain mental illnesses: Illnesses in the database with numbers exponentially exceeding global norms still fit within the cost-effective framework because they are treated with comparably cheaper pharmaceuticals. Long-term intervention is bypassed this way. Since long-term intervention is costly, bypassing it then allows the cost-effective framework to be upheld.

3. By drastically curbing time spent in a mental health facility: The standard for high paying members for treatment in a private facility is limited to 21 days per year. This amount of time is hugely inadequate for the effective treatment of serious illnesses.

Any health system must include interventions that not only change the symptoms of the disorders but also allow sufferers to move more easily back into community life (Andrews, Peters & Teesson, 1994). Outcome is not just a reduction in symptoms.

What are the implications of this? This means that some members of the medical aid scheme have been deliberately misdiagnosed. Alternatively, those, correctly diagnosed, do not receive the treatment required of such an illness. The scenario then is of thousands of mentally ill people, who are not treated successfully. They will not live lives free of the symptoms that cause suffering, distress and isolation.

Are there factors influencing psychiatric diagnosis? If so, what are these factors and what is the potential impact on the mental health landscape and sufferers of mental illness?

Among patients on this medical aid scheme, examples of an *under representation* of patients (relative to global averages) are observed for the following disorders:

    a. Abuse, dependence and/or overdose of opioids

    b. Alcoholism

    c. Anxiety disorder

    d. Attention deficit and hyperactivity disorder

    e. Behavioural disorder

    f. Developmental and learning disorder

    g. Mental retardation

    h. Obsessive compulsive disorder

    i. Schizophrenia

    j. Substance abuse or dependence disorder

k. Vascular dementia

Among patients on this medical aid scheme, examples of an *over representation* of patients (relative to global averages) are observed for the following disorders:

a. Bipolar mood disorder

b. Depression

c. Parasomnia

Medical aids and health insurance have substantially and artificially influenced the mental health arena, to the point where Rappo (2002) summarises this influence as the management of health cost rather than health care. Medical aid guidelines determine whether, or the extent to which the expertise of clinicians and therapists are reimbursable (Kirk & Kutchins, 1988; Hohenshil & Singh, 1997; Glosoff, 1998; Mead, Murphy, DeBernardo & Shoemaker, 1998; Danzinger & Welfel, 2001). When patients cannot afford to personally cover costs, inaccurate mental disorder diagnoses that are reimbursable may be submitted for patients to receive a modicum of care. Wylie (1995) refers to this practice as 'diagnosing for dollars.'

The Medical Schemes Act of 1998 (Regulation 8), requires schemes to pay for the diagnosis, treatment and care of Prescribed Minimum Benefits (PMBs), in full, regardless of which benefit option the member belongs to. PMBs include a wide range of 270 conditions (such as HIV, diabetes, various cancers cardiac treatment, and medical emergencies) and 27 chronic illnesses (such as schizophrenia and epilepsy).

According to Allan Sweidan (CEO of Akeso Clinics & Psychologist in Johannesburg), Bipolar mood disorder, for example, is eligible for PMB coverage, but other forms of depression are

excluded. This means that patients are then falsely coded as having bipolar mood disorder. South African Psychiatrist Dora Wynchank sees this as one of the ways psychiatric patients are discriminated against (Egbe, Brooke-Sumner, Kathree, Selohilwe, Thornicroft & Petersen, 2014), and where fundamentally, they are denied the correct treatment for their illnesses because of the dictates of cost. Weight is added to this argument when one considers that depression is not listed as a PMB and yet, 20% of woman and up to 12% of men suffer from it (Sloan & Sandt, 2006; Egbe et al., 2014). That this study reveals an 82% over-representation of the average global figures of bipolar mood disorder, attests to this deliberate misdiagnosis by medical practitioners, who are forced to operate within the narrow confines of medical aid guidelines, but are at the same time compelled in whatever way to provide a measure of care to patients. This is an example of where the type of health care system influences the provision of psychiatric services (D'Agostino & Stephens, 1986; Brown, 2001; National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Board on Health Care Services; Committee on Health Care Utilization and Adults with Disabilities, 2018).

Medical spending on psychiatric hospitalisation imposes a significant cost in medical aid scheme reimbursement claims. Dementia, mental retardation and schizophrenia, are reported to be the largest contributor to psychiatric health care costs (Tzeng, Lian, Chang, Yang, Lee, Pan & Lung, 2007; KMGL: Medical Care Law, 2010), with schizophrenia being one of the most expensive psychiatric disorders across the adult lifespan (Freiman, Cunningham & Cornelius, 1994; Guest & Cookson 1999; Kaskie, Wallace, Kang & Bloom, 2006). It is obvious then, that a primary objective in the design of medical aid policies is to limit these expenditures.

Medical aid schemes cite PMBs as a major cost driver, and to circumvent this, in September

2014, a case was submitted against the Minister of Health, arguing that although the minister may determine the list of conditions that comprise the PMBs, he has no authority to determine the scope of payment (Burger, Lubbe, Serfontein & Ellis, 2017). The result of this is that Discovery Health Medical Aid Scheme has limited the payment of services of 15 categories of health professionals, including psychologists. Psychologists now fall under the 'allied health benefits' category, that regulates limited annual cover for art therapists, chiropractors, homeopaths, podiatrists, social workers and speech therapists.

Because clinical psychology is lumped into the same category as podiatry and homeopathy for example, undermines the status of psychology in the treatment of mental illness. Schizophrenia, for example, requires long-term and intense management – management that includes the expertise of a clinical psychologist. That Discovery Medical Aid Scheme, limits payment to these medical professions, translates to severely affecting the effectivity of mental-health treatment.

Furthermore, two-thirds of people with psychosis experience a relapsing or deteriorating course of illness, unless adequately treated (Emsley, Chiliza, Asmal & Harvey, 2013; Fleischhacker, Arango, Arteel, Barnes, Carpenter, Duckworth, Galderisi, Halpern, Knapp, Marder, Moller, Sartorius & Woodruff, 2014). Because there is a scarcity of psychiatrists in South Africa (see pages 54, 55 and 56 of this study) and there are limitations imposed by medical aids to the full spectrum of treatment programmes (discussed in this section), the resultant will be psychiatric hospitals acquiring an accumulated number of chronically ill patients suffering from regressive, psychiatric disorders. Patients in psychiatric hospitals tend to stay 69% longer than patients at tertiary care hospitals do (Rud & Noreik, 1982; Mechanic & Aiken, 1989; Chung, Cho & Yoon,

2009). In Korea, for example, the average length of hospital stay for psychiatric patients is 89.8 days (OECD Health Data, 2007; Chung et al., 2009). Discovery Medical Aid Scheme limits psychiatric hospitalisation to 21 days per annum, regardless of the severity of the mental illness diagnosis. That a patient may relapse during a year, or require longer hospitalisation, is characteristic of mental illness, but this is not factored in medical aid scheme policy. The outcome of this equates to inadequate care for the mentally ill. Inadequate care, as a casualty of cost-driven health policy.

Medical aid scheme policies dictate mental health care, mental health care providers and the course of treatment (Wineburgh, 1998), especially how managed health care has radically altered the counselling landscape (Stern, 1993; Cuffel, Snowden, Masland & Piccagli, 1996), having a dire impact on the effectivity of treatment of mental illness. For example, mental health benefits may be limited to 20 sessions and brief therapy may be limited to one to five sessions (Cuffel et al., 1996; Kiesler, 2000). What this does is restrict treatment to the narrow parameters of the benefit package (Austad & Hoyt, 1996). Studies show that most mental health counsellors admit that medical aid scheme and health insurance stipulations have a negative influence on their practices (Miller, 1996; Murphy et al., 1998; Danzinger & Welfel, 2001). For the patient and mental health practitioner, this tragically translates to adhering to treatment plans that comply with medical aid payment policy, rather than patient need. Medical aid policies create restrictions that diminish the independence of patient and counsellor in making mental health decisions that are in the best interest of the patient (Smith, Grost & Kashner, 1995; Wineburgh, 1998; Meyers, 1999; Danzinger & Welfel, 2001).

Imposing limitations can only but affect a medical professional's practice style at psychiatric hospitals, but also the interrelation of medical policy and patient thought and behaviour when it comes to treatment. This suggests that patient diagnoses are affected by medical aid scheme policy, which then interrelates among patients, among medical professionals, or between patients and medical professionals within a psychiatric institution (Russo, 1974; Simon & Zusman, 1983; Bertakis, Callahan, Helms, Azari, Robbins & Miller, 1998; Hassan, McCabe & Priebe, 2007). According to Borch-Jacobsen (2001), an aspect of the symptoms of mental illness is the sum of a patient's interaction with medical professionals and institutions. Patients will tend to conform to the language of the medical professional and the society to which they belong, to expedite the treatment they so desperately need (Grivois, 1992). Barrett (1996), by way of reinforcing this point, demonstrates how schizophrenic patients learn, during clinical interviews, to speak the doctor's language. It seems then that medical aid policy has the capacity to radically change the appearance of the mental health landscape, creating a false reality of mental illness prevalence's, and a thin veneer of treatment. What this does is to undermine what needs to be done to effectivity treat those that are mentally ill, firstly with the correct diagnosis and secondly with suitable treatment.

Incorrect diagnoses, driven by medical aid scheme policy has resulted in increasing epidemiological inaccuracy (at national and global levels) as reflected in the mental health statistics documented by the World Health Organization (WHO), such as the intentional misdiagnosis using depression or generalised anxiety disorder codes instead of V-Code diagnoses (Kleinman & Cohen, 1997).

Tragically, members will continue to pay fees, paying under the illusion that medical cover ensures effective treatment.

Chapter 5: Critical Reflections

Chapter 5: Critical Reflections

Overview and critical reflections

Civil liberties cannot be disputed if they ensure the dignity of human beings. Examples of such irrefutable rights would be the right to adequate shelter, the right to sanitation, clean water and protection from abuse. These fundamentals are what each human being deserves. Another fundamental, is surely the right to adequate medical care? All people should have the right to effective medical treatment, but instead, what is apparent, is a polarisation in the quality of medical care brought about by the introduction of medical aid schemes and health insurance (Abuosi, Domfeh & Abor, 2016).

What this creates is a system of inequality, where those with medical aid can afford care in better-equipped hospitals and can opt for best-practice treatment options, compared to those on government care. The subdivision creates a stratification into the 'have and have-nots' and it is a tragedy.

The clear-cut distinction into the 'have' and 'have-nots' is not quite so binary. While those without medical aid are most certainly receiving of inferior medical care, it seems, from the outcome of this study, that those with medical aid support are also subject to inadequate care. It can be deduced that people on medical aid, with a mental disorder, may not receive the prolonged and intensive treatment they require. Medical aid delivers, but only within the strict confines of the governance of cost. This provision is based on an equation of cost return, and for this equation to balance, intensive, multidisciplinary and (often-needed) prolonged treatment is simply not cost effective. How has this issue of ensuring cost effectiveness for medical aid

providers been solved? What are the implications for the mentally ill? These questions are discussed in the conclusion below.

The present study quantitatively analysed a dataset for a South African medical aid scheme, between 2008 to June of 2015. The focus of analysis is an investigation around the mental illnesses listed in the dataset. Analysis concentrated on frequency distributions across and within diagnoses, gender, treatment options, time and compared these results against the dataset population and within the larger South African and/or global context. Analysis also determined any correlations between mental illnesses.

An objective of this analysis is to determine whether mental illness prevalence rates in the dataset aligned with national and/or global prevalence rates for significant disorders. Should a misalignment be apparent, a further aim of the analysis is to argue for possible reasons behind these outliers. Medical aid schemes operate within clear policy parameters, and because the dataset is from an existing medical aid scheme, it is logical to apply reasons for possible outliers from this perspective. Importantly then, because this perspective is adopted, it is necessary to provide a background on the nature of medical aid schemes and the rules and objectives they are governed by.

Before analysing data or constructing arguments, it is important to describe the backdrop within which the dataset resides. What is this backdrop? It is firstly the South African mental health arena, and overarching that, a global picture of mental disorder frequencies. To this end, the current mental health landscape in South Africa is described from the vantage point of significant mental disorder prevalence rates. In addition, it is critical to discuss the attainability of care for those that are ill. Do South African mentally ill patients receive the treatment they

need? Is the process involved in receiving treatment, easily navigated? If treatment is received, to what degree is the treatment approach effective? It is critical to examine best-practice treatment approaches for specific mental disorders and this is discussed in Chapter 4.

The fluctuating nature of mental disorder frequency is presented in this study and possible contributing factors for this are examined. An underlying aspect in this study is the recognition that there are metamorphoses of mental disorders that may result in altered or overlapping symptoms (Salloum & Thase, 2000). The overlapping or transformation of symptoms is the factor that inadvertently supports increasingly constrained medical aid scheme policy because it creates a loophole to validate misdiagnosis: Because of overlapping symptoms, it is likely that the diagnoses of mental disorders may be prone to misdiagnosis (whether deliberately or erroneously).

Study limitations

The study database was limiting in the data fields provided. Detailed data, with more data fields, will further add to creating a more accurate picture of the mental health arena in South Africa. It would have been especially useful to be able to utilise such characteristics as:

1. Patient age

2. Pre-admission history

3. Severity of psychiatric illness.

4. The proportion of involuntary admissions

5. The proportion of readmissions

Recommendations for future research

It is of value to create a much-needed awareness of the impact, and prevalence of mental disorders in the South African context. Studies and statistics exist for certain mental disorders, but many are scantily documented.

A study focusing on the concise characterisation of disorders, locality patterns and prevalence rates will serve to establish a clearer picture of mental illness in South Africa.

Medical aid providers have digitised databases of their members, but the public sector has great gaps in the management of patient databases. A future study that combines both public and private statistics will be invaluable.

