

**TUBERCULOSIS AWARENESS CREATED THROUGH FACEBOOK: A CASE  
STUDY APPROACH OF TB PROOF SOUTH AFRICA'S FACEBOOK PAGE**

by

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**DECLARATION**

I declare that “Tuberculosis Awareness Created Through Facebook: A Case Study Approach of TB Proof South Africa’s Facebook Page” is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

*Ndemaze*

Signature

July 2018

Date

## **DEDICATION**

This research is dedicated to God Almighty who gave me life, inspiration and strength to undertake this study.

This study is also dedicated to my parents: Grace Asongu and the late Paul Asongu

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## **ABSTRACT**

Health promotion is an educational tool that can be used to educate and create awareness of health issues through various media forms. The purpose of this study was to explore the use of TB Proof South Africa's Facebook page in creating TB awareness. The literature on TB, social media, health promotional campaigns and health promotional models was reviewed to contextualise this study. A qualitative case study approach was used to collect data from TB Proof South Africa's Facebook page. Data was collected using three data collection methods; namely, online ethnographic observation, textual analysis and visual analysis.

The findings indicate that TB Proof South Africa's Facebook page creates awareness of TB. Results from this study also suggested collaboration between South African healthcare professionals and traditional health practitioners in the fight against tuberculosis. The study advocates the need for comparative studies to explore the use of other health-related Facebook pages.

**Keywords:** tuberculosis (TB), awareness, health promotion, health communication, health promotion campaigns, social media, Facebook, TB Proof South Africa, healthcare, South Africa, case study

## **OPSOMMING**

Gesondheidsbevordering is 'n opvoedkundige werktuig wat gebruik kan word om op te voed en bewustheid van gesondheidskwessies deur middel van verskeie mediavorme te skep. Die doel van hierdie studie was om die gebruik van TB Proof South Africa se Facebook-blad in die skepping van TB-bewustheid te verken. Leesstof oor TB, sosiale media, gesondheidsbevorderingsveldtogte en gesondheidsbevorderingsmodelle is beoordeel om hierdie studie te kontekstualiseer. 'n Kwalitatiewe gevallestudiebenadering is gebruik om data van TB Proof South Africa se Facebook-blad in te samel. Data is ingesamel deur gebruikmaking van drie data-insamelingsmetodes, naamlik aanlyn etnografiese waarneming, teksontleding en visuele ontleding.

Die bevindings dui daarop dat TB Proof South Africa se Facebook-blad bewustheid van TB skep. Resultate van hierdie studie beveel ook samewerking tussen Suid-Afrikaanse gesondheidsorgberoepslui en tradisionele gesondheidspraktisyns in die

stryd teen tuberkulose aan. Die studie bepleit die behoefte aan vergelykende studies om die gebruik van ander gesondheidsverwante Facebook-blaaie te verken.

**Sleutelwoorde:** tuberkulose (TB), bewustheid, gesondheidsbevordering, gesondheidskommunikasie, gesondheidsbevorderingsveldtogte, sosiale media, Facebook, TB Proof South Africa, gesondheidsorg, Suid-Afrika, gevallestudie

## LIST OF ACRONYMS AND ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
CDC	Center for Disease Control and Prevention
DR-TB	Drug-Resistant Tuberculosis
HBM	Health Belief Model
HIV	Human Immunodeficiency Virus
IMB	Information-Motivation-Behavioural Skills Model
MDR-TB	Multidrug-Resistant TB
SA	South Africa
SCIHDC	Soul City Institute of Health and Development Communication
SNS	Social Networking Sites
TB	Tuberculosis
TRA	Theory of Reasoned Action
UN	United Nations
USA	United States of America
USAID	United States Agency for International Development

VCT	Voluntary Counselling and Testing Campaigns
WHO	World Health Organisation
XDR-TB	Extensively Drug-Resistant Tuberculosis

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## CHAPTER 1: INTRODUCTION

### 1.1 ORIENTATION

Tuberculosis (TB), the human immunodeficiency virus (HIV/AIDS) and malaria are among the top 10 causes of morbidity and mortality worldwide (WHO 2017). TB and the HIV/AIDS epidemic have a synergistic relationship, as HIV/AIDS is a driver of TB (Loveday & Zweigenthal 2011; WHO 2017). An increase in HIV infection without effective treatment for HIV leads to an increase in TB incidence (Loveday & Zweigenthal 2011).

According to the World Health Organisation (WHO), TB can be defined as an illness caused by *bacterium mycobacterium*; it was declared as “a global emergency” by the WHO (Makesh 2013:2). Globally, ten million people fell ill with TB in 2016 with the highest proportion of new cases per population from Africa (WHO 2017). In 2016, sub-Saharan Africa was reported to have a TB incidence rate exceeding 260 cases per 100.000 population (WHO 2017). In Sub-Saharan Africa, South Africa is one of the countries with very high infection rates (WHO 2014; WHO 2015; WHO 2017). TB killed more than 33.000 people in South Africa in 2016 (StatsSA 2016). TB also accounted for 7.2% of deaths for the year 2016 in South Africa (StatsSA 2016). Mtaita (2009) attributes high infection rates to lack of access to integrated healthcare, prevention and medication.

Preventable illnesses, including TB, continue to claim millions of lives (Mtaita 2009; WHO 2016). Globally, close to 10 million people contract TB each year, and the disease causes over 1.4 million deaths (WHO 2016). This public health problem (TB) ranks among the world’s most serious health problems despite the innumerable unparalleled biomedical achievements in healthcare and medicine worldwide (Gerace 2014). Thus, the high burden of TB has necessitated using various strategies to create awareness of TB. Health communication activities have been used to support the prevention and control of communicable diseases such as TB (Sixsmith et al. 2014). Health communication is “an art and technique of informing, influencing and motivating individuals, institutional and public audience about health issues” (Mahmud et al. 2013:2). Health communication is, therefore, an important tool for disseminating health information and influencing the salience of health issues in the public agenda (Bravo 2015).

One of the ways through which health communication can be used to create awareness of TB is through the use of health communication campaigns (Crawford & Okigbo 2014). Health communication campaigns can use a variety of media platforms (Abramson, Keefe & Chou 2015). Social media platforms are, therefore, being used for health communication campaigns (Abramson, Keefe & Chou 2015; Zhang, He & Sang 2013). Social media helps raise awareness of health-related issues, and social networking sites such as Facebook have become popular platforms for organisations to create awareness of tuberculosis (Hughes 2010). Facebook is one of the most popular social networking platforms in the world (Facebook 2013), so TB Proof South Africa is using a Facebook page to facilitate TB awareness in South Africa. TB Proof South Africa is a non-profit organisation which aims at creating awareness of TB (Flett 2015; TB Proof 2012). Therefore, this study explores the use of TB Proof South Africa's Facebook page for TB awareness.

## **1.2 RATIONALE OF THE STUDY**

Health communication has many sub-fields; for example, healthcare provider-patient relationships and health education and health promotion that occur in the form of edutainment where soap operas or documentary soap operas are used to educate the audience via the media (Ogunlela 2014; Rogers & Storey 1987; Singhal, Njogu, Bouman & Elias 2006). Health campaigns are another branch of health promotion where educational campaigns on different illnesses are used to educate specific audiences on specific illnesses (Piotrow, Kincaid, Rimon & Rinebart 1997; Singhal, Cody, Rogers & Sabido 2004). As in the case of this research, health promotion is used as a tool to educate substantial numbers of people on TB via social media, specifically Facebook.

The goal of health promotion is to improve health outcomes by sharing health-related information (Fishbein & Yzer 2003; Schiavo 2007). Social media platforms are increasingly being used for health information sharing in the digital age (Chou et al. 2015). Social media is broadly defined as a group of web-based applications that allows users to modify content in a participatory and collaborative fashion resulting in the creation and exchange of user-generated content (Kaplan & Haenlein 2010). Social media is being used for information seeking, socialisation, entertainment and status seeking (Bravo 2015).

Social media sites are increasing in popularity worldwide, and their distinct characteristics of openness, participation, conversation, community and connectedness have provided health promoters with new interpersonal channels which enable enhanced communication, engagement and collaboration (Lapointe, Ramaprasad & Vendel 2014; Zhang, He & Sang 2013). The popularity of social media sites has created a great opportunity to leverage these new communication tools for practical health awareness and education purposes (Ratzan 2011). Social media platforms such as Facebook have created an excellent opportunity to share TB-related information, and Facebook has great potential to influence individuals' health behaviours by improving their access to health information and thereby improving health outcomes (Zhang, He & Sang 2013).

Facebook also provides health promoters with the opportunity to change health communication "from one-to-many to include one-to-one and many-to-many simultaneously" (Norman 2012:3). Health communication via social media should improve health outcomes. This view is supported by Kincaid (2005:7) who points out that "health communication should carry an educational role by ensuring that health information is disseminated effectively to the intended audience". Therefore, it is imperative to evaluate the effectiveness of TB Proof South Africa's Facebook page as a TB awareness platform.

### **1.3 PURPOSE OF THE STUDY**

The purpose of this research study was to conduct a qualitative case study analysis that explored and described the use of TB Proof South Africa's Facebook page for creating TB awareness. This was done from 1 February to 30 June 2017. Such research is necessary as South Africa has a high incidence of TB cases (WHO 2017). Creating awareness of TB can help curb the scourge of the disease in South Africa, so health organisations can use health promotion campaigns as a tool to educate their audience via social media. Health promotion aims to identify communication strategies for improving society's health and to impart knowledge to change health attitudes, perceptions and health-related behaviours (Atkin & Marshall 1996; Kreps 1989; Markova & Power 1992). Against the background of the rising burden of TB, management of the disease has become essential to reduce infection

and morbidity; communication is central to this, and health promotion initiatives must use the most effective strategies for creating awareness of TB (SixSmith et al. 2014).

Some strategies that have been identified to prevent TB include case finding to detect and treat infectious TB earlier, reducing the duration of infectiousness and transmission, and TB vaccination strategies (Churchyard, Mametja, Mvusi, Ndjeta, Hessling, Reid, Babatunde & Pillay 2014). Despite these prevention strategies, TB remains a global health problem and this is because knowledge on prevention of TB is limited and results in a higher risk of contracting TB and seeking care (Abebel & Demissie 2012).

Limited knowledge could create a knowledge gap that makes it difficult to combat this disease and, therefore, health promotion should be clear and complete enough to address these gaps (Abebel & Demissie 2012). Hence, it was important to carry out this study to analyse the use of TB Proof South Africa's Facebook page for creating TB awareness. This was necessary because creating awareness of TB can help alleviate the TB in South Africa.

#### **1.4 BACKGROUND OF THE STUDY**

South Africa has one of the highest incidences of tuberculosis worldwide, and the third highest incidence after India and China. South Africa stands at an estimated number of 450.000 cases of active tuberculosis, and the country is also among the countries with the highest number of HIV-associated tuberculosis cases (WHO 2015). Thus, the South African National Strategic Plan (NSP) provides strategic guidance for HIV, STI and TB activities and focuses on drivers of HIV and TB epidemics to achieve its goal (SANAC 2011).

The NSP target is to have no new infections by 2032 (Churchyard, Mametja, Mvusi, Ndjeka, Hesseling, Reid, Babatunde & Pillay 2014). For this goal to be achieved, every medium used in creating awareness of TB should be effective.

As health concerns for society evolve, the methods used to communicate health issues must also change to optimise effectiveness (Gerace 2014). TB presents serious health problems and can be fatal (CDC 2013a), so the communication intervention for combating this disease should be effective. Effective communication

has the potential to bridge the knowledge gap on TB by providing information on the prevention and treatment of TB, thus increasing awareness. Health promotion is integral to providing appropriate and effective healthcare (Bosher & Smalkoski 2002; Guttan & Thompson 2011; Ratzen et al. 1994). More and more internet users spend time on social media websites: social media is the future of communication (Murray 2014; Pew Internet 2012). Hence social media should be used by health organisations, including TB Proof South Africa, to fight TB (Murray 2014; Pew Internet 2012). The following section provides an explanation of the relationship of the topic to the discipline of communication.

## **1.5 RELATIONSHIP OF THE TOPIC TO THE DISCIPLINE OF COMMUNICATION**

This case study approach explores the use of TB Proof South Africa's Facebook page for TB awareness. The content of the Facebook page includes posts, comments and visuals that were analysed to determine if TB Proof South Africa's Facebook page was used for creating TB awareness. This study analysed health promotion messages in the form of posts, comments and visuals on a social media platform (TB Proof South Africa's Facebook page). This topic is related to the discipline of communication, as the study is located within the field of health communication, which is in turn, an area in the discipline of communication. Additionally, the topic looked at the interactions that included posts, comments, and visuals on TB Proof South Africa's Facebook page. Facebook is a communication platform, and the study is related to the discipline of communication.

The following sub-sections discuss the research problem, research objectives and research questions pertaining to this study.

## **1.6 FORMULATION OF THE RESEARCH PROBLEM, THE RESEARCH OBJECTIVES AND THE RESEARCH QUESTIONS**

### **1.6.1 The Research Problem**

As noted in the literature, health promotion campaigns have been used to fight many illnesses, and when delivered appropriately, they have yielded optimal results (Harris, Cheadle, Hannon, Lichielle, Forehand, Mahoney & Yarrow 2012). Social media platforms have become popular methods for organisations to communicate health messages (Abramson, Keefe & Chou 2015). This is because social media

holds significant health communication potential since they allow consumers to engage in the creative process of content promotion (Korda & Itani 2011).

Despite the extensive use of social media for health promotion campaigns, the research gap in the use of social media in TB health communication campaigns has been well documented (Cobbs & Graham, 2012; Sharma, Killan, & Leung, 2014; Zhang, He & Sang, 2015; Gerace, 2014). Considering the fact that millions of people die from TB every year in South Africa, it is important that health promotion interventions targeting TB are accentuated. This study focuses on the use of TB Proof South Africa's Facebook page as a TB health awareness platform.

### **1.6.2 Research Objectives**

There are basically two types of objectives in research; namely, exploratory and descriptive objectives (Babbie & Mouton 2001; du Plooy 2009; Rankosha 2014). The objectives of this study are both exploratory and descriptive. The objectives of this study are explained as follows:

- To explore how TB Proof SA's Facebook page create awareness of TB as an illness
- To explore how TB Proof SA's Facebook page use health promotion to create TB awareness.
- To describe the characteristics of TB Proof South Africa's Facebook page, including both the participants and the activities on the page.

The next section is a discussion of the research questions in this study.

### **1.6.3 Research Questions**

The research questions on which this study was based were formulated as follows:

- How does TB Proof SA's Facebook page create awareness of TB as an illness?
- How does TB Proof SA's Facebook page use health promotion to create TB awareness?

- What are the characteristics of TB South Africa's Facebook page? Specifically, who are participants on this page and what activities do they perform on this page?

## **1.7 METHODOLOGY**

A qualitative case study approach was selected for this study since it allows for an in-depth analysis of a case within its real-life context (Yin 2014). In this study, the Yin (2014) protocol was used in conjunction with Creswell (2013), Stake (2008), Hancock and Algozzine (2011), Matthews and Ross (2010), Sarantakos (2013), Braun and Clarke (2006), Tavakol and Dennick (2011). The case study referred to is the TB Proof South Africa's Facebook page. This study aimed to conduct an in-depth analysis of this specific case to determine the use of social media as a health promotion platform.

The data collection methods included online ethnographic observation of posts and comments, textual analysis of posts and comments and visual analysis of photographs on the organisation's Facebook page. This study made use of triangulation in the following forms; namely, data and theoretical triangulation. Data triangulation was employed using the three data collection sources named above. The purpose of using data triangulation was to increase the validity of the research findings.

In terms of theoretical triangulation, this research employed four theoretical models: the Information-Motivation-Behavioural Skills Model (IMB), Health Belief Model (HBM), the Theory of Reasoned Action (TRA) and the PEN-3 Model (PEN-3). Data was analysed using specific steps from Braun and Clarke (2006) and results from the three data collection methods were presented thematically.

## **1.8 DEFINITION OF CONCEPTS**

The following concepts are defined as they were applied in the context of this study.

### **1.8.1 Social media**

Social media refers to interactive web usage (Kaplan & Haenlein 2010). In the context of this study, social media refers to the social networking site, for example, Facebook, since this research analysed Facebook as a social media platform.

### **1.8.2 Facebook**

Facebook is one of the most popular social media platforms in the world (Facebook 2013). In this research, TB Proof South Africa's Facebook page was used as the main social media platform.

### **1.8.3 Tuberculosis (TB)**

Tuberculosis is a communicable disease caused by the bacteria *mycobacterium* (WHO 2015). It is an airborne bacterial infection (Mtaita 2009).

### **1.8.4 Tuberculosis Proof South Africa (TB Proof South Africa).**

TB Proof South Africa was founded in 2012. It is a South African (SA) non-profit organisation fighting TB (TB Proof 2012). A non-profit organisation is an organisation that seeks to identify a societal problem and advocates change on a voluntary basis without seeking any profit for its operations (Glavin 2011). TB Proof SA's Facebook page was the case study for this research.

### **1.8.5 Page**

A page acts as the voice of an organisation on Facebook (Hilliard 2012). For this study, TB Proof SA's Facebook page was used as the voice of an organisation.

### **1.8.6 Comment**

Comment refers to any content that was posted on TB Proof SA's Facebook page by its users (Hilliard 2012). For the context of this study, comments refer to content posted by the users of the organisation's Facebook page.

### **1.8.7 Text**

Text can be defined as posted content that can be found on the TB Proof social media page that was analysed to draw meaning about the page (McKee 2003). The current study drew meaning from the text on TB Proof SA's Facebook page by analysing the posts and comments on the page. Text on the page was provided by TB Proof SA and users of the organisation's Facebook page.

### **1.8.8 Visual**

For the context of this research, visuals will be defined as any photographs that were posted on TB Proof SA's Facebook page (Hanrahan, Stolte & Mackinlay 2007). These photographs were posted by the organisation.

### **1.8.9 Post**

Post refers to content generated by the page administrator (Abramson, Keefe & Chou 2015). For the context of this study, posts were generated by TB Proof SA, the organisation.

### **1.8.10 Culture**

In this study, culture is defined as “a system of interrelated values active enough to influence and condition perception judgement, communication and behaviour in a given society” (Mazrui 1986:239). People are influenced by their traditional beliefs, so some South Africans use both traditional and western medication for TB treatment (Mazrui 1986).

## **1.9 CHAPTER DEMARCATION**

Chapter 1 of this dissertation presents the background to the research in the introduction, a discussion of the problem statement and by elaborating on the research questions. The literature review chapters are Chapters 2, 3 and 4. Chapter 2 provides a discussion of TB as an illness. Chapter 3 is a discussion of health communication, the use of the internet in health promotion, the use of social media in health promotion, and the use of Facebook in health promotion. Chapter 4 presents a discussion of the theoretical frameworks used in this study. The HBM, the TRA, the IMB Skills Model and the PEN-3 Model are reviewed and critiqued in this chapter. Chapter 5 presents the methodology used in this study by explaining the qualitative case study design that made use of three data collection methods; namely, online ethnographic observation, textual analysis and visual analysis. Chapter 6 is an in-depth analysis of the research findings and Chapter 7 concludes the study by answering all the research questions stated in Chapter 1.

### **1.10 SUMMARY**

This chapter has introduced TB as a global health problem, and the role health communication can play in combating TB. The chapter has also elaborated the

purpose, background, relevance and the relationship of the topic to the discipline of communication. Furthermore, the research problem, the research questions and the research objectives have also been discussed. Lastly, the chapter highlights the demarcation of the study.

The next chapter provides the context for the research conducted by explaining the epidemiology of tuberculosis and South African healthcare systems.

## **CHAPTER 2: LITERATURE REVIEW PART 1: SOUTH AFRICAN HEALTHCARE SYSTEM AND THE EPIDEMIOLOGY OF TUBERCULOSIS IN SOUTH AFRICA**

### **2.1 INTRODUCTION**

The literature review chapters present the literature on TB as an illness (Part 1), health communication (Part 2), and the selected theoretical models for this study (Part 3). It is important to conduct a literature review as it ensures that one does not merely duplicate existing studies (Mouton 2006). In this literature review chapter, an epidemiological overview will be provided detailing TB as an illness, types of TB, symptoms of TB, risk factors for TB, diagnosis of TB, treatment of TB, diagnostic rates of TB worldwide and diagnostic rates of TB in Africa, sub-Saharan Africa and SA. The chapter also provides information on the South African public and private healthcare system to contextualise the research study.

### **2.2 TUBERCULOSIS AS AN ILLNESS: WHAT IS TUBERCULOSIS?**

Research literature indicates that TB is a disease that is caused by *mycobacterium tuberculosis*, and it typically affects the lungs (pulmonary TB) but can also affect other sites as well (extra-pulmonary TB) (WHO 2015). The spread of TB occurs when a source such as a person with TB produces *mycobacterium tuberculosis* when coughing and an exposed person inhales the droplet nuclei containing *mycobacterium tuberculosis* (South African Department of Health 2007). The droplet nuclei harbouring *mycobacterium* is so tiny that it cannot be seen with the naked eye (Rankoska 2014). Sauer (2009) adds that the *mycobacterium* bacteria can also spread through the air (for example when an infected person coughs or speaks). When a person becomes infected with the bacterium, one of two conditions will develop – latent TB or active TB (Sauer 2009).

### **2.3 TYPES OF TUBERCULOSIS, SYMPTOMS OF TUBERCULOSIS, AND RISK FACTORS FOR TUBERCULOSIS.**

Latent and active TB are the two main types of the disease. People with latent TB cannot spread TB to others since they have no symptoms of TB (Unite against TB 2009). However, they may develop TB (active TB) later on (Unite against TB 2009). According to Kanabus (2016), about 80% of the South African population is infected with TB bacteria, the vast majority of whom have latent TB rather than active TB.

Latent TB can develop to active TB at a later stage. A person can develop active TB when they are exposed to the TB bacteria or when their immune system is weak, or it can develop as reactivation disease in people who have been previously infected (Unite against TB 2009). Close contact with anyone with active TB can result in contracting the disease.

According to Pellico (2013), symptoms of pulmonary TB include a persistent cough, mild fever, chest pain, night sweats, weight loss and fatigue. Arjun (2011) adds that dyspnoea and anorexia could also be symptoms of TB. Only pulmonary TB is infectious (Pellico 2013). It is also important to note that the risk factors for TB following infection include HIV and AIDS, diabetes, cancer, immunosuppressive medication, silicosis, severe kidney disease, alcoholism, malnutrition, smoking (WHO 2012a). The following section is an explanation of the diagnosis for TB and treatment for TB.

## **2.4 DIAGNOSIS AND TREATMENT OF TUBERCULOSIS**

Globally, TB diagnosis is usually achieved through sputum smear microscopy in which bacteria are observed in sputum samples examined under a microscope (WHO 2015). The use of the rapid test Xpert MTB/RIF was also recommended by the WHO as an initial diagnostic test for people at risk of drug-resistant TB (WHO 2015). The use of the Xpert MTB/RIF has expanded substantially since 2010 when the WHO first recommended its use (WHO 2015).

The WHO established a global reporting system in 1995, and since then it has received reports of 78 million TB cases, 66 million of which were treated successfully (WHO 2015). Between 2000 and 2014, TB treatment alone saved 35 million lives among HIV-negative people and TB treatment and antiretroviral therapy saved an additional 8 million lives among HIV-positive people (WHO 2015:8). In most cases, if detected early, TB can be cured (Stop 2011). For treatment of patients diagnosed with active TB, chemotherapy with a combination of medications that are effective against TB bacteria is used for a specific period (Ali 2015:16).

The recommended treatment for new cases of drug-susceptible TB is a six-month regimen of four first-line drugs: isoniazid, rifampicin, ethambutol and pyrazinamide (WHO 2015). Two new therapies for TB treatment (bedaquiline and pretomanid

[BPa] and bedaquiline, pretomanid, moxifloxacin and pyrazinamide [BPaMZ]) are also recommended for XDR-TB treatment. TB patients who are well informed about the disease are more likely to follow treatment instructions and protocol (Adekanmbi 2015). Effective treatment, as well as TB awareness, can reduce the number of persons suffering from TB.

## **2.5 DIAGNOSTIC RATES OF TUBERCULOSIS: WORLDWIDE**

The current study was not aimed at drawing conclusions about the trends in TB patterns with regard to the magnitude of the illness. Instead, the focus was to address the TB epidemic in relation to the South African public health communication platforms with specific focus on online health promotion (TB Proof SA's Facebook page). TB has been one of the most feared diseases for centuries, yet it has failed to fade, like so many of the ancient plagues (Sauer 2009). It is estimated that one-third of the world's population is infected with the TB bacterium (CDC 2014).

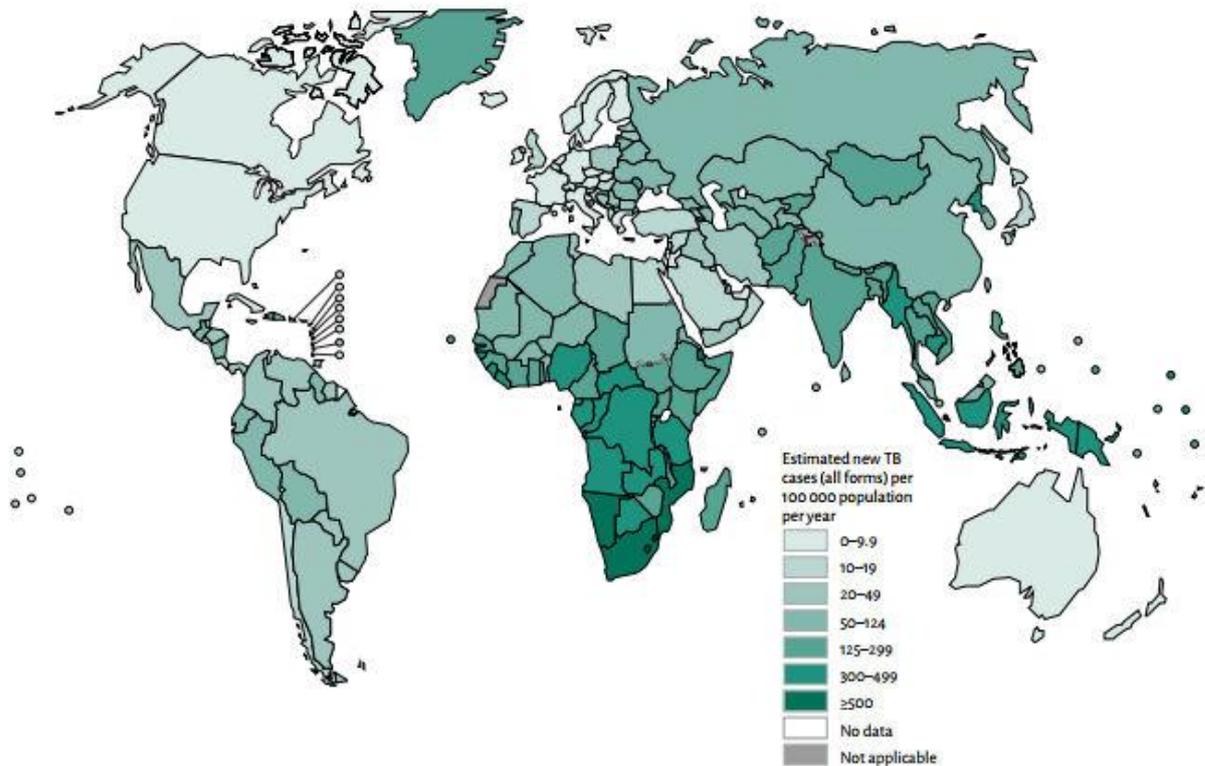
In 2014, the largest number of new TB cases occurred in the southeastern and western Pacific regions, accounting for 58% of new cases globally (Factsheet 2016). In 2014, TB killed 1.5 million people worldwide; 9.6 million people are estimated to have fallen ill with TB in 2014 (WHO 2015). The global TB mortality rate in 2015 was 47% (WHO 2015). TB ranks alongside HIV as the leading cause of death worldwide (WHO 2015).

Apart from the Millennium Development Goals (MDGs), the End TB Strategy has been implemented to end the global TB epidemic (WHO 2015). This strategy serves as a blueprint for countries to reduce the number of TB deaths by 90% by 2030, to cut new cases by 80% and to ensure that no family is burdened with the catastrophic costs associated with TB (WHO 2015).

Figure 2.1 depicts the estimated global TB incidence rates in 2014. The map shows the incidence of TB cases relative to population size. The lowest rates are found predominantly in high-income countries, including most countries in Western Europe, Canada, the United States of America, Australia, and New Zealand. The incidence rate is less than ten cases per 100.000 population per year. Most countries in the regions of America have rates below 50 per 100.000 per year.

**Figure 2.1 Estimated TB incidence rates, worldwide (2014)**

Estimated TB incidence rates, 2014



Source: (WHO 2015:18)

## **2.6 DIAGNOSTIC RATES OF TUBERCULOSIS IN AFRICA, SUB-SAHARAN AND SOUTH AFRICA**

The burden of TB disease is highest in the resource-poor countries in Asia and Africa (Chaisson & Martinson 2008:1089–1092). According to the WHO (2015:8), the African region had 28% of the world's TB cases, but also the most severe burden relative to population (281 incident cases per 100.000 population on average, more than double the global average of 133). Globally in 2014, there were an estimated 1.2 million new HIV-positive TB cases (12% of all TB cases), and almost three-quarters of these cases were in the African region (WHO 2015:8). This means that the TB incidence rate is still high in this area.

The African region bears the highest global TB and HIV burden, and over 50% of TB cases in sub-Saharan Africa are co-infected with HIV (Zumla, Petersen, Nyirenda & Chakaya 2015). Although sub-Saharan Africa has 12% of the world's population, it

generated 29% of the 9 million TB cases and had 240.000 TB-related deaths in 2014 (Zumla et al. 2015).

South Africa, in sub-Saharan Africa, is among the 22 high TB burden countries in the world (WHO 2016). It is estimated that 1% of SA's population of about 55 million people develop active TB each year, or to use the conventional measure, 860 per 100.000, one of the highest in the world (Fact Sheet 2016). TB remains the leading cause of death in SA, contributing 12% of deaths in 2009 (StatsSA 2014).

The National Department of Health (NDoH) established the National Tuberculosis Programme in 1994 in an effort to eradicate the disease (NDoH 2015). SA has adopted the 20-year vision (2012-2032) in line with attaining the four zeros advocated by the Joint United Nations Programme on HIV and AIDS (UNAIDS): zero new HIV and TB infections; zero new infections due to vertical transmission; zero preventable deaths associated with HIV and TB; and zero discrimination associated with HIV and TB (NDoH 2015:8). Health promotion campaigns (such as the use of TB SA's Facebook page) could be used to help attain the aim of the National Tuberculosis Programme.

In the following section of the literature review, a discussion of the South African healthcare system is provided. Background information on the South African public and private healthcare systems will be presented to contextualise this study.

## **2.7 SOUTH AFRICAN HEALTHCARE SYSTEM**

The health sector in SA is greatly influenced by segregation and apartheid notions and legislations (Coovadia, Jewkes, Barron, Sanders & McIntyre 2009; Mack 2011). According to Coovadia et al. (2009:817),

“The roots of a dysfunctional health system and the collision of communicable and non-communicable diseases in SA can be found in policies from the periods of the country's history, from colonial subjugation, apartheid dispossessions, to the post-apartheid period.”

The history of SA has had a pronounced effect on the health of its people and the health policy and services of the present day (Coovadia et al. 2009). Apartheid policies served the dominant objective of maintaining social, economic and political

power for the white population group (Benatar 2013; Wadee, Gilson, Thiede, Okarafor & McIntyre 2003). The disparities in socio-economic status have contributed to inequalities in the health status in SA (Wadee et al. 2003), and it comes as no surprise that MDR-TB and HIV became additional markers of the longstanding poor health of the major black minority, despite the availability of modern drug treatments (Benatar 2013).

South Africa has a two-tiered healthcare system; namely, the public and the private sectors, which cater for the unemployed and high-and low-income earners (Mack 2011). A detailed discussion of these healthcare systems is provided in the following sections.

### **2.7.1 The public healthcare system**

In 1994, a new single de-racialised government was formed when the African National Congress (ANC) won the first democratic election in SA. Under the ANC government, a new single de-racialised public health system was created with the national provincial and local government services to provide comprehensive healthcare to South Africans as stipulated in the White Paper on the Transformation of the Healthcare System (Department of Health 1997). These changes were aimed at improving the quality, equity access, efficiency and effectiveness of the health system (Department of Health 1997).

There has been significant restructuring within the health sector since 1994 (Wadee et al. 2003). The NDoH is largely responsible for the policy-making and coordination functions, while the provincial health departments are responsible for the vast majority of health service provision (ibid). Since the advent of democracy, SA has made significant strides in reducing poverty-related diseases such as measles and malnutrition (Department of Health 2015).

However, despite the progress that has been achieved so far, the public health system's effectiveness and efficiency is still a considerable challenge (Department of Health 2015). Continuation of free-market policies, inadequate economic growth, rapid urbanisation, migration, corruption, and poor management of public services by the new government are some of the challenges faced by the healthcare system in SA (Benatar 2013).

Most South Africans remain impoverished, despite social grants, with inferior and inadequate access to healthcare (Benatar 2013). SA faces serious public health challenges, including an elevated burden of chronic diseases such as HIV and tuberculosis (Harrison 2009; Mathee 2009). Coovadia et al. (2009:19) add, “Pivotal facets of primary healthcare are not in place, and there is a substantial human resources crisis facing the public health sector”. Although the current policy by the Department of Health is that all DR-TB patients should be hospitalised until they are cured, there are only about 2,000 beds available for DR-TB treatment and management (Department of Health 2011). More needs to be made available to improve the quality of healthcare and the infrastructure, and making services easily available to all South Africans to ensure better health outcomes (ibid).

### **2.7.2 The private healthcare system**

Private healthcare in SA takes the form of medical schemes (Ramjee, Vieyra, Abraham, Kaplan & Taylor 2014). The apartheid government encouraged the growth of the private sector to reduce demand in the public sector (Mack 2011; McIntyre et al. 2006). The apartheid government encouraged private sector growth through charging fees for specific health services and the growing membership of medical schemes (a form of voluntary private insurance) and de-regulation, meaning that medical schemes charged those with a higher risk of falling ill (McIntyre 2006).

According to Heywood et al. (2007:174), the socio-economically advantaged are likely to make use of private health providers through funding mechanisms that will ensure access to healthcare through membership of medical schemes or other forms of health insurance, out-of-pocket expenditure, access through their workplace and non-profit and non-governmental organisations. Only the socio-economically advantaged can afford private healthcare in SA.

The South African Constitution binds the state to work towards the progressive realisation of the right to health (Coovadia 2009). As is evident from the above discussion, the South African healthcare system still has much to do with regard to producing sufficient care as promised in the constitution. According to Harrison (2009:33), “the health system in SA stands on the edge of a chasm, which can only be bridged by new resources and decisive leadership”. Hence, the South African

government needs to improve the effectiveness and efficiency of the South African healthcare system to be able to serve the population efficiently.

## **2.8 SUMMARY**

The purpose of this chapter was to discuss TB as an illness, the epidemiology of TB in SA and the South African healthcare systems. The disease was placed in context by explaining some important features surrounding the illness, notably, symptoms, risk factors, diagnosis and treatment. The epidemiology of TB was contextualised by providing background information to the prevalence of TB in Africa, Sub-Saharan, Africa and SA. This chapter also provided a discussion of the healthcare systems in SA, namely the public and private healthcare systems. The next chapter will review the literature relating to health communication.

## **CHAPTER 3: LITERATURE REVIEW PART 2: HEALTH COMMUNICATION**

### **3.1 INTRODUCTION**

The previous chapter presented the literature on the SA healthcare system and on TB as an illness. This chapter reviews the literature regarding health communication, the use of the internet in health promotion, the use of social media in health promotion and the use of Facebook in healthcare. In doing so, the chapter positions the proposed case study within the context of existing health communication literature to clearly articulate the contribution of the study to the existing literature on health communication.

### **3.2 HEALTH COMMUNICATION: AN OVERVIEW**

Health communication can be defined as a strategy to inform and influence individuals and the public about health concerns (Bernhardt 2004; Ogunlela 2014; Parker 2006). TB remains a global health concern, and SA has one of the highest TB incidences worldwide, as discussed in Chapter 2 (Churchyard et al. 2014). Tuberculosis (TB) is a global health concern, and health communication is an important aspect to consider since health communication can be used to inform and influence decisions that enhance healthcare and treatment (Geist-Martin, Ray & Sharf 2011).

The aim of health communication is to improve health outcomes by sharing health-related information (Fishbein & Yzer 2003; Schiavo 2007). In relation to this focus, the study aims to explore the TB Proof SA's Facebook page to determine if the posts, comments and visuals on the page are aimed at improving health outcomes on TB. This was done by analysing the posts (that can be defined as content generated by the page administrator), comments (that can be defined as content that was posted on the organisation's Facebook page by its users) and visuals (that can be defined as any pictures or photographs posted on the page by the organisation). In the next section, a discussion of health promotion campaigns will be provided to contextualise the study.

### 3.3 HEALTH PROMOTIONAL CAMPAIGNS

Health promotional campaigns are an important tool for influencing the target audience with messages designed to promote positive health-related knowledge and decisions (Crawford & Okigbo 2014). According to Rogers and Storey (1987:821), health promotion campaigns can take many forms, address different objectives and use a variety of media. They are usually designed to:

“...influence people’s beliefs and actions towards their health or the health of others, for specific target audiences or groups, and hardly for the entire population, for implementation within a particular span of time, to be integrated with various media, and other communication efforts to educate an audience about a health-related topic” (Rogers & Storey 1987:821).

The earliest known health promotion campaign was a campaign to inoculate people against smallpox in the United States in 1832 (Snyder 2007; Verardi, Titong & Hagen 2012). Many other health promotion campaigns have followed, such as anti-smoking media campaigns in Massachusetts, the California Tobacco Control Programme, AIDS prevention in Ghana, Vasectomy promotion in Brazil, and vaccination coverage in the Philippines (Yagnik 2015). The “Pink Ribbon Campaign” is another well-known health promotion campaign that promotes breast cancer awareness (King 2007). “Movember” is an annual global health promotion campaign in November directed at men’s health with special focus on cancer and mental health (Prasetyo, Hauff, Nyuyen, Broak & Hiemstra 2015).

In South Africa, where the current study was conducted, health promotion campaigns have also been used to address a number of health issues. For example, Voluntary Counselling and Testing Campaigns have been used to increase public access and promote voluntary counselling and testing to achieve universal access to HIV prevention, treatment, care and support (Kiabilua 2012). Another example is the *Khomanani* (XiTsonga word meaning “caring together”) campaign, which was developed in 2001 to address issues related to HIV and AIDS, STIs and tuberculosis (TB) through activities that influenced and supported individual social change, with the overall theme of “Moving the Nation to Act” (Department of Health 2008:1). The National Tuberculosis Control Programme, The Stop TB Partnership and the TB

Alliance are some of the campaigns that specifically target TB as an illness in SA. These campaigns are targeted towards a reduction of the incidence of TB and the suffering it causes among the people of SA.

The most recent campaign to fight TB in SA was launched by the Minister of Health on 24 March (World TB Day) in 2015. This campaign is a comprehensive TB screening and testing campaign under the banner “Ending SA’s TB epidemic: Accelerating our response in key populations” (Soul City Institute of Health and Development Communication 2015).

Health promotion campaigns can use a variety of media platforms (Rogers & Storey 1987), and they have included the use of television, radio, telephone, and face-to-face contact as a traditional means of delivering health information and messages (Gerace 2014). A combination of mass media and interpersonal channels can yield effective health communication results (McKee, Bernard & Benton 2004).

Research has shown that traditional health promotion campaigns (such as radio, television and newspapers) have been effective in influencing health outcomes (Gerace 2014). In the United States of America (USA), television was used to promote the early detection of cancer by using patients who survived cancer as members of the cast in different episodes and programmes (Ogunlela 2014). This, therefore, means that traditional mass media such as television can be used to promote positive health behaviours (TB preventive behaviour).

A number of organisations have also used traditional media such as television for health promotion and disease prevention (Singhal, Njogu, Bouman & Elias 2006). For example, the Soul City Institute for Health and Development Communication in SA used television to promote positive behaviour regarding HIV. This campaign was aired in the form of edutainment (E-E). According to Singhal and Rogers (2003:289),

“Edutainment (entertainment-education) is the process of purposively designing and implementing a media message to both entertain and educate, to increase audience members’ knowledge about an issue, create favourable attitudes, shifts, social norms, and change the overt behaviour of individuals and communities.... to continue the process of social change, which can occur at the individual, community, or society level.”

Over the past two decades, E-E has become a major approach to health promotion and the prevention of diseases (Piotrow, Kincaid, Rimon & Rinebart 1997; Singhal, Cody, Rogers & Sabido 2004). E-E uses the appeal of the media to show its' audience how they can live happier and safer lives (Singhal & Rogers 1999:9). Numerous organisations are involved in utilising the E-E strategy for health and disease prevention on a worldwide basis. These organisations include the Johns Hopkins University Center for Communication Programmes, the Center for Disease Control and Prevention in Atlanta, the BBC World Service Trust, and the Soul City Institute for Health and Development Communication in SA (Singhal, Njogu, Bouman & Elias 2006). Soul City is the pioneering public health television programme in SA offering the first series that addresses issues specifically related to HIV and AIDS (Dagron & Tufte 2006). "*InterSEXions*" is another South African series that used edutainment to bring about change in people's lives by providing information on HIV and AIDS (Ogunlela 2014).

The implementation of health promotion campaigns is not limited only to using traditional media such as television but extends to the use of the internet in promoting positive behavioural outcomes. For example, the "*InterSEXions*" drama series used Facebook to provide additional information regarding the series, and HIV and AIDS (Durden & Govender 2012). Facebook has also been used to create awareness of breast cancer (Abramson et al. 2015), which indicates that TB Proof SA's Facebook page can be used to create awareness of TB. The liberalisation of Information and Communication Technologies and burgeoning information and communication tools like social media have substantially changed the nature of platforms for health promotion.

### **3.4 THE INTERNET AND HEALTH PROMOTION**

The internet includes thousands of networks, millions of computers and billions of users across the world (Greenfield & Yan 2006). According to Duncan (2002:417), the "internet is a worldwide system of linked computer networks". It enables faster and broader communication with a click of the button (Suggs et al. 2015). The internet is a convenient and open source for educational material and information on many topics (Uttenhout 2012). It has emerged as an important transformative mechanism for healthcare practices and health promotion (Lintonen, Konu &

Seedhouse 2008; Thackeray & Neiger 2009; Weaver & Hopkins 2009). The internet provides a pathway empowering patients and the public to create, seek, and share a vast array of information (ibid). Therefore, TB Proof SA is using the internet (Facebook) to share information on TB. The internet includes thousands of websites that provide health and medical information, many of which provide chat rooms and communities devoted to specific health and medical conditions such as HIV and TB (Macias, Lewis & Smith 2005).

TB Proof SA's Facebook page serves as a virtual community devoted to a specific disease (TB). By using the internet through Facebook, users of the organisation's Facebook page can search for information on TB. The "internet can be a powerful avenue through which patients with chronic health conditions can obtain information about their illness and treatment options" (Kalichman et al. 2003:111). The internet has become the preferred first source for health information (Massey 2013; Simou 2016). Traditional sources of information are declining (Dewan & Ramaprasad 2014; Horton 2008; Suggs, McIntyre, Warburtan, Henderson & Howitt 2015). This is because the internet offers many advantages for finding health information, for example, immediacy, accessibility, and confidentiality (Boulos & Wheeler 2007; Luambano & Nawe 2004; Massey 2013). People go to the internet for the accessibility and the volume of free, fast information and the possibility of tailored content, privacy (that is, anonymity), reach and immediacy (Farr 2011; Fox 2011; Koskan et al. 2012).

Despite the advantages offered by the internet in terms of health information, scholars such as Carrol and Richardson (2015) have pointed out that websites on the internet lack the true multi-way communication (communication that allows users to exchange information, as well as benefits from connection and support). Thus, much of the health information provided on the internet does not take advantage of the interactive nature of the web or allow for a more dynamic communication between the health provider and the health consumer (Tanner, Friedman, Koskan & Barr 2009). Interactive communication allows for a two-way flow of communication exchange that occurs between the health provider and the consumer (Berry 2007). Interactive communication increases the opportunity for health consumers to interact with health professionals through the use of communication technologies such as

social media, which allow direct communication between individuals despite distance or structural barriers (Robinson, Patrick & Thomas 1998). For the purposes of this study, interactive communication occurs on TB Proof SA's Facebook page. The organisation's Facebook page caters for interaction between the health provider (TB Proof) and the user (user of the organisation's Facebook page) through the comment feature on the page. As online communication evolved during the past decade, new communication platforms featuring multi-way communication have changed the way online users communicate to resolve an array of societal concerns, including health issues (Foster 2011). Web 2.0 is a platform featuring multi-way communication.

### **3.4.1 Web 2.0 and health promotion**

Murugesan (2010:3) states that in 2004 Tim O'Reilly coined the term Web 2.0, which "encompasses Web technologies and services such as blogs, networking sites, wikis and communication tools that emphasise sharing of content among users and online collaborations". According to Laudon and Traver (2012:56), Web 2.0 is "a set of applications and technologies that allows users to create, edit and distribute content, share preferences, bookmarks and online personas, participate in virtual lives and build online communities". The rise of Web 2.0 has made users not only receivers of information but also creators of online content (Jue, Marr & Kassotakis 2010). Web 2.0 not only facilitates two-way communication between the user of TB Proof SA's Facebook page and TB Proof SA, the organisation, but also allows communication among users of the organisation's Facebook page. For this study, the term Web 2.0 is employed to describe networking sites, because the purpose of this research is twofold, firstly, to investigate the social networking site, Facebook, and secondly, to investigate how the organisation makes use of this platform to create TB awareness.

By using Web 2.0, there is the potential to reach target audiences for behaviour change initiatives such as the use of TB Proof SA's Facebook page to encourage behaviour change towards TB. The internet is used globally, suggesting an initiative that incorporates the use of the internet as a behaviour change strategy can be wide-reaching (Dooley 2013). Billions of people worldwide use Web 2.0 interactive communication tools to seek information (for example, health data) and to connect with others (Foster 2013).

Web 2.0 advancements in health promotion have been found to be positive additions to the health promotion process (Mahoney, Lawton & Pelliccio 2015). With the use of Web 2.0 individuals can engage in wide-scale health promotion, collective resource building and collaboration (Fox 2009). With increased reach and recognition of the potential of digital health (Web 2.0), there is a greater opportunity to gather data, share quality information and develop evidenced-based health promotion strategies for prevention, detection, treatment, care, and support of patients wherever they may reside (Ratzan 2011).

The evolution of the internet has led to the emergence of social media, which changes the internet as a static source of health information to a more dynamic form of health promotion (Uttenhout 2012). In the wake of the Web 2.0 phenomenon, health communication strategies are changing to match the increasingly influential and rapidly evolving social media revolution (Newbold & Campos 2011). In the next section social media in relation to health promotion is discussed.

### **3.5 SOCIAL MEDIA AND HEALTH PROMOTION**

Social media is broadly defined as “a group of web-based applications that build on the ideological and technological foundations of Web 2.0 and allows the creation and exchange of user-generated content” (Kaplan & Haenlein 2010:60). In the light of the popularity and fast adoption of social networking sites in the past few years, there has been increasing interest in optimising the use of social media in health promotion (Lapointe, Ramaprasad & Vedel 2014; Macais, Lewis & Smith 2005; Thackeray & Neiger 2009). The main advantage of social media compared to traditional media is that social media offers the benefits of both mass and interpersonal communication. It can be used both as an awareness and dissemination tool to augment messages distributed through traditional media (for example, radio and television) and as an innovative way to collaborate, co-create content and engage with target audiences (Schein et al. 2010; Norman 2012).

Social media platforms can be used to promote public health and improve functional health literacy (Gupta, Tyagi & Sharma et al. 2013). For example, using social media platforms for health campaigns to demonstrate the dangers of smoking or dietary interventions will increase the spread of these campaigns because of the popularity

of social media (Chou et al. 2009). Social media holds considerable potential for health intervention activities (Levac & O’Sullivan 2010).

Among developed countries, Canada is a case in point: social media has been used to embed and interject public health messages into daily online conversations (Schein, Wilson & Keelan 2010). Social media has also been used by Local Health Departments in the USA to educate and inform people about diabetes (Harris, Mueller, Snider & Haire-Joshu 2013). Among developing countries, social media has been used as a platform to extend dialogue and “diffuse ideas” that encourage sexual behaviour change in SA (Govender, Dyll-Myklebust, Delate & Sundar 2013). Social media (Facebook) can also be used to disseminate TB-related information to South Africans.

It is important to note that there is a difference between social media and social networking because these terms are often used interchangeably. It is important to highlight the difference between social media and social networking sites to contextualise these concepts in the current study. This difference will be explained in the following section.

### **3.6 SOCIAL MEDIA AND SOCIAL NETWORKING**

Social media are highly interactive platforms through which users can “share, co-create, discuss and modify user-generated content” (Kietzmann, Hermkens, McCarthy & Silvestre 2011:241), while social networking sites are applications enabling users to connect by designing personal information profiles and inviting others to have access to those profiles (Davel 2013). Therefore, users of TB Proof SA’s Facebook page can share information on TB and also invite others to join the page. These two terms will be elaborated on in the next section.

#### **3.6.1 Social media**

Social media is a set of web-based tools that enables the creation of user-generated content. Social media allows user-generated content to be created by individuals and the general public (Daugherty, Eastin & Bright 2008; Haataja 2010). Users of the organisation’s Facebook page are allowed to engage in the creative process of content promotion. Social media involves conversations between people, sharing of thoughts, experiences, content and information for making better or more informed

choices (Jerving 2009:5; Madia & Borgese 2010; Palmer & Koeing-Lewis 2009). The current study investigated a social media platform (TB Proof SA's Facebook page) to find out if the conversations, sharing of thoughts, experiences and content information on the page led users to make informed choices (that is, adopting TB preventive behaviour). Social media is classified into many types, including social networking sites, and it is important to note that it was beyond the scope of this study to discuss all types of social media. The following section is an explanation of social networking.

### **3.6.2 Social networking**

According to Gulati (2008: 2–3), a “network” is a “set of people, organisations or social entities connected by a set of socially meaningful relationships”. When these relationships are augmented by a computer connection, they translate into “a social network” (William & Gulati 2007:5). Social networks are groupings of individuals into specific clusters and communities that interact with one another through social networking websites (Madia & Borgese 2010). A “community” refers to a social network of groups of people, organisations that display certain norms and standards which exist in a formal or an informal manner (Cottrell et al. 2015).

The TB Proof SA community is an example of a social network. TB Proof is a community comprising individuals who interact with each other on a social networking website (Facebook). People can create their own unique profile and interact with others who have a common interest (Millier 2012; Webster 2007; Zhang 2009). For example, to “belong” to the TB Proof SA community, one must have a Facebook account with a unique profile and also have interest in TB-related information. Therefore, social networking is a web model where individual members become part of a broader virtual community (Stokes 2009). For the purpose of this research, the term “social networking” was used to refer to the Facebook social networking site since this research was concerned only with the Facebook site and how the TB community uses it to create TB awareness.

It is important to note that all online interaction is social networking but social networking sites specifically allow individuals to construct public or semi-public profiles, create a list of other users with whom they share a connection, as well as view and examine this list (and those made by others) within the system (Baker &

White 2011; Baym & Ledbetter 2009). Having established the difference between social media and social networking sites, it is also important to discuss the evolution of social networking sites, because the current study explored the use of a social networking site (Facebook) for TB awareness. Therefore, the following section will provide information on the evolution of social networking sites.

### **3.7 EVOLUTION OF SOCIAL NETWORKING SITES (SNS)**

Social network sites are web-based services that allow individuals to construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the system (Boyd & Ellison 2007:1).

Social networks and health are closely related. This is because social networks influence one's health by providing four broad types of support: emotional, instrumental, informational and appraisal (Zhang, He & Sang 2013). Such support could help enhance one's ability to cope with stressful health challenges leading to a better health outcome (ibid).

SNS have been evolving since the dawn of human interaction (Edosomwan, Prakasan, Kouame, Watson & Seymour 2011). The first social network site appeared in 1997 and was termed SixDegrees.com, which allowed users to create, list their friends and view their friends' lists (Boyd & Ellison 2007; Dewing 2010). From 1997 to 2001, a number of community tools began to support various combination profiles and publicly articulated friends (Boyd & Ellison 2007).

Another social networking site termed Ryze.com was launched in 2001 to help people leverage their business networks (Boyd & Ellison 2007). Shortly after Ryze hit the web, the achievements and adversities of Friendster began, and Friendster was considered the top social network in 2003. In 2004, popular names like Facebook, Harvard, Dogster and Mixi evolved (Edosomuan et al. 2011). Until 2010, there were several social media created such as FriendFeed in 2007, which was a feed to consolidate the updates from social media and social networking websites and was acquired by Facebook in 2009 (Jasra 2010). FM was created in 2008 and in 2009 Bingbox was launched (Edosomwan et al. 2011).

To a great extent, the evolution of these social network sites removed time and space barriers for people to connect with one another, providing potential for them to maintain existing social ties and expand social networks (Zhang, He & Sang 2013). SNS such as Facebook and Twitter allow individuals to communicate instantly with an extensive network of friends, acquaintances and colleagues (Newbold & Campos 2011).