A clear picture is essential to manage treatment, group outreach and focused communication.

Conclusion

The study quantitatively analysed a dataset of mental disorders for South Africa's leading medical aid scheme. It is found that there are changes in prevalence rates of mental disorders over time and that these fluctuations are attributed to an economic factor within medical aid scheme cost-driven policy.

The effect of cost-driven policy is that members diagnosed with a mental disorder may not be granted provision of adequate treatment because diagnosis is in part, determined by economic structures.

Costs for mental illness treatment programmes are curtailed by keeping patient numbers significantly low, by radically over-diagnosing certain mental illnesses treated with comparably cheaper pharmaceuticals or by drastically curbing time spent in a mental health facility.

Some members of the medical aid scheme have been deliberately misdiagnosed. Alternatively, those, correctly diagnosed, do not receive the treatment required of such an illness. The scenario then is of thousands of mentally ill people, who are not treated effectively.

Members continue to pay fees, paying under the illusion that medical cover ensures effective treatment.

Personal conclusion

In 2018, my curly-haired, wide-mouthed boy of 16 was diagnosed with schizophrenia. There is such a sense of sadness and loss attached to hearing this. Sadness, at knowing the suffering the illness brings. Loss, at mourning the end of carefree childhood. Nevertheless, at the same time, hearing the diagnosis brings with it a sense of gratitude for those professionals who devote their lives to assisting with and learning about the complexity of the illness. More importantly, the diagnosis comes coupled with a deep respect for the daily bravery and quiet heroism shown by those who endure such internal turmoil and suffering. Schizophrenics are truly exceptional and beautiful human beings.

This brings me to my huge frustration: that in the 21st century, with the advancement of Artificial Intelligence, virtual reality, and the pioneering of genetic engineering, there still exists such ignorance around the nature of mental illness. It is almost a deliberate and stubborn resistance to accept the reality of illnesses of the brain.

For me, it is so simple – schizophrenia is a complex and serious illness of the brain that results in a myriad of symptoms. That it is manageable (especially with early diagnosis), makes it no different to any other serious, outwardly obvious illness that requires effective management. Why then the fear? The prejudice? The stigma? The misconceptions?

Ignorance breeds intolerance and judgement. Therefore, it rests on us, those that understand, to destigmatise actively. Communication is essential. The symptoms of the illness need to be understood. The management of the illness needs to be understood. There is no place for our children, our parents or family members who have schizophrenia to endure the added pain that ignorance brings. We know they have enough to deal with.

Chapter 6: References

A Guide to DSM-5 (2013, May 15). Autism Spectrum Disorders. Retrieved from

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3671160/.

A Guide to DSM-5 (2013, May 21). Mixed-Mood Specifier. Retrieved from

https://www.medscape.com/viewarticle/803884_12.

A Guide to DSM-5 (2013, May 21). Neurodevelopmental Disorders. Retrieved from

https://www.medscape.com/viewarticle/803884_3.

A Guide to DSM-5 (2013, May 21). Removal of the Bereavement Exclusion from MDD.

Retrieved from https://www.medscape.com/viewarticle/803884_10.

A Guide to DSM-5 (2016, August 13). Disruptive Mood Dysregulation Disorder (DMDD).

Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5305694/.

Abramowitz, J., Franklin, M., & Foa, E. (2002). Empirical status of cognitive-behavioral

therapy for obsessive-compulsive disorder: A meta-analytic review. *Romanian Journal of*

Cognitive Behavioral Therapy and Hypnosis, 2, 89–104.

Abuosi, A.A., Domfeh, K.A., & Abor, J.Y. (2016). Health insurance and quality of care:

Comparing perceptions of quality between insured and uninsured patients in Ghana's hospitals.

International Journal of Equity Health, *15,* 76. Retrieved from https://doi.org/10.1186/s12939-

016-0365-1.

Acuff, C., Bennett, B., Bricklin, P. M., Canter, M.B., Knapp, S.J., & Moldawsky, S. (1999). Considerations for ethical practice in managed care. *Professional Psychology: Research and Practice*, *30*, 563–575.

ADAA: Anxiety and Depression Association of America. (2017, April 7). Treatment: Anxiety disorders. Retrieved from https://adaa.org/finding-help/treatment.

Adler, A.B., Wright, K.M., Bliese, P.D., Eckford, R., & Hoge, C.W. (2008). A2 diagnostic criterion for combat-related posttraumatic stress disorder. *Journal of Traumatic Stress*, *21*(3), 301–308.

Albert, P. (2015). Why is depression more prevalent in woman? *Journal of Psychiatry and Neuroscience, 40*(4), 219–221.

Allday, E. (2011, November 26). Revision of psychiatric manual under fire. Retrieved from https://www.sfgate.com/news/article/Revision-of-psychiatric-manual-under-fire-2295555.php.

Allen, J., Balfour, R., Bell, R., & Marmot, M. (2014). Social determinants of mental health. *International Review of Psychiatry, 26*(4), 392–407. Retrieved from http://informahealthcare.com/doi/abs/10.3109/0954 0261.2014.928270.

Allen, J.M. (2015, January 29). Diagnostic Ethics: Harms/Benefits, Somatic Symptom Disorder. *Psychology Today*. Retrieved from https://www.psychologytoday.com/us/blog/saving-normal/201312/diagnostic-ethics-harmsbenefits-somatic-symptom-disorder.

Alonso, J., Liu, Z., Evans-Lacko, S., Sadikova, E., Sampson, N., Chatterji, S., Abdulmalik, J., Aguilar-Gaxiola, S., Al-Hamzawi, A., Andrade, L.H., Bruffaerts, R., Cardoso, G., Cia, A., Florescu, S., de Girolamo, G., Gureje, O., Haro, J.M., He, Y., de Jonge, P., & Karam, E. G. (2018). Treatment gap for anxiety disorders is global: Results of the World Mental Health Surveys in 21 countries. *Depression and Anxiety*, *35*(3), 195–208. Retrieved from https://doi.org/10.1002/da.22711.

Altice, F.L., Kamarulzaman, A., & Soriano, V.V. (2010). Treatment of medical, psychiatric, and substance-use comorbidities in people infected with HIV who use drugs. *The Lancet, 376*, 367–87.

American Mental Health Counselors Association. (2000). Code of ethics of the American Mental Health Counselors Association. *Journal of Mental Health Counseling*, *23*, 2–22.

American Psychiatric Association (1994). Diagnostic and Statistical Manual of Mental Disorders: DSM-IV (4th ed). *American Psychiatric Association, 886*. Retrieved from https://dsm.psychiatryonline.org/doi/abs/10.1176/appi.books.9780890420249.dsm-iv-tr.

American Psychiatric Association (2013). Diagnostic and Statistical Manual of Mental Disorders (Fifth ed.). *American Psychiatric Publishing*. ISBN 978-0-89042-555-8.

American Psychiatric Association (2013). Highlights of Changes from DSM-IV-TR to DSM-5. Diagnostic and Statistical Manual of Mental Disorders (Fifth ed.). *American Psychiatric Publishing*, 5–25. ISBN 978-0-89042-555-8.

American Psychiatric Association. (2017, January 31). What are Eating Disorders? Retrieved from https://www.psychiatry.org/patients-families/eating-disorders/what-are-eating-disorders.

Amexo, M., Tolhurst, R., & Barnish, G. (2004). Malaria misdiagnosis: Effects on the poor and vulnerable. *The Lancet*, *364*, 1896–1898.

Andrews, G., Hall, W., Teesson, M., & Henderson, A.S. (1999). The Mental Health of Australians. Commonwealth Department of Health and Aged Care, Canberra.

Andrews, G., Peters, L., & Teesson, M. (1994). The measurement of consumer outcome in mental health. Canberra, ACT: Australian Government Publishing Service.

Andrews, J.G., Stewart, G., Morris-Yates, A., Holt, P., & Henderson, A.S. (1990). Evidence for a general neurotic syndrome. *British Journal of Psychiatry*, *157*, 6–12.

Angold, A., Costello, E.J., & Erkanli, A. (1999). Comorbidity. *Journal of Child Psychology and Psychiatry, 40*, 57–87.

Angrist, B. (1983). Psychoses induced by central nervous system stimulants and related drugs. In I. Creese (ed.) Stimulants: Neurochemical, Behavioral and Clinical Perspectives, Raven Press, New York.

Angst, J., Vollrath, M., Merikangas, K.R., & Ernst, C. (1990). Comorbidity of anxiety and depression in the Zurich Cohort Study of Young Adults. Maser, Jack D, (Ed); Cloninger, DC, US: American Psychiatric Press, Inc.

Aragona, M. (2013). Epistemological reflections about the crisis of the DSM-5 and the revolutionary potential of the RDoC project Dialogues. *Philosophy, Mental and Neuro Sciences, 7,* 11-20.

Arcelus, J., Mitchell, A.J., Wales, J., & Nielsen, S. (2011). Mortality rates in patients with Anorexia Nervosa and other eating disorders. *Archives of General Psychiatry, 68*(7), 724-731.

Attride-Stirling, J. (2001). Thematic networks: an analytic tool for qualitative research. *Qualitative Research, 1*(3), 385–405.

Austad, C.S., Hunter, R.D., & Morgan, T.C. (1998). Managed health care, ethics and psychotherapy. *Clinical Psychology: Science and Practice, 5*(1), 67–76.

Avidan, A.Y., & Kaplish, N. (2013). The parasomnias: epidemiology, clinical features, and diagnostic approach. *Clinics in Chest Medicine, 31*(2), 353-70.

Bachmann, S. (2018). Epidemiology of Suicide and the Psychiatric Perspective. *International Journal of Environmental Research and Public Health, 15*(7), 1425. doi:10.3390/ijerph15071425.

Baingana, F., Jenkins, R., Belkin, G., Borowitz, M., Daly, A., Francis, P., & Mayeya, J. (2010). Mental health and the development agenda in Sub-Saharan Africa. *Psychiatric Services*, *61*(3), 229-234.

Bakan, D. (1966). The test of significance in psychological research. *Psychology Buletin, 66*(6), 423-437.

Bandelow, B., & Michaelis, S. (2015). Epidemiology of anxiety disorders in the 21st century. *Dialogues in Clinical Neuroscience*, *17*(3), 327–335. Retrieved from https://doi.org/10.31887/DCNS.2015.17.3/bbandelow.

Bandelow, B., Michaelis, S., & Wedekind, D. (2017). Treatment of anxiety disorders. *Dialogues in Clinical Neuroscience, 19*(2), 93–107.

Barrett, R.J. (1996). The psychiatric team and the social definition of schizophrenia: An anthropological study of person and illness. Cambridge: Cambridge University Press.

Bartels, S.J., Drake, R.E., & McHugo, G.J. (1992). Alcohol abuse, depression, and suicidal behaviour in schizophrenia. *American Journal of Psychiatry*, *149*(3): 394–95.

Bastide, R. (1965). *Sociology of Mental Illness*. Paris: Flammarion.

Bateson, G. (1972). *Steps to an Ecology of Mind*. San Francisco: Chandler.

Bauer, M., & Pfennig, A. (2005). Epidemiology of bipolar disorders. *Epilepsia, 46*(Suppl 4), 8–13.

Bell, J. (2004). An update on the neuropathology of HIV in the HAART era. *Histopathology, 45*, 549–59.

Benedict, R. (1934). Anthropology and the Abnormal. *Journal of General Psychology, 10*, 59-82.

Bertakis, K.D., Callahan, E.J., Helms, L.J., Azari, R., Robbins, J.A., & Miller, J. (1998). Physician practice styles and patient outcomes: Differences between family practice and general internal medicine. *Medical Care, 36*(6), 879-891.

Bertolote, J. (2008). The roots of the concept of mental health. *World Psychiatry: Official Journal of the World Psychiatric Association (WPA)*, 7(2), 113–116. Retrieved from https://doi.org/10.1002/j.2051-5545.2008.tb00172.x.

Bertozzi, S., Padian, N.S., & Wegbreit, J. (2006). HIV/AIDS Prevention and Treatment. In: Jamison DT, Breman JG, Measham AR, et al., editors. Disease Control Priorities in Developing Countries. 2nd edition. Washington (DC): The International Bank for Reconstruction and Development / The World Bank; 2006. Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK11782/ Co-.

Bhattacharjee, J.I., & El-Sayeh, H.G. (2008, July 16). Aripiprazole versus typical antipsychotic drugs for schizophrenia. *Cochrane Database of Systematic Reviews*. doi: 10.1002/14651858.CD006617.pub3.

Bhopal, R. (2008). Concepts of Epidemiology (2nd ed.). Oxford, England: Oxford University Press.

Bhugra, D. (2005). The global prevalence of schizophrenia. *PLoS Medicine*, *2*(5), e151–e175. Retrieved from https://doi.org/10.1371/journal.pmed.0020151.

Bhugra, D. (2005, May 31). The Global Prevalence of Schizophrenia. *PLoS Medicine*, *2*(5), e151. Retrieved from http://doi.org/10.1371/journal.pmed.0020151.

Bilder, R.M. (1997). Neurocognitive impairment in schizophrenia and how it affects treatment options. *Canadian Journal of Psychiatry, 42*(3), 255-64.

Bilynsky, N.S., & Vernaglia, E.R. (1998). The ethical practice of psychology in a managed-care framework. *Psychotherapy, 35*(1), 54–68.

Blacher, J. (2001). Transition to adulthood: Mental retardation, families, and culture. *American Journal on Mental Retardation, 106*(2), 173-188.

Bonita, R., Beaglehole, R., & Kjellström, T. (2006). Basic Epidemiology (2nd ed.). Geneva, Switzerland: World Health Organization.

Borch-Jacobsen, M. (2001). Making psychiatric history: Madness as folie à plusieurs. *History of the Human Sciences, 14*(2), 19-38.