The evidence regarding the accessibility of social media shows that it is ideal for reaching the general public and it provides users with the opportunity to feel connected and to experience a sense of support without the need for face-to-face interaction (Levac & O'Sullivan 2010). SNS have been used in various fields, including psychology, policy-making, tourism, and health communication (Blacksmith & Aptima 2013; Cachia 2008; Miguens & Baggio & Costa 2008; Norman 2012). Therefore, Facebook, a social networking site, can be used to create awareness of TB.

SNS present enormous opportunities in the field of health promotion by moving health promotion “from one-to-many to include one-to-one and many-to-many simultaneously” and reaching people in real time wherever they are located (Norman 2012). SNS such as Facebook could be an attractive means of reaching the “at-risk population”, concerning TB, such as the South African population (Jones 2012:119).

Kreps and Neuhauser (2010) assert that social media provides users with the opportunity to connect to one another, which could prove favourable for positive health behaviour change. It provides the opportunity for individuals to interact with health organisations on a personal level through a single channel and receives answers to their specific questions. For example, on TB Proof SA's Facebook page, users have the opportunity to ask questions related to TB and TB Proof answers these questions. Questions and answers are visible to other users aggregating the information and creating collaboration. In one-to-one contact, this information would not be publicly accessible and would not be of value to other users of this page. The current study investigated if these interactions (between TB Proof and its users) led to the adoption of TB preventive behaviours.

Social networks are considered effective channels to positively influence health behaviours (Apatu et al. 2013; Chou et al. 2013; Korda & Itani 2013). According to Korda and Itani (2013:15), “people of all demographics are adopting these technologies” and increasingly use them for health-related issues. As a result, non-profit and government health organisations have steadily expanded their use of SNS to reach and engage their audience (Thackeray et al. 2011). For example, in SA, “InterSEXions” a South African produced television drama series uses a social networking platform (Facebook) to facilitate HIV and AIDS awareness (Durden & Govender 2012). TB Proof (a South African non-profit organisation) is also using a social networking platform (Facebook) to create awareness of TB.

TB is a major health issue, not just in SA, but worldwide (WHO 2015). TB ranks alongside HIV and AIDS as a leading cause of death across the globe (Walzl 2016). In 2015, TB killed 1.5 million people worldwide, and an estimated 26.000 people are infected each day (Hill 2016). Prevalence is highest in sub-Saharan Africa, from Ethiopia to SA, and in Asia, particularly in India and China (ibid). TB is the leading cause of death in SA (NDoH 2016). Due to this severe increase in infection rates SNS are now being used to disseminate TB-related information to the general public (Abramson, Keefe & Chou 2015).

Nevertheless, some people are reluctant to use SNS for health information. This is because SNS usage is a new technology and not everyone is interested or motivated to use these methods of communication (Uttenhout 2012). However, institutions such as hospitals, the pharmaceutical industry, insurers and patients have already succeeded in using social networking to interact with their stakeholders (Crossing 2008), so TB Proof SA can use its Facebook page to effectively disseminate TB-related information to South Africans. Thus, it is important to investigate whether the posts, comments and the visuals on the organisation’s Facebook page led users to adopt TB preventive behaviour.

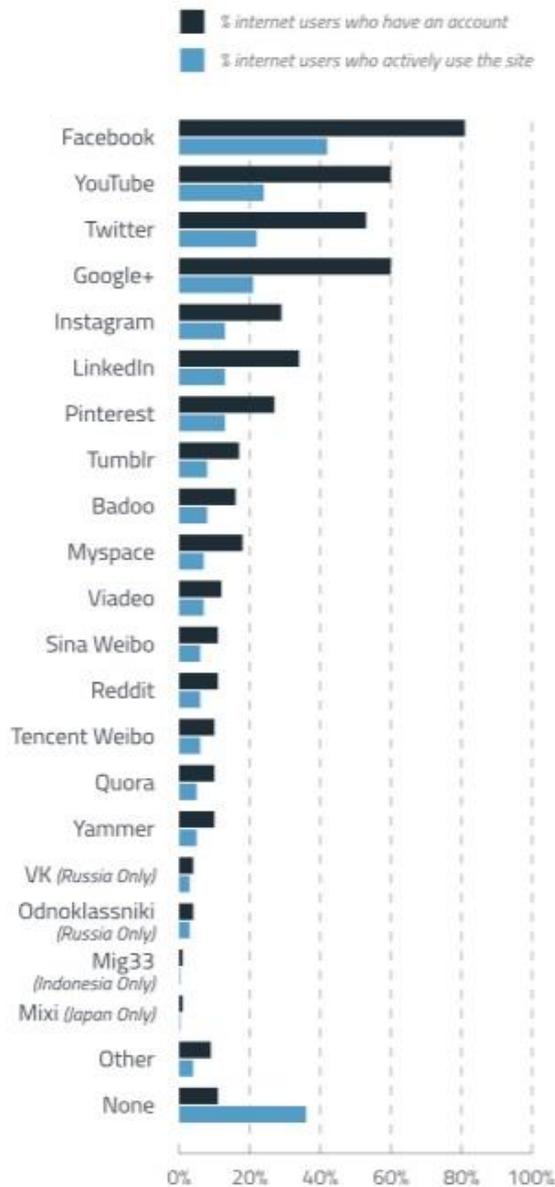
The social networking site Facebook has been explored as a tool for communicating health information and creating social networks. The next section discusses how Facebook has been used in health promotion.

### **3.7.1 Facebook**

Facebook was launched in 2004 and currently has 2.19 billion active users worldwide (Facebook 2018). Facebook is an individual-focused social networking service, and any individual over the age of 13 can register as a user at no cost by creating a profile and adding content about themselves over a period of time (Bernard 2015). The main function of Facebook is to create an online social network with other users and share personal information and other content with the users' network (Uttenhout 2012).

Facebook is one of the most popular and well-known social networking websites and it is currently the leading social media in the world (Claudette 2014; Facebook 2018). Figure 3.1 depicts the Global Web Index summary in January 2015 showing social network account ownership and active usage. It is important to show both account ownership and active usage because it is the active social media use of statistics that shows the potential of a platform. As evident in Figure 3.1, Facebook is clearly the most popular social media platform, reaching more than 80% of the world's internet users, with half its users actively using their accounts at least once per month. Facebook is followed by YouTube that reaches 60% of global internet users, half of which use the video site at least once a month. Twitter, Google, Instagram, LinkedIn, Pinterest and Tumblr follow the top two social media sites with comparatively small audiences. Meanwhile, some countries draw large numbers of users to their own social networks, such as Badoo, Sina Weibo and Tencent Weibo in China; Mixi in Japan; and VK in Russia.

Chart 7: TOP 20 SOCIAL PLATFORMS -  
ACCOUNT OWNERSHIP AND ACTIVE USAGE



**Figure 3.1 Global Web Index**

Source: Global Web Index 2015

As evidenced in the chart above, Facebook is the most popular social media platform in the world. Given its popularity, researchers support the use of Facebook in health promotion (Abramson, Keefe & Chou 2015; Apatula et al. 2011; Chou et al. 2013; Farmer et al. 2009; Neiger 2012; Woolley & Peterson 2012). Some Facebook interventions have proved to be successful. For example, Facebook intervention for diabetes has provided information and support to users (Zhang et al. 2013).

Moreover, Facebook intervention for breast cancer has provided information and support to its users (Abramson, Keefe & Chou 2015). Therefore, TB Proof SA's Facebook page has great potential to provide information and support to users of the TB Proof SA's Facebook page.

In the next section, a discussion of the use of social media is provided to contextualise the study further.

### **3.8 THE USE OF SOCIAL MEDIA**

The use of social media is a global trend. Over 3 billion user accounts exist across all social media platforms around the world (European Publishers Council 2018). In Africa, there are 453 million active social media accounts; 53.7% of the population is connected to the internet in SA (Statista 2018). Notwithstanding the comparatively higher social media penetration in Africa, SA still experiences limited access to the internet.

There are a number of factors that make it difficult for some South Africans to obtain access to the internet. These factors include poverty, infrastructure barriers, digital literacy challenges and policy and operational barriers (West 2015). These challenges represent significant barriers for millions of people in developing countries such as SA (West 2015). From the perspective of the use of social media and in the light of the above problems, African countries are ranked far lower than their global counterparts, but when compared to other countries in Africa, SA's use of social media is significantly higher (Global Web Index 2015; Taylor 2010).

SA ranks among the ten progressive countries in the world undergoing connectivity insurgency (Erasmus 2012). The result of this revolution is an ever-increasing use of social media by South Africans (ibid). South Africans make use of popular social networks such as Facebook, YouTube, Twitter and Instagram. (Fuseware 2015). Therefore, social media (Facebook) can be used to disseminate information on TB to South Africans. It is important to note that South Africans also make use of home grown social networks such as Mxit, Motribe, Blueworld and Sembuse.

Mxit is one of the dominant SNS in SA with nearly five (5) million users, of which a majority (88%) reside in SA. (Wronski & Goldstruck 2013). Motribe is a mobile

platform enabling users, brands, agencies and publishers across the world to build and manage their own mobile social communities (Noonam & Piatt 2014). Blueworld is another South African social networking site geared towards younger users. It features several interactive options through a clean interface and users can enter chat rooms, post mini-blogs and videos and create profiles (USAID 2013). Sembuse is a South African mobile social network and instant messaging platform similar to Mxit (Noonan & Piatt 2014). Table 3.1 lists the top 20 popular websites in SA.

**Table 3.1 Top 20 popular websites in South Africa**

Number	Website	Number	Website
1	Google.com	11	FNB
2	Google.co.za	12	News24
3	Facebook*	13	Junkmail
4	YouTube	14	Ask*
5	Yahoo	15	Pinterest*
6	LinkedIn*	16	OLX
7	Amazon	17	Blogspot*
8	Gumtree	18	Mybroadband*
9	Wikipedia*	19	Kickass.so
10	Twitter*	20	Standard Bank

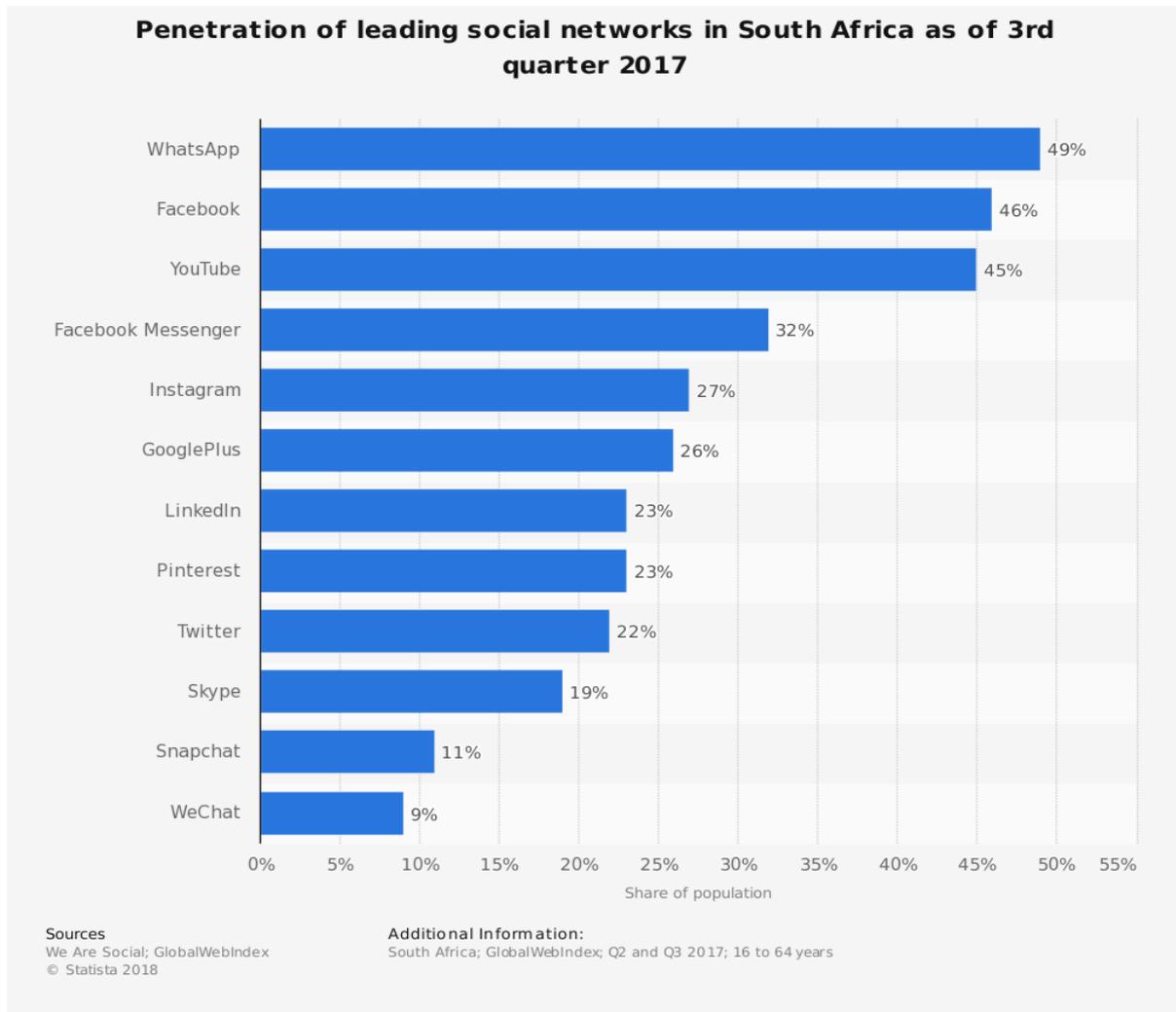
Source: Global Web Index 2015

It is evident from Table 3.1 that Facebook is the third most popular social media website in SA. Therefore, Facebook could be effectively used as a platform to disseminate health-related information to South Africans.

As evident in Figure 3.2, WhatsApp is the top active social media platform in SA (49%), followed by Facebook with 46% and Instagram with 27%. GooglePlus is next with 26%. LinkedIn, Pinterest, Twitter, Skype, Snapchat, WeChat follow the four top social media platforms with comparatively small audiences. Therefore, Facebook is

the second top active social media platform in SA and TB Proof SA’s Facebook page can be used to create awareness of TB.

**Figure 3.2 Top Active Social Platforms in South Africa**



Source: Global Web Index 2018

In the next section, Facebook and healthcare are discussed to contextualise the current study further. This is because the current study explored the effectiveness of TB Proof SA’s Facebook page as a TB awareness platform. Therefore, it is important to explore the use of Facebook in healthcare.

### 3.9 FACEBOOK AND HEALTHCARE

Researchers show mixed support for the use of Facebook in healthcare (Anderson 2012; Buchanan & Beckett 2014; Farmer et al. 2009; Woolley & Peterson 2012; Zhang, He & Sang 2013). Facebook has great potential to influence individuals’

health behaviours by shaping the perceptions of social norms and the expectations that they set for themselves or by improving their access to personally relevant information (Zhang, He & Sang 2013). According to Woolley and Peterson (2012), Facebook as a medium can be effective to help individuals maintain and adopt a healthy lifestyle. This is because Facebook provides “a readily accessible portal” for patients and healthcare professionals, which allows them to share experiences of investigation diagnosis and disease treatment (Farmer et al. 2009:445). Facebook allows for the most interactive, extensive use of pictures, videos, messaging, and network connectivity (Anderson 2012). Buchanan and Beckett (2014) indicate that health-related information can be shared on Facebook. Therefore, Facebook is a channel through which TB-related information can be disseminated to South Africans; TB Proof SA is using this platform to share tuberculosis information with its users.

Nevertheless, Facebook may not be an appropriate channel for the dissemination of health messages that may contain content considered sensitive, embarrassing or stigmatising, as this type of message may not be accessed and redistributed by network users (Byron, Albury & Evers 2013). Nonetheless, Facebook has potential to foster relationships and trust among patients and healthcare providers and may be a useful platform for healthcare information sharing (Bravo 2015; Greene, Choudhry, Kilabuk & Shrank 2011; Morris, Consolve, Munson, Patrick, Tsai & Kramer 2011). For example, medical practitioners can interact with patients and offer medical advice via Facebook (Antheunis, Tates & Nieboer 2013; Hawn 2009; Ventola 2014). This implies that the organisation can interact with its users by providing TB-related information via TB Proof SA’s Facebook page.

### **3.10 SUMMARY**

The aim of this chapter was to review the literature on health communication, the use of the internet in health promotion, the use of social media in health promotion, and Facebook and healthcare. Therefore, in this chapter, a discussion of health communication was provided. The use of the internet in health promotion was also discussed in detail. In addition, a discussion of the use of social media in health promotion regarding the present study was provided. Finally, this chapter provided a

discussion on the use of Facebook for healthcare. The next chapter will focus on the selected theoretical models for this study.

## **CHAPTER 4: LITERATURE REVIEW PART 3: HEALTH PROMOTION MODELS AND THEORIES**

### **4.1 INTRODUCTION**

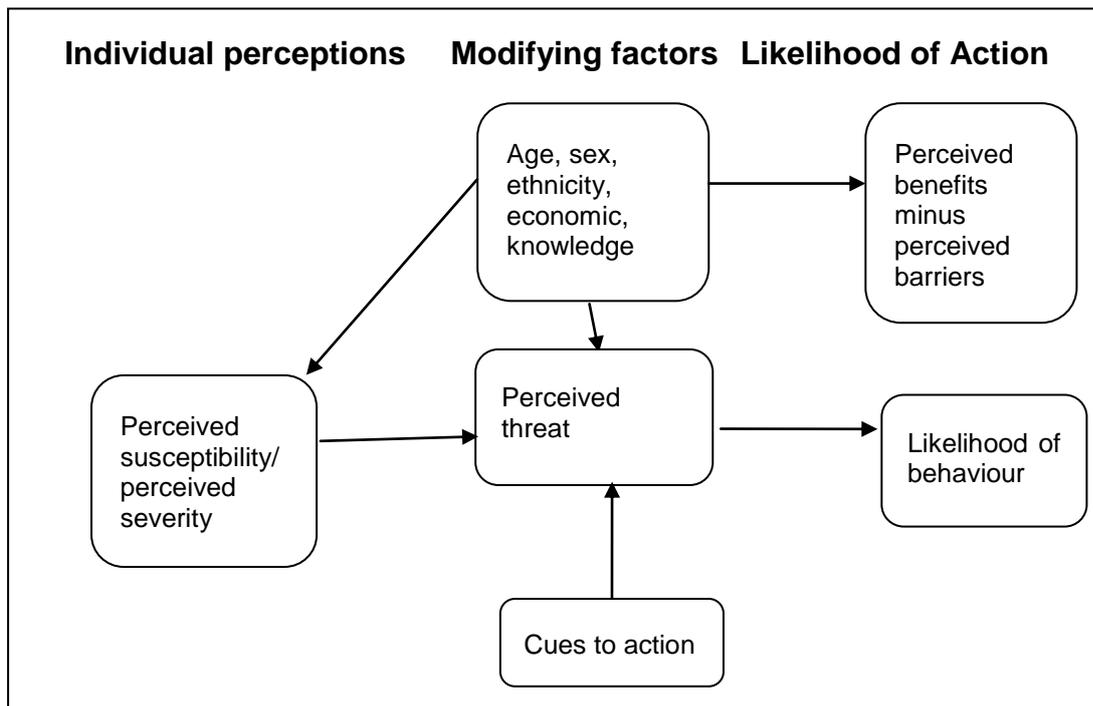
This chapter comprises an in-depth discussion of the literature related to the chosen theories and models for this study. It is important to provide clarification about the difference between a model and a theory because this study made use of both models and theories to explain the effectiveness of TB Proof SA's Facebook page for TB awareness. A theory represents a set of statements that are developed via a process of continued abstraction while a model involves a deliberate simplification of a phenomenon (Nilsen 2015). The following are models and a theory selected for this study: the HBM (Becker 1974), TRA (Fishbein & Ajzen 1975), IMB Skills Model (Fisher & Fisher 1992–1993) and the PEN-3 Model (Airhihenbuwa 1989). These models and the theory will be discussed to understand the behavioural outcomes of users of the organisation's Facebook page.

Furthermore, this chapter discusses the application of the selected models in the field of health promotion focusing on TB Proof SA as a case study. This chapter will conclude by providing a discussion of the criticisms of the selected models in relation to the present study. In the current study, these models are used in a health promotion context for health behaviour change (Cottrell et al. 2015).

### **4.2 THE HEALTH BELIEF MODEL (HBM)**

The HBM is the most commonly used model in health education and health promotion (Glanz, Rimer & Lewis 2002; Sharma & Romas 2012). It was originally developed in the 1950s by a number of social psychologists in an attempt to determine why individuals were failing to participate in prevention programmes offered by the United States Public Health Services (Hochbaum 1958; Rosenstock 1974). The HBM is an individual-based model that advocates behaviour change through rational decision making (Glanz 2002; Janz, Champion & Stretcher 2002). The HBM was developed exclusively to explain health-related behaviours (Orji, Vassileva & Mandryk 2012). The goal of the HBM is to explain behaviour change maintain health-related behaviours and avail a guiding framework for health interventions (Janz & Becker 1984; Fishbein & Yzer 2003). TB Proof SA's Facebook page was created as a health intervention associated with health behaviour; the use

of the page for TB awareness. Thus, the HBM was used in analysing the use of this page for creating TB awareness. The HBM is often used because of its adaptability in health contexts and situations (Shade 2010). Therefore, the HBM is an appropriate model to use in combination with the TRA, the IMB and PEN 3 model in analysing the use of TB Proof South African Facebook page for TB awareness. A graphical representation of the HBM is presented in Figure 4.1.



**Figure 4.1 The Health Belief Model (HBM)**

Source: Janz & Becker (1984 in Glanz et al. 2002:52).

The constructs of the HBM is discussed as follows.

#### 4.2.1 Perceived susceptibility

According to the HBM, perceived susceptibility is a belief about the possibility of contracting a disease or being harmed by a condition (Chew et al. 2002). If people believe that they are susceptible to a particular health condition and its corresponding outcomes then they are motivated to implement a healthy behaviour (Rosenstock 1966). For example, in SA individuals who feel susceptible to TB can put into practice the “*Haybo Wena*” (which can be translated as “Hey you”) initiative. The *Haybo Wena Use Your Elbow* is a phrase adopted in SA to get people to alter

behaviour positively with a simple action like using their elbow as opposed to their hand when coughing (News24:2016). The campaign encourages communities to:

- *Uma ubona ekhwehlela*, (if you see coughs)
- *Haybo wena*, (point them out-say, hey you)
- *Sebenzisa indololwane*, (use your elbow)

Therefore, South Africans who feel susceptible to TB may adopt the *Haybo Wena* initiative as a TB preventive behaviour. When related to the current study, perceived susceptibility includes the risk of contracting TB in the long term or immediate future by users of TB Proof SA's Facebook page. The more susceptible a user feels, the greater the likelihood of preventive measures occurring (Sharma & Romas 2012). This construct of the HBM was used in the current study to explain health actions towards alleviating TB and this was accomplished by analysing comments on TB Proof SA's Facebook page from 1 February to 30 June 2017.

#### **4.2.2 Perceived severity/perceived threat**

The HBM argues that a person is more likely to take action to avoid a potential health risk if they believe contracting the disease would have some negative impact on their life (Janz et al. 2002). For example, with an illness such as TB people are aware that contracting the disease can cause pain, disability and even lead to death. Some people also believe that contracting TB may affect their work, family and social life (Rajeswari et al. 1999). Therefore, perceived severity is one's belief about the seriousness of a medical condition and the sequence of events after diagnosis and personal feelings related to those consequences (Janz et al. 2002). Therefore, the current study employed this construct to determine the perceived threat to users of the TB Proof SA's Facebook page. User's comments were analysed to determine the perceived threats of users of the organisation's Facebook page.

#### **4.2.3 Perceived benefits**

Perceived benefits are "the individual's beliefs regarding the effectiveness of strategies designed to decrease vulnerability or reduce the threat of illness" (Brown, Diclemente & Reynolds 1991:51). Individuals need to be provided with relevant information that is relevant to the situation or condition at hand and can, therefore,

guide them towards personal preventive behaviours (Cottrell et al. 2015). For example, if a post (content generated by the page administrator) is made on TB Proof SA's Facebook page on TB preventive practices, users of the page need to see the advantages that come with adopting these practices. A meta-analysis of longitudinal studies done on HBM by Carpenter (2010) indicated that perceived benefit was a consistent predictor of performing a given behaviour. Thus, this construct was employed in the current study to determine if users' (of this Facebook page) perceived benefits encourage them to adopt TB preventive behaviour.

#### **4.2.4 Perceived barriers**

According to Brown et al. (1991:51), perceived barriers can be defined as "the assessment of potential negative consequences that may result from taking a particular health action". In the current study, perceived barriers are the potential negative consequences that may result when taking action against TB. Barriers such as cost, unwanted side effects, time, social and family related obstacles can be considered as barriers (negative consequences) that hinder practising a healthy behaviour (Champion & Skinner 2008). Thus, in the context of this study and TB as an illness, barriers may include expense, pain, inconvenience and time consumption. The current study employed this construct to determine the perceived barriers experienced by users of TB Proof SA's Facebook page. User's comments were analysed to determine barriers for not adopting TB preventive behaviour.

Culture is a major impediment to adopting TB preventive behaviour. Culture is "a system of interrelated values active enough to influence and condition perception judgement, communication and behaviour in a given society" (Mazrui 1986:239). People are generally influenced by their cultural beliefs, especially in Africa (Moola 2010). About 80% of Africans consult traditional healers, who are significant in determining the causes of illness in Africa (Reid & Cornell 2004; Mabetoa 1992). Consulting with non-western doctors is commonly done in SA, and this could be a barrier to combating TB in SA (Bhengu 1989).

Among some South Africans requests related to health and well-being are directed to the ancestral spirits, and some traditional healers in SA attribute the causes of illness to ancestral spirits (Vilakazi 1965). For example, the cause of TB is

sometimes attributed to a mode in which an ancestor's spirit orders the infected persons to adhere to and perform a ritual (Thinwa 2004). Moreover, the cause of TB is also attributed to poisoning sent through food and certain herbs are given to the infected person to induce vomiting to eliminate the poison (Thinwa 2004).

Due to these attributions (cultural beliefs), there is some belief that illnesses cannot be cured through western therapeutic techniques (Karlson & Moloatoa 1984; Mabetoa 1992). Traditional African medicine, therefore, becomes the healing system of choice.

In a study conducted among hostel dwellers in Cape Town, it was found that traditional healers were used for special conditions that biomedical healers are considered unable to treat (Heap & Ramphele 1991). Culture is an integral part of the belief system, and the cause of health problems or illness is central to the belief system of some Africans (Shai-Mahoko 1997). Illness is viewed by some South Africans as a cultural reaction to life (Shai-Mahoko 1997). Therefore, culture can be a barrier to adopting TB preventive behaviour.

#### **4.2.5 Cues to action**

This construct of the HBM is "specific stimuli necessary to trigger appropriate health behaviour" (Matton 1999:243). Cues to action are those incidents that occur to remind one of the severity of an illness (Henshaw & Freedman-Doan 2009). For example, cues to initiate action against TB could be having a family member ill with TB or knowing someone who died of TB. This behaviour change model is ideal for health promotion campaigns since the media can be used to educate the masses about the health problem (Moola 2015). An example of such a campaign is World TB day, which is a global mass media campaign aimed at educating the world about TB.

For the purpose of this study, cues to action in relation to TB include the use of the media to get information on TB, personal health maintenance, a balanced diet and management of risk factors. According to the HBM, the posts and visuals on TB Proof SA's Facebook page should provide knowledge or information about cues to actions that will enable users to adopt TB preventive behaviour. Therefore, the current research analysed the posts and visuals on the organisation's Facebook page to determine if the posts and visuals carry cues to action against TB.

#### **4.2.6 Self-efficacy**

According to the HBM, self-efficacy focuses on a person's confidence in their ability to successfully perform the recommended action (Campbell 2004; Pender 1996). If a person is not confident in their ability to successfully perform a recommended behaviour, change will not occur. An example of this construct when related to TB can be the need to wash hands regularly or the confidence in one's ability to be able to undergo TB testing.

For example, one of the posts made on TB Proof SA's Facebook page on 12 March 2015, reads as "Stop TB Partnership staff gets tested for TB: A call for universal access to TB testing". This post provides information on TB by drawing attention to the importance of knowing one's status on infection. Therefore, the current research explored self-efficacy of users of the organisation's Facebook page through their comments on the page. Comments on the page were analysed to determine user's self-efficacy after exposure to information on the TB Proof Facebook page.

Several studies of various health behaviours have used the HBM as their theoretical basis to predict and explain preventive, screening, sick role and service adoption behaviours in the past few years (Alemayehu 2015; Gerace 2014; Uttenhout 2012). Therefore, in the next section, various research studies will be reviewed by different scholars who made use of the HBM. This review will be done to contextualise the use of the HBM in the present study.

### **4.3 APPLICATION OF THE HEALTH BELIEF MODEL (HBM) IN THE FIELD OF HEALTH PROMOTION**

A review of the literature shows that the HBM Model has been employed in health behaviour and communication studies (Case 2015; Sohl & Moyer 2007). For example, Gerace (2014) employed the HBM to investigate the effectiveness of using social media in delivering a TB health communication campaign. This study targeted 18- to 24-year-old millennial college students from the University of California. The instrument used in this study consisted of four components aligned to the HBM to measure participants' perceptions of susceptibility, severity, barriers, and benefits. The results of this study revealed that a vast majority of millennial students prefer to receive health information via social media and these students are more likely to share this health information via social media rather than over traditional media.

Findings from this study also revealed that a social-media-focused communication campaign would be more effective at effecting self-efficacy for millennial college students than a traditional media based campaign. The current study aimed to emulate Gerace (2014), by employing the HBM to analyse the use of TB SA's Facebook page for TB awareness.

Uttenhout (2012) used the HBM to analyse social media pages that were created in collaboration with municipal health services to enhance communication about common head lice prevention to parents in the Netherlands. The objective of this study was to assess the perceptions and media choices about head lice. Findings indicated that current information received from pharmacies and schools is perceived as sufficient by parents. Even though social media has potential in health communication, the projection and actual popularity of a social media channel about head lice is low to Dutch parents. Findings from this study revealed that parents were ignorant of the websites and social media channels that disseminate information on preventive behaviour regarding head lice. The current study drew from this finding by analysing the use of TB Proof SA's Facebook page for TB awareness.

Furthermore, Guilford (2011) has used the HBM to analyse breast cancer knowledge, beliefs, and screening behaviours of college women in the southeastern parts of the USA. The results of this cross-sectional descriptive study revealed that the HBM constructs of self-efficacy and perceived barriers were significantly associated with breast self-examination. This finding suggests that women's general level of confidence in their ability to perform breast examination increased. Findings also revealed participants' low level of perceived susceptibility towards breast cancer. This finding is inconsistent with the finding of a study conducted by Akhigbe and Akhigbe (2012). The majority of respondents (79.5%) perceived susceptibility to breast cancer was high in the study carried out by Akhigbe & Akhigbe (2012).

With reference to the current study, the HBM was used to evaluate the susceptibility of users of TB SA's Facebook page to TB. This was done by analysing user's comments to determine whether the comments alluded to susceptibility (susceptibility of being infected by TB).

It is important to note that the scope of applicability of the HBM is limited when compared to the TRA and the IMB. This is because “key constructs of the HBM include perceived susceptibility and perceived severity with respect to a given health threat” (Sutton 2002). Although these constructs can be applicable to non-health-related events (such as risk of financial loss), the scope of the HBM is limited by the nature of these constructs. By contrast, the TRA and the IMB are general theories that can be applied to any domain or behaviour.

The HBM is one of the most cited health communication models (Carpenter, 2010; Case 2015; Wallston & Wallston 1984). However, there are some limitations to its applicability to the present study (Cochran & Mays 1993; Grown 2005; Irwin, Millen & Fallows 2003; Michael-Johnson 1992). Sharma and Romas (2012:85) state, “Cultural factors, socio-economic status, and previous experiences also shape health behaviors, and those factors are not accounted for in the model”. Munro et al. (2007) note that when applying the HBM to long-term medication adherence, it is important for the influence of cultural factors to be considered. In the next section, criticism of the HBM regarding the current study will be examined.

#### **4.4 CRITICISM OF THE HEALTH BELIEF MODEL (HBM)**

The HBM has been criticised for being an individual-based model that lacks consideration for culture. This is because culture plays a major role in health-related behaviours (Carol 2007). According to Naidoo (2006), an individual’s behaviour is often guided by the cultural context within which they live, so users of TB Proof SA’s Facebook page may not adopt TB preventive behaviour because of their cultural values and this may hinder the process of eliminating TB. This is because “culture forms the basis of healthcare in SA and it determines how a community will react to an illness...” (Moola 2015:113). Individuals are influenced by their culture, which includes consuming herbal remedies to cure TB. SA has a traditional medicine policy that is acknowledged by the WHO (Summerton 2006).

The consumption of medicinal plant remedies is an integral part of South African culture, and the government of this country established a directorate of “Traditional Medicine” in 2006 within the Department of Health and a “Traditional Practitioners Council” in 2007 (Gavriilidid & Ostergren 2012; Buwa & Afolayan 2009). For a

number of years, SA traditional medicine has been recognised by the SA Government for sustaining healthcare in the urban and rural areas (Gavriilidid & Ostergren 2012). Many communities in SA use herbal medicine as treatments for illness because of their traditional beliefs. For instance, *Carpobrotus Edulis*, often referred to as sour fig or Hottentot's fig, is widely used as a traditional remedy for the treatment of TB (Wyk, Oudsthoorn & Gericke 1997). *Tulbaghia Violacea Harvis* is another herb that is used as a traditional remedy for the treatment of TB in SA (Hutchings, Scott, Lewis & Cunningham 1996; Van Wyke & Gericke 2000).

Richter (2003:7) points out that biomedical medicines are characterised by diseases of the physical body only, and are based on the principles of science, technology, knowledge and clinical analysis "indicating that cultural beliefs are not catered for in biomedical medicine". Thus, it is evident that any model of healthcare based on a single system of medicine will find it difficult to cope with the healthcare demand in the near future (Payyappallimana 2010). If culture is recognised as a contributing factor in public health and health promotion, it has the potential of developing new and effective strategies to fight diseases (for example, TB) (Kreuter & McClure 2004).

Walker, Reid and Cornell (2004:90–9) assert, "South Africa is characterised by cultural complexity and differences". SA has been referred to as the "rainbow nation", a title that epitomises the country's cultural diversity (Naidoo 2011:81). With eleven official languages, the South African population is one of the most complex and diverse in the world (Government Communication and Information Systems 2007). Thus, "the cultural differences among ethnic groups might prove crucial in the perception of seriousness and susceptibility to disease, as well as in the perception of social sanctions attached to a given disease" (Quah 1985:363).

Therefore, cultural differences within ethnic groups in SA may affect behavioural change towards TB. Livingston (1992) states that the success of any health promotion campaign in Africa relates to how much consideration is given to specific and unique cultural factors of the specific region, for example, SA. Therefore, health professionals should make an effort to learn the symbolic interpretations of illnesses and provide relevant information to help people understand health promotional messages (Faure 2000). This is because culture influences our human abilities such

as perception, thinking, acting and feeling; hence our pattern of behaviour becomes consistent with our cultural reality (Poovan 2005). Therefore, cultural tolerance must be catered for in health promotion interventions.

Health promotion sectors have acknowledged the fact that culture plays a significant role in determining health behaviour (Keuter & McClure 2004; Lui 2010). As mentioned earlier, the HBM overlooks this cultural dimension. It is, therefore, apparent that the lack of cultural consideration in the HBM limited its applicability in analysing the use of TB Proof SA's Facebook page for TB awareness.

In the following section, the TRA will be discussed. The TRA has commonly informed research in both health and media consumption behaviours (Albarracin et al. 2005; Ajzen, Abarracin & Hornik 2007; Shin 2008). It has also informed interventions through identifying and targeting attitudes and norms towards behaviour and consistently predicted health and media use behaviours (Albarracin et al. 2005; Ajzen, Abarracin & Hornik 2007; Shin 2008). Owing to the appropriateness of the TRA in informing research both in health and media consumption behaviour, it was selected as one of the theories to evaluate the use of TB Proof SA as a TB awareness platform. The following section discusses the TRA, its constructs, application of the TRA in the field of health promotion and the criticism of the TRA.

#### **4.5 THE THEORY OF REASONED ACTION (TRA)**

Like the HBM, the TRA is also an individual-based theory. The TRA was introduced in 1967 (Bernard & Krupat 1994). Ajzen and Fishbein (1980) explain the relationship between positive attitude and positive behaviour using the TRA. Fishbein and Yver (2003:165) explain that TRA is a behaviour change theory based on the following: "performance of a given behaviour is primarily determined by the strength of a person's intention to perform that behaviour". One's behaviour is determined by behavioural intent, which in turn is influenced by attitudes and subjective norms and both of these stem from one's set of beliefs (Acha-anyi 2014).

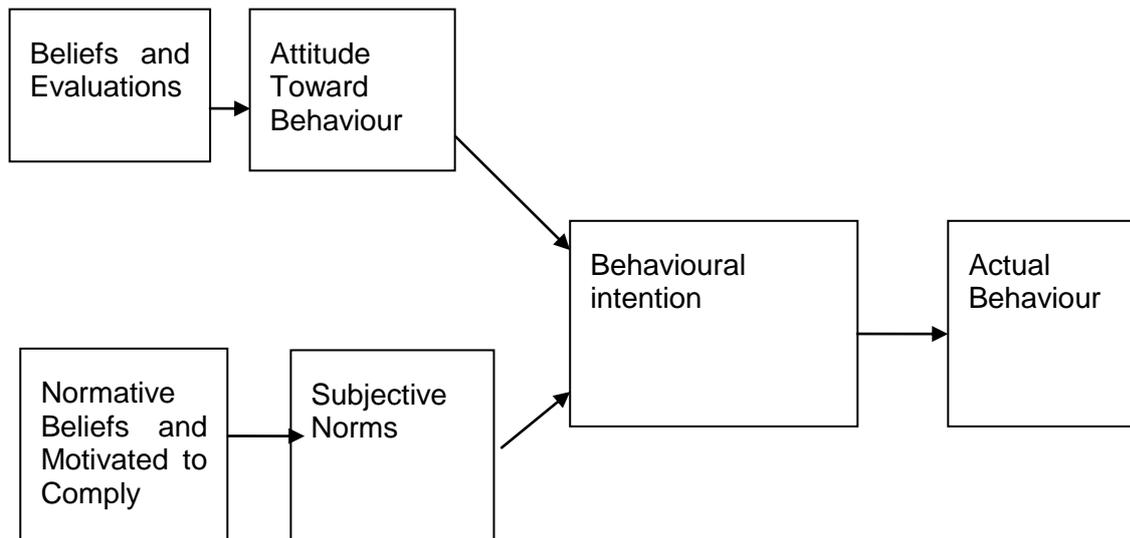
Like the HBM, the TRA also relates to cognitive behaviour change and persuasive communication for health-related issues. The TRA does provide "a framework for deciphering individuals' action by identifying measuring and combining beliefs that are relevant to individuals, allowing us to understand their own reasons that motivate

the behaviour of interest” (Montana & Kasprzyk 2002:73). This is done by analysing users’ (users of TB Proof SA’s Facebook page) comments to identify the relevant behavioural outcomes and referents for each particular behaviour.

According to the TRA, a behavioural intention of performing a particular behaviour is determined by personal (attitudinal) and social (normative) factors (Fishbein & Ajzen 1975). “People consider the implications of their actions before they decide to engage or not engage in a given behaviour” (Fishbein & Ajzen 1975:5). This assumption is based on the premise that an individual’s behaviour is rational and intentional.

The TRA has guided studies on the use of a media channel for specific purposes such as information and support (Kaye 2007). The current study explores the use of a media channel that is TB Proof SA’s Facebook page for a specific purpose, which is the dissemination of TB-related information. Therefore, the TRA was suitable to guide the exploration of the use of the organisation’s Facebook page as a TB awareness platform. Moreover, the TRA has been used in media studies to predict the use of specific media platforms (Foster 2013:40). For example, Peslak, Ceccucci and Sendall (2011) used the TRA to predict the use of SNS among college students. The TRA is, therefore, appropriate for the current research. This is because the current study explores the use of a social networking site (Facebook) for TB awareness.

The TRA has also been employed to understand behavioural outcomes in health communication research (Foster 2013). Moreover, the TRA is particularly useful in analysing and identifying reasons for action and messages that can change people’s attitudes (Schiavo 2007). This further justifies the use of the TRA in the current study because the reasons (motivation) for users using TB Proof SA’s Facebook page for TB awareness were investigated. User’s motivations for using the page were determined through the conversations recorded on the page. Figure 4.2 shows a schematic presentation of the TRA.



**Figure 4.2 Theory of Reasoned Action (TRA)**

Source: Fisher & Ajzen (1975:16)

A discussion of behavioural intention, attitude and subjective norms is provided in the following section. This discussion helps in contextualising the focus of the present study.

#### **4.5.1 Behavioural intention**

The TRA stipulates that behavioural intention is a “function of a person’s attitude about behaviour and subjective norms” (Raingruber 2013:57). Behaviour is determined by behavioural intent that in turn is influenced by two major factors: personal (attitudinal) and social (normative) factors. These factors stem from one’s set of beliefs (Ajzen & Fishbein 1980). Ajzen and Fishbein (1965) argue that when there is a high correlation between behavioural intent and behaviour, one should not only be able to predict behavioural intention but predict behaviour as well. In the context of this study, if users of TB Proof SA’s Facebook page have a high intention to adopt positive behaviour towards TB, then they will likely adopt TB preventive behaviour and if users do not have a high intention to adopt positive behaviour, then they will probably not adopt TB preventive behaviour. This construct was employed in the current study to understand the behavioural intention of users of the organisation’s Facebook page. Behavioural intentions were determined through the comments on this page.

#### **4.5.2 Attitude**

Attitudes are functions of underlying beliefs about the outcomes of performing the behaviour (Capella, Fishbein, Hornik, Ahen, & Sayeed 2001). A user of TB Proof SA's Facebook page will have a favourable attitude towards TB preventive behaviour if they believe adopting this behaviour will lead to a positive outcome. According to the TRA, people's intention to partake in a particular behaviour is based on

- their attitude towards that behaviour (for example, a user of TB Proof SA's Facebook page will have a positive attitude if they believe the behaviour will have a positive outcome);
- their subjective norms, (for example, what a user believes others think about adopting that behaviour); and,
- past experiences with adopting this behaviour (for example, positive experiences have positive outcomes) (Foster 2013).

This study has explored user's attitudes towards using TB Proof SA's Facebook page as a source for TB-related information. According to the clearly established relationships in the TRA, a user of the organisation's Facebook page will adopt TB preventive behaviour if they believe adopting this behaviour will lead to positive outcomes. Thus, this construct of the TRA was used in the current study to understand or explain the user's attitude towards TB.

#### **4.5.3 Subjective norms**

According to the TRA, subjective norms provide a second determinant of behavioural intention. The construct subjective norms according to Ajzen (1991), is the perceived social pressure to adopt or not adopt the behaviour. Ndebele (2012:36) explains that adopting or not adopting this behaviour is as a result of normative beliefs, which are "normative expectations of others and motivation to comply with these expectations". These expectations come from significant others, such as family members, experts, friends, or co-workers (Raingruber 2013). Significant others in the context of this study refer to health practitioners, parents, virtual online friends and close friends because these groups of people can influence a user's decision to perform or not to perform a TB preventive behaviour. For example, people tend to turn to their family

for advice on health concerns such as TB (Kostan, Foster, Karlis, Rose & Tanner 2012). Family members act as motivators through verbal persuasion (Chani 2010).

According to the TRA, the influence of an individual's normative beliefs is a combination of the beliefs about what others think of the behaviour and their motivation to comply with others' beliefs (Ajzen 1985; Fishbein & Ajzen 1975). For the purposes of this study, subjective norms are perceived opinions of significant others who are important to an individual (user) and who influence their decision whether to use the TB Proof SA Facebook page for TB awareness, along with an individual's (user) motivation to comply with these opinions.

In the next section, the application of the TRA in the field of health promotion is discussed. The TRA has been applied in the health promotion field in extensive studies to examine a vast number of topics such as analysing antidrug messages, examining the implications for designing preventive messages for condom use, as a framework to investigate the factors that influence doctors' mediation behaviours with patients, and to explore how interactive media can change knowledge, attitudes, and behaviours about mental health (Capella et al. 2001; Foster 2011; Robinson 2008; Zimmerman, Noar, Chaisamrej & Thomas 2005). Some of these topics will be discussed in the next section to further contextualise the TRA as a theory for this study.

#### **4.6 APPLICATION OF THE THEORY OF REASONED ACTION (TRA) IN THE FIELD OF HEALTH PROMOTION.**

Using a content analysis Foster (2013) systematically sampled YouTube videos to explore how interactive media can change knowledge, attitudes, and behaviours about mental health. This study was employed the TRA to explore these attitudes, norms, past behaviours and intentions to use YouTube for mental health promotion. Findings revealed that YouTube has a wealth of information on mental health, even though respondents were concerned about the credibility of this information (Foster 2013). Therefore, interactive media such as Facebook (TB Proof SA's Facebook page in particular) have the potential to substantially disseminate information on tuberculosis, but there is a need to determine the effectiveness of TB-related information disseminated on this platform. Findings also revealed attitudes, social norms, perceptions of credibility, past behaviour, loss of privacy and fear of stigma

were considered as potential predictors of intention to perform specific behaviours on the YouTube platform (Foster 2013). The current study aimed to emulate Foster (2013) by exploring the intentions to adopt TB preventive behaviour by users of the TB Proof SA's Facebook page. This was done by analysing the comments on the organisation's Facebook page.

Robinson (2008) employed the TRA as a theoretical framework to investigate the factors that influenced doctors' mediation behaviours with patients. Results from this study revealed that doctors were likely to perform positive mediation (endorsement of e-health) in patient consultations when they frequently used e-health to look up patient-related information (Robinson 2008). Therefore, Ball and Lillis (2001:6) caution doctors "to keep pace" with e-health and rapidly developing internet healthcare.

As much as constructs of the TRA can be used to predict behavioural outcomes, there are challenges in application. The TRA, like the HBM, is also critiqued for failing to address elements such as "personality-related factors, cultural factors, and demographic variables, which also shape behaviour" (Sharma & Romas 2012:132). The TRA omits the fact that behaviour may not always be under volitional control and the impacts of past behaviour on current behaviour (Munro et al. 2007). The next section provides a critique of the TRA concerning its application to the current study.

#### **4.7 CRITICISM OF THE TRA**

Like the HBM, TRA is criticised because it is an individual-based theory (Wanyoike 2011). Like the HBM, the TRA explains health behaviour change that occurs at a cognitive intrapersonal level where the person experiences beliefs and attitudes at a cognitive level that can either implement positive or negative behaviour change (Bernard & Krupat 1994). The TRA assumes that individuals possess the necessary skills and resources and can translate their desires into actions (behaviour) and then into a determinable likelihood of behavioural occurrence without any interference (Cochran & Mays 1993). In a country like SA, this assumption limits the applicability of the TRA to individuals because in African society much emphasis is placed on collective human value within the community as opposed to individual value (Poovan

2005). This suggests that the collective context, in which individuals exist (culture), plays a role in their decision-making process and may limit the freedom to perform a desired TB preventive behaviour.

Users of TB Proof SA Facebook page live in an online environment in Africa, where collectivism is a way of life (Edwards et al. 2004). Thus, the collective way of life may influence their decision making. Therefore, the behaviour of users of TB Proof SA's Facebook page is influenced by their culture. Collectivism signifies a distinctly African way of life and reveals the collective psyche of African people (Edwards, Mkunga, Ngcobo & Dhlomo 2004). The African collective way of life is enhanced through Ubuntu. Ubuntu is an Nguni term that expresses the interconnectedness among human beings and is wonderfully described in the Nguni proverb "*Umuntu ngumuntu ngabanye abanutu*", meaning, "a person is because of other people" (Mbigi 1997:2; Meyer, Moore & Viljoen 2003:536). This proverb illustrates how an African is anchored within a community and connected to the members of that community (Poovan 2005). The TRA "ignores the collective context in which the individuals exist, and places emphasis solely on the individual actor" (Tlou 2009:45).

Even though proponents of the TRA may argue that subjective norms explain the role of the collective individual in decision making, subjective norms are still driven by individual motive orientation (Dutta-Bergman 2005). Thus, the TRA does not consider the role of collective individuals. Therefore, the TRA has limited applicability for understanding health behaviours of users of the TB Proof SA Facebook page because it does not consider the role of collective individuals. Harrison, Smit and Meyer (2000) argue that most of the theories that focus on individual change (such as the theories discussed in this study) are more individualistic in approach, design and implementation and are no longer useful in communities that are collective, such as the African communities (SA).

In the following section, the IMB Skills Model will be discussed. Like the HBM and TRA, the IMB is also cognitively inclined towards behaviour change. The IMB Skills Model is based on a health behaviour theory that implicates cognitive determinants of HIV risk (TB risk) and prevention such as HIV (TB) knowledge, personal attitude, and behavioural intentions to practice prevention (Ajzen & Fishbein 1980). The IMB has received support from previous research with populations on antiretroviral

therapy (ART) and has been the basis for a number of different adherence interventions (Amico et al. 2007; Amico et al. 2009; Fisher et al. 2008; Smith 2001).

Owing to the appropriateness of this theoretical foundation in the practical implementation of AIDS prevention programmes, the model was used in other risk reduction behaviours (Moola 2015). Therefore, the IMB is appropriate in TB prevention programmes and can be used to investigate TB risk behaviour of users of TB Proof SA's Facebook page.

The IMB presents a more sustainable alternative in curbing tuberculosis prevention in SA. This is because the IMB constructs have been associated with risk behaviours in SA (Pettifor et al. 2004). Therefore, it is an appropriate model for exploring the use of TB Proof SA's Facebook page as a TB awareness platform. In the following section, a discussion of the IMB Skills Model, its constructs and criticism will be discussed in relation to the present study.

#### **4.8 THE INFORMATION, MOTIVATION BEHAVIOURAL SKILLS MODEL (IMB)**

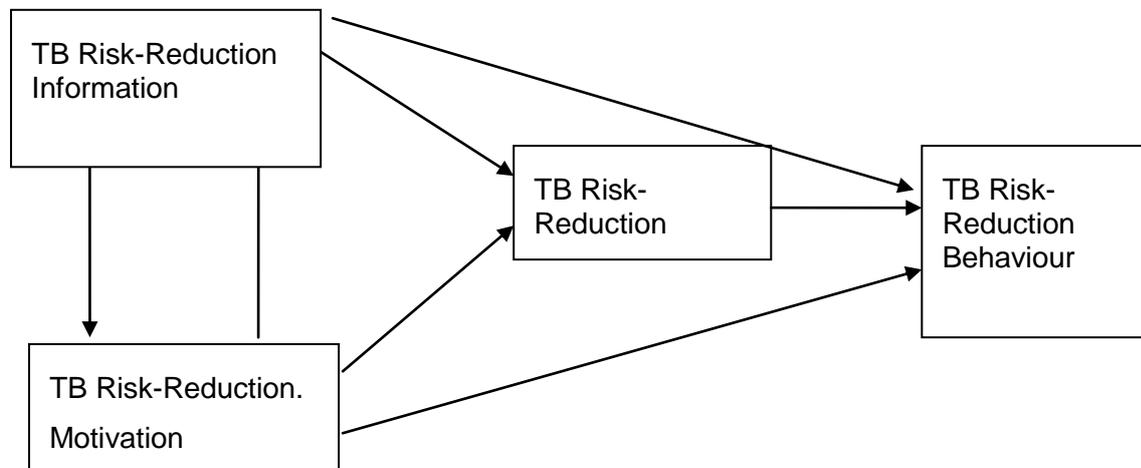
In 1992 Fisher and Fisher proposed the IMB Skills Model in an attempt to reduce HIV incidence (Fisher et al. 1996). The three main constructs of the IMB Skills Model are information, motivation and behaviour (Amico, Toronso-Alfonso & Fisher 2005). According to the IMB, two cognitive and one behavioural factor determine tuberculosis preventive behaviour, namely (a) information about tuberculosis transmission and prevention (b) motivation to reduce risk of contracting TB, perceived normative support to reduce TB preventive, and behavioural intentions; and (c) behavioural skills to practice prevention of tuberculosis. In the current research study, information about TB transmission and prevention was assessed through the posts, comments and visuals on the page. Motivation to reduce risk of contracting TB, perceived normative support to reduce TB and preventive and behavioural intentions were determined through these posts, conversations and visuals. Behavioural skills to practice prevention of TB were determined through the conversations on TB Proof SA's Facebook page.

The model assumes that information, motivation, and behavioural skills are fundamental determinants of TB prevention behaviour (Fisher et al. 2002). Thus, individuals who are well informed and motivated to act and those who possess the

behavioural skills to do so are more likely to perform TB preventive behaviour. The reverse is also true as individuals who are not well informed and lack motivation to act and do not possess the necessary behavioural skills will be less likely to perform TB preventive behaviour (Fisher 2006b). The IMB has been used as a basis for understanding HIV risk behaviours across populations (Fisher et al. 1996). The IMB has been validated as a comprehensive health behaviour change framework (Moola 2015). Thus, the IMB was employed in understanding why people use TB Proof SA's Facebook page for TB awareness.