Boutayeb, A. (2006). The double burden of communicable and non-communicable diseases in developing countries. *Transactions of the Royal Society of Tropical Medicine and Hygiene, 100*(3), 191–9. Retrieved from http://trstmh.oxfordjournals.org/cgi/doi/10.1016/j. trstmh.2005.07.021.

Brådvik, L. (2018). Suicide Risk and Mental Disorders. *International Journal of Environmental Research and Public Health*, *15*(9), 2028. Retrieved from https://doi.org/10.3390/ijerph15092028.

Brady, K.T., Haynes, L.F., Hartwell, K.J., & Killeen, T.K. (2013). Substance use disorders and anxiety: A treatment challenge for social workers. *Social Work in Public Health*, *28*(3-4), 407–423. Retrieved from https://doi.org/10.1080/19371918.2013.774675.

Braun, S.A., & Jane, A. (2005). Managed Mental Health Care: Intentional Misdiagnosis of Mental Disorders. *Journal of Counseling and Development*, *83*, 425.

Brauner, C.B., & Stephens, C.B. (2006). Estimating the prevalence of early childhood serious emotional/behavioral disorders: Challenges and recommendations. *Public health reports (Washington, D.C. 1974), 121*(3), 303-10.

British Psychological Society Response (2011, June 15). Retrieved from https://dxrevisionwatch.files.wordpress.com/2012/02/dsm-5-2011-bps-response.pdf.

Brittain, K., Myer, L., Koen, N., Koopowitz, S., Donald, K.A., & Barnett, W. (2015). Risk factors for antenatal depression and associations with infant birth outcomes: Results from a South African birth cohort study. *Paediatric and Perinatal Epidemiology, 29*(6), 505–14. Retrieved from http://doi.wiley.com/10.1111/ppe.12216.

Brock, H., & Hany, M. (2020). Obsessive-Compulsive Disorder. StatPearls. Treasure Island (FL): StatPearls Publishing. PMID: 31985955.

Brooke, J. (2016, March 31). Caring for patients with dementia. Retrieved from https://www.nursinginpractice.com/article/caring-patients-dementia.

Brown, B.L. (2012). Descriptive Statistics. In: Encyclopedia of Research Design. Thousand Oaks, SAGE Publications, 353-359. doi: http://dx.doi.org/10.4135/9781412961288.

Brown, K., & Bradley, L.J. (2002). Reducing the stigma of mental illness. *Journal of Mental Health Counseling, 24*, 81–87.

Brown, S.L. (2001). Variations in utilization and cost of inpatient psychiatric services among adults in Maryland. *Psychiatric Services, 52*(6), 841-843.

Burda, D. (1993). Providers' share of fraud cases rises: Survey. *Modern Healthcare, 23*, 17.

Burger, J., Lubbe, M., Serfontein, J., & Ellis, S. (2017). A cross-sectional analysis of the association between age and gender and prescribed minimum benefit chronic disease list conditions among South Africans with concomitant hypertension, diabetes and dyslipidaemia. *African Health Sciences*, *17*(1), 88–98. Retrieved from https://doi.org/10.4314/ahs.v17i1.12.

Business Tech. (October, 2019). The 5 biggest medical aid schemes in SA – what they offer, and how much they cost in 2019. Retrieved from: https://businesstech.co.za/news/finance/287446/the-5-biggest-medical-aid-schemes-in-sa-what-they-offer-and-how-much-they-cost-in-2019/.

Butler, A.C., Chapman, J.E., Forman, E.M., & Beck, A.T. (2006). The empirical status of cognitive-behavioral therapy: A review of meta-analyses. *Clinical Psychology Review, 26*(1), 17-31.

Byrne, P. (2007). Managing the acute psychotic episode. *British Medical Journal (Clinical Research Edition), 334*(7595), 686–692. doi:10.1136/bmj.39148.668160.80.

Cabassa, L.J., & Baumann, A.A. (2013). A two-way street: Bridging implementation science and cultural adaptations of mental health treatments. *Implementation Science, 8*, 90.

Carey, M.P., & Carey, K.B. (1999). Behavioral Research on the Severe and Persistent Mental Illnesses. *Behavior Therapy*, *30*(3), 345–353. Retrieved from https://doi.org/10.1016/S0005-7894(99)80014-8.

Caron, C., & Rutter, M. (1991). Comorbidity in child psychopathology: Concepts, issues and research strategies. *Journal of Child Psychology and Psychiatry*, *32*, 1063–80.

Cartwright, J., Lasser, J., & Gottlieb, M.C. (2017). To code or not to code: Some ethical conflicts in diagnosing children. *Practice Innovations, 2*(4), 195–206. Retrieved from https://doi.org/10.1037/pri0000053.

Centers for Disease Control and Prevention. (2017, August 28). Principles of epidemiology in public health practice. An introduction to applied epidemiology and biostatistics. Retrieved from https://www.cdc.gov/OPHSS/CSELS/DSEPD/SS1978/Lesson1/Section1.html.

Charlson, F., Van Ommeren, M., Flaxman, A., Cornett, J., Whiteford, H. & Saxena, S. (2019). New WHO prevalence estimates of mental disorders in conflict settings: A systematic review and meta-analysis. *The Lancet, 394*(10194), 240-248.

Cheung, M.W.L., & Chan, W. (2004). Testing dependent correlation coefficients via structural equation modeling. *Organizational Research Methods, 7*(2), 206-223.

Chisholm, D., Diehr, P., & Knapp, M. (2003). Depression status, medical comorbidity and resource costs. Evidence from an international study of major depression in primary care (LIDO). *British Journal of Psychiatry, 183*, 121–31.

Chisholm, D., Gureje, O., & Saldivia, S. (2008). Schizophrenia treatment in the developing world: An interregional and multinational cost-effectiveness analysis. *Bulletin of the World Health Organization, 86*, 542–51.

Chung, W., Cho, W.H., & Yoon, C.W. (2009). The influence of institutional characteristics on length of stay for psychiatric patients: A national database study in South Korea. *Social Science and Medicine, 68*(6), 1137-1144.

Ciesla, J., & Roberts, J. (2001). Meta-analysis of the relationship between HIV infection and risk for depressive disorders. *American Journal of Psychiatry, 158*, 725–730.

Cipriani, A., Furukawa, T.A., & Salanti, G. (2018). Comparative efficacy and acceptability of 21 antidepressant drugs for the acute treatment of adults with major depressive disorder: A review and network meta-analysis. *Lancet, 391*(10128), 1357-1366. doi: 10.1016/S0140-6736(17)32802-7.

Clark, D.M. (2011). Implementing NICE guidelines for the psychological treatment of depression and anxiety disorders: the IAPT experience. *International Review of Psychiatry*, *23*(4), 318–327. Retrieved from https://doi.org/10.3109/09540261.2011.606803.

Clark, L.A., Cuthbert, B., Lewis-Fernández, R., Narrow, W.E., & Reed, G.M. (2017). Three Approaches to Understanding and Classifying Mental Disorder: ICD-11, DSM-5, and the National Institute of Mental Health's Research Domain Criteria (RDoC). *Psychological Science in the Public Interest*, *18*(2), 72–145. Retrieved from https://doi.org/10.1177/1529100617727266.

Coffman, D.L., Maydeu-Olivares, A., & Arnau, J. (2008). Asymptotic distribution free interval estimation: for an intraclass correlation coefficient with applications to longitudinal data. *Methodology, 4*(1), 4-9.

Coggan, D., Barker, D., & Rose, G. (2003). *Epidemiology for the uninitiated*. New Jersey, USA: John Wiley & Sons.

Cole, D.A., Peeke, L.G., Martin, J.M., Truglio, R., & Seroczynski, A.D. (1998). A longitudinal look at the relation between depression and anxiety in children and adolescents. *Journal of Consulting and Clinical Psychology*, *66*(3), 451–460.

Cooper, C.C., & Gottlieb, M.C. (2000). Ethical issues with managed care: Challenges facing counseling psychology. *The Counseling Psychologist, 28*, 179–236.

Cooper, P.J., Tomlinson, M., Swartz, L., Landman, M., & Molteno, C. (2009). Improving quality of mother-infant relationships and infant attachment in a socioeconomically deprived community in South Africa: randomised controlled trial. *British Medical Journal, 338*, 1– 8.

Cooper, P.J., Tomlinson, M., Swartz, L., Woolgar, M., Murray, L., & Molteno, C. (1999). Post-partum depression and the mother-infant relationship in a South African peri-urban settlement. *British Journal of Psychiatry, 175*(6), 554–8. Retrieved from http://bjp.rcpsych.org/cgi/doi/10.1192/ bjp.175.6.554.

Coovadia, H., Jewkes, R., Barron, P., Sanders, D., & McIntyre, D. (2009). The health and health system of South Africa: historical roots of current public health challenges. *Lancet, 374*, 817-834.

Cosgrove, L., Bursztajn, H.J., & Krimsky, S. (2009). Developing unbiased diagnostic and treatment guidelines in psychiatry. *New England Journal of Medicine, 360*(19), 2035–2036. doi:10.1056/NEJMc0810237.

Cosgrove, L., Bursztajn, H.J., Kupfer, D.J., & Regier, D.A. (2006). Toward credible conflict of interest policies in clinical psychiatry. *Psychiatric Times, 26*(1).

Council for Medical Schemes. (March, 2019). Development of Low-Cost Benefit Options within the Medical Schemes Industry. Retrieved from:

https://www.medicalschemes.com/files/extras/LCBOFullDraft29March_final.pdf

Council for Medical Schemes. (October, 2019). Annual Report of the Council for Medical Schemes 2013/2014. ISBN: 978-0-620-60270-9. Retrieved from:

http://www.medicalschemes.com/files/Annual%20Reports/AR2013_2014LR.pdf.council

Council on Ethical and Judicial Affairs of the American Medical Association. (1994). Ethical issues in health care system reform. *The Journal of the American Medical Association, 272*, 1056-1062.

Crocq, M-A. (2013). Milestones in the history of Personality Disorders. *Dialogues in Clinical Neuroscience, 15*(2).

Crow, S.J., Peterson, C.B., Swanson, S.A., Raymond, N.C., Specker, S., Eckert, E.D., & Mitchell, J.E. (2009). Increased mortality in bulimia nervosa and other eating disorders. *American Journal of Psychiatry 166*, 1342-1346.

Cuffel, B.J., Snowden, L., Masland, M., & Piccagli, G. (1996). Managed care in the public mental health system. *Community Mental Health Journal, 32*, 109–124.

Cummings, N.A., Budman, S.H., & Thomas, J.L. (1998). Efficient psychotherapy as a viable response to scarce resources and rationing of treatment. *Professional Psychology: Research and Practice, 29*, 460–469.

D'Agostino, R., & Stephens, M. (1986). Goodness-of-Fit Techniques. New York: Marcel Dekker, Inc.

Danzinger, P.R., & Welfel, E.R. (2001). The impact of managed care on mental health counselors: A survey of perceptions, practices, and compliance with ethical standards. *Journal of Mental Health Counseling, 23*, 137–151.

Daré, L.O., Bruand, P.E., & Gérard, D. (2019). Co-morbidities of mental disorders and chronic physical diseases in developing and emerging countries: A meta-analysis. *BMC Public Health 19***,** 304. Retrieved from https://doi.org/10.1186/s12889-019-6623-6.

Davis, K. A., Sudlow, C. L., & Hotopf, M. (2016). Can mental health diagnoses in administrative data be used for research? A systematic review of the accuracy of routinely collected diagnoses. *BMC psychiatry*, *16*, 263. doi:10.1186/s12888-016-0963-x.

De Kock, J.H., & Pillay, B.J. (2017). A situation analysis of psychiatrists in South Africa's rural primary healthcare settings. *African Journal of Primary Healthcare and Family Medicine, 9*(1), 1-6. Retrieved from http://dx.doi.org/10.4102/phcfm.v9i1.1335.

Department of Health and Human Services (US). (2002, April 9). Mental health: A report of the Surgeon General. Retrieved from https://profiles.nlm.nih.gov/ps/retrieve/ResourceMetadata/NNBBHS.

Department of Health and Human Services: Substance Abuse and Mental Health Service Administration Center for Mental Health Services, National Institute of Health, National Institute of Mental Health. (2004, June 20). Mental health: A report of the Surgeon General—

Executive Summary. Retrieved from

http://www.surgeongeneral.gov/library/mentalhealth/summary.html.

Des Jarlais, D.C., Arasteh, K., & Perlis, T. (2007). Convergence of HIV seroprevalence among injecting and non-injecting drug users in New York City. *AIDS, 21*, 231–5.

Devereux, G. (1956). Normal and abnormal: The key problem of psychiatric anthropology. In: Some Uses of Anthropology: Theoretical and applied. Washington DC: Anthropological Society of Washington, 23 - 48.

Dhanda, A., & Jagawat, T. (2013). Prevalence and pattern of learning disabilities in schoolchildren. *Delhi Psychiatry Journal, 16*(2), 386 – 390.

Director's Biography. (2013, May 22). National Institute of Mental Health. Retrieved from https://www.nimh.nih.gov/index.shtml.

Dirks, E., Spyer, G., van Lieshout, E.C., & de Sonneville, L. (2008). Prevalence of combined reading and arithmetic disabilities. *Journal of Learning Disabilities, 41*, 460–473.

Disability Adjusted Life Years (DALYs). (2008). In: Kirch W. (eds) Encyclopedia of Public Health. Springer, Dordrecht. Retrieved from https://doi.org/10.1007/978-1-4020-5614-7_807.

Discovery Integrated Annual Report. (2018). Retrieved from https://www.discovery.co.za/assets/discoverycoza/medical-aid/about-dhms/dhms-ir-2018.pdf.