Researchers argue that the constructs of the IMB Model are reliable in predicting health behaviours (Misovich et al. 2003; Zeleke 2015; Suls & Wallston 2003; Amico 2011). Suls and Wallston (2003:92) articulate the reliability of the IMB constructs by stating, "The presence of health promotion, motivation and behavioural elements appears to be associated with health promotion behavioural change". Thus, the IMB is valuable in analysing the use of TB Proof South Arica's Facebook page for TB awareness. By analysing the posts and comments and visuals on TB SA's Facebook page, the researcher determined the information, motivation and behavioural skills that users of this page have that is directly related to TB-risk behaviour. Constructs of the IMB were employed to determine if TB Proof SA's Facebook page has had significant, sustained effects on information, motivation and behavioural skills on users of this page.

Below is a graphical representation of the constructs of the IMB Skills Model.



**Figure 4.3 The Information-Motivation-Behavioural Skills Model (IMB)**

Source: Fisher & Fisher (1992:465)

The IMB Skills Model comprises the following constructs:

#### 4.8.1 Information

According to Misovich, Fisher, Bryan and Catapano (2003:777), information which refers to objective information and misinformation is “an initial prerequisite for enacting health behaviour”. This construct also contains heuristics held by an individual such as health beliefs specific to tuberculosis that are often used to guide behaviour (for example, the absence of TB means one does not need medical care) (Zelege 2015).

Information that is directly relevant to a health domain is critical to the performance of health behaviour in that domain (Misovich et al. 2003). Therefore, information dissemination on TB Proof SA’s Facebook page should be relevant to TB prevention because relevant information is critical to fighting TB. The specific kind of information relevant to TB may include accurate basic information about TB, drug interactions, side effects and information about available care and support systems. The current research, therefore, assessed the organisation’s Facebook page to determine if the page had useful and TB-related information.

### **4.8.2 Motivation**

Motivation is comprised of an individual's personal motivation (that is attitudes and beliefs about engaging or not engaging in the behaviour), as well as their social motivation (that is perceptions of social norms regarding the appropriateness of the behaviour), and of the social support or social consequences for engaging in the behaviour (Fisher & Fisher 1992; Fisher et al. 2004). Thus, personal motivation related to this study refers to users' attitudes and beliefs about the outcomes of practising TB preventive behaviour while social motivation refers to the user's perceived norms regarding TB. This construct was employed in the current study to determine user's motivation for using TB Proof SA's Facebook page as a TB awareness platform. The posts, comments and visuals on the page were analysed to determine if the page provided motivating information that may lead to TB preventive behaviour.

### **4.8.3 Behavioural skills**

Behavioural skills comprise an individual's objective abilities and perceived self-efficacy to enact a series of coordinated behaviours involved in the execution of health behaviour *per se* (Fisher et al. 2004; Fisher & Fisher 1992). Behavioural skills include objective skills and perceived skills or self-efficacy (Fisher et al. 2002) and performing all these skills are critical to preventive behaviour (Amico 2011). Thus, an informed and motivated user of TB SA's Facebook page who possess objective skills and perceived skills (self-efficacy) should be able to perform TB preventive behaviour while a user who is not informed, not motivated and do not possess behaviour skills will not engage in TB preventive behaviour. The current research study employed this construct to investigate the behavioural skills of users of TB Proof SA's Facebook page.

It is important to note that the HBM, the TRA and the IMB Model explain health behaviour change that occurs at a cognitive intrapersonal level where the person experiences beliefs and attitudes at a cognitive level that can either implement positive or negative behaviour change. The HBM, the TRA, and IMB Model indicate that persuasive communication, as well as information and motivation, are required for behaviour change to occur.

According to Fisher et al. (2006), the IMB can also be used to assess a wide range of health-related behaviours with information, motivation, and behavioural skills as fundamentals determinants of behaviour. Therefore, the next section provides a discussion of research conducted using the IMB as determinants of behaviour. These studies are discussed to further contextualise the present study.

#### **4.8.4 APPLICATION OF THE INFORMATION-MOTIVATION-BEHAVIOURAL SKILLS MODEL (IMB) IN THE FIELD OF HEALTH PROMOTION**

The IMB Skills Model has been used to assess a wide range of health-related behaviours. For example, Cornman, Schmeige, Bryan, Benziger and Fisher (2007) researched an IMB Skills Model-based HIV prevention intervention for truck drivers in India. In this study, 250 male truck drivers were used to assess the IMB constructs and findings showed an effect of constructs of the IMB Model on attitudes, norms, and behavioural skills related to condom use by marital partners. Thus, to assess the attitudes, norms, and behavioural skills related to the use of TB SA's Facebook page for TB awareness, constructs of the IMB were employed. The attitudes, norms and behavioural skills of users were determined by analysing the comments on TB SA's Facebook page.

The results of the study conducted by Misovich et al. (2003) to test the IMB for predicting Breast Self-Examination among 166 women revealed insufficient rates of BSE-related behaviours. This cross-sectional survey also found deficiencies in BSE in relation to the constructs of the IMB Model. These findings, therefore, suggest that constructs of the IMB can be used to determine the use of TB South Africa's Facebook page for TB awareness (Misovich et al. 2003). Thus, the IMB was employed in the current study to assess TB-related behaviour. The IMB constructs were used to find out if users of TB SA's Facebook page have deficiencies regarding the IMB constructs. This was determined by analysing the comments made by users of the page.

Kalichman et al. (2006) analysed AIDS prevention behaviour in SA with reference to the IMB. The sample for this study was 191 people with sexually transmitted infections (STIs) in Cape Town. Of the 191 people, 131 were men and 60 were women. English and IsiXhosa languages were used by these researchers to administer all measures and participants declared their ages, gender, race,

educational level, employment status and marital status (Kalichman et al. 2006). Data for this study was collected and analysed to predict the IMB in relation to acquired immune deficiency syndrome (AIDS) preventive behaviours and results showed that the IMB Model maybe generalised in a South African context and can be used for HIV infection risk reduction interventions (Kalichman et al. 2006). Therefore the IMB is valuable in guiding TB-risk reduction interventions such as the use of TB Proof SA's Facebook page for TB awareness. The IMB was employed in the current study to determine the effectiveness of the model in improving levels of information, motivation to act upon the information, and imparting behavioural skills aimed at reducing TB-risk behaviour among users of the organisation's Facebook page.

Zelege (2015) evaluated the IMB on adherence to antiretroviral therapy in an Ethiopian context. Data for this cross-sectional study was collected by means of structured questionnaires, and 400 participants were randomly selected to fill in these questionnaires. The results revealed the need to continue educational, informational and other interventions to address behavioural skills of patients to improve adherence behaviours. Therefore, it was necessary to investigate if TB SA's Facebook page is providing TB-related information that can encourage TB preventive behaviour. Findings from this study also confirmed the applicability of the IMB Model in an Ethiopian context. The fact that this model has been used in so many contexts further justifies the applicability of the IMB to the current study. The researcher believes that the successful use of the model in Ethiopia and SA implies that the model may also be used elsewhere among populations in Africa. Therefore, the IMB was applied in the present study.

Even though constructs of the IMB may be used to explain and predict behaviour, there are challenges regarding its application. Therefore, the next section provides a critique on the IMB with regards its application to the present study.

#### **4.9 CRITICISM OF THE INFORMATION-MOTIVATION-BEHAVIOURAL (IMB) SKILLS MODEL**

The IMB, like the TRA and the HBM, is criticised because it is an individual-based theory. The IMB, the TRA and HBM are similar as all three models assume that individuals are future-oriented and that they weigh up the costs and benefits of

possible future courses of action (Sutton 2002). Like the TRA and HBM, the IMB does not consider the cultural factor which has great influence on an individual's behaviour. These models do not consider the cultural factor while other behavioural models such as the PEN-3 Model considers culture as a major determinant of behavioural outcomes (Iwelunmor, Newsome & Airhihenbuwa 2013). Behaviour patterns are not influenced by individual decisions but deeply embedded within the cultural norms that are inherited (Somma & Bodiang 2003). Therefore, culture is the foundation on which health behaviour is expressed (Airhihenbuwa & Webster 2004). Culture is the foundation on which TB preventive behaviour is expressed, but these models do not give attention to this dimension. Loosi (2004:5) posits, "Culture plays a role in the day-to-day decisions people have to go through because the way people behave is largely influenced by their culture". Culture is deeply rooted in all aspects of a society, including local perceptions of health and illness and health-seeking behaviours (Uwah 2013).

Vaughn, Jacquez and Baker (2009:65) contend, "Different cultural groups have diverse beliefs systems with regard to health and healing". Thus, cultural beliefs greatly influence behavioural outcomes within a given community. For example, in SA, where the current study was conducted, the spiritual healer finds the cause of illness in other areas of life or in spirits (Etkin, Ross & Muazzamu 1990; Shai-Mahoko 1997; Washington 2010). Edginton, Sekane and Goldstein 2002) purport that in SA, "there is a strong belief in some communities that tuberculosis is contracted as a result of breaking cultural rules" (Edginton, Sekane & Goldstein 2002:1075). While in the western world, it is believed TB can be contracted through environmental pollution and alcohol (Edginton, Sekane & Goldstein 2002). Therefore, cultural beliefs affect behavioural outcomes; behavioural outcomes are not only determined by information motivation and behavioural skills that an individual possesses. Therefore, the IMB has limitations when applied to investigating the use of TB SA's Facebook page for TB awareness as information, motivation and behavioural skills may not always lead to desirable behaviour, as assumed by the IMB. This is because the cultural beliefs of a community (South Africa) influence health attitudes, practices and responses to health delivery (Foster, Philips, Belgrave, Randolph & Braithwaite 1993). Thus, culture plays an important role in health decision making in a South African context.

Ndebele (2012) conducted a study using the IMB and recommended that health communication approaches consider culture to be able to sustain behavioural change. Health communication messages should be designed to suit cultures; if not, there is no certainty that the messages have been received (Wanyoike 2011). Rongkavilit et al. (2010) confirmed this recommendation. Somma and Bodiang (2003:1) emphasise the importance of culture in health behaviour by stating that “culture is the determinant of socially accepted behaviour, value systems, beliefs and practical knowledge”. Culture is, therefore, an essential factor that influences the behavioural outcomes of users of TB SA’s Facebook page. Vaughn, Jacquez and Baker (2009) explain that the heart of health behaviour is attributions and cultural difference because culture plays a role in behavioural outcomes. Individuals across cultures communicate via networks such as Facebook (Naidoo 2011), so the applicability of the HBM, the TRA and the IMB in a South African context is limited because “South African society is characterised by cultural complexity and differences” (Walker, Reid & Cornell 2004:90).

The PEN-3 Model was developed by Airhihenbuwa (1989) in response to the apparent omission of culture in explaining health outcomes in existing health models (such as the HBM, the TRA and the IMB). While the HBM, the TRA, and the IMB focus on the individual to promote behavioural change, PEN-3 offers a culture-centred approach to health that extends the analysis to the totality of the contexts that either inhibit or nurture the individual. In doing so, the PEN-3 Model unpacks assumptions surrounding individual responsibilities or capabilities to expand and examine the role that other factors play in inhibiting healthy behaviour change. This study, therefore, used the PEN-3 Model to incorporate the cultural aspect that is omitted in the other three models (HBM, TRA and IMB). The following section describes and discusses the PEN-3 Model.

#### **4.10 THE PEN-3 MODEL**

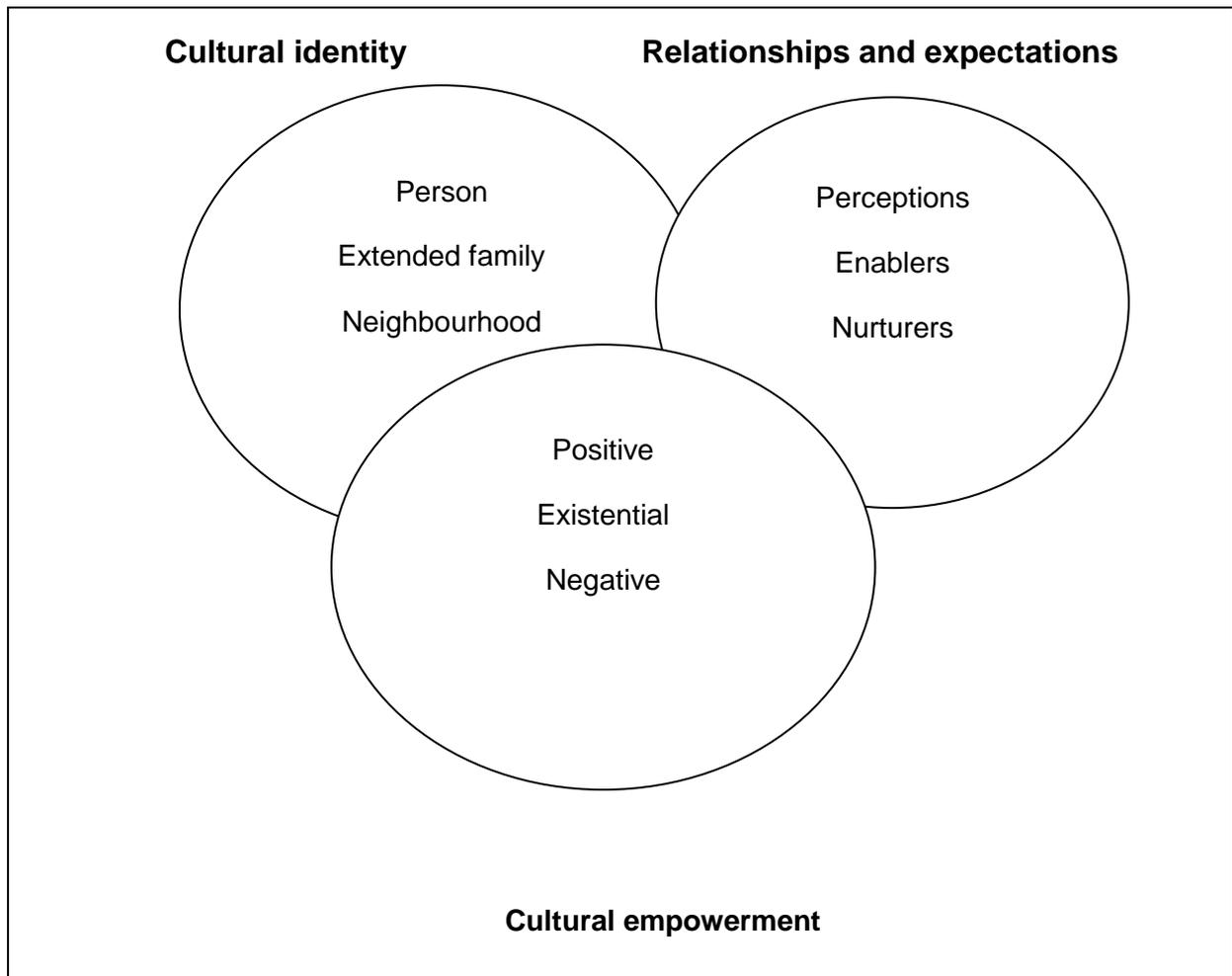
The PEN-3 Model was developed by Airhihenbuwa (1989), and it situates culture at the centre of determinants of health behaviour in health promotion and disease prevention interventions (Airhihenbuwa 1989; Airhihenbuwa 1995; Airhihenbuwa 1999; Chemuru & Srinivas 2015; Cowdery et al. 2010; Iwelunmor, Newsome & Airhihenbuwa 2014). According to the PEN-3 Model, culture plays a vital role in

determining the level of health of the individual, the family and the community (Hall 1999). Therefore, the model provides guidelines for ensuring that health interventions are culturally specific by identifying and organising a community's cultural components as part of the planning process (Chemuru & Srinivas 2015:15).

Since the PEN-3 Model reinforces the importance of addressing health interventions within a cultural framework (Airhihenbuwa 1999) it was used in this study to determine if TB Proof SA's Facebook page considers culture as a determinant of health behaviour. This was done by analysing the posts, comments and visuals on the organisation's Facebook page.

The PEN-3 Model offers an organising framework to centralise culture when defining health problems such as tuberculosis and framing the solutions (for example, the use of TB Proof SA's Facebook page to create awareness of TB) (Airhihenbuwa 1995; 2007a; 2007b). These solutions are formed to promote positive qualities (positive behaviour) that are better sustained, rather than focusing on negative qualities (Hall 1999; Iwelunmor, Newsome & Airhihenbuwa 2014). Thus, the PEN-3 Model should be understood in terms of positive values that should be encouraged, unique values that should be examined and negative values that should be changed (Hall 1999; Iwelunmor, Newsome & Airhihenbuwa 2014).

The PEN-3 Model is applied to create effective health messages that are responsive to the values and beliefs of the culture (Dunleavy et al. 2017). Hence, the model has been used to address health interventions (health problems) associated with diabetes, HIV and AIDS, cancer, hypertension, smoking, nutrition and stress (Cowdery et al. 2010; Erwin et al. 2010; Gaston, Porter & Thomas 2007; Osann et al. 2011; Petros et al. 2006; Westmaas et al. 2012; White et al. 2012). In these conditions, the PEN-3 Model is an appropriate model to use in combination with the HBM, the TRA and the IMB in exploring the use of TB Proof SA's Facebook page for TB awareness. A graphical representation of the PEN-3 Model is presented (Figure 4.4). The graph displays the constructs of the PEN-3 Model.



**Figure 4.4 The PEN-3 Model**

Source: Airhihenbuwa and Webster (2004)

The PEN-3 Model comprises three constructs. Each construct includes three different factors which form the acronym PEN. Constructs of the PEN-3 Model are explained in the following sections.

#### **4.10.1 Cultural identity**

According to Airhihenbuwa (1989), the three different factors that constitute this construct include **P**ersons, **E**xtended Family, and **N**eighbourhoods. The cultural identity construct focuses on the health intervention point of entry, which may occur at the level of persons, extended family members or neighbourhoods (community members) (Airhihenbuwa 1995; Iwelunmor, Newsome & Airhihenbuwa 2014; Whembolua, Conserve & Tshiswaka 2015). This construct emphasises that one's (a person's) identity plays a critical role in influencing health decisions (Airhihenbuwa

2007; Airhihenbuwa & Webster 2004). One's identity is shaped by persons (for example, mothers and healthcare workers) extended family (grandparents, uncles and aunts) and neighbourhoods (community members).

This construct assumes that persons, extended family and neighbourhoods are determinants of a person's behaviour, thus persons, extended family members and neighbourhoods constitute an individual's culture and might influence a user's decision to perform or not perform a TB preventive behaviour (that is, a user of TB Proof SA's Facebook page) (Airhihenbuwa 1995). This construct of the PEN-3 Model was used to determine whether persons, the extended family and neighbourhoods influence an individual's behaviour. This was done by analysing comments, posts and visuals on the organisation's Facebook page.

#### **4.10.2 Relationships and expectations**

Three factors constitute this construct namely, **p**erceptions, **e**nableers, and **n**urturers (Airhihenbuwa 1989; Airhihenbuwa 1995). According to Airhihenbuwa (1989), perceptions, enablers and nurturers are determinants of health behaviour. Perceptions include values, beliefs and attitudes that may promote or hinder TB preventive behaviour. Enablers are the cultural, societal and structural effects (for example, healthcare support services) that facilitate or hinder TB preventive behaviour. Nurturers are considered to be partners, family, friends, and community members who may support or discourage TB preventive behaviours (Airhihenbuwa 1989, Iwelunmor et al. 2014; Cowdery et al. 2010; Kline 2007). Therefore, posts, comments and visuals on TB Proof SA's Facebook page were analysed to determine if perceptions, enablers and nurturers influence a user's decision to adopt or not to adopt TB preventive behaviour.

#### **4.10.3 Cultural empowerment**

The three factors that constitute this construct include **p**ositive, **e**xistential and **n**egative (Airhihenbuwa 1989). The cultural empowerment construct considers the positive, existential and negative cultural values that are factored into health behaviours and decisions (Iwelunmor et al. 2014; Kline 2007). With this construct, health issues are investigated first by identifying practices that are positive and highlighting values that are existential and have no harmful health consequences

before identifying negative practices that serve as barriers (Cowdery et al. 2010; Whembolua, Conserve & Tshiswaka 2015).

Iwelunmor et al. (2014) emphasise that focus should be more on the strengths and personal qualities that could serve as a protection against diseases. This is because positive aspects of culture can help promote healthy behaviour (for example, knowledge about TB diagnosis) that leads to improved health outcomes (Kline 2007). This construct explores health problems by identifying beliefs and practices that are positive, before identifying negative health practices that hinder preventive behaviours (Iwelunmor, Newsome & Airhihenbuwa 2014). This construct was used in the current study to predict and explain positive, existential and negative cultural values that influence TB preventive behaviour. This was done by analysing user's comments on TB Proof SA's Facebook page.

In the following section, the application of the PEN-3 Model in the field of health promotion is discussed. The PEN-3 Model has been applied in the field of health promotion in extensive studies to examine a vast number of topics, such as assessing how the health professional's cultural competence contributes to African-American women's barrier towards and receipt of mammograms and to identify cultural attitudes towards people with HIV/AIDS in the Western Cape, SA. (Airhihenbuwa et al. 2009; Cowdery et al. 2010; Dunleavy et al. 2017; Hall et al. 2015). Some of these studies will be discussed in the following section to further contextualise the PEN-3 Model as one of the theoretical frameworks for this study.

#### **4.11 APPLICATION OF THE PEN-3 MODEL IN THE FIELD OF HEALTH PROMOTION**

Dunleavy et al. (2017) employed the PEN-3 Model as a theoretical framework to address HIV/AIDS prevention in rural Guatemala (Central America). The constructs of the PEN-3 Model (relationships and expectations and cultural empowerment) were used to evaluate the cultural specifics regarding HIV/AIDS prevention and to examine cultural norms, institutions, and agents that influence HIV/AIDS preventive behaviour.

The findings suggested that collectivism (a sense of responsibility for personal health, family and community) was a strong positive cultural perception. The cultural

identity construct was used to determine the HIV/AIDS intervention point of entry. Results from this study indicated that religious leaders, lesbians, gays, bisexuals, transgender, and heterosexual young adults were the point of entry. Therefore constructs of the PEN-3 Model are valuable in guiding TB-risk reduction interventions such as the use of TB Proof SA's Facebook page for TB awareness. Hence, the current study used the constructs of the PEN-3 Model (cultural empowerment, relationships and expectations) to identify cultural factors that affect TB preventive behaviour. The cultural identity construct was used to identify entry points enhancing cultural acceptance and efficacy (of users of TB Proof SA's Facebook page).

Hall et al. (2015) used the PEN-3 Model to assess how health professionals' cultural competence contributes to African-American women's barrier to and receipt of mammograms. Data for this study was collected by conducting a series of focus group discussions among 61 African-American women residing in Texas in the USA. Findings from this study revealed that perceptions among participants included medical mistrust due to lack of respect from medical professionals. The results of this study also illuminated how medical professionals' behaviour could act as enablers. Enablers are positive or negative systematic, social and cultural forces, which influence health behaviours (Airhihenbuwa 1995). The findings also suggested that healthcare providers can act as nurturers by being sensitive to the needs, questions, and concerns of the patient (Hall et al. 2015). The current study aimed to emulate Hall et al. by employing the PEN-3 Model to analyse the use of TB Proof SA's Facebook page for TB awareness.

As much as constructs of the PEN-3 Model can be used to predict behavioural outcomes, there are challenges in application. The PEN-3 Model attracts some criticisms, and the next section provides a critique on the PEN-3 Model relating to its application to the current study.

#### **4.12 CRITICISM OF THE PEN-3 MODEL**

The PEN-3 Model concentrates more on culture and does not encompass other factors such as socio-economic status, which is significant in TB interventions (Courtwright & Turner 2010; Benatar 2013; Wadee et al. 2003; Wanyoike 2011).

Another limitation in using the PEN-3 Model is transferability, that is, the extent to which the findings from this study can be transferred from one context to another (Cowdery et al. 2010). Cultural aspects of health behaviour in one community may not be applicable in another community.

Nevertheless, despite the limitations, all the models discussed in this chapter can be applied to explore the effectiveness of TB Proof SA's Facebook page for TB awareness. This is because the HBM, the TRA, the IMB and the PEN-3 Model are health promotion models and are appropriate to investigate the use of the organisation's Facebook page for TB awareness. Moreover, these models are used to explain and understand behavioural outcomes and are thus appropriate for this study (Dunleavy et al. 2017; Hall et al. 2015; Janz, Champion & Stretcher 2002; Sharma & Romas 2012).

#### **4.13 SUMMARY**

The aim of this chapter was to provide a discussion of the models selected for the research to provide a theoretical context for the current study. This aim was achieved by discussing these models with reference to the current study. Constructs from the selected health communication models were explained and linked to the chosen research methodology to justify the method chosen for conducting the current study. Previous studies conducted using these models were also discussed to provide a context for the current research. This chapter provided a discussion of the criticisms of the selected models. The next chapter describes the case study methodology that was employed in this study.

## **CHAPTER 5: METHODOLOGY**

### **5.1 INTRODUCTION**

This chapter focuses on the research methodology adopted in exploring the effectiveness of TB Proof SA's Facebook page for TB education. A qualitative case study research design was used to explore the effectiveness of the underlying Facebook page. The methodological underpinning which substantially builds on Yin (2014) is complemented with other analytical frameworks from authors such as Braun and Clarke (2006), Creswell (2013), Hancock and Algozzine (2011), Matthews and Ross (2010), Sarantakos (2013), Stake (2008) and Tavakol and Dennick (2011). Hence narratives from the underpinning literature are used for case study research, data collection, data analysis and reliability and validity.

This chapter, starting with the research paradigm, explores qualitative research as applied to this study. The chapter further outlines the case study and case study protocol. The population, sampling and units of analysis are also discussed in detail. Adhering to the case study methodology, three data collection methods were used; namely, online ethnographic observation (that included analysing posts and comments on TB Proof SA's Facebook page), textual analysis (texts were analysed) and visual analysis (photographs were analysed). This chapter is outlined as follows: data collection methods, procedures in data analysis, issues of data validity and reliability, and some discourse on the ethical considerations in relation to informed consent and confidentiality.

### **5.2 RESEARCH PARADIGM**

This study is set within an interpretative paradigm. The central role of the interpretative paradigm is to explore how people "make sense of their social worlds and how they express understandings through language, sound, imagery, personal style and rituals" (Deacon et al. 1996:6). The interpretative paradigm is essential in the current study as the research aimed at answering the "how" and "why" questions surrounding the use of TB Proof SA's Facebook page for creating TB education. Posts, comments and visuals on this page were explored to understand how and why this page is used to promote TB education. Posts can be defined as content generated by the page administrator (Abramson, Keefe & Chou 2015). Conversations in the form of comments can be defined as any content posted on the

organisation's Facebook page by its users (Hilliard 2012). Social media texts can be defined as posted content on the TB Proof social media page that the researcher used to draw meaning about the page (McKee 2003). Visuals can be defined as any photographs that were posted on TB Proof SA's Facebook page (Hanrahan, Stolte & Mackinlay 2007).