Drake, R.E., Mueser, K.T., Clark, R.E., & Wallach, M.A. (1996). The course, treatment and outcome of substance disorder in persons with severe mental illness. *American Journal of Orthopsychiatry*, *66*(1), 42–51.

Driessen, E., & Hollon, S.D. (2010). Cognitive behavioral therapy for mood disorders: Efficacy, moderators and mediators. *The Psychiatric Clinics of North America, 33*(3), 537–55.

Egbe, C., Brooke-Sumner, C., Kathree, T., Selohilwe, O., Thornicroft, G., & Petersen, I. (2014). Psychiatric stigma and discrimination in South Africa: Perspectives from key stakeholders. *BMC Psychiatry, 14*(1), 1.

Eisenberg, J. (1986). Doctors' Decisions and the Cost of Medical Care. Ann Arbor, Michigan: Health Administration Press.

El-Sayeh, H.G., & Morganti, C. (2006). Aripiprazole for schizophrenia. *Cochrane Database of Systematic Reviews*, *2*, Art. No.: CD004578. doi: 10.1002/14651858.CD004578.pub3.

Emsley, R., Chiliza, B., Asmal, L., & Harvey, B.H. (2013). The nature of relapse in schizophrenia. *BMC Psychiatry*, *13*, 50. Retrieved from https://doi.org/10.1186/1471-244X-13-50.

Epstein, A.M., & Ayanian, J.Z. (2001). Racial Disparities in Medical Care. *New England Journal of Medicine*, *344*, 1471–1473.

Erasmus, S. (2016, April 13). Ten things your medical scheme cannot do. Retrieved from https://www.fin24.com/Money/Health/10-things-your-medical-scheme-cannot-do-20160413.

Esteban, L., Navas, P., Verdugo, M.Á., & Arias, V.B. (2021). Community Living, Intellectual Disability and Extensive Support Needs: A Rights-Based Approach to Assessment and Intervention. *International Journal of Environmental Research and Public Health*, *18*(6), 3175. Retrieved from https://doi.org/10.3390/ijerph18063175.

Etikan, I., Abubakar, S., & Alkassim, R. (2017). Frequency measures of epidemiological studies. *Biometrics & Biostatistics International Journal, 5*(1), 20-23. doi: 10.15406/bbij.2017.05.00124.

Felman, A. (2018, November 1). What to know about anxiety. *Medical News Today*. Retrieved from: https://www.medicalnewstoday.com/articles/323454.php.

Ferri, C.P., Prince M., & Brayne, C. (2005). Global prevalence of dementia: A Delphi consensus study. *The Lancet, 366*, 2112–2117.

First, M.B., & Tasman, A. (2004). DSM-IV-TR Mental Disorders: Diagnosis, Etiology, and Treatment. West Sussex, England: John Wiley & Sons, Ltd.

First, M.B., Rebello, T.J., Keeley, J.W., Bhargava, R., Dai, Y., Kulygina, M., Matsumoto, C., Robles, R., Stona, A.C., & Reed, G.M. (2018). Do mental health professionals use diagnostic classifications the way we think they do? A global survey. *World Psychiatry: Official Journal of the World Psychiatric Association (WPA)*, *17*(2), 187–195. Retrieved from https://doi.org/10.1002/wps.20525.

Fish, T., Ramjee, S., Richards, B., Hongoro, C., Hoffman, H., & McLeod, H. (2006). Assessment of the Impact of the DSP and CDL Legislation on the Medical Scheme Environment. Pretoria: Council for Medical Schemes.

Fiske, A., Wetherell, J. L., & Gatz, M. (2009). Depression in older adults. *Annual Review of Clinical Psychology, 5*, 363–389. doi:10.1146/annurev.clinpsy.032408.153621.

Fleischhacker, W.W., Arango, C., Arteel, P., Barnes, T.R., Carpenter, W., Duckworth, K., Galderisi, S., Halpern, L., Knapp, M., Marder, S.R., Moller, M., Sartorius, N., & Woodruff, P. (2014). Schizophrenia - time to commit to policy change. *Schizophrenia Bulletin*, *40*(3), S165–S194. Retrieved from https://doi.org/10.1093/schbul/sbu006.

Foa, E.B., Kozak, M.J., Goodman, W.K., Hollander, E., Jenike, M.A., & Rasmussen, S.A. (1995). DSM-IV field trial: Obsessive-compulsive disorder. *American Journal of Psychiatry, 152*(1), 90-6.

Foa, E.B., Steketee, G., Grayson, J.B., Turner, R.M., & Latimer, P.R. (1984). Deliberate exposure and blocking of obsessive-compulsive rituals: Immediate and long-term effects. *Behavior Therapy, 15*, 450–472.

Folland, S., Goodman, A.C., & Stano, M. (2013). The Economics of Health and Health Care. New Jersey: Pearson Education, Inc.

Frances, A., Mack, A.H., Ross, R., First, M.B. (2000) The DSM-IV Classification and Psychopharmacology. In Bloom, Floyd E.; Kupfer, David J. (eds.). *Psychopharmacology: The Fourth Generation of Progress*. American College of Neuropsychopharmacology.

Freeman, M., Nkomo, N., Kafaar, Z., & Kelly, K. (2008). Mental disorder in people living with HIV/AIDS in South Africa. *South African Journal of Psychology, 38*(3), 489–500.

Freeman, V., Rathore, S., Weinfurt, K., Schulman, K., & Sulmasy, D. (1999). Lying for patients: Physician deception of third-party payers. *Archives of Internal Medicine, 159*, 2263-2270.

Freiman, M.P., Cunningham, W., & Cornelius, L. (1994). Use and expenditures for the treatment of mental health problems: National medical expenditure survey research findings. Publication 94-0085. Rockville, Md, Agency for Health Care Policy and Research. Retrieved from https://ps.psychiatryonline.org/doi/abs/10.1176/appi.ps.54.2.188.

Friedman, M.J., Resick, P.A., Bryant, R.A., & Brewin, C.R. (2011). Considering PTSD for DSM-5. *Depression and Anxiety, 28*(9), 750–769. doi:10.1002/da.20767.

Friedman, M.J., Resick, P.A., Bryant, R.A., Strain, J., Horowitz, M., & Spiegel, D. (2011). Classification of trauma and stressor-related disorders in DSM-5. *Depression and Anxiety, 28*(9), 737–749. doi:10.1002/da.20845.

Galderisi, S., Heinz, A., Kastrup, M., Beezhold, J., & Sartorius, N. (2015). Toward a new definition of mental health. *World Psychiatry: Official Journal of the World Psychiatric Association (WPA)*, *14*(2), 231–233. Retrieved from https://doi.org/10.1002/wps.20231.

Gaudiano, B.A. (2008). Cognitive-behavioural therapies: Achievements and challenges. *Evidence-based Mental Health*, *11*(1), 5-7.

Geller, D.A. (2006). Obsessive-compulsive and spectrum disorders in children and adolescents. *Psychiatric Clinics of North America, 29*(2), 353-70.

Ginige, P., Tennakoon, S.U., Wijesinghe, W.H., Liyanage, L., Herath, P.S., & Bandara, K. (2014). Prevalence of behavioral and emotional problems among seven to eleven-year-old children in selected schools in Kandy District, Sri Lanka. *Journal of Affective Disorders, 167*, 167-70. doi: 10.1016/j.jad.2014.05.062.

Global Burden of Disease Collaborative Network (GBD). 2017. Global Burden of Disease Study 2017 Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2018.

Global Burden of Disease Study 2013. (2013). Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990–2013: A systematic analysis for the Global Burden of Disease Study 2013. *The Lancet*, *386*(9995), 743–800.

Glosoff, H.L. (1998). Managed care: A critical ethical issue for counselors. *Counseling and Human Development, 31*(2), 1–16.

Glosoff, H.L., Garcia, J., Herlihy, B., & Remley, T.P. (1999). Managed care: Ethical considerations for counselors. *Counseling and Values, 44*, 8–16.

Goldman, L. (2019, November 22). What is depression and what can I do about it? Medical News Today. Retrieved from https://www.medicalnewstoday.com/kc/depression-causes-symptoms-treatments-8933.

Gomes de Matos, E., Gomes de Matos, T.M., & Gomes de Matos, G.M. (2005). Importance and constraints of the DSM-IV use in the clinical practice. *Revista de Psiquiatria do Rio Grande do Sul*, *27*(3), 312-318. Retrieved from https://doi.org/10.1590/S0101-81082005000300010.

Good, R.X. (2018, September 13). Benzodiazepines. Retrieved from https://www.goodrx.com/benzodiazepines.

Goodrich, D.E., Kilbourne, A.M., Nord, K.M., & Bauer, M.S. (2013). Mental health collaborative care and its role in primary care settings. *Current Psychiatry Reports*, *15*(8), 383. Retrieved from https://doi.org/10.1007/s11920-013-0383-2.

Goodwin, G.M., Haddad, P.M., Ferrier, I.N., Aronson, J.K., Barnes, T., Cipriani, A., Coghill, D.R., Fazel, S., Geddes, J.R., Grunze, H., Holmes, E.A., Howes, O., Hudson, S., Hunt, N., Jones, I., Macmillan, I.C., McAllister-Williams, H., Miklowitz, D.R., Morriss, R., Munafò, M., & Young, A. H. (2016). Evidence-based guidelines for treating bipolar disorder: Revised third edition recommendations from the British Association for Psychopharmacology. *Journal of Psychopharmacology*, *30*(6), 495–553. Retrieved from https://doi.org/10.1177/0269881116636545.

Goold, S., Hofer, T., Zimmerman, M., & Hayward, R. (1999). Measuring physician attitudes towards cost, uncertainty, malpractice, and utilization review. *Journal of General Internal Medicine, 9*, 544-549.

Gopalkrishnan, N. (2018). Cultural Diversity and Mental Health: Considerations for Policy and Practice. *Frontiers in Public Health*, *6*, 179. Retrieved from https://doi.org/10.3389/fpubh.2018.00179.

Government of South Africa. (2002, November 6). Mental Health Care Act 17 of 2002. Government Gazette Volume 449, No. 24024. Pretoria: Government Printers; 2002. [cited 24 March 2016]. Retrieved from http://www.capementalhealth.co.za/Images/Act.pdf.

Grant, B.F., Stinson, F.S., & Hasin, D.S. (2005). Prevalence, correlates, and comorbidity of bipolar I disorder and axis I and II disorders: results from the National Epidemiologic Survey on alcohol and related conditions. *Journal of Clinical Psychiatry, 66*(10), 1205–1215.

Gray, A., & Vawda, Y. (2018). Health Legislation and Policy. In: Rispel LC, Padarath A, editors. South African Health Review 2018. Durban: Health Systems Trust; 2018. Retrieved from http://www.hst.org.za/publications/Pages/SAHR2018.

Greden, J.R. (2001). The burden of recurrent depression: Causes, consequences and future prospects. *Journal of Clinical Psychiatry, 62*, 5–9.

Grivois, H. (1992). Becoming Crazy. Paris: Synthélabo.

Grover, S., Avasthi, A., & Chakrabarti, S. (2005). Cost of care of schizophrenia: a study of Indian out-patient attenders. *Acta Psychiatrica Scandinavica, 112*, 54–63.

Grumet, G. (1989). Health care rationing through inconvenience. *New England Journal of Medicine, 321*, 607-611.

Guest, J.F., & Cookson, R.F. (1999). Cost of schizophrenia to UK society. An incidence-based cost-of-illness model for the first 5 years following diagnosis. *PharmacoEconomics, 15*(6), 597-610.

Gureje, O., & Alem, A. (2000). Mental health policy development in Africa. *Bulletin of the World Health Organization, 78*, 475–82.

Gureje, O., Lasebikan, V.O., Kola, L., & Makanjuola, V.A. (2006). Lifetime and 12-month prevalence of mental disorders in the Nigerian Survey of Mental Health and Well-Being. *British Journal of Psychiatry, 188*, 465–471.

Hacking, I. (1999). The social construction of what? Cambridge, MA: Harvard University Press, 113 - 14.

Hagnell, O., & Graesbeck, A. (1990). Comorbidity of anxiety and depression in the Lundby 25-Year Prospective Study: The pattern of subsequent episodes. In J. D. Maser & C. R. Cloninger (Eds.), Comorbidity of mood and anxiety disorders (pp. 139–152). Washington: American Psychiatric Press.

Hall, W. (1996). What have population surveys revealed about substance use disorders and their co-morbidity with other mental disorders? *Drug and Alcohol Review, 15*, 157–70.

Hall, W. (1998). Cannabis and psychosis. *Drug and Alcohol Review, 17*, 433–44.

Hall, W., Lynskey, M., & Teesson, M. (2001). What is comorbidity and why does it matter? In M. Teesson & L. Burns (Eds) National Drug Strategy: National Comorbidity Project, National Drug and Alcohol Research Centre, University of NSW, Sydney. pp. 11-12.

Hart, L.M., Granillo, M.T., Jorm, A.F., & Paxton, S.J. (2011). Unmet need for treatment in the eating disorders: A systematic review of eating disorder specific treatment seeking among community cases. *Clinical Psychology Review, 31*(5), 727-735. doi: 10.1016/j.cpr.2011.03.004.

Hassan, I., McCabe, R., & Priebe, S. (2007). Professional-patient communication in the treatment of mental illness: A review. *Communication and Medicine, 4*(2), 141-152.

Hathaway, L.M., Boals, A., & Banks, J.B. (2010). PTSD symptoms and dominant emotional response to a traumatic event: An examination of DSM-IV criterion A2. *Anxiety, Stress and Coping, 23*(1), 119–126. doi:10.1080/10615800902818771.

Hauenstein, E.J., Petterson, S., Merwin, E., Rovnyak, V., Heise, B., & Wagner, D. (2006). Rurality, gender, and mental health treatment. *Family & Community Health, 29*(3), 169-185.

Health, 24. (2017, July 18). South Africa has one of the highest prescription rates for ADHD medication. Retrieved from https://www.health24.com/Medical/ADHD/Treatment/SA-has-one-of-the-highest-prescription-rates-for-ADHD-medication-20150216.

Health24. (2013, June 19). One in ten in SA has addiction problem. Retrieved from https://www.health24.com/Lifestyle/Street-drugs/News/Dagga-alcohol-top-SA-drug-choices-20130618.

Health24. (2017, June 29). Sixty percent of SA teens have been drunk. Retrieved from https://www.health24.com/Lifestyle/Street-drugs/About-recreational-drugs/see-60-of-sa-teens-have-been-drunk-20170628.

Henderson, C., Evans-Lacko, S., & Thornicroft, G. (2013). Mental illness stigma, help seeking, and public health programs. *American Journal of Public Health, 103*(5), 777–780. doi:10.2105/AJPH.2012.301056.

Herman, A.A., Stein, D.J., Seedat, S., Heeringa, S.G., Moomal, H., & Williams, D.R. (2009). The South African stress and health (SASH) Study: 12-month and lifetime prevalence of common mental disorders. *South African Medical Journal, 99*(5), 339-44.

Hibbard, J., & Weeks, E. (1987). Consumerism in health care. *Medical Care, 25*, 1019-1032.

Hibbard, J., Slovic, P., & Jewett, J. (1997). Informing consumer decisions in health care. *Milbank Quarterly, 75*, 395-414.

Hickey, P. (2014, April 4). Justina Pelletier: The case continues. Mad in America. Retrieved from https://www.madinamerica.com/2014/04/justina-pelletier-case-continues.

Hidaka, B.H. (2012). Depression as a disease of modernity: Explanations for increasing prevalence. *Journal of Affective Disorders*, *140*(3), 205–214. Retrieved from https://doi.org/10.1016/j.jad.2011.12.036.

Highlights of Changes from DSM-IV-TR to DSM-5 (PDF). (2013, October 19). American Psychiatric Publishing. American Psychiatric Association. Retrieved from: file:///C:/Users/Merrill.VanDerWalt/Downloads/APA_DSM_Changes_from_DSM-IV-TR_-to_DSM-5%20(2).pdf.

Hilzenrath, D. (1998, March 15). Healing vs honesty: For doctors, managed care's cost controls pose moral dilemma. Washington Post. Retrieved from https://europepmc.org/abstract/med/11647572.

Hoek, H.W. (2006). Incidence, prevalence and mortality of anorexia nervosa and other eating disorders. *Current Opinion in Psychiatry, 19*(4), 389-94.

Houts, A.C. (2000). Fifty years of psychiatric nomenclature: Reflections on the 1943 War Department Technical Bulletin, Medical 203. *Journal of Clinical Psychology*, *56*(7), 935–967.

How physician organizations are responding to managed care. (1999). Washington, DC: Center for Studying Health System Change. Health System Change Issue Brief 20. Retrieved from http://www.hschange.org/index.cgi?func=new.

Huff, E.D. (2000). Outpatient utilization patterns and quality outcomes after first acute episode of mental health hospitalization. *Evaluation & the Health Professions, 23*, 441–457.

Hyman, S. (2006). Mental health disorders. In: Disease Control Priorities in Developing Countries. New York, New York: Oxford University Press.

IFC: Independent Financial Consultants. (2019, October 15). Medical Aid schemes that cover psychotherapy. Retrieved from: https://www.medicalaid-quotes.co.za/articles/medical-aid-schemes-cover-psychotherapy.

InformedHealth.org. Institute for Quality and Efficiency in Health Care. (2017). Depression: How effective are antidepressants? Retrieved from: https://www.ncbi.nlm.nih.gov/books/NBK361016/.

Insel, T. (2013, April 29). Transforming Diagnosis. Retrieved from https://www.nimh.nih.gov/about/directors/thomas-insel/blog/2013/transforming-diagnosis.shtml.

Institute of Medicine (US). Committee on Nervous System Disorders in Developing Countries. Neurological, Psychiatric, and Developmental Disorders: Meeting the Challenge in the Developing World. (2001). Washington (DC): National Academies Press (US). Retrieved from: https://www.ncbi.nlm.nih.gov/books/NBK223473/.

Institute of Medicine. (2001). Neurological, Psychiatric, and Developmental Disorders: Meeting the challenge in the developing world. Washington, DC: The National Academies Press. Retrieved from https://doi.org/10.17226/10111.

Institute of Medicine. (2002). Committee on the Consequences of insurance. Care Without Coverage: Too Little, Too Late. Effects of Health Insurance on Health. Washington (DC): National Academies Press. Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK220636/.

Jablensky, A. (2000). Prevalence and incidence of schizophrenia spectrum disorders: Implications for prevention. *Australian and New Zealand Journal of Psychiatry, 34,* S26-34.

Jaisoorya, T.S., Janardhan Reddy, Y.C., Nair, B.S., Rani, A., Menon, P.G., Revamma, M., Jeevan, C.R., Radhakrishnan, K.S., Jose, V., & Thennarasu, K. (2017). Prevalence and correlates of obsessive-compulsive disorder and subthreshold obsessive-compulsive disorder among college students in Kerala, India. *Indian Journal of Psychiatry*, *59*(1), 56-62.

Jampala, V.C., Zimmerman, M., Sierles, F.S., & Taylor, M.A. (1992). Consumers' attitude toward DSM-III and DSM-III-R: A 1989 survey of psychiatric educators, researchers, practitioners, and senior residents. *Comprehensive Psychiatry, 33*, 180–185.

Janardhan Reddy, Y.C., Sundar, A.S., Narayanaswamy, J.C., & Math, S.B. (2017). Clinical practice guidelines for obsessive-compulsive disorder. *Indian Journal of Psychiatry*, *59*(Suppl 1), S74-S90.

Janmeja, A.J., Das, S.K., & Bhargava, R. (2005). Psychotherapy improves compliance with tuberculosis treatment. *Respiration, 72*, 375–80.

Jayashree, K., Mithra, P. P., Nair, M., Unnikrishnan, B., & Pai, K. (2018). Depression and Anxiety Disorders among school going adolescents in an urban area of south India. *Indian Journal of Community Medicine, 43*(1), S28–S32. doi:10.4103/ijcm.IJCM_209_18.

Jenkins, R., Baingana, F., Ahmad, R., McDaid, D., & Atun, R. (2011). Mental health and the global agenda: Core conceptual issues. *Mental Health in Family Medicine*, *8*(2), 69–82.

Jenkins, R., Kiima, D., & Njenga, F. (2010). Integration of mental health into primary care in Kenya. *World Psychiatry, 9*, 118–20.

John, P. (2010 [a]). Learning and other developmental disorders in India. *Indian Journal of psychiatry*, *52*(Suppl 1), S224-8.

John, P. (2010 [b]). Boundary debates: The new challenge of Psychiatry. *Indian Journal of Psychiatry, 52(2), 106-9.*

Johnsen, E. (1994). Utilization management and its impact on client well-being: The next frontier for mental health counseling. *Journal of Mental Health Counseling, 16*, 279–285.

Kagee, A., & Martin, L. (2010). Symptoms of depression and anxiety among a sample of South African patients living with HIV. *AIDS Care, 22*(2), 159–165. Retrieved from http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve, &db=PubMed, &dopt=Citation, &list_uids=20390494.

Kalaria, R.N., Maestre, G.E., Arizaga, R., Friedland, R.P., Galasko, D., Hall, K., Luchsinger, J.A., Ogunniyi, A., Perry, E.K., Potocnik, F., Prince, M., Stewart, R., Wimo, A., Zhang, Z.X.,

& Antuono, P. (2008). Alzheimer's disease and vascular dementia in developing countries: Prevalence, management, and risk factors. *The Lancet. Neurology*, *7*(9), 812-26.

Kalb, P. (1999). Health care fraud and abuse. *Journal of the American Medical Association, 282*, 1163-1168.

Kandel, D.B., Davies, M., Karus, D., & Yamaguchi, K. (1986). The consequences in young adulthood of adolescent drug involvement. *Archives of General Psychiatry, 43*, 746–754.

Kar, S.S., Pradhan, H.S., & Mohanta, G.P. (2010). Concept of essential medicines and rational use in public health. *Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine*, *35*(1), 10–13. Retrieved from https://doi.org/10.4103/0970-0218.62546.

Karam, E.G., Andrews, G., Bromet, E., Petukhova, M., Ruscio, A.M., & Salamoun, M. (2010). The Role of Criterion A2 in the DSM-IV Diagnosis of Posttraumatic Stress Disorder. *Biological Psychiatry, 68*(5), 465–473. doi: 10.1016/j.biopsych.2010.04.032.

Karim, S.A., Churchyard, G., Karim, Q.A., & Lawn, S. (2009). HIV infection and tuberculosis in South Africa: An urgent need to escalate the public health response. *Lancet, 374*(9693), 921–933.

Karno, M., Golding, J.M., Sorenson, S.B., & Burnam, M.A. (1998). The epidemiology of obsessive-compulsive disorder in five US communities. *Archives of General Psychiatry, 45*, 1094-1099.

Kaskie, B., Wallace, N., Kang, S., & Bloom, J: (2006). The implementation of managed behavioral healthcare in Colorado and the effects on older Medicaid beneficiaries. *The Journal of Mental Health Policy and Economics, 9*(1), 15-24.

Kendall, P.C., Flannery-Schroeder, E., Panichelli-Mindel, S.M., & Southam-Gerow, M. (1997). Therapy for youths with anxiety disorders: A second randomized clinical trial. *Journal of Consulting and Clinical Psychology, 65*(3), 366–380.

Kendler, K.S. (1996). Major depression and generalised anxiety disorder. Same genes, (partly) different environments — revisited. *British Journal of Psychiatry, 30*, 68–75.

Kessler, R. (1995). The epidemiology of psychiatric comorbidity. In M.T. Tsuang, M. Tohen, & G. Zahner (eds) Textbook of Psychiatric Epidemiology. John Wiley and Sons, New York.

Kessler, R., & Ustun, T. (2001*).* Institute of Medicine Neurological, Psychiatric, and Developmental Disorders: Meeting the challenge in the developing world. Washington DC: National Academy Press.

Kessler, R.C., & Bromet, E.J. (2013). The epidemiology of depression across cultures. *Annual Review of Public Health*, *34*, 119-38.

Kessler, R.C., Berglund, P., Demler, O., Jin, R., Merikangas, K.R., & Walters, E.E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry, 62*(6), 593-602*.*

Kiesler, C.A. (2000). The next wave of change for psychology and mental health services in the health care revolution. *American Psychologist, 55*, 481–487.

Killoran, A., & Kelly, M.P. (2009). Evidence-based Public Health: Effectiveness and efficiency. Oxford, England: Oxford University Press.

Kim, J.H., Lee, K.S., Yoo, K.B., & Park, E.C. (2015). The differences in health care utilization between Medical Aid and health insurance: A longitudinal study using propensity score matching. *PloS one*, *10*(3), e0119939. Retrieved from https://doi.org/10.1371/journal.pone.0119939.

Kim, Y. (2000). Psychiatric reimbursement reform in Korea. *Journal of Korean Association of Social Psychiatry, 5*(1), 44-60.

Kirigia, J., & Sambo, L. (2003). Cost of mental and behavioural disorders in Kenya. *Annals of General Hospital Psychiatry, 2*, 7.

Kirk, S.A., & Kutchins, H. (1988). Deliberate misdiagnosis in mental health practice. *Social Service Review, 62*, 225–237.

Kleinman, A. (1986). Social origins of distress and disease: Depression, neurasthenia and pain in modern china. New Haven, Connecticut: Yale University Press.

Kleinman, A. (1988). Rethinking Psychiatry: From cultural category to personal experience. New York: Free Press.

Kleinman, A., & Cohen, A. (1997). Psychiatry's Global Challenge. *Scientific American, 276*(3), 86-89. Retrieved from http://www.jstor.org/stable/24993661.

KMGL (Korea Ministry of Government Legislation). (2010, July 15). Medical Care Law. Seoul. Retrieved from http://www.moleg.go.kr/english/korLawEng?pageIndex=2.

Knapp, M., Funk, M., & Curran, C. (2006). Mental health in low-and middle-income countries: Economic barriers to better practice and policy. *Health Policy and Planning, 21*, 157–70.

Korea Ministry of Health and Welfare (KMHW) and National Health Insurance Corporation (NHIC). (2015). National Medical Care Aid Statistical Yearbook Seoul, Korea. Retrieved from http://apps.who.int/iris/bitstream/10665/208215/1/9789290617105_eng.pdf.

Kranzler, H.R., Del Boca, F.K., & Rousaville B.J. (1996). Comorbid psychiatric diagnosis predicts three-year outcomes in alcoholics: A post-treatment natural history study. *Journal of Studies on Alcohol, 57*, 619–26.

Krieger, N. (1994). Epidemiology and the web of causation: Has anyone seen the spider? *Social Science and Medical Journal 39***,** 887–903.

Krieger, N., & Zierler, S. (1995). What explains the public's health? A call for epidemiologic theory. *Epidemiology*, *7***,** 107–09.

Krueger, R.F., Hopwood, C.J., Wright, A.G., & Markon, K.E. (2014). DSM-5 and the path toward empirically based and clinically useful conceptualization of personality and psychopathology. *Clinical Psychology: Science and Practice, 21*(3), 245–261. doi:10.1111/cpsp.12073. ISSN 1468-2850.

Kuhn, T.S. (1996). The Structure of Scientific Revolutions, 3rd Edition. Chicago, Illinois: The University of Chicago Press.