The purpose of interpretative research is to observe, understand and interpret everyday events, experiences, as well as the values people attach to social phenomena (Aikenhead, 1997; Collis & Hussey 2009; Rubin & Babbie 2010). Therefore, the interpretative paradigm enables the process of observing and interpreting information on TB Proof SA's Facebook page. Observation was carried out by collecting data through descriptive online ethnographic observation, textual analysis and visual analysis while interpretation was carried out through thematic analysis. The next section explains the qualitative research as a context for this study.

### **5.3 QUALITATIVE RESEARCH**

This study adopted a qualitative research methodology, which refers to thick descriptive research about people's lives, stories, behaviours, social movements, interactions, relationships, perceptions, feelings and knowledge (Patton 1990; Strauss & Corbin 1990). A major advantage of qualitative research is that it enables the researcher to gain an in-depth understanding of a certain practice or phenomena rather than collecting data from large samples and aggregating the data across situations (Moyo 2015; Neuman 2006; Patton 1990; Yin 2014). Qualitative researchers are, therefore, able to acquire an in-depth understanding of a phenomenon.

In-depth analysis is required to examine posted content on health-related Facebook pages (Abramson, Keefe & Chou 2015; Park, Rodgers & Stemmler 2013), so qualitative research enabled the researcher to analyse the use of TB Proof SA's Facebook page in depth. This was done by carrying out a substantive analysis of the posts, comments and visuals on the organisation's Facebook page to determine the functions and uses pertaining to this page. These features were retrospectively analysed from 1 February to 30 June 2017 to identify distinctive themes and

corresponding primary functions (see Chapter 6 for the themes that emerged during this analysis).

Another aim of qualitative research is to collect data related to the values, behaviours and opinions of a particular population (Polite & Beck 2008). By extension, the values, behaviours and opinions of users of TB Proof SA's Facebook page were determined through the themes that emerged from the posts, conversations, texts and visuals on the page. A qualitative research method allows the researcher to "study things in their natural settings, attempting to make sense of, or interpret phenomenon in terms of the meaning people bring to them" (Denzin & Lincoln 2005:3).

In the current study, the researcher drew meaning from the conversations, posts and visuals on TB Proof SA's Facebook page. Thus, Facebook was a natural setting where conversations take place about TB as an illness. This study adopted the qualitative research method in the light of the above advantages. A prime requisite for a qualitative approach to an inquiry is a good research design.

#### **5.4 RESEARCH DESIGN**

Two types of research design have been documented in the literature, namely, quantitative and qualitative (Creswell 2013; Fink 2005). This study employed a case study approach as a qualitative research design in the process of collecting and analysing data. This design was selected because it allowed for an in-depth analysis of the use of TB Proof for TB education. The following section explains the case study approach as applied to this study.

#### **5.5 CASE STUDY APPROACH**

A case study research design was used to explore a phenomenon, that is, the use of TB Proof SA's Facebook page for TB education within its real-world context (Facebook). According to Yin (2014:16), "a case study is an empirical inquiry that investigates a contemporary phenomenon, the 'case', on an in-depth level within its real-world context". A case study approach enables the detailed intensive understanding of a single case by using multiple data collection methods such as interviews and observations (Bertrand & Hughes 2007).

The aim of using a case study was to make a detailed analysis of the use of TB Proof SA's Facebook page for creating TB education. This was done by collecting data through online ethnographic observation, textual analysis and visual analysis (see Section 5.8).

One of the main advantages in selecting a case study research design for this study is because "case study benefits from prior development of theoretical propositions to guide collection and analysis of data" (Yin 2009:18). Thus, the HBM, the TRA, the IMB Skills Model and the PEN-3 Model were used as theoretical propositions (foundations) that guided data collection and analysis in this study.

A case study caters for the investigation of a bounded system (a bounded system refers to the case under investigation) (Creswell 2012). Therefore, the case study approach was an appropriate selection for this study since it allowed the investigation of a bounded system, that is, the use of the TB Proof SA Facebook page for TB education. Davis et al. (2011) note that case studies may derive from individuals, social activities or groups. For example, the current case study builds on a social activity, that is, the use of Facebook for promoting TB education. In essence, Facebook embodies social activities because it is a social networking site allowing for interaction among the participants. The above arguments justify the selection of a case study approach for this study.

Different types of case studies exist; namely, the intrinsic case study, the single or instrumental case study, and the collective or multiply case study (Hancock & Algozzine 2011; Matthews & Ross 2010; Stake 2008). An intrinsic case study focuses on the case itself since the case exhibits a unique circumstance (Hancock & Algozzine 2011; Stake 2008). A single or instrumental case study "focuses on the issue of concern and then selects one bounded case to illustrate this issue" (Creswell 2012:99). A collective or multiple case study is an instrumental case study but extends to include several cases (Matthews & Ross 2010; Stake 2008). However, for the purpose of this study, an instrumental or single case study was deemed more appropriate, as justified in the following paragraph.

A single case study was selected for this study, mainly because the aim of the research was to explore an issue, tuberculosis, within the context of a case study;

namely, TB Proof SA's Facebook page (Creswell 2012; Rowley 2002; Yin 2014). A single case study allows research to be conducted in the same single case over a period of time (Sarantakos 2013; Yin 2014). A single case study was, therefore, an appropriate methodology for this study because an in-depth analysis of the organisation's Facebook page was carried out over a five-month period (from 1 February to 30 June 2017). An in-depth analysis of TB Proof SA's Facebook page was conducted to determine how users of this page interpret health messages on the page. Such a comprehensive analysis was also aimed at determining if messages on this page provide education on TB as an illness.

Critics of the case study approach believe that a case study is "microscopic"; in other words, limited sample cases and, therefore, findings from case studies cannot be generalised (Sarantakos 2013; Tellis 1997). However, the selected case study was not intended to be generalised, but rather to provide an in-depth analysis of a particular case (the use of TB Proof SA's Facebook page for promoting TB education). The following section explains the case study.

## **5.6 THE CASE STUDY: TB PROOF SOUTH AFRICA'S FACEBOOK PAGE AS AN ORGANISATION**

The case selection for this study was guided by the research purpose, questions, propositions and theoretical context (Rowley 2002). The case, (TB Proof SA's Facebook page) was selected to obtain an in-depth understanding of the use of the organisation's Facebook page for creating TB awareness. The selected Facebook page for this study is owned by a non-profit organisation called TB Proof South Africa. A non-profit organisation is an organisation that seeks to identify a societal problem and advocate change on a voluntary basis without seeking any profits for its operations (Glavin 2011).

TB Proof SA is a non-profit organisation that has identified TB as a health problem in SA. The organisation advocates change by creating a Facebook page to create awareness of TB. The organisation was founded in 2012 by healthcare workers and students after multiple personal experiences with occupational tuberculosis, particularly MDR-TB (TB Proof 2012). It is an advocacy and education group consisting of TB survivors and affected healthcare workers and students. The mission of TB Proof SA is towards "Zero stigma and zero TB in SA" (TB Proof 2012).

TB Proof's mission is to use education (TB education) and advocacy to "TB Proof" the South African population by creating greater awareness of TB (TB Proof 2012; Flett 2015).

The following section is a discussion of sister organisations that have Facebook pages geared towards creating awareness of tuberculosis. An explanation of these sister organisations is provided to contextualise the study.

### **5.6.1 TB Proof sister organisations**

Other organisations that have Facebook pages aimed at creating awareness of tuberculosis include the Stop TB Partnership, the TB Alliance, Observatorio Tuberculosis Brasil, TB Alert, Action, the Auruum and the Center for Disease Control and Prevention (CDC). The Stop TB Partnership is a United Nations hosted partnership and a collective force transforming the fight against TB (Stop TB Partnership 2001). The Stop TB Partnership was founded in 2001, and the partnership's mission is to serve everyone who is vulnerable to TB and to ensure that high-quality diagnosis, treatment and care is available to all who need it (Stop TB Partnership 2001).

TB Alert, founded in 1999, is the UK's national tuberculosis charity focusing on raising public and professional awareness of TB. Its main goal is to control and ultimately eliminate TB and increase access to effective treatment for all (TB Alert 1999).

The Center for Disease, Control and Prevention (CDC) was founded in the USA in 1946. Its mission is to save lives and protect people from health threats such as TB. The Auruum Institute is a proudly African public benefit organisation that focuses on treatment and research efforts to eradicate TB and HIV (Auruum Institute 2005). Formed in 2005, its remit is to improve the health of people and communities through innovation in TB and HIV integration in global health areas (Auruum Institute 2005).

TB Alliance is a not-for-profit organisation that was created in 2000, and it is dedicated to the discovery and development of better, faster-acting, and affordable tuberculosis drugs that are available to those who need them (TB Alliance 2017). Observatorio Tuberculosis Brasil is another non-for-profit organisation that was

created in August 2003 in the state of Rio de Janeiro to fight tuberculosis (Observatorio 2003). Action is a partnership of organisations around the world that advocate life-saving care for millions of people who are threatened by preventable diseases such as tuberculosis (Action 2017). The following section describes the case study protocol.

## **5.7 CASE STUDY PROTOCOL**

A case study protocol can be used to structure and govern a case research project. A protocol provides guidelines on how to conduct case study research. This study adhered to Yin's (2014:84) case study protocol, which is substantiated in four main strands as follows.

### **5.7.1 An overview of the case study objective**

The objective of this research was to carry out qualitative research that explored and described the effective use of TB Proof SA's Facebook page for promoting TB education from 1 February to 30 June 2017.

### **5.7.2 Data collection procedures.**

A data collection procedure involves the identification of the likely sources of evidence.

The data collection methods employed in this study include online ethnographic observation, textual analysis and visual analysis.

### **5.7.3 Data collection questions.**

The data collection questions are concerned with specific questions that the case study research must keep in mind when collecting data.

The following data collection questions were established in this study, as previously presented in Chapter 1:

- How does TB Proof SA's Facebook page create awareness of TB as an illness?
- How does TB Proof SA's Facebook page use health promotion to create TB awareness?

- What are the characteristics of TB South Africa's Facebook page? Specifically, who are participants on this page and what activities do they perform on this page?

#### **5.7.4 Guide for the case study report**

A guide for the case study report concerns the outline, format for data, use and presentation of other documentation. Findings and outcomes of this study were presented thematically (See Chapter 6).

The next section discusses the population, sampling strategies and units of analysis that were implemented in this study.

### **5.8 POPULATION, SAMPLING AND UNITS OF ANALYSIS**

#### **5.8.1 Population**

Matthews and Ross (2010) describe a population as the total number of cases that meet specified criteria. Every study has a target and an accessible population. The target population refers to the cases that meet the eligibility criteria for selection in the study (Burns & Grove 2009; Polity & Beck 2012). Building on these insights, the target population for this study were participants on TB Proof SA's Facebook page who feature through posts, comments and visuals on the page. According to Howell and Saving-Baden (2010), an accessible population refers to a subgroup of the target population. Thus, for the current study, the accessible population were the posts, comments and visuals that were selected during the timeframe of the study, which was from 1 February to 30 June 2017.

#### **5.8.2 Sampling**

There are two types of sampling, namely, probability or non-probability sampling procedures. With probability sampling, every unit of the population has an equal chance of being included in the sample (Sarantakos 2013). The most common forms of probability sampling are simple random sampling and systematic sampling (Sarantakos 2013). Contrary to probability sampling, non-probability sampling procedures do not employ the rules of representativeness (Sarantakos 2013; Fourie 2001). Purposive, quota, snowball and convenience sampling are examples of non-probability sampling (Babbie 2013; Sarantakos 2013).

Purposive non-probability sampling involves choosing the case that is related to the research (Creswell & Plano-Clark 2011; Liamputtong 2013). Therefore, non-probability purposive sampling was used to identify the Facebook page that was used for this study. Non-probability purposive sampling was employed because it allows the selection of a case to study based on its relevance to the research questions and research objectives (Saunders et al. 2003). The aim of this study was to explore a phenomenon, that is, the use of TB Proof SA's Facebook page for promoting TB education. The research site was purposely selected to obtain information that led to a more in-depth understanding of the phenomenon based on the research objectives (Creswell 2002; Leedy & Omrod 2006; Silverman 2000).

To select a sample for this study, a search was conducted of Facebook pages related to TB as an illness. Facebook's search engine was used to find the pages that focus on TB in SA specifically. This search was conducted by using the abbreviation "TB". One must have an existing Facebook account to be able to access TB Facebook pages. Therefore, the researcher's Facebook account was used to access these pages. The search yielded many results; some of the non-profit organisations with TB Facebook pages included Stop TB Partnership, TB Alliance, The Union, Observatio Tuberculosis Brasil, and TB Proof SA. TB Proof SA's Facebook page was selected to serve as the sample for the current study. This page was chosen because it is owned by a South African non-profit organisation and it is consistent with the scope of this specifically South African research.

### **5.8.3 Units of analysis**

The units of analysis refer to "who" or "what" is being studied (Babbie & Mouton 2001; Trochim 2006). For this study, the units of analysis were the posts, comments and visuals that were accessed from TB Proof SA's Facebook page from 1 February to 30 June 2017. The following section describes the three data collection methods employed in this study.

## **5.9 DATA COLLECTION**

Yin (2014) advocates the use of multiple data sources in any case study. Online ethnographic observation, textual analysis and visual analysis were used in this research to collect data. Data for this study was compiled over a five-month period

(from 1 February to 30 June 2017). This time period falls within TB awareness month, which is March. Thus data was collected prior, during and after TB awareness month. Only posts, comments and visuals (photographs) within the stated period were chosen to maintain a manageable sample size for analysis.

The following discussion provides an explanation of the data collection methods used in this study.

### **5.9.1 Online descriptive ethnographic observation**

According to Flick (2014:355), “ethnography essentially involves a researcher observing and recording human behaviour in a particular setting, often referred to as the field”. In this study, human behaviour was observed in a particular online setting (Facebook). The ethnographic approach provides the benefits of combining data from online observation, textual analysis and visual analysis to understand the use of TB Proof SA’s Facebook page for TB education (Pantidi 2013).

Ethnography appears in a variety of formats such as interpretive, reflexive, post-critical and online ethnography (netnography) (Davis 1999; Denzin 1997; Kozinets 2010). This study used online ethnography to collect data. Online ethnography was selected because it allows the researcher to observe “postings” within an online community (Hine 2005).

It is important to note that ethnographic research falls within the parameters of field research (Liamputtong 2013; Sarantakos 2013; Whitehead 2005). According to Sarantakos (2013), field research is the study of events and activities as they occur in a real-world context. Thus, this study investigated an activity (the use of TB Proof SA’s Facebook page for promoting TB education) as it occurred in its online context. Within this framework, the notion of “field” extends from physical to virtual or online. Ethnographic data is collected through observations, interviews and participation (Kozinets 2002; Whitehead 2005). For this study, data was collected using online ethnographic observation. Therefore, the following section provides a discussion of online ethnographic observation.

### **5.9.1.1 *Online ethnographic observation***

Online ethnography is the adaptation of ethnographic methodology to the study of social cultural practices associated with the use of the internet (Nolasco 2016). This method allows for the study of the use of TB Proof SA's Facebook page for TB education since the use of Facebook is associated with the use of the internet. Pantidi (2013) maintains that online ethnographic observation enables the researcher to give a rich, detailed description of a particular phenomenon (Pantidi 2013). This method enabled the researcher to give a rich, detailed description of the use of the organisation's Facebook page for TB education.

Two types of online ethnographic observations exist; namely, observation without the ethnographer participating in the activities being observed (non-participant or simple observation) and observation where the ethnographer actually participates in the community activities (participant observation) (Matthews & Ross 2010; Whitehead 2005). This study employed non-participant observation because the ethnographer did not participate in the activities being observed. The ethnographer simply observed and described activities that took place on the Facebook page. Ethnographic fieldwork is descriptive (Genzuck 2003; Spradley 1980). This is because good description leads to good ethnography (Wolcott 1987). This study used descriptive observation as one of the methods of data collection. A detailed explanation of descriptive observation as applied to this study follows.

### **5.9.1.2 *Descriptive observation***

Descriptive observation, which is a mode of online ethnography, was used to collect data for this study (Flick 2006; Maxwell 2013). Descriptive observers (ethnographers) usually observe everything through the heightened awareness of the senses (Whitehead 2005). Descriptive observation was employed in the present study with the aim of gathering in-depth information on the use of TB Proof SA's Facebook page for promoting TB education in a virtual online setting (Maxwell 2013; Sarantakos 2013).

For the purposes of this study, two of TB Proof SA's Facebook page features; namely, posts and comments were used to collect data. Posts and comments were copied and pasted onto a Word document to facilitate the coding process.

Screenshots of these comments and posts were also taken and saved. These screenshots were kept as back-up in case the data disappeared.

Critics of descriptive observation argue that descriptive observation cannot offer inductive generalisations of the results (Liamputtong 2013; Sarantakos 2013; Schensul, Schensul & LeCompte 1999). However, the selected case study was not meant to generalise results, but instead to provide an in-depth analysis of the use of TB Proof SA's Facebook page for creating TB education (Creswell 2012; Yin 2009). In this research, descriptive observation was appropriate because an in-depth analysis was required to determine the use of the organisation's Facebook page for TB education.

### **5.9.2 Textual analysis**

Textual analysis refers to the method used by communication researchers to gather, describe and critically interpret media messages (texts) (Frey, Botan & Kreps 1999; McKee 2003). Textual analysis was used in this study to interpret messages on TB Proof SA's Facebook page. The purpose of textual analysis is to "describe the content, structure, and functions of messages contained in the text" (Frey, Botan & Kreps 1999). Textual analysis was used in this study to describe the content and functions of messages on the organisation's Facebook page.

Text is interpreted to try to obtain a sense of the ways humans make sense of the world (McKee 2003). Therefore, textual analysis was employed in this study to interpret online posts and comments (interactions) on TB Proof SA's Facebook page. This study interpreted texts to determine whether posts and comments contribute appropriately with regard to promoting TB education. The text in these posts and comments was analysed and interpreted using textual thematic analysis. The textual analysis in the study consisted of multiple stages of evaluation (see Section 5.10 for a detailed description of the thematic analysis process).

### **5.9.3 Visual analysis**

Visual analysis is a data collection method that presents information (data collected) in ways that support visual thinking (Hanrahan, Stolte & Mackinlay 2007). Thus, visual analysis was used in this study to understand the meaning of the visuals (photographs) that were posted on TB Proof SA's Facebook page. This research

investigated whether these visuals create or portray information on TB. To achieve this aim, photographs were coded in terms of themes that emerged from these visuals. Visual thematic analysis was used to analyse and interpret these visuals.

The goal of this method is to answer research questions using data and facts (Hanrahan, Stolte & Mackinlay 2007). Thus, data that refers to visuals on the organisation's Facebook page was used to answer the questions surrounding the use of TB Proof SA's Facebook page for promoting TB education. The advantage of using this method is that on the one hand, it enables access to information at any time and on the other hand, it saves time and cost in transcribing (Bevins 2014). The following section explains how data was collected and analysed.

## **5.10 DATA ANALYSIS**

The approach used to analyse data collected is consistent with steps provided by Braun and Clarke (2006). The steps are explained in the sections that follow.

### **5.10.1 Thematic analysis**

Thematic analysis is a technique that involves a process of working with raw data to identify, analyse and interpret key ideas or themes (Braun & Clarke 2006; Matthews & Ross 2010). In this study, thematic analysis was used to identify and interpret themes that emerged from the online descriptive ethnographic observation, textual analysis and visual analysis. It is important to note that the thematic analysis process was both theoretical and inductive. The thematic analysis was theoretical because findings were linked to theories discussed in the literature review chapters (Cohen et al 2011; Creswell 2005; Cassell and Symon 1994). The thematic analysis was inductive because the researcher began with specific observations and then move to generate themes in the data (Creswell 2005; Onwuegbuzie & Leech 2005; Creswell & Plano Clarke 2007). The thematic analysis process adapted from Braun and Clarke (2006) includes six phases. They are substantiated in chronological order:

- ***Familiarising with the data***

This phase involves becoming familiarised with the content of the data. This was accomplished in the study by reading all data repeatedly to achieve immersion and have a broad perspective (Hsieh & Shannon 2005). Posts, conversations (text) and

visuals on TB Proof SA's Facebook page were copied and pasted into a Word document to facilitate the process of reading. Posts, comments and visuals were carefully and repeatedly read on the organisation's Facebook page.

- ***Generating initial codes***

This phase involves generating initial codes from research data. The researcher began this process by writing notes on the posts and comments to be analysed. Once a code was generated, it was matched with data extracts that demonstrated that code. At the end of this phase, codes were generated from posts, comments and visuals on TB Proof SA's Facebook page.

- ***Searching for themes***

During this third phase, codes are broken down into small segments of themes. A theme is an outcome of coding and analytic reflection (Saldana 2013). Various codes can be combined to form an overall theme. Braun and Clarke (2006) purport that various codes should reflect some form of relationship among themselves for them to be grouped into a single theme. The themes and their related data serve as illustrative examples to support interpretation (Saldana 2009). Posts, comments and visuals on TB Proof SA's Facebook page were copied and pasted into a Word document to facilitate the coding process and identification of themes.

- ***Reviewing the themes***

During the fourth phase, the preliminary themes identified in the previous phase are reviewed. Braun and Clarke (2006) purport that during this phase data extracts for each theme are read to ensure that selected extracts give meaning to each theme. Themes without enough data to support them are included into other themes. For the current study, themes derive from the posts, comments and visuals were reviewed and similar ideas were put together.

- ***Refining and naming themes***

At this stage, the researcher identifies the real meaning of each theme and working titles are assigned to the themes. For this study, the real meaning of each theme was identified, and working titles were assigned to each of them.

- ***Producing the report***

This phase “provides a concise, coherent, logical, non-repetitive and interesting account of the data themes” (Braun & Clarke 2006:93). For this study, a concise, non-repetitive and interesting account of data themes was established

A summary of the data analysis process is presented in Table 5.1.

**Table 5.1 Summary of the data analysis process**

<b>PHASES OF THEMATIC ANALYSIS</b>	<b>ONLINE ETHNOGRAPHIC OBSERVATION</b>	<b>TEXTUAL ANALYSIS</b>	<b>VISUAL ANALYSIS</b>
<b>Phase 1: familiarising with data</b>	Prolonged engagement with data. Posts and comments on TB Proof SA’s Facebook page were read repeatedly to achieve immersion and have a broad perspective.	Texts (posts and comments) on TB Proof SA’s Facebook page were read to achieve a sense of all the data.	All visuals on TB Proof SA’s Facebook page were looked at repeatedly to have a sense of the photographs.
<b>Phase 2: generating initial codes</b>	At this stage, the researcher wrote notes on posts and comments, and initial codes from posts and comments were produced. Once a code was identified, it was matched with posts or comments that demonstrated that code.	Texts were read to identify initial codes.	Visuals were looked at many times and at the end of this phase, codes were generated from the visuals.
<b>Phase 3: searching for themes</b>	During this phase, the researcher sorted the identified codes from posts and comments	Codes from text were transformed into themes.	Codes generated from visuals were transformed into

PHASES OF THEMATIC ANALYSIS	ONLINE ETHNOGRAPHIC OBSERVATION	TEXTUAL ANALYSIS	VISUAL ANALYSIS
	into potential themes.		themes.
<b>Phase 4: reviewing themes</b>	Themes generated from posts and comments are reviewed to determine if there is enough data to support the theme.	Data extract read to ensure that selected data gives meaning to each theme.	Visuals were reviewed and similar visuals put together.
<b>Phase 5: refining and naming themes</b>	Themes were named and organised with accompanying posts and comments. Themes include the use of western versus traditional medicine to cure tuberculosis, stigmatisation of tuberculosis and TB and HIV/AIDS co-infection.	Working titles were assigned to themes generated from text on the TB Proof SA's Facebook page. Themes include community building, sharing testimonies, positive cases from TB survivors and collaboration with sister organisations to promote awareness of tuberculosis.	A detailed interpretation of the visuals that constitute each theme is provided. Themes include TB medication, TB patients and healthcare workers raising awareness of TB.
<b>Phase 6: producing the report</b>	In-depth discussion of the posts and comments that constitute each theme is provided. This discussion is linked to the literature and the study's research questions (see Chapter 6).	A concise and coherent explanation of themes generated from texts is provided. These themes are linked to the literature and the study's research questions (see Chapter 6).	A detailed interpretation of the visuals that constitute each theme is provided. The interpretation is linked to the literature and the study's research questions (see Chapter 6).

Source: Braun and Clarke (2006)

The next section examines the issues of reliability and validity relating to the present study.

## **5.11 RELIABILITY AND VALIDITY**

Reliability and validity are critical concepts that are used to enhance the accuracy of assessment and evaluation of the research work (Tavakol and Dennick 2011). In the following sections, these concepts are explained in the context of this study.

### **5.11.1 Reliability as applied to the case study**

Reliability is the ability of the research technique to produce consistent results when repeated several times on the same subject (Babbie 2013; Zohrabi 2013). Reliability is concerned with precision and accuracy (Cohen, Manion & Morrison 2005). To obtain reliable results, this study followed the guidelines in case study research. This research was guided by a case study protocol adapted from Yin (2014). To further ensure reliability, the research built on several theoretical models (the HBM, the TRA, the IMB, and the PEN-3 Model). These models ensured that all-important concepts in the study were explored to enhance reliability (Mutinta 2015).

### **5.11.2 Validity**

Validity is concerned with the meaningfulness of the research components (Drost 2011). According to Sarantakos (2013), there are several types of validity, including internal validity and external validity, which will be discussed as follows.

#### ***5.11.2.1 Internal validity***

According to Sarantakos (2013), internal validity refers to the extent to which the research procedures influence the research results: the research procedures must be appropriate for the research study. Triangulation is one of the ways to strengthen internal validity and triangulation was employed to strengthen internal validity in the current research (Liamputtong 2013; Rowley 2002). Triangulation occurs when two or more methods, theories, data sources, or researchers have been used in a single research study (Liamputtong 2013; Ziyani, King & Ehler 2004).

This research made use of data triangulation and theoretical triangulation to validate findings. Data triangulation was employed by using three data collection sources namely, online ethnographic observation, textual analysis and visual analysis. The

purpose of using data triangulation was to enrich data and also increase the validity of research results. In terms of theoretical triangulation, this research employed four theoretical models, including the IMB Skills Model, the HBM, the TRA and the PEN-3 Model.

Table 5.2 is a summary of the process of triangulation as applied in this study.

**Table 5.2 Summary of the process of triangulation.**

<b>DATA TRIANGULATION</b>	<b>TRIANGULATION PROCESS</b>
Online ethnographic observation	Analysis (themes which emerged) compared with themes under textual analysis and visual analysis.
Textual analysis	Analysis (themes which emerged) are noted and compared with themes which emerged from online ethnographic observation and visual analysis.
Visual analysis	Analysis of themes that emerged are compared with themes from online ethnographic observation and textual analysis.
<b>THEORETICAL TRIANGULATION</b>	The literature reviewed in Chapters 2, 3 and 4 is consulted to analyse and interpret data from online ethnographic observation, textual analysis and visual analysis (noted differences and similarities to the literature review theoretical perspective).