Kumar, M.G., & Shanker, R. (2017). Statistical Techniques for Transportation Engineering, Chapter 6 - Correlation and Regression. Publisher: Butterworth-Heinemann. ISBN

9780128115558. Retrieved from

https://www.sciencedirect.com/science/article/pii/B9780128115558000064.

Kuria, M.W., Ndetei, D.M., Obot, I.S., Khasakhala, L.I., Bagaka, B.M., Mbugua, M.N., &

Kamau, J. (2012). The Association between Alcohol Dependence and Depression before and

after Treatment for Alcohol Dependence. *ISRN Psychiatry*, 482802. Retrieved from

https://doi.org/10.5402/2012/482802.

Lack, C.W. (2012). Obsessive-compulsive disorder: Evidence-based treatments and future

directions for research. *World Journal of Psychiatry*, *2*(6), 86-90.

Lampros, S., & Talias, M. (2020). Assessing and improving the quality in mental health

services. *International Journal of Environmental Research and Public Health, 17*, 249-280.

Landerl, K., & Moll, K. (2010). Comorbidity of learning disorders: Prevalence and familial

transmission. *Journal of Child Psychology and Psychiatry, 51*, 287–294.

Larson, B.A. (2013). Calculating disability-adjusted-life-years lost (DALYs) in discrete-time.

Cost Effective Resource Allocation 11, 18. Retrieved from https://doi.org/10.1186/1478-7547-

11-18.

Last, J.A. (1988). A Dictionary of Epidemiology. Oxford, England: Oxford University Press.

Latour, B. (1987). Science in Action: How to follow scientists and engineers through society.

Cambridge, MA: Harvard University Press.

Learning Disabilities Association of America. (2018, August 24). New to learning disabilities.

Retrieved from https://ldaamerica.org/support/new-to-ld/.

Lee, Y.M., Kim, J.H., Lee, H.Y., Jeong, Y.K., Lim, K.Y., Lee, J.H., & Rhee, C.S. (1998). Length of stay in the mental health facilities in Korea. *Journal of Korean Neuropsychiatric Association, 37*(1), 83-94.

Levinson, D., Lerner, Y., & Lichtenberg, P. (2003). Reduction in inpatient length of stay and changes in mental health care in Israel over four decades: A national case register study. *The Israel Journal of Psychiatry and Related Sciences, 40*(4), 240-247.

Lévi-Strauss, C. (1950). Introduction to the work of Marcel Mauss. In Marcel Mauss, Sociology and Anthropology. Paris, France: Presses Universitaires de France.

Lewis, C., Hitch, G.J., & Walker, P. (1994). The prevalence of specific arithmetic difficulties and specific reading difficulties in nine to 10-year-old boys and girls. *Journal of Child Psychology and Psychiatry, 35*, 283–292.

Lewis-Beck, M.S., Bryman, A., & Futing Liao, T. (2004). *The SAGE Encyclopedia of Social Science Research Methods*. Publisher: Thousand Oaks, CA: Sage Publications. doi: 10.4135/9781412950589.

Lieberman, J., Stroup, T.S., & McEvoy, J.P. (2005). Effectiveness of antipsychotic drugs in patients with chronic schizophrenia. *New England Journal of Medicine, 353*, 1209–1223.

Lim, G.Y., Tam, W.W., Lu, Y., Ho, C.S., Zhang, M.W., & Ho, R.C. (2018). Prevalence of Depression in the Community from 30 Countries between 1994 and 2014. *Scientific Reports, 8*(1), 2861. doi:10.1038/s41598-018-21243-x.

Lincoln, Y.S., & Guba, E.G. (1985). Naturalistic Inquiry. California: Sage Publications.

Liu, X., Liu, L., Owens, J.A., & Kaplan, D.L. (2005). Sleep patterns and sleep problems among schoolchildren in the United States and China. *Pediatrics*, *115*(1), 241–249.

Lo, B. (1995). Misrepresenting the patient's condition to gain benefits. In: Resolving Ethical Dilemmas: A Guide for Clinicians. Baltimore, Maryland: Williams & Wilkins.

London Health Observatory. (2015, August 24). Summary-mapping health intelligence in London. Retrieved from http://www.lho.org.uk/viewResource.aspx?id=10898.

Lopez, A.D., Mathers, C.D., & Ezzati, M. (2006). Global Burden of Disease and Risk Factors. Washington (DC): The International Bank for Reconstruction and Development/The World Bank. Retrieved from: https://www.ncbi.nlm.nih.gov/books/NBK11812/

Lund, C., & Flisher, A.J. (2002). Staff/bed and staff/patient ratios in South African public sector mental health services. *South African Medical Journal, 92*(2), 157-61.

Lund, C., Breen, A., Flisher, A.J., Kakuma, R., Corrigall, J., & Joska, J.A. (2010). Poverty and common mental disorders in low- and middle-income countries: A systematic review. *Social Science and Medicine, 71*(3), 517-28. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/20621748.

Lund, C., Stein, D.J., Corrigall, J., Bradshaw, D., Schneider, M., & Flisher, A.J. (2008). Mental health is integral to public health: A call to scale up evidence-based services and develop mental health research. *South African Medical Journal*, *98*(6), 444-446. Retrieved February 14, 2019, from http://www.scielo.org.za/scielo.php.

Malhi, G., Mann, J. (2018). Depression. *The Lancet, 392*(10161), 2299-2312.

Manikkam, L., & Burns, J.K. (2012). Antenatal depression and its risk factors: An urban prevalence study in KwaZulu-Natal. *South African Medical Journal, 102*(12), 940–944.

Mark, T.L., Levit, K.R., Buck, J.A., Coffey, R.M., & Vandivort-Warren, R. (2007). Mental health treatment expenditure trends, 1986-2003. *Psychiatric Services, 58*(8), 1041-1048.

Markowitz, J.S., Straughn, A.B., & Patrick, K.S. (2003). Advances in the pharmacotherapy of attention-deficit-hyperactivity disorder: Focus on methylphenidate formulations. *Pharmacotherapy*, *23*(10), 1281–1299. doi:10.1592.

Marquez, P. V., & Saxena, S. (2016). Making Mental Health a Global Priority. *Cerebrum: The Dana forum on Brain Science*, cer-10-16.

Marx, M.H., & Hillix, W.A. (1963). Systems and Theories in Psychology. New York, New York: Wiley.

Masroor, A., Patel, R.S., Bhimanadham, N.N., Raveendran, S., Ahmad, N., Queeneth, U., Pankaj, A., & Mansuri, Z. (2019). Conduct Disorder-Related Hospitalization and Substance Use Disorders in American Teens. *Behavioral Sciences (Basel, Switzerland)*, *9*(7), 73. Retrieved from https://doi.org/10.3390/bs9070073.

Mathers, C., & Loncar, D. (2006, November 28). Updated projections of global mortality and burden of disease, 2002–2030. Retrieved from https://doi.org/10.1371/journal.pmed.0030442.

Matthew, K., Wynia, M.P., Cummins, D.S., Van Geest, J.B., & Wilson, I. (2000). Physician manipulation of reimbursement rules for patients. *Journal of the American Medical Association, 283*(14), 1858-1865. doi:10.1001/jama.283.14.1858.

Mayosi, B.M., Flisher, A.J., Lalloo, U.G., Sitas, F., Tollman, S.M., & Bradshaw, D. (2009). The burden of non-communicable diseases in South Africa. *Lancet, 374*(9693), 934-47. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/19709736.

Mbatia, J., & Jenkins, R. (2010). Development of a mental health policy and system in Tanzania: An integrated approach to achieve equity. *Psychiatric Services, 61*, 1028–31.

Mbele, Z. (2017). Patient participation: A vital component. *Mental Health Matters*, *4*(5), 16-17.

McDaid, D., Knapp, M., & Raja, S. (2008). Barriers in the mind: Promoting an economic case for mental health in low-and middle-income countries. *World Psychiatry, 7*, 79–86.

McGrath, J., Saha, S., Chant, D., & Welham, J. (2008). Schizophrenia: A concise overview of incidence, prevalence, and mortality. *Epidemiological Review, 30*, 67-76.

McQuoid-Mason, D. (2011). Medical ethics and the payment of fees before treatment. *South African Medical Journal, 101*(11), 798-799.

Mead, M.A., Hohenshil, T.H., & Singh, K. (1997). How the DSM system is used by clinical counselors: A national study. *Journal of Mental Health Counseling, 19*, 383–402.

Mechanic, D., & Aiken, L. (1989). Capitation in mental health: Potentials and cautions. In Paying for Services: Promises and Pitfalls of Capitation. San Francisco: Jossey-Bass Publishers.

Meltzer, L.J., Johnson, C., Crosette, J., Ramos, M., & Mindell, J.A. (2010). Prevalence of diagnosed sleep disorders in pediatric primary care practices. *Pediatrics*, *125*(6), 1410–1418.

Merikangas, K., & Pato, M. (2009). Recent developments in the epidemiology of bipolar disorder in adults and children: Magnitude, correlates, and future directions. *Clinical Psychology: Science and Practice, 16*(2), 121–133.

Merikangas, K.R., Mehta, R.L., & Molnar, B.E. (1998). Comorbidity of substance use disorders with mood and anxiety disorders: Results of the international consortium in psychiatric epidemiology. *Addictive Behaviors, 23*, 893–907.

Mesly, O. (2015). Creating Models in Psychological Research. Publisher: États-Unis: Springer Psychology. ISBN978-3-319-15752-8

Meyers, C. (1999). Managed care and ethical conflicts: Anything? *Journal of Medical Ethics, 25*, 382–388.

MHaPP. (2019, August 28). Retrieved from https://assets.publishing.service.gov.uk/media/57a08af9e5274a31e00008b2/MHaPP_Final_Report_forR4D.pdf.

Micale, M. (1993). On the "Disappearance" of Hysteria: A Study in the Clinical Deconstruction of a Diagnosis. *Isis, 84*(3), 496-526. Retrieved from http://www.jstor.org/stable/235644.

Mickenautsch, S. (2010). Systematic reviews, systematic error and the acquisition of clinical knowledge. *BMC Medical Research Methodology, 10*, 53. Retrieved from http://doi.org/10.1186/1471-2288-10-53.

Miller, I.J. (1996). Managed care is harmful to outpatient mental health services: A call for accountability. *Professional Psychology: Research and Practice, 27*, 349–363.

Moll, K., Kunze, S., Neuhoff, N., Bruder, J., & Schulte-Körne, G. (2014). Specific learning disorder: Prevalence and gender differences. *PloS One*, *9*(7), e103537. doi:10.1371/journal.pone.0103537.

Morreim, E. (1991). Gaming the system: Dodging the rules, ruling the dodgers. *Archives of Internal Medicine, 151*, 443-447.

Mosadeghrad, A.M. (2014). Factors affecting medical service quality. *Iranian Journal of Public Health, 43*(2), 210–220.

Mughal, A.Y., Devadas, J., Ardman, E., Levis, B., Go, V.F., & Gaynes, B.N. (2020). A systematic review of validated screening tools for anxiety disorders and PTSD in low to middle income countries. *BMC psychiatry*, *20*(1), 338. Retrieved from https://doi.org/10.1186/s12888-020-02753-3.

Munshi, N. (2012). Study of impact of Forex & FII. Online self-publishing and eBook Company: Publisher: Lulu.com. ISBN: 1300439572, 9781300439578.

Murphy, D.L., Timpano, K.R., Wheaton, M.G., Greenberg, B.D., & Miguel, E.C. (2010). Obsessive-compulsive disorder and its related disorders: A reappraisal of obsessive-compulsive spectrum concepts. *Dialogues in Clinical Neuroscience*, *12*(2), 131–148. Retrieved from https://doi.org/10.31887/DCNS.2010.12.2/dmurphy.

Murphy, M.J., DeBernardo, C.R., & Shoemaker, W.E. (1998). Impact of managed care on independent practice and professional ethics: A survey of independent practitioners. *Professional Psychology: Research and Practice, 29*, 43–51.

My Child without Limits (2018, November 7). Common treatments and Therapies. Retrieved from http://www.mychildwithoutlimits.org/plan/common-treatments-and-therapies/.

Myers, N.L. (2010). Culture, stress and recovery from schizophrenia: Lessons from the field for global mental health. *Culture, Medicine and Psychiatry*, *34*(3), 500–528. Retrieved from http://doi.org/10.1007/s11013-010-9186-7.

Nathan, T., Stengers, I., & Andréa, P. (2000). An ethnopsychiatry of schizophrenia? *Ethnopsy: Les mondes contemporains de la guérison, 1*, 9-43.

National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Board on Health Care Services; Committee on Health Care Utilization and Adults with Disabilities. (2018). Health-Care Utilization as a Proxy in Disability Determination: Factors That Affect Health-Care Utilization. Publisher: Washington (DC): National Academies Press (US). Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK500097/.

National Collaborating Centre for Mental Health (UK). (2011). Common Mental Health Disorders: Identification and Pathways to Care. Leicester (UK): British Psychological Society; NICE Clinical Guidelines, No. 123.). Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK92254/.

National Collaborating Centre for Mental Health (UK). (2014). Psychosis and Schizophrenia in Adults: Treatment and Management: London: National Institute for Health and Care Excellence (UK). Retrieved from: https://www.ncbi.nlm.nih.gov/books/NBK333029/.

National Eating Disorders Collaboration. (2018, September 4). Treatment Options. Retrieved from https://www.nedc.com.au/eating-disorders/treatment-and-recovery/treatment/treatment-options/.

National Health Insurance Statistical Yearbook (NHIC), Korea: National Health Insurance Corporation (NHIC) and Health Insurance Review and Assessment Service (HIRA). (2006). Retrieved from http://www.coopami.org/en/countries/countries/south_korea/social_protection/pdf/social_protection05.pdf.

National Institute for Health and Care Excellence. (2003). Clinical Guidelines. London: National Institute for Health and Care Excellence (UK). Retrieved from: https://www.ncbi.nlm.nih.gov/books/NBK11822/.

National Institute of Neurological Disorders and Stroke. (2017, March 9). Learning disabilities information page. Retrieved from https://www.ninds.nih.gov/Disorders/All-Disorders/Learning-Disabilities-Information-Page.

Nel, C., Augustyn, L., Bartman, N., Koen, M., Liebenberg, M., Naudé, J., & Joubert, G. (2018). Anxiety disorders: Psychiatric comorbidities and psychosocial stressors among adult outpatients. *South African Journal of Psychiatry*, *24*, 1-7. doi:https://doi.org/10.4102/sajpsychiatry.v24i0.1138.

Nemes, J. (1993). The fight against fraud: As the number of healthcare cases climbs, investigators make comparisons to S & L scandal. *Modern Healthcare, 23*, 39-40, 42, 44.

Ngui, E.M., Khasakhala, L., Ndetei, D., & Roberts, L.W. (2010). Mental disorders, health inequalities and ethics: A global perspective. *International Review of Psychiatry, 22*(3), 235–244. doi:10.3109/09540261.2010.485273.

NHS. (2017, February 16). NHS Treatment: Vascular Dementia. Retrieved from https://www.nhs.uk/conditions/vascular-dementia/treatment/.

NHS. National Institute for Health Research. (2018, April 3). The most effective antidepressants for adults revealed in major review. Retrieved from https://discover.dc.nihr.ac.uk/content/signal-00580/the-most-effective-antidepressants-for-adults-revealed-in-major-review.

Nyati, Z., & Sebit, M. (2002). Burden of mental illness on family members, care-givers and the community. *East African Medical Journal, 79*, 206–209.

OECD Health Data. (2007). Statistics and indicators for 30 countries. Retrieved from http://www.oecd.org/els/health-systems/health-data.htm.

Ollendick,T. H., & King, N. J. (1994). Diagnosis, assessment, and treatment of internalizing problems in children: The role of longitudinal data. *Journal of Consulting and Clinical Psychology, 62*(5), 918–927.

Ott, R.L., & Longnecker, M. (2001). An introduction to statistical methods and data analysis (5th ed.). Pacific Grove, California: Duxbury.

Owens, J.A., Spirito, A., McGuinn, M., & Nobile, C. (2000). Sleep habits and sleep disturbance in elementary school-aged children. *Journal of Developmental and Behavioral Pediatrics*, *21*(1), 27–36.

Pagel, J.F., & Parnes, B.L. (2001). Medications for the Treatment of Sleep Disorders: An Overview. *Primary Care Companion to the Journal of Clinical Psychiatry*, *3*(3), 118–125. Retrieved from https://doi.org/10.4088/pcc.v03n0303.

Pagel, J.F., Forister, N., & Kwiatkowki, C. (2007). Adolescent sleep disturbance and school performance: The confounding variable of socioeconomics. *Journal of Clinical Sleep Medicine*, *3*(1), 19–23.

Pallanti, S., Grassi, G., Sarrecchia, E.D., Cantisani, A., & Pellegrini, M. (2011). Obsessive-compulsive disorder comorbidity: Clinical assessment and therapeutic implications. *Frontiers in Psychiatry*, *2*, 70. Retrieved from https://doi.org/10.3389/fpsyt.2011.00070.

Pandit, M.S., & Pandit, S. (2009). Medical negligence: Coverage of the profession, duties, ethics, case law, and enlightened defence - A legal perspective. *Indian Journal of Urology, 25*(3), 372–378. Retrieved from https://doi.org/10.4103/0970-1591.56206.

Parikh, S.V., & Kennedy, S.H. (2018). More data, more answers: Picking the optimal antidepressant. *Lancet, 7*, 391(10128), 1333-1334. doi: 10.1016/S0140-6736(18)30421-5.

Patel, K. R., Cherian, J., Gohil, K., & Atkinson, D. (2014). Schizophrenia: Overview and treatment options. *Pharmacy and therapeutics, 39*(9), 638–645.

Patel, K.R., Cherian, J., Gohil, K., & Atkinson, D. (2014). Schizophrenia: Overview and treatment options. *Journal for Formulary Management*, *39*(9), 638–645.

Patel, V. (2001). Poverty, inequality, and mental health in developing countries. In: Poverty, Inequality and Health. Oxford, England: Oxford University Press.

Patel, V. (2007). Mental health in low-and middle-income countries. *British Medical Bulletin, 81–82*, 81–96.

Patel, V., Araya, R., & Chatterjee, S. (2007). Treatment and prevention of mental disorders in low-income and middle-income countries. *The Lancet, 370*, 991–1005.

Patel, V., Rahman, A., & Jacob, K.S. (2004). Effect of maternal mental health on infant growth in low-income countries: New evidence from South Asia. *British Medical Journal, 328*, 820–823.

Pediatric OCD Treatment Study (POTS) Team. (2004). Cognitive-behavior therapy, sertraline, and their combination for children and adolescents with obsessive-compulsive disorder: The Pediatric OCD Treatment Study (POTS) randomized controlled trial. *The Journal of the American Medical Association, 292*(16), 1969-1976.

Pedrelli, P., Nyer, M., Yeung, A., Zulauf, C., & Wilens, T. (2015). College Students: Mental Health Problems and Treatment Considerations. *Academic Psychiatry: The Journal of the American Association of Directors of Psychiatric Residency Training and the Association for Academic Psychiatry*, *39*(5), 503–511. Retrieved from https://doi.org/10.1007/s40596-014-0205-9.

Peltzer, K., Louw, J., Mchunu, G., Naidoo, P., Matseke, G., & Tutshana, B. (2012). Hazardous and harmful alcohol use and associated factors in tuberculosis public primary care patients in South Africa. *International Journal of Environmental Research and Public Health, 9*(9), 3245–3257.

Peltzer, K., Naidoo, P., Matseke, G., Louw, J., McHunu, G., & Tutshana, B. (2012). Prevalence of psychological distress and associated factors in tuberculosis patients in public primary care clinics in South Africa. *BMC Psychiatry, 12*, 89.

Perry, A., Lawrence, V., Henderson, C. (2020). Stigmatisation of those with mental health conditions in the acute general hospital setting. A qualitative framework synthesis, *Social Science and Medicine, 10*, 1016.

Pfammatter M., Junghan, U.M., & Brenner, H.D. (2006). Efficacy of psychological therapy in schizophrenia: Conclusions from meta-analyses. *Schizophrenia Bulletin, 32*(1), *S64-80.*

Philip, J. (2003). Co-morbid disorders in learning disabled children. In: Learning Disabilities in India. London: Sage Publications.

Polanczyk, G., de Lima, M.S., & Horta, B.L. (2007). The worldwide prevalence of ADHD: A systematic review and meta-regression analysis. *American Journal of Psychiatry, 164*, 942-948.

Polanczyk, G.V., Willcutt, E.G., & Salum, G.A. (2014). ADHD prevalence estimates across three decades: An updated systematic review and meta-regression analysis. *International Journal of Epidemiology, 43*, 434-442.

Potuzak, M., Ravichandran, C., Lewandowski, K.E., Ongür, D., & Cohen, B.M. (2012). Categorical vs dimensional classifications of psychotic disorders. *Comprehensive Psychiatry*, *53*(8), 1118–1129. Retrieved from https://doi.org/10.1016/j.comppsych.2012.04.010.

Prince, M., Patel, V., & Saxena, S. (2007). No health without mental health. *The Lancet, 370*, 859–77.

R Core Team (2020). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. Retrieved from https://www.R-project.org/.

Raimo, E.B., & Schuckit, M.A. 1998. Alcohol dependence and mood disorders. *Addictive Behaviours, 23*, 933–46.

Rajgopal, T. (2010). Mental well-being at the workplace. *Indian Journal of Occupational and Environmental Medicine*, *14*(3), 63–65. Retrieved from https://doi.org/10.4103/0019-5278.75691.

Ranis, G., Stewart, F., & Samman, E. (2005). Human Development: Beyond the Human Development Index. Yale University Economic Growth Center, Discussion Paper No. 916. Retrieved from https://www.researchgate.net/publication/5012111_Human_development_Beyond_the_HDI.

Rappo, P.D. (2002). Coding for mental health and behavioral problems: The arcane elevated to the ranks of the scientific. *Pediatrics, 110*(1), 167–169.

Ray, G.T., Mertens, J.R., & Weisner, C. (2007). The excess medical cost and health problems of family members of persons diagnosed with alcohol or drug problems. *Medical Care, 45*(2), 116-122.

Reddy, M.S. (2010). Depression: The disorder and the burden. *Indian Journal of Psychological Medicine*, *32*(1), 1–2. Retrieved from https://doi.org/10.4103/0253-7176.70510.

Rehm, J., & Shield, K.D. (2019). Global Burden of Disease and the Impact of Mental and Addictive Disorders. *Current Psychiatry Reports 21*, 10. Retrieved from https://doi.org/10.1007/s11920-019-0997-0.

Remes, O., Brayne, C., van der Linde, R., & Lafortune, L. (2016). A systematic review of reviews on the prevalence of anxiety disorders in adult populations. *Brain and Behavior, 6*(7), e00497. doi:10.1002/brb3.497.

Renjin Tu, R. (2012). Encyclopedia of Epidemiology. Chapter Title: Bar Chart. Thousand Oaks: SAGE Publications, Inc. Online ISBN: 9781412953948. doi: http://dx.doi.org/10.4135/9781412953948.

Ressing, M., Blettner, M., & Klug, S.J. (2010). Data analysis of epidemiological studies: Part 11 of a series on evaluation of scientific publications. *Deutsches Arzteblatt International*, *107*(11), 187–192. Retrieved from https://doi.org/10.3238/arztebl.2010.0187.

Rhodes, A.E., Goering, P.N., & Williams, J.I. (2002). Gender and outpatient mental health service use. *Social Science and Medicine, 54*(1), 1-10.

Ritchie, H., & Roser, M. (2019, October 7). Mental Health. OurWorldInData.org. Retrieved from: https://ourworldindata.org/mental-health.

Robinson, S.M., & Adinoff, B. (2016). The classification of substance use disorders: Historical, contextual, and conceptual considerations. *Behavioral Sciences, 6*(3), 18. doi:10.3390/bs6030018.

Robson, C. (2011). Real World Research: A resource for users of social research methods in applied settings. Chichester: John Wiley.

Rochat, T.J., Bland, R.M., Tomlinson, M., & Stein, A. (2013). Suicide ideation, depression and HIV among pregnant women in rural South Africa. *Health, 5*(3), 650–61.

Rothman, K.J., & Greenland, S. (1998). Modern Epidemiology. Philadelphia, Pennsylvania: Lippincott-Raven.

Roudinesco, E. (1999). Why Psychoanalysis? Paris: Fayard.

Røysamb, E., Kendler, K.S., Tambs, K., Orstavik, R.E., Neale, M.C., Aggen, S.H., Torgersen, S., & Reichborn-Kjennerud, T. (2011). The joint structure of DSM-IV Axis I and Axis II disorders. *Journal of Abnormal Psychology*, *120*(1), 198–209. Retrieved from https://doi.org/10.1037/a0021660.

Rud, J., & Noreik, K. (1982). Who become long-stay patients in a psychiatric hospital? *Acta Psychiatrica Scandinavica, 65*(1), 1-14.

Ruscio, A.M. (2008). Important questions remain to be addressed before adopting a dimensional classification of mental disorders. *American Psychologist, 63*(1), 61-62.

Ruscio, A.M., Stein, D.J., Chiu, W.T., & Kessler, R.C. (2010). The epidemiology of obsessive-compulsive disorder in the National Comorbidity Survey Replication. *Molecular Psychiatry*, *15*(1), 53-63.

Russo, J.R. (1974). Mutually therapeutic interaction between mental patients and delinquents. *Hospital and Community Psychiatry, 25*(8), 531-533.

Rutter, M., & Quinton, D. (1984). Parental psychiatric disorder: Effects on children. *Psychological Medicine, 14*, 853–80.

Salloum, I.M., & Thase, M.E. (2000). Impact of substance abuse on the course and treatment of bipolar disorder. *Bipolar Disorders*, *2*, 269–280.

Saraceno, B., Levav, I., & Kohn, R. (2005). The public mental health significance of research on socio-economic factors in schizophrenia and major depression. *World Psychiatry, 4*(1723–8617), 181–5.

Saunders, M., Lewis, P., & Thornhill, A. (2012). Research Methods for Business Students. Midrand, Gauteng: Pearson Education Limited.

Saxena, S., Thornicroft, G., & Knapp, M. (2007). Resources for mental health: Scarcity, inequity, and inefficiency. *The Lancet, 370*, 878–879.

Schneider, A., Hommel, G., & Blettner, M. (2010). Linear regression analysis: Part 14 of a series on evaluation of scientific publications. *Deutsches Arzteblatt International*, *107*(44), 776–782. Retrieved from https://doi.org/10.3238/arztebl.2010.0776.

Schneiderman, N., Ironson, G., & Siegel, S.D. (2005). Stress and health: Psychological, behavioral and biological determinants. *Annual Review of Clinical Psychology*, *1*, 607–628. Retrieved from https://doi.org/10.1146/annurev.clinpsy.1.102803.144141.

Schoeman, R., & de Klerk, M. (2017). Adult attention-deficit hyperactivity disorder: A database analysis of South African private health insurance. *South African Journal of Psychiatry, 23*, 1-6. Retrieved from https://doi.org/10.4102/sajpsychiatry.v23i0.1010.