Source: Sarantakos (2013)

### **5.11.2.2 External validity**

External validity refers to the extent to which research findings can be generalised to the broader population (Friis & Sellers 2009; Sarantakos 2013). For the current study, there was no intention to generalise results; instead, the sample was selected to carry out an in-depth analysis of TB Proof SA’s Facebook page as a TB education platform. Therefore, the findings of the current study cannot be generalised to other health organisations’ Facebook pages. However, results from this study can serve as

a heuristic for other researchers who are interested in evaluating Facebook pages for health education. Ethical considerations related to the current study are discussed in the following section.

## **5.12 ETHICAL CONSIDERATIONS**

The current study adhered to all necessary ethical guidelines stipulated in the Policy for Research Ethics of the University of South Africa (UNISA). The following are the ethical principles that were taken into consideration.

### **5.12.1 Informed consent**

Informed consent involves providing the research participants with all necessary information to aid them in their decision to participate or not in a research project (Barlow & Drand 2009). This research did not require consent from TB Proof SA's Facebook users nor approval from TB Proof administration since the page is in the public domain (Abramson, Keefe & Chou 2014; Bravo 2015).

### **5.12.2 Confidentiality**

Confidentiality was guaranteed in this research by not using user's names to report the findings (Babbie 2008). Users remained anonymous. Confidentiality was upheld by using pseudonyms in the study.

## **5.13 SUMMARY**

This chapter explained the methods that were used in conducting this research. The research paradigm, qualitative research, the case study approach, the case study protocol, population, sampling, units of analysis, data collection techniques, data analysis, validity and reliability and ethical considerations have been explained in detail. Non-probability purposive sampling strategies and qualitative data collection methods were used to enrich data collected and also to add credibility to the research findings. Data collected through these research strategies was instrumental in investigating the effectiveness of TB Proof SA's Facebook page for TB awareness. The next chapter discusses the data analysis and empirical findings from this study.

## **CHAPTER 6: DATA ANALYSIS AND FINDINGS**

### **6.1 INTRODUCTION**

The previous chapter discussed the methodological underpinnings that are consistent with the study; this chapter presents the detailed empirical results of the study. Using a qualitative case study research design, data was collected in three phases. The first phase of the empirical study explored the use of the TB Proof SA's Facebook page for creating TB awareness. This involved conducting an online ethnographic observation of the posts and comments on the organisation's Facebook page. Posts refers to content generated by the page administrator and comments refers to any content posted on the TB Proof SA's Facebook page by its users (Abramson, Keefe & Chou 2015; Hilliard 2012). The second phase explored the phenomenon under study by using a textual analysis to analyse the text on the page and finally, visual analysis was employed to explore the photographs (visuals) on the page.

Data was analysed using specific steps from Braun and Clarke (2006) and results from the three data collection methods were presented thematically. It is of value to note that both posts and comments were used to substantiate some themes under online ethnographic observation and textual analysis because of the need to avoid information selection bias and the imperative to exploit all information available to elicit the themes (Althubaiti 2016; Choi & Pak 2005; Norris 1997). A detailed discussion of themes that emerged was substantiated with the literature and the theoretical frameworks used for this study, which is detailed in Chapters 2, 3 and 4.

According to Liamputtong (2013), triangulation occurs when two or more methods, theories, data sources, or researchers have been used in a single research study. Triangulation is one of the means for strengthening validity and reliability in qualitative research (Liamputtong 2013; Rowley 2002). This study made use of data triangulation and theoretical triangulation. Data was triangulated by crosschecking (comparing) findings from all three data collection methods (online ethnographic observation, textual analysis and visual analysis). Theories were triangulated by using tenets from the HBM, the TRA, the IMB and the PEN-3 theoretical models to substantiate the research findings. Finally, a summary of the research findings was

discussed with regard to the use of TB Proof SA's Facebook page for creating TB awareness.

The three data collection methods and four theoretical models enabled the triangulation of findings in the light of the goal of this study, which is to explore the use of TB Proof SA's Facebook page for creating TB awareness. This chapter is organised into three main sections. Firstly, the findings from online ethnographic observation are presented. Secondly, findings related to the textual analysis are explained, and thirdly, the results from the visual analysis are explained.

## **6.2 SECTION ONE: FINDINGS FROM ONLINE ETHNOGRAPHIC OBSERVATION**

This section provides a discussion of the findings from online ethnographic observation. Posts and comments on TB Proof SA's Facebook page were analysed to obtain themes in this data collection method. It is important to note that some of the themes emerged from comments (only comments were available to support the data for the theme), while others emerged from both posts and comments (since both posts and comments were available to support the data). The sub-sections provide a discussion of the three themes that emerged from this data collection method.

### **6.2.1 Online ethnographic observation**

Three main themes emerged from the posts and comments on TB Proof SA's Facebook page. These include the use of western versus traditional medicine to cure tuberculosis; stigmatisation of tuberculosis; and TB and HIV co-infection. As explained in Section 6.2.1.1, the theme of western versus traditional medicine to cure tuberculosis emerged from comments only since comments were available to support this data. The theme of stigmatisation of tuberculosis emerged from posts and comments while the theme of TB and HIV co-infection emerged from comments. In the next sub-section the three themes that emerged from online ethnographic observation will be discussed in detail.

### **6.2.1.1 Theme 1: The use of western versus traditional medicine to cure tuberculosis**

Western versus traditional medication is one of the themes that emerged from the online ethnographic observation of the TB Proof SA's Facebook page. Western, or allopathic medicine, refers to a scientific and empirical medical approach that sees disease as a natural phenomenon subject to investigation by scientific methods (Buwa & Afolayan 2009). Traditional medicine refers to indigenous knowledge and practices of medicine inspired by narrated ancestral beliefs handed down through generations and used in the diagnosis, prevention and elimination of physical, social or mental imbalances (Nemutandani 2016).

There is consensus in the literature that developing countries, including SA, use both traditional and biomedical medicine to treat various diseases and ailments, especially in rural areas (Bereda 2002; Kuokanen 2000; Lovell 2009). About 80% of South Africans still seek the services of traditional health practitioners (Nemutandani 2016; Mahomoodally 2013; Peltzer et al. 2011). Traditional health practitioners are well-established healthcare providers, using plants, animals, and mineral substances together with methods based on social, cultural and religious backgrounds, as well as prevailing community knowledge, attitudes and beliefs for the physical, mental, and social well-being of the community (Bereda 2002). Thus, people consult with both western and traditional health practitioners in search of TB treatment (Nemutandani 2016).

The use of both western and traditional medicine to cure TB is evident throughout the comments that were analysed on the page; therefore, the theme of western versus traditional medicine emerged from comments on the TB Proof SA's Facebook page. The verbatim quotes from the comments that constituted this theme are discussed as follows:

**Comment 1:** *“There has been tremendous rhetoric as to what maybe the cause of tuberculosis as postulated by physiologic. The disease is said to be cause by an airborne transmission. Hence I recommend western Orthodox medicine and traditional medicine is preferable for the cure.”* (Heven, June 8, 2017)

This comment explains the cause of TB and also suggests the use of orthodox, western medication and traditional medicine to cure TB. From the literature reviewed in Chapter 3, it was noted that TB is a disease that is caused by *mycobacterium tuberculosis*, and it typically affects the lungs (pulmonary TB) but can also affect other parts of the body as well (extra-pulmonary TB) (WHO 2015). The literature reviewed in Chapter 4 also revealed that South Africans use both western medicine and traditional herbs to cure illnesses such as tuberculosis (Buwa & Afolayan 2009; Wyk, Oudstshoorn & Gericke 1997), so western and traditional medicine should be used in the fight against TB in SA. This finding also suggests that social media allows user-generated content to be shared (Uttenhout 2012). This is evident in the comment above, where Heven shares information regarding the cause of TB.

**Comment 2:** *“Some people believe that both traditional medicine/herbs and western medication can cure Tuberculosis.”* (Dolin, June 21, 2017)

This comment made by Dolin substantiates the use of western and traditional medicine for TB treatment. Consulting with non-western doctors is commonly done in SA, where the current study was conducted (Buwa & Afolayan 2009; Gavriilidid & Ostergren 2012). People are “going back to their roots” to experience the complete *ubuntu* treatment provided by traditional healers (Nemutandani 2016:16). Traditional practices, beliefs and the use of traditional medicine remain essential in many people’s lives, even when receiving western treatment (ibid). Thus, people consult traditional healers and western medical services concurrently (Viney et al. 2014). This indicates that both western and traditional medicine should be used in the fight against TB in SA.

**Comment 3:** *“I do agree, some people use traditional herbs/ medication for tuberculosis treatment”.* (Janey, June 21, 2017).

This comment reiterates that traditional herbs are used for TB treatment. In Africa, patients sometimes abandon western medication in favour of herbal remedies supplied by traditional health practitioners (Babb et al. 2007; Malangu 2007; Mills et al. 2006; Pelzer et al. 2008). As discussed in Chapter 4, many people in SA use herbal medicine as treatment for TB because of their cultural beliefs. For instance, *Carpobrotus Edulis*, often referred to as sour fig or Hottentot’s fig, is widely used as a

traditional remedy for the treatment of TB (Wyk, Oudstshoorn & Gericke 1997). *Tulbaghia Violacea Harv.* is another herb that is also used as a traditional remedy for the treatment of TB in SA (Hutchings, Scott, Lewis & Cunningham 1996; Van Wyke & Gericke 2000).

South Africans also use herbal remedies such as *Canova* and *izifozonke* (essential vitamins mixed with herbs) to boost the immune system (Peltzer et al. 2011; Walwyn & Maitshotlo 2010). South Africans also use *stameta* (aloe mixed with vitamins and herbs) for lower back and joint pain, gum disorder, digestive problems and constipation (Ndhlala 2009). A study conducted by Ncube (2014) indicated that people in Gugulethu Township in SA concurrently use herbs and western medicine for TB treatment. It is evident that any healthcare model that is characterised by a single medicinal system is unlikely to accommodate SA's healthcare demand (Payyappallimana 2010); thus, an understanding of culture is critical in finding solutions to the TB pandemic. If culture is recognised as a contributing factor in public health and health promotion, it has the potential to develop new and effective strategies to fight diseases (for example, TB) (Kreuter & McClure 2004).

It can be inferred from the comments above that the construct perceived barriers of the HBM is applicable to some individuals in a country like SA where people are influenced by their cultural beliefs, which include consuming traditional medicine (to cure illnesses such as TB) (Brown 1991; Wanyoike 2011).

Many South Africans are attached to a culture based on tradition rather than established scientific knowledge (Liverpool et al. 2004). This finding suggests that culture could be a major barrier to adopting TB preventive behaviour. Cultural consideration is lacking in some of the health promotion models discussed in Chapter 4. The HBM, the TRA, and the IMB fail to address cultural factors that also shape behaviour (Sharma & Romas 2012). The HBM, the TRA and the IMB explain health behaviour change that occurs at a cognitive intrapersonal level where the person who experiences beliefs and attitudes at a cognitive level can either implement positive or negative behaviour change (Amico, Toronso-Alfonso & Fisher 2005; Bernard & Krupat 1994; Fishbein & Ajzen 1975; Glanz 2002; Janz, Champion & Stretcher 2002; Wanyoike 2011). These models do not give attention to the cultural dimension. Behavioural patterns are not only influenced by individual

decisions, but they are deeply embedded within the cultural norms that are inherited (Carol 2007; Iwelunmor, Newsome & Airhihenbuwa 2014; Poovan 2005; Somma & Bodiang 2003). Thus, these theories do not acknowledge the importance of culture in an individual's decision making.

However, the PEN-3 Model discussed in Chapter 4 acknowledges culture as the foundation on which TB preventive behaviour is expressed (Airhihenbuwa & Webster 2004). The PEN-3 Model situates culture at the centre of determinants of health behaviour in health promotion and disease prevention interventions (Airhihenbuwa 1989; Airhihenbuwa 1995; Airhihenbuwa 1999; Chemuru & Srinivas 2015). According to the PEN-3 Model, culture plays a vital role in determining the level of health of the individual, family and community (Airhihenbuwa 1995). This is consistent with the findings from this theme that indicate that culture and the use of traditional and western medicine to cure TB is an important determinant of TB preventive behaviour. Thus, cultural factors need to be catered for in the fight against tuberculosis in SA. Focusing on cultural influences and the integration of cultural beliefs and experiences along with providing culturally sensitive messages using TB Proof SA will be crucial in addressing TB in SA.

**Comment 4:** *“Being a traditional healer, I think there is a lot that can be done to bring both western and traditional healing into the picture to help those who can't afford western medication...nonetheless we can't separate the two as we traditional healers have herbs that help with TB and other related illnesses like asthma.”* (Reag, June 22, 2017)

This comment was made by a person who apparently practices traditional healing. The data suggests that the traditional healer encourages collaboration between traditional and western medication in the fight against TB and other related diseases. This comment is in line with the literature, which suggests that traditional health practitioners want to work with medical health practitioners to fight diseases such as TB and HIV and AIDS (Nemutandani 2016). While traditional healers are significant in determining the causes of illness in Africa, their services are not expensive (Dahab et al. 2008; Mabetoa 1992; Puckree et al. 2002).

Consulting with non-western doctors is commonly done in SA because 80% of Africans consult traditional healers (Reid & Cornell 2004). TB is a leading cause of death in SA; therefore, collaboration between traditional healers and medical health practitioners could help eliminate the TB pandemic (WHO 2015).

The comments noted above that emerged from the online ethnographic observation acknowledge the fact that people use both traditional and western medicine to cure diseases such as TB. This finding concurs with the literature, which states that people use western and traditional medicine when curing the same illness (De Savigny et al. 2004; Masatu et al. 2001; Mshana, Hampshire, Panter-Brick & Walker 2008). This finding suggests that both traditional and western medicine should be used in the fight against TB in SA.

This finding is consistent with the literature reviewed in the study. Chapter 4 discussed the use of both western and traditional medicine in the fight against TB in SA. Although the two health systems operate at different levels of science, the preceding data suggests that they could play a complementary role in the fight against TB. This finding also suggests that it is necessary to have an understanding of the use of both western and traditional medicine because the lack of knowledge of either decreases the chances of intervention strategies being successful (Ncube 2014). Adopting both western and traditional medicine will create an opportunity to build relationships to address the challenges of patient's secrecy, treatment overdose and abandonment of treatment (Ncube 2014).

The WHO emphasises the necessity to ensure respect, recognition and collaboration among practitioners of the various healthcare systems to fight diseases such as tuberculosis (WHO 2014). Thus, there is a need to adopt both western medicine and traditional medicine in the fight against TB in SA. Consistent with Liverpool et al. (2004), the use of western and traditional medicine can help alleviate mistrust, provide knowledge and lead to a coordinated approach for controlling diseases such as TB. This finding suggests that collaboration between healthcare professionals and traditional health practitioners is important in the fight against TB in SA. Thus, recognition of the role traditional health practitioners could play, and an acknowledgement of their existence should form part of the strategies to fight the TB pandemic.

The comments noted previously are also in line with the literature discussed in Chapter 3, which suggests that social media provides highly interactive platforms through which users can share, discuss and modify user-generated content (Kietzmann, Hermkens, McCarthy & Silvestre 2011). All the comments noted under this theme were generated by users of TB Proof SA's Facebook page, indicating that social media presents a platform where user-generated content is created by individuals (Daugherty, Eastin & Bright 2008; Haataja 2010). User-generated content in the case of this analysis relates to the use of both traditional and western medication to cure TB. Social media is used as a platform to discuss links between traditional and western medication (to cure TB), and the organisation's Facebook page presents a meeting-point where users can share TB-related content, confirming that social media can be used for health promotion.

### ***6.2.1.2 Theme 2: Stigmatisation of tuberculosis***

The stigmatisation of tuberculosis emerged as a theme only from posts on the TB Proof SA's Facebook page. This theme emerged from posts because only posts were available to support this data. All the posts that constituted the theme of the stigmatisation of tuberculosis were made by TB Proof SA as an organisation only. This is because one of the objectives of TB Proof SA, as discussed in Chapter 4, is to "zero stigmatisation of tuberculosis" (TB Proof 2012). In other words, one of the objectives of TB Proof SA is to ensure that no one is stigmatised because of tuberculosis.

For this study, stigmatisation is defined as a social process characterised by exclusion, rejection, blame or devaluation and gives a mark or attribute to individuals (Ozturk 2014; Scambler 2009). Stigmatisation plays a major role in the persistent suffering, disability and economic loss associated with illnesses such as TB, Ebola, HIV and AIDS and mental health (Cheung 2015; Courtwright and Turner 2010; Kakuma et al. 2010). People are often victimised for their illnesses and face unfair discrimination; thus many do not disclose their illness for fear of stigmatisation (Courtright & Tuner 2010).

Research by Liefoghe et al. 1997, Nyamvithayopong et al. 2000 and Tadesse 2016, shows that most people are aware of the symptoms of diseases but rarely take the

initiative to seek a medical opinion when these signs are noticed out of fear of stigmatisation. Infected individuals also fail to disclose their status for fear of stigmatisation (Abney 2010), so stigmatisation is considered to have a negative influence on disclosing socially devalued illnesses or conditions (Klopper, Stellenberg & Van der Merwe 2014). If not understood and dealt with, these adverse effects impact on TB control strategies. Therefore, stigmatisation has been recognised as a key problem that needs to be addressed (Cheung 2015; Kakuma et al. 2010; Klopper et al. 2014; Ncube 2014; Nyamvithayopong et al. 2000). The importance of addressing stigma related to TB is illustrated by the fact that this disease is one of the major causes of death worldwide (Cremers et al. 2015). Thus there is an urgent need to find strategies to reduce the stigmatisation of diseases such as TB.

As mentioned, TB Proof SA's Facebook page addresses the issue of stigmatisation through posts on the page. Posts refer to content generated by TB Proof SA (Abramson, Keefe & Chou 2015). Thus, the posts were made by the administration of the organisation who are the owners of the page. As discussed in Chapter 1, the organisation's Facebook page is owned by a group of South African healthcare workers. The verbatim quotes from the posts that constituted this theme will be discussed as follows.

**Post 1:** *"Show your support for people with TB and unmask the stigma."* (TB Proof SA, March 28, 2017).

This post calls on people to support those infected with TB by unmasking (fighting) stigma. According to Sukumani (2012), support is essential to fight TB and stigmatisation of TB. As discussed in Chapter 3, social networks such as Facebook influence one's health by providing support and this helps to improve one's abilities to cope with stressful health behaviours and challenges, leading to a better health outcome (Zhang, He & Sang 2013).

A study conducted by Abramson, Keefe and Chou (2015) also revealed that Facebook could be used to provide support to its users. By writing a post that encourages users to support people with TB and unmask the stigma attached to tuberculosis, TB Proof SA's Facebook page is providing support to users as support

is critical to an individual's well-being and adaptation to a condition (Kgatitswe 2012; Shetty, Shemko & Abbas 2004; Sukumani 2012). This finding also suggests that social media (Facebook) can be used as a platform to discourage the stigmatisation of communicable diseases such as TB (Taggart et al. 2015). The above comment clearly encourages users to support people with TB and also to avoid stigmatising TB-infected individuals.

The above post relates to the HBM construct of cues to action. As discussed in Chapter 4, cues to action is one of the constructs of the HBM comprising "specific stimuli necessary to trigger appropriate health behaviour" (Matton 1999:243). These cues to action might constitute a physicians' advice, print or electronic advertisements, a magazine or newspaper article or mass media campaigns (interventions) that elicit readiness to apply preventive health behaviour (Chew et al. 2002; Matton 1999; Tedesco & Ivory 2007). In the context of this study, information on TB Proof SA's Facebook page that triggers appropriate health behaviour constitutes cues to actions. As suggested by the HBM, the posts on the organisation's Facebook page should provide knowledge or information on cues to actions against TB. The data discussed earlier calls for cues to action by stating that people should support those infected with TB. This support will help reduce TB infections, as people with symptoms of TB will be tested and get treatment. Hence more lives will be saved. Therefore, the need to fight stigmatisation of TB cannot be overemphasised.

**Post 2:** *"Imagine a world free of TB, and a world free of TB-stigma."* (TB Proof SA, April 27, 2017)

This post discusses the possibility or dream of having a world free of TB and a world free of TB-stigma. Esmail, Barry, Young and Wilkinson (2014) indicate that the global health community has set itself the task of eliminating TB as a public health problem by 2050. According to Raviglione and Sulis (2016), one of the Sustainable Development Goals is to end the global epidemic of TB by 2030. As discussed in Chapter 1 of this study, the WHO's Stop TB strategy envisions a TB-Free world, with no more people suffering from the disease or dying from it (WHO 2012b).

Targets for 2035 include a 95% decline in TB mortality, a 90% reduction in the TB incidence rate, to align with the quest for universal health coverage and social protection and the complete abolition of catastrophic expenditures for TB-affected people and families (WHO 2012b). The South African NSP targets to have no new tuberculosis infections by 2032 (Churchyard et al. 2014). The post noted above is, therefore, in line with the goals of the WHO, the Sustainable Development Goals and the NSP. TB Proof SA is helping to achieve this goal by making posts that envisage a TB-Free world. Thus, by making this post, TB Proof SA's Facebook page is promoting the goal of a TB-Free world, and in a TB-Free world, there will be no TB-related stigma.

**Post 3:** *“A popular misconception is that stigma mostly affects the weaker socio-economic sections. The reality is that all segments of society are affected by it; let us fight TB-stigma.”* (TB Proof SA, March 31, 2017).

This post portrays the theme of stigmatisation of tuberculosis by creating awareness that every segment of society is affected by TB and TB-related stigma. TB is an infectious disease that spreads from person to person through the air (Mtaita 2009; Rankosha 2014). Therefore, whether socio-economically advantaged, socio-economically disadvantaged, obese or thin, tall or short, men or women, children or babies, everyone is at risk of contracting TB (WHO 2015; USAID 2014). This implies that everyone is susceptible to TB and should, therefore, fight TB and the stigma associated with it.

As suggested by the literature on the HBM, people who believe that they are susceptible to a particular health condition and its corresponding outcomes are motivated to implement a healthy behaviour (Rosenstock 1966). Thus, perceived susceptibility includes the risk of contracting TB in the long term or the immediate future by users of TB Proof SA's Facebook page. The more susceptible a user feels, the greater the likelihood of preventive measures occurring (Sharma & Romas 2012). Thus, this post encourages users of TB Proof SA to feel susceptible to TB, and hence there is a likelihood that these users will fight stigmatisation of TB (Sharma & Romas 2012).

It is important to note that the post discussed above is contrary to findings from a study conducted by Courtwright and Turner (2010). Findings from this study revealed that the socio-economically disadvantaged are more susceptible to TB and TB-related stigma. This is true in a country like SA where 30.4 million South Africans live in poverty (StatsSA 2017), and poverty has increased rates of MDR-TB (Benatar 2013). This is because the disparities in socio-economic status have contributed to inequalities in the health status in SA (Wadee et al. 2003). SA has a two-tiered healthcare system namely, the public and the private sectors, with the former catering for the unemployed and low-income earners (Mack 2011). The public healthcare system is used by low-income earners and the unemployed while the private healthcare system takes the form of medical schemes (Ramjee et al. 2014). Therefore, only the socio-economically advantaged can afford private healthcare in SA.

Most South Africans remain impoverished despite social grants, with inferior (inadequate) access to healthcare (Benatar 2013). According to Coovadia et al. (2009:19), “pivotal facets of primary healthcare are not in place, and there is a substantial human resources crisis facing the public health sector”. Hence, the increased infection rates of diseases such as TB and HIV (Harrison 2009; Mathee 2009).

There is a symbiotic relationship between poverty and the burden of TB (Ncube 2014). Poverty results in poor nutrition and a compromised immune system, which makes people vulnerable to disease-causing organisms such as *mycobacterium* (Spence et al. 1993). Therefore, if poverty is not addressed, it becomes a barrier to TB control and prevention. Hence, poverty reduction should be part of the TB alleviation intervention strategy (WHO 2014; USAID 2014; Murray 2010; Ncube 2014).

The data that constituted this theme is in line with the literature that suggests that there is stigma associated with people who have been infected or affected by communicable diseases such as TB, HIV and Ebola (Deacon et al. 2005; Cheung 2015; Churcher 2013). Stigmatisation is perceived to increase TB diagnostic delay and treatment non-compliance (Courtwright & Turner 2010; Ozturk 2014). This is detrimental to a country like SA, which has the world's rates of TB and also has the

highest rate of HIV associated with TB, as well as one of the most significant outbreaks of extremely drug-resistant (XDR)-TB (Unmasked Stigma 2017). The most likely explanation for the emergence of these bacteria is treatment non-compliance (ibid). Additionally, stigma and discrimination are social factors that deter people from seeking TB treatment and thus contribute to the failure of TB intervention strategies in SA. By addressing the problem of TB-related stigma, TB Proof SA (social media) is playing a vital role in the fight against TB. Essentially, this is because fighting TB stigmatisation can increase the number of people who seek treatment and it can also increase treatment compliance and thus reduce the TB infection rate in SA (Cheung 2015; Courtwright & Turner 2010; Cremers et al. 2015; Ncube 2014).

### **6.2.1.3 Theme 3: TB and HIV and AIDS co-infection**

Another theme that emerged from comments on TB Proof SA's Facebook page is the theme of TB and HIV/AIDS co-infection. This theme encompasses the idea that TB and HIV are closely linked. Lawn et al. (2011) support this view by stating that an increase in HIV and AIDS infection leads to an increase in TB incidence without effective treatment for HIV and AIDS. The burden of TB is increasing, largely due to the spread of HIV and AIDS (Churchyard & Corbett 2008). Of the estimated 8.7 million people who developed TB globally in 2012, 1.1 million (13%) were estimated to be HIV co-infected (Bruchfeld et al. 2015).

Corbett et al. (2003) explain that HIV has emerged as one of the key factors undermining global TB control. This view is reflected in the comments on TB Proof SA's Facebook page. Thus, the theme of TB and HIV co-infection includes a discussion of the comments that mentioned TB and HIV co-infection. Comments on TB and HIV co-infection are illustrated as follows:

**Comment 1:** *"TB as we know it I think is curable by the normal western orthodox medication but I think it is also very opportunistic, manifesting as TB when there is a deeper problem that is making it attack someone. The most common opportunity that TB takes is the HIV window but I also think that there are other illnesses that can make one susceptible to TB..."*(Jacs, June 22, 2017)

The above comment is consistent with the literature that states that HIV is the strongest risk factor for the development of TB (Corbett et al. 2003; Pawlowski et al. 2012; Sharma et al. 2005). HIV is a key driver of the TB epidemic, making prevention and effective treatment of HIV essential in managing the TB epidemic (Corbett et al. 2003). The above comment also suggests that other diseases make one susceptible to TB. HIV is not only a driver of the TB epidemic. According to the CDC (2009), influenza and TB are a dangerous combination. The results of a study conducted by CDC (2009) revealed that TB and influenza are a dangerous combination because there is an increased risk of death among TB patients with influenza. Moreover, influenza is also one of the drivers of a TB epidemic. Diabetes also triples the risk for active TB (Riza et al. 2014). Strategies to eradicate TB in SA should consider other diseases that make one susceptible to TB.

**Comment 2:** *“HIV and tuberculosis are deadly diseases. We must all fight to eradicate these diseases”.* (Dadah, June 20, 2017)

This comment emphasises that HIV and TB are contagious and can lead to death; everyone should fight against these diseases. According to the WHO (2016), HIV and TB are the leading causes of death globally. In 2016, an estimated 10.4 million people developed TB, and 1.3 million died from the disease, including 374.000 deaths among HIV-positive patients (WHO 2016). Candice, Kwan and Ernst (2011) explain that synergic interaction between HIV and tuberculosis has deadly consequences. Without adequate control of the TB-HIV co-infection, the long-term TB elimination target set for 2050 will not be reached (WHO 2016). It follows that the fight against TB and HIV must be dealt with concurrently.

**Comment 3:** *“We can only succeed to fight TB when we succeed to fight HIV/AIDS. The two cannot be separated. Many HIV patients have TB.”* (Anni, June 20, 2017)

This comment suggests that the fight against TB and the fight against HIV should be dealt with concurrently because an increase in HIV infection leads to an increase in TB infections. Sutariya et al. (2015), agree with the above comment, stating that the risk of contracting TB is estimated to be 26 to 31 times higher in HIV-positive individuals than in uninfected people. According to Pawlowski et al. (2012), an estimated 14 million individuals are dually infected with TB and HIV globally.

Churchyard and Corbett (2008) add that approximately one-third of Africans with HIV die in hospitals because of TB. Loveday and Zweigenthal (2011) also mention that there is a high TB and HIV co-infection rate in SA and poor HIV treatment adherence will result in high rates of re-infection of TB. SA has one of the highest HIV-associated TB cases (Churchyard et al. 2014). WHO estimates that 66% of people with TB in SA are co-infected with HIV (WHO 2013). The goal of eliminating TB, therefore, requires a focused, continuous effort to meet the prevention and treatment needs of people most at risk (those infected with HIV). The strategy of fighting HIV is, therefore, essential in achieving the goal of TB elimination in SA. It is evident from the data that social media (TB Proof SA's Facebook page) is used as one of the platforms to address the goal of HIV and TB elimination. Thus, the organisation's Facebook page plays a pivotal role in addressing the issue of HIV and TB co-infection in SA.

**Comment 4:** *"I think we should fight TB by first addressing HIV, because people infected with HIV are more likely to contract TB due to their weak immune system."* (Mamai, June 20, 2017)

In the literature reviewed in Chapter 2, it was explained that TB is present in many people, but it is sometimes latent until one's immune system is compromised; thus, TB manifests in people whose immune systems have been compromised with conditions such as HIV. HIV increases the risk of the progression of latent to active TB by suppressing the immune system responsible for protecting the body (Churchyard & Corbett 2008; Ncube 2010). A decline in CD4 cells (due to HIV) lessens the immune system's ability to prevent the growth and spread of *mycobacterium tuberculosis* (WHO 2012). A weakened immune system also allows the dissemination of the TB bacteria to areas other than the lungs (WHO 2012). Without early treatment for HIV-infected people with low CD4 counts and resultant poor immunity, the incidence of TB will remain high (Loveday & Zweigenthal 2011).

All persons with TB should be tested for HIV, and all persons with HIV should be tested for TB (Amollo 2009; CDC 2015). Hence, efforts to eradicate TB have to be integrated with the fight against HIV/AIDS in SA. This is because an increase in HIV infection leads to an increase in TB incidence without effective treatment for HIV (Amollo 2009; CDC 2015). This finding is consistent with a study conducted by

Mekonnen, Derbie and Desalegn (2015) on TB and HIV co-infections and associated factors among patients on a directly observed treatment short course in northeastern Ethiopia. Of the total 990 TB patients enrolled in the study, 98.2% were screened for HIV; of these, 24.3% were co-infected with TB and HIV. The odds of having TB and HIV co-infection were 2.8 and 1.7 times higher among smear positive and smear negative patients with pulmonary TB respectively than among patients with extra-pulmonary TB (Mekonnen, Derbie & Desalegn 2015).

In summary, this finding suggests that collaborative TB and HIV activities that reduce the co-morbidities and mortalities should be addressed. In other words, the finding suggests that the fights against TB and HIV should be dealt with concurrently. This is because TB and HIV co-infection results in increased mortality among those infected and also threatens the health of those who have neither disease (Corbett et al. 2003). The World Health Organisation and the United Nations Joint Programme on AIDS (UNAIDS) agree on the importance of a collaborative approach to dealing with TB-HIV co-infection (WHO 2013; UNAIDS 2014). Therefore, the fight against TB and HIV/AIDS in SA must be dealt with simultaneously. Findings from this theme also suggest that social media can be used as a platform to raise health awareness and improve health literacy (Gupta, Tyagi & Sharma 2013). This is evident as the comments that constituted this theme specifically create awareness of the fact that HIV/AIDS is the strongest risk factor for TB; hence, social media presents a platform for this awareness to be conveyed.

### **6.3 SECTION TWO: RESULTS OBTAINED FROM TEXTUAL ANALYSIS**

This section provides a discussion of the findings obtained from the textual thematic analysis of TB Proof SA's Facebook page. Findings from the textual analysis were triangulated with findings from online ethnographic observation throughout. The text that constitutes both posts and comments on the page was analysed. A number of themes and sub-themes emerged as follows.

#### **6.3.1 Textual analysis**

Themes emerged from both posts and comments. The three major themes that emerged from both posts and comments include community building, sharing testimonies and collaboration with sister organisations to promote awareness of

tuberculosis. The following sections discuss the themes and sub-themes that emerged from textual analysis.

### **6.3.1.1 Theme 1: Community building**

The theme of community building emerged from the posts and comments on TB SA's Facebook page. According to Brown (2001), community building refers to creating a sense of belonging, of continuity, of being connected to others who share the same ideas. Sense of belonging refers to the "experience of personal involvement in a system or environment so that persons feel themselves to be an integral part of that system or environment" (Hargety et al. 1992:173). The concept of community building related to the context of this study takes place within a virtual online environment. TB Proof SA's Facebook page is a virtual community that brings people together to discuss issues surrounding tuberculosis. Dennis et al. (1998) defined a virtual community as "people with shared interests or goals for whom electronic communication is a primary form of interaction". In the same vein, Leimeister and Ragajopalan (2014) argue that a virtual community is a group of people who may or may not meet one another face-to-face and who exchange words and ideas through the mediation of computer networks. The organisation's Facebook page provides a community where users (social media participants) discuss tuberculosis-related issues.

From the overall theme of community building provided by the organisation (TB Proof SA) that aims to build a community where fellow TB sufferers, survivors, healthcare workers, sister organisations (such as TB Alliance) and ordinary page users (people who simply want to share and exchange information on TB) come together to communicate and share information, motivation, and support one another, a sub-theme emerged from this data namely, support and care. A discussion of the sub-themes which emerged from this main theme follows.

#### **6.3.1.1.1 Sub-theme 1: support and care**

TB Proof SA demonstrates a sense of community building on its Facebook page by providing support and care to its users. This is evident in the responses to one of the organisation's Facebook user's comments. The comment and responses to this comment follow.

**Comment by user:** *“TB is the worst disease ever and I am undergoing multidrug-resistant TB treatment.”* (Aros, June 27, 2017)

TB Proof SA’s response:

**Post 1:** *“Sorry to hear about your diagnosis! Keep strong through the treatment.”* (TB Proof SA, June 28, 2017)

The response provided by TB Proof SA articulates support to the user of the page, Aros. By stating that Aros should keep strong through the treatment, TB Proof is providing support and care to Aros. TB patients need support to mitigate the difficulty of continually taking TB treatment, confronting stigma, and isolation within the community (Paz-Solden, Alban, Jones and Oberhelman 2013). This support assists in coping mechanisms that inversely improve the physical and psychological well-being of those in need (Farmer et al. 2009; Kgatitswe 2012; Macq et al. 2005 Sukumani 2012). TB Proof SA’s Facebook page, therefore, presents a platform where TB patients get support and care when undergoing TB treatment.

**Other users commented:**

**Comment 1:** *“Hi Aros, I am also an MDR (multidrug-resistant tuberculosis) patient, I wish you the best during your treatment.”* (Reag, June 27, 2017)

This data suggests that TB Proof SA provides a platform where users with a common interest support each other, as in the case of Aros and Reag, who started communicating with each other about illness. This social media communication helps to provide support to each other. As discussed in Post 1 above, support assists TB patients to deal with the adverse effects of TB (Farmer et al. 2009; Kgatitswe 2012; Macq et al. 2005 Sukumani 2012).

The results obtained are consistent with those discussed in the literature review, with Stokes (2009) stating that SNS such as Facebook allow individuals (users) to become part of a broader virtual community. By building a virtual community, TB Proof SA’s Facebook page provides support and also gives a sense of belonging to users of the page (Hargety et al. 1992; Leimeister & Ragajopalan 2014). Being part of a virtual community may also diminish and possibly eliminate feelings of isolation,

loneliness and uncertainty (Kgatitswe 2012). Thus, McKenna and Bargh (1998) maintain that individuals have the need to feel connected to others and to have a sense of belonging to a group or community.

This finding is also consistent with findings from previous studies. For example, a study conducted by Walker (2013) on rare disease-specific social media sites as an opportunity for collaboration, revealed that social media tools available in the promotion of rare disease efforts are uniquely valuable in that they provide a community of individuals who share a common interest. Moreover, a study carried out by Lapointe, Ramaprasad and Vedel (2014) also established that Facebook creates an opportunity for community building. The study also revealed that Facebook creates an online community that drives the creation of health awareness (ibid). This finding implies that TB Proof SA's Facebook page creates awareness of TB through community building.

**Comment 2:** *“Aros, Hang in there and follow through with the treatment, you will be fine.”* (Rahu, June 27, 2017)

This comment provides support by encouraging Aros to follow through and complete the TB treatment. Treatment adherence is critical to all people infected with TB. This is because failure to adhere to TB treatment results in a relapse of TB, prolonged infection and possibly death (Volmink & Garner 2009). However, treatment adherence can be difficult without support (Ncube 2014; Sukumanki 2012). Therefore, Rahu's comment provides the support that Aros needs to adhere to TB treatment. TB Proof SA's Facebook page provides a community where users can provide support to each other.

The above comment relates to the TRA, the IMB and the PEN-3 Model discussed in Chapter 4 of this study. According to the TRA and the IMB, motivation is one of the prerequisites for enacting healthy behaviour (Ajzen & Fishbein 1980; Fishbein & Ajzen 1975; Fisher et al. 2004). This suggests that if a TB patient is motivated to adhere to TB treatment, their attitude towards TB treatment might be favourable. Motivation in the context of this analysis is provided by Rahu, who emphasises that Aros will be fine if he follows through with treatment.

Additionally, as suggested by the PEN-3 Model, the neighbourhood (community members) influences behavioural outcomes. The PEN-3 Model emphasises that one of the determinants of behavioural outcomes is neighbourhoods. A person's identity plays a critical role in influencing health decisions, and this identity is shaped by neighbourhoods (Airhihenbuwa 2007; Airhihenbuwa & Webster 2004). Neighbourhood in the context of this study refers to the community members on TB Proof SA's Facebook page. Community members on the organisation's Facebook page (community members such as Rahu) influence users' behavioural outcomes. This is evident in the above comment as Rahu emphasises that Aros should "hang in there and follow through with TB treatment". It is important to note that the sub-theme of support and care correlates with Post 1 under the theme of stigmatisation of tuberculosis (discussed under online ethnographic observation). Post 1 under the theme of stigmatisation of tuberculosis emphasises the need to support TB patients.

#### ***6.3.1.2 Theme 2: Sharing testimonies: Positive cases from TB survivors***

Sharing testimonies is one of the themes that emerged from data on the TB Proof SA's Facebook page. Thus, this theme explored and described the experiences of TB survivors. The theme emerged from the posts made by TB survivors on the organisation's Facebook page. Data that emerged from this theme demonstrated that former TB patients (TB survivors) shared their personal stories on TB Proof SA's Facebook page to create awareness of TB. Sharing disease experiences provides health information that has a positive effect on patients (Asiri et al. 2017). Personal stories were shared by Ingridia, Zee, Chav, Tendah and Ran to create awareness of TB. The stories of the aforementioned TB survivors will be discussed in the following paragraphs.

**Post 1:** *"Patients stories always put TB into perspective-if it happened to me, it can happen to you...TB is an airborne disease, anyone can contract it."* (Ingridia, March 25, 2017)

In this post, Ingridia, a dietician who contracted TB, shared her experience with tuberculosis. She explained that she was hospitalised for over two months, both from the disease and from the side effects of the medicine. Ingridia stated that she also had to go through the six-month TB treatment. Ingridia also added that she suffered

liver failure, and eventually fell into a coma. However, she eventually received treatment. Ultimately, she encourages patients to disclose their TB status so they could obtain all the help they need to fight the disease. She concluded her story by stating that she has “learned that each person’s story and experience is valuable and that fighting TB is a worthy cause”.

It is important to note that the concept of perceived susceptibility from the HBM is directly linked to Ingridia’s post. As discussed in Chapter 4, perceived susceptibility is a belief about the possibility of contracting a disease or being harmed by a condition (Chew et al. 2002). This construct of the HBM assumes that if people believe they are susceptible to TB and its corresponding outcomes, then they are motivated to implement TB preventive behaviour (Rosenstock 1966). Ingrid’s post clearly shows the possibility of everyone contracting tuberculosis by stating that anyone can contract TB. This finding implies that individuals should adopt TB preventive behaviour because we are all susceptible to contracting TB (Rosenstock 1966).

**Post 2:** *“For months, I battled with the TB disease. I became depressed.”* (Zee, 6 June 2017)

In this post, Zee tells how he contracted and defeated TB. Zee explained that he contracted tuberculosis in Ethiopia before moving to the USA to join his adoptive parents. While in the USA, he got sick and after several tests, he was diagnosed with TB. He had to undergo a six-month course of medication. After a fierce fight, Zee finally defeated the deadly disease, and he is now telling his story to raise awareness of TB. Zee’s story suggests that TB Proof SA Facebook page covers global stories to create awareness of TB. Social media, such as Facebook, eliminates health borders (Mamun, Ibrahim & Turin 2015). Anyone in the world can join the organisation’s Facebook page. Zee currently lives in the USA but has access to TB Proof SA’s Facebook page. Therefore, social media (Facebook) provides a global platform for those affected by chronic illnesses, such as TB (Mamun, Ibrahim & Turin 2015).

**Post 3:** *“I myself often felt that dying would be easier....Today, I am cured of drug-resistant TB, am TB-Free. I am a proof that TB can be defeated”. We*

*need support, empathy and encouragement for TB patients. It's not just a physical battle but also a mental one where family and friends matter a great deal."* (Chav, February 3, 2017)

Chav shared her testimony by explaining that TB made her feel like dying. Chav further explained that she had to endure six years of toxic drug therapy, including 400 painful injections, and had much of an affected lung removed to recover from a severe form of drug-resistant TB. She added that she took more than 20 pills per day and these drugs were toxic because they changed the colour of her skin, damaged her hearing and vision, caused excruciating joint pain, triggered bouts of psychosis, left her constantly nauseous and unable to eat. She added that at one point she was a skeletal 70 pounds and coughing up blood daily. However, Chav eventually received treatment for MDR-TB.

Chav's post relates directly to the TRA, which suggests that subjective norms, that is, individual beliefs about whether a particular health behaviour is desirable in the eyes of close social ties, are an important determinant of their intention to perform or change behaviour (Fishbein & Ajzen 1975). Accordingly, family and friends play a vital role in a patient's recovery process (Shillitoe 1998). Macq et al. (2005) argue that family and friends seem to have the most harmonious and the most supportive behaviour, which is helpful to patients during treatment.

People turn to their families for advice on health concerns such as TB (Kostan et al. 2012; Sukumani et al. 2012). Family members act as motivators through verbal persuasion (Sukumani et al. 2012). Chav's story also relates to the PEN-3 Model. The PEN-3 Model assumes that persons, extended family and neighbourhoods are determinants of a person's behaviour; therefore, persons, extended family members and neighbourhoods can influence a user's (user of TB Proof SA's Facebook page) decision to perform or not to perform TB preventive behaviour (Airhihenbuwa 1995).

This assumption is clearly echoed in Chav's post as he states that TB patients need support, empathy and encouragement from family and friends during treatment. In essence, people infected with TB do need support from family and friends during TB treatment. A study conducted by Akeju, Wright and Maja (2017) among TB patients in Tshwane (SA) revealed that the support provided by family and friends helped

patients to adhere to TB treatment and these patients perceived the support to be necessary in their TB treatment. It is also useful to note that this finding is in line with the literature, which suggests that social networks, such as Facebook, influence one's health by providing support and such support helps to improve one's abilities to cope with stressful health behaviours and challenges, leading to better health outcomes (Zhang, He & Sang 2013).

**Post 4:** *"One day I became very angry and annoyed to an extent that I took out a sim card from my phone and swallowed it. I ran to the clinic and told the nurses that there are people who wanted to kill me. I then ran into the night. We later realised I was suffering from psychosis related mental illness which had been sparked by the MDR-TB medication. I would like to encourage everyone who is on treatment to adhere to treatment to avoid further complications" I am now recovered from this condition."* (Tendah, March 21, 2017).

Tendah explained that she felt so ill that she thought she was going to die, even while she was on treatment. She stated that she had to take injections and tablets every day, the side effects of the treatment made her weak, and she also lost her appetite. Studies have revealed that most TB patients experience side effects, such as weakness, loss of appetite, nausea, vomiting, psychosis, burning sensations and pain (Akeju, Wright & Maja 2017; Chirinos, Meirelles & Bousfield 2015). Tendah explained that she suffered most of these side effects during TB treatment. She concluded her story by stating that, despite all the odds, she complied with her treatment and she was eventually treated for TB.

It is important to note that Tendah's posts correlate to those of Chav, discussed earlier. This is because Tendah mentions that she felt as though she was going to die, even while on TB treatment. Chav also mentioned that TB made her feel like dying. Some tuberculosis patients feel like dying while undergoing treatment because of the stressful treatment process, as evidenced by Chav and Tendah's testimonies.

Tendah's post suggests that every TB patient should adhere to TB treatment to avoid complications. According to WHO (2014), about half of the patients diagnosed

with TB do not complete the treatment, and this results in negative treatment outcomes such as drug-resistant TB, prolonged infection and death. Naidoo et al. (2013) explain that correct and consistent compliance to TB treatment will help achieve a good treatment outcome, which is key to achieving high cure rates. High cure rates will prevent the increase in TB cases (ibid). This finding suggests that to be treated, like Tenda, correct and consistent compliance to TB treatment is required throughout the treatment period.

**Post 5:** *“I was just another student who rushed through attending classes and worked hard to keep myself in the rat race, until I started coughing and then everything changed. Within a few days, post rigorous tests, I was diagnosed as a primary TB patient...I successfully went through TB. The most common problem for TB patients is poor nutrition.”* (Ran, February 2, 2017)

Ran explained his story by stating that he did not notice many TB symptoms when he was diagnosed with TB. He explained that he had a cough only for a few days and when he went to hospital, he was told he had been infected with TB. Ran stated he was very shocked at the results. He explained that even though the results were shocking, he still went through with the six-month treatment and fortunately, he is completely free from TB. Ran concluded his story by stating that the problem most TB patients face start with poor nutrition.

Ran’s story suggests that some TB patients do not know the symptoms of TB until they are diagnosed. This finding is consistent with a study conducted by Ncube (2014) on people’s understanding of TB in the setting of HIV/TB prevalence in Gugulethu Township in SA. Results from this study revealed that people dealt with symptoms of TB without knowing what it was, unless they were diagnosed. Ran’s story also suggests that more should be done to provide good nutrition to TB patients.

In support of the previous statement, Chanda and Gosnell (2006) indicate the need for proper nutrition for TB patients. Evans and Thomas (2009:19) add that nutrition of the TB patient is crucial in the healing process. This theme links directly to the TRA and the IMB discussed in Chapter 4. The TRA and the IMB (as discussed in Chapter 4) indicate that motivational factors also help determine a patient’s attitude for

behavioural change (Ajzen & Fishbein 1980; Fisher & Fisher 1992; Fisher et al. 2004).

Motivation is comprised of an individual's personal motivation (attitudes and beliefs about engaging in or in the behaviour change) as well as their social motivation (perceptions of social norms regarding the appropriateness of the behaviour) and of the social support or social consequences for engaging in the behaviour (Fisher & Fisher 1992; Fisher et al. 2004). By sharing their testimonies on TB Proof SA's Facebook page, TB survivors help motivate TB patients to adhere to treatment despite all odds.

In summary, findings from this theme suggest that Facebook could be used as a platform to share health testimonies and thus provide support, motivation and health-related information. This finding correlates with results from studies conducted by Asiri et al. (2017), who found that individuals use Facebook to share personal experiences of their disease. In addition to sharing their personal experiences, the study revealed that individuals also use this platform to offer explicit advice and report signs and symptoms of diseases such as HIV and sickle cell (Asiri et al. 2017).

Zainab, Yunus and Househ (2016) in their study of health information sharing on Facebook, found that people with diabetes mellitus are increasingly sharing their health experiences with other Facebook users. Farmer et al. (2009) also assert that Facebook provides a readily accessible portal for patients to share experiences of investigation diagnosis and disease treatment. Accordingly, Facebook provides an avenue to share a vast array of health-related information (Asiri et al. 2017; Farmer et al. 2009; Lintonen, Konu & Seedhouse 2008; Thackeray & Neiger 2009; Weaver & Hopkins 2009; Zainab, Yunus & Househ 2016).

Therefore, the personal testimonies shared on TB Proof SA's Facebook page help provide information on tuberculosis. By sharing testimonies on the organisation's Facebook page, TB survivors can offer information about TB to users by basing information on experience (Kgatitswe 2012; WHO 2010). This information fosters empowerment by "improving understanding and knowledge, enhancing decision-making skills and consequent behavioural actions" (Barek et al. 2008:1867). It is

worth noting that results from the theme of sharing testimonies partly address the first research question, which seeks to investigate the use of TB Proof SA's Facebook page for TB awareness.

### ***6.3.1.3 Theme 3: Collaboration with sister organisations to promote awareness of tuberculosis***

Further analysis of data on TB Proof SA's Facebook page revealed that the organisation collaborates with other health organisations to create awareness of tuberculosis. Sister organisations are other health organisations that are devoted to addressing issues around preventable diseases such as TB. The primary aim of the sister organisations is to provide information and education on TB as an illness. This information and education on tuberculosis is provided by making posts on the organisation's Facebook page.

Thus, this theme includes a discussion of the posts that were made by sister organisations on TB Proof SA's Facebook page. Data that emerged from this study illustrated that sister organisations, such as TB Alliance, Observatorio Tuberculosis Brasil, Stop TB Partnership, Action and the International Union Against Tuberculosis and Lung Disease (The Union), made posts on TB Proof SA's Facebook page. TB Alliance is a non-profit organisation dedicated to the discovery and development of new, fast-acting affordable TB medicines (TB Alliance 2017). Observatorio Tuberculosis Brasil is an organisation that is focused on contributing to tuberculosis control by monitoring social and epidemiological indicators related to tuberculosis (Observatorio Tuberculosis Brasil 2017). Stop TB Partnership is a United Nations hosted partnership and a collective force transforming the fight against TB (Stop TB Partnership 2001). Action is a partnership of organisations around the world that advocate life-saving care for millions of people who are threatened with preventable diseases such as tuberculosis (Action 2017) (see discussion of these organisations in Chapter 5).

As mentioned earlier, the posts made by these sister organisations are aimed at informing and educating the masses (users of TB Proof SA's Facebook page) on TB. Therefore, the organisation collaborates with these sister organisations to create awareness of tuberculosis. Collaboration refers to the process of working together in a climate where the parties acknowledge, respect, and appreciate each other's roles

and provide mutual assistance to help attain a common goal of fighting tuberculosis (Lapointe, Ramaprasad & Vedel 2013; Nemitandani 2016). The posts made by the sister organisations mentioned previously are illustrated as follows:

**Post 1:** *“Diagnosis and treatment come with severe physical and psychological stressors for the patient. It should be obvious, then, that treatment should have not just a physical component but a social and emotional one as well.”* (Action, April 4, 2017)

Liefooghe et al. (1997) described TB treatment as difficult, agonising and even devastating. TB patients, therefore, expect emotional support and guidance from healthcare workers, family and friends during TB treatment (Du Toit & Van Staden 2007). This post suggests that social and emotional support is important to ensure compliance with the prescribed TB treatment, hence the need to give social and emotional support to TB patients (Kagee 2005; Shillitoe 1988; Zhang, He & Sang 2013).

This post correlates with the theme of sharing testimonies. Results under the theme of sharing testimonies revealed that TB patients need emotional support during treatment because treatment is tough and often unbearable. Ingridia, Zee, Chav and Tendah explain that TB treatment was very difficult and devastating (theme of sharing testimonies), hence support from family and friends is critical during the treatment process.

The TRA and IMB acknowledge the importance of support as a motivating aspect of treatment compliance (Shillitoe 1988; Zeleke 2014). Motivation is provided by significant others, such as family members, friends, experts and co-workers (Ndebele 2012; Raingruber 2013). Significant others in the context of this analysis refer to family and friends. As evident in the above post, family and friends have an influence on a user’s (user of TB Proof SA’s Facebook page) decision to comply or not to comply with TB treatment. Therefore this post relates to the TRA and IMB Models discussed in Chapter 4.

**Post 2:** *“knowledge on tuberculosis is power”* (TB Alliance, February 9, 2017).

TB education is the core for TB prevention, diagnosis and treatment (Desalu et al. 2013; Haasnoot et al. 2010; Hassan et al. 2017). Thus, this post helps provide educational material aiming to empower users (users of TB Proof SA's Facebook page) about TB as an illness. This post provided an overview of the epidemiology of tuberculosis to educate users on the disease. The post provided a definition of TB, types of TB, symptoms of TB, risk factors for TB, diagnosis of TB, treatment of TB, treatment effects and diagnostic rates of TB worldwide. This post is in line with the literature discussed under the epidemiology of TB as discussed in Chapter 2.

This post links to the IMB Model discussed in Chapter 4. According to the IMB, information is one of the determinants of TB preventive behaviour (Amico, Toronso-Alfonso & Fisher 2005). Information is "an initial prerequisite for enacting health behaviour" (Misovich et al. 2003:777