Schwartz, S., Susser, E., & Susser, M. (1999). A future for epidemiology? *Annual Review of Public Health*, *20***,** 15–33.

Sharma, S. (2018, August 12). Disorders that disrupt sleep (parasomnias). Retrieved from https://www.emedicinehealth.com/disorders_that_disrupt_sleep_parasomnias/article_em.htm# what_are_the_disorders_that_disrupt_sleep_parasomnias.

Shibre, T., Kebede, D., & Alem, A. (2003). Schizophrenia: Illness impact on family members in a traditional society – rural Ethiopia. *Social Psychiatry and Psychiatric Epidemiology, 38*, 27–34.

Shields, L., & Twycross, A. (2003). The difference between incidence and prevalence. *Paediatric nursing, 15*(7), 50.

Shields, P., & Rangarajan, N. (2013). A Playbook for Research Methods: Integrating Conceptual Frameworks and Project Management. Publisher: Stillwater, OK: New Forums. ISBN 10: 1-58107-247-3.

Shorter, E. (1997). A History of Psychiatry: From the era of the asylum to the Age of Prozac. New York, New York: John Wiley.

Shrivastava, A., Johnston, M., & Bureau, Y. (2012). Stigma of Mental Illness-1: Clinical reflections. *Mens sana monographs*, *10*(1), 70–84.

SickKids Staff. (2018, May 13). Behavioural disorders: Treatment with psychotherapy and medications. Retrieved from https://www.aboutkidshealth.ca/Article?contentid=2000, &language=English.

Simon, J., & Zusman, J. (1983). The effect of contextual factors on psychiatrists' perception of illness: A case study. *Journal of Health and Social Behavior, 24*(2), 186-198.

Sloan, D.M., & Sandt, A.R. (2006). Gender Differences in Depression. *Women's Health*, 425–434. Retrieved from https://doi.org/10.2217/17455057.2.3.425.

Smart, D., & Smart, J.F. (1997). DSM-IV and culturally sensitive diagnosis: Some observations for counselors. *Journal of Counseling and Development, 75*, 392–399.

Smink, F.R., van Hoeken, D., & Hoek, H.W. (2012). Epidemiology of eating disorders: Incidence, prevalence and mortality rates. *Current Psychiatry Reports*, *14*(4), 406-14.

Smith, H. B. (1999). Managed care: A survey of counselor educators and counselor practitioners. *Journal of Mental Health Counseling, 21*, 270–284.

Smith, J.R., Grost, K., & Kashner, T.M. (1995). A trial of the effect of a standardized psychiatric consultation on health outcomes and costs in somatizing patients. *Archives of General Psychiatry, 52,* 238-243.

Smith, L.D., Best, I.A., Stubbs, A., Archibald, A.B., & Roberson-Nay, R. (2002). Constructing knowledge: The role of graphs and tables in hard and soft psychology. *American Psychologist, 57*(10), 749–761.

Snow, R.C., Guerra, C.A., & Noor, A.M. (2005). The global distribution of clinical episodes of Plasmodium falciparum malaria. *Nature, 434*, 214–17.

South African Health News Service. (2018, October 03). Medicine Price Registry. Retrieved from https://www.health-e.org.za/medicine-price-registry/.

Stallones, R.A. (1980). To advance epidemiology. *Annual Review of Public Health*, *1*, 69–82.

Stansfeld, S.A., Rothon, C., Das-Munshi, J., Mathews, C., Adams, A., Clark, C., & Lund, C. (2017). Exposure to violence and mental health of adolescents: South African Health and Well-being Study. *BJPsych Open*, *3*(5), 257–264. Retrieved from https://doi.org/10.1192/bjpo.bp.117.004861.

Statistics South Africa. (2016, March 24). Poverty Trends in South Africa. 2014. Retrieved from http://www.statssa.gov.za.

Stein, D.J., Phillips, K.A., Bolton, D., Fulford, K.W., Sadler, J.Z., & Kendler, K.S. (2010). What is a mental/psychiatric disorder? From DSM-IV to DSM-V. *Psychological Medicine*, *40*(11), 1759–1765. Retrieved from https://doi.org/10.1017/S0033291709992261.

Stein, D.J., Williams, D.R., & Kessler, R.C. (2009). The South African Stress and Health (SASH) Study: A scientific base for mental health policy. *South African Medical Journal, 99*(5), 337.

Stern, S. (1993). Managed care, brief therapy, and therapeutic integrity. *Psychotherapy, 30*(1), 162–175.

Stice, E., Marti, C.N., Shaw, H., & Jaconis, M. (2009). An 8-year longitudinal study of the natural history of threshold, subthreshold, and partial eating disorders from a community sample of adolescents. *Journal of Abnormal Psychology, 118*(3), 587-597. doi:10.1037/a0016481.

Substance Abuse and Mental Health Services Administration (US), Office of the Surgeon General (US). (2016). Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health. Washington (DC): US Department of Health and Human Services; Chapter 4: Early Intervention, Treatment, and Management of Substance Abuse Disorders. Retrieved from: https://www.ncbi.nlm.nih.gov/books/NBK424859/.

Sullivan, P. (1995). Mortality in anorexia nervosa. *American Journal of Psychiatry, 152*(7), 1073-1074.

Sundgot-Borgen, J., & Torstveit, M.K. (2004). Prevalence of eating disorders in elite athletes is higher than in the general population. *Clinical Journal of Sport Medicine, 14*(1), 25-32.

Taube, C.A., Goldman, H.H., & Salkever, D. (1990). Medicaid coverage for mental illness: Balancing access and costs. *Health Affairs, 9*(1), 5-18.

The National Institute of Mental Health. (2002, Feb 28). Eating Disorders: Facts about eating disorders and the search for solutions. Retrieved from www.nimh.nih.gov/health/publications/eating-disorders-new-trifold/index.shtml.

The Renfrew Center Foundation for Eating Disorders. (2003, October 31). Eating Disorders 101 Guide: A Summary of Issues, Statistics and Resources. Retrieved from https://www.eatingdisorderhope.com/information/statistics-studies#Anorexia-Nervosa-Statistics.

The WHO World Mental Health Surveys. (2008). Global perspectives on the epidemiology of mental disorders. New York, New York: Cambridge University Press.

Tsai, A.C., Tomlinson, M., Dewing, S., Le Roux, I.M., Harwood, J.M., & Chopra, M. (2014). Antenatal depression case finding by community health workers in South Africa: Feasibility of a mobile phone application. *Archives of Women's Mental Health, 17*(5), 423–31.

Tufte, E.R. (2001). The visual display of quantitative information. Cheshire, Connecticut: Graphics Press.

Turner, S., Mota, N., Bolton, J., & Sareen, J. (2018). Self-medication with alcohol or drugs for mood and anxiety disorders: A narrative review of the epidemiological literature. *Depression and Anxiety*, *35*(9), 851–860. Retrieved from https://doi.org/10.1002/da.22771.

Tzeng, D-S., Lian, L-C., Chang, C-U., Yang, C-Y., Lee, G-T., Pan, P., & Lung, F-W. (2007). Healthcare in schizophrenia: Effectiveness and progress of a redesigned care network. *BMC Health Services Research, 7*(1), 129.

Valderas, J.M., Starfield, B., Sibbald, B., Salisbury, C., & Roland, M. (2009). Defining comorbidity: Implications for understanding health and health services. *Annals of Family Medicine*, *7*(4), 357–363. Retrieved from https://doi.org/10.1370/afm.983.

Van Heerden, M.S., Grimsrud, A.T., Seedat, S., Myer, L., Williams, D.R., & Stein, D.J. (2009). Patterns of substance use in South Africa: results from the South African Stress and Health study. *South African Medical Journal*, *99*(5), 358-66.

Veatch, R. (1972). Models for ethical medicine in a revolutionary age. *Hastings Center Report, 2*, 5-7.

Venkat, P., Chopp, M., & Chen, J. (2015). Models and mechanisms of vascular dementia. *Experimental Neurology*, *272*, 97–108. Retrieved from https://doi.org/10.1016/j.expneurol.2015.05.006.

Volkow, N.D. (2009). Substance use disorders in schizophrenia - Clinical implications of comorbidity. *Schizophrenia Bulletin*, *35*(3), 469–472. Retrieved from https://doi.org/10.1093/schbul/sbp016.

Vos, T. (2010). Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990–2010: A systematic analysis for the Global Burden of Disease Study. *Lancet*, *380*(9859), 2163–2196.

Wakefield, J.C. (2007). The concept of mental disorder: Diagnostic implications of the harmful dysfunction analysis. *World Psychiatry, 6*(3), 149–156.

Wakefield, J.C. (2013). DSM-5: An overview of changes and controversies. *Clinical Social Work Journal, 41*(2), 139–154. doi:10.1007/s10615-013-0445-2.

Watson, R.I. (1967). Psychology: A prescriptive science. *American Psychologist, 22*(6), 435 - 443.

Watzlawick, P., Beavin, J.H., & Jackson, D.D. (1967). Pragmatics of human communication: A study of interactional patterns, pathologies, and paradoxes. New York, New York: Norton.

Weiss, M. (1985). The inter-relationship of tropical disease and mental disorder: conceptual framework and literature review. *Malaria. Culture, Medicine and Psychiatry, 9*, 121–200.

Weissman, M.M., Bland, R.C., Canino, G.J., Greenwald, S., Hwu, H.G., Lee, C.K., Newman, S.C., Oakley-Browne, M.A., Rubio-Stipec, M., & Wickramaratne, P.J. (1994). The cross-national epidemiology of obsessive-compulsive disorder. *Journal of Clinical Psychiatry, 55*(1), 5-10.

Welch, S., Klassen, C., Borisova, O., & Clothier, H. (2013). The DSM-5 controversies: How should psychologists respond? *Canadian Psychology, 54*(3), 166–175. doi:10.1037/a0033841

Whiteford, H.A., Degenhardt, L., & Rehm, J. (2013). Global burden of disease attributable to mental and substance use disorders: Findings from the Global Burden of Disease Study 2010. *The Lancet, 382*, 1575–86.

Whiteford, H.A., Ferrari, A.J., & Degenhardt, L. (2016). Global burden of disease studies: implications for mental and substance use disorders. *Health Affairs, 35*(6), 1114-1120.

Whiteford, H.A., Ferrari, A.J., Degenhardt, L., Feigin, V., & Vos, T. (2015). The global burden of mental, neurological and substance use disorders: An analysis from the Global Burden of Disease Study 2010. *PloS one*, *10*(2), e0116820. Retrieved from https://doi.org/10.1371/journal.pone.0116820.

WHO (a). (2018, October 12). Depression and other common mental disorders: Global health estimates. Retrieved from http://apps.who.int/iris/bitstream/handle/10665/254610/WHO-MSD-MER-2017.2-eng.pdf.

WHO (b). (2018, March 22). Fact-sheets: Depression. Retrieved from http://www.who.int/news-room/fact-sheets/detail/depression.

WHO. (2015, June 5) The global burden of disease: 2004 update. Retrieved from http://www.who.int/healthinfo/global_burden_disease/2004_report_update/en.

Widiger, T.A., & Trull, T.J. (2007). Plate tectonics in the classification of personality disorder. *American Psychologist, 62*(2), 71-83.

Willcutt, E.G. (2012). The prevalence of DSM-IV attention-deficit/hyperactivity disorder: A meta-analytic review. *Neurotherapeutics, 9*, 490-499.

Williams, D., Herman, A., Stein, D., Heeringa, S.G., Jackson, P.B., & Moolmal, H. (2008). Twelve-month mental disorders in South Africa: Prevalence, service use and demographic correlates in the population-based South African Stress and Health Study. *Psychological Medicine, 38*(2), 211–20.

Wilson, F., & Mabhala, M. (2009). Principles of Epidemiology. Key Concepts in Public Health. London, England: Sage Books.

Winklbaur, B., Ebner, N., Sachs, G., Thau, K., & Fischer, G. (2006). Substance abuse in patients with schizophrenia. *Dialogues in Clinical Neuroscience*, *8*(1), 37–43. Retrieved from https://doi.org/10.31887/DCNS.2006.8.1/bwinklbaur.

World Bank. (1993). World Development Report 1993: Investing in Health. New York: Oxford University Press. Retrieved from World Bank. https://openknowledge.worldbank.org/handle/10986/5976 License: CC BY 3.0 IGO.

World Health Organization. (1979). Schizophrenia: An international follow-up study. Chichester, Sussex: Wiley. Retrieved from http://www.who.int/iris/handle/10665/41598.

World Health Organization. (2001). Mental health problems: The undefined and hidden burden (Fact Sheet No. 218). Retrieved April 21, 2001, from: http://www.who.int/mediacentre/factsheets/fs218/en/.

World Health Organization. (2008). Integrating mental health into primary care: A global perspective. Geneva, Switzerland. Retrieved from http://www.who.int/mental_health/resources/mentalhealth_PHC_2008.pdf.

World Health Organization. (2017, August 28). Epidemiology. Retrieved from http://www.who.int/topics/epidemiology/en/.

Worthington, J., Fava, M., Agustin, C., Alpert, J., Nierenberg, A.A., Pava, J.A., & Rosenbaum, J.F. (1996). Consumption of alcohol, nicotine, and caffeine among depressed outpatients. *Psychosomatics, 37*, 518–22.

Wylie, M.S. (1995). The power of DSM-IV: Diagnosing for dollars. *Family Therapy Networker*, 22–32.

Zulman, D.M., Asch, S.M., Martins, S.B., Kerr, E.A., Hoffman, B.B., & Goldstein, M.K. (2014). Quality of care for patients with multiple chronic conditions: The role of comorbidity

interrelatedness. *Journal of General Internal Medicine*, *29*(3), 529–537. Retrieved from

https://doi.org/10.1007/s11606-013-2616-9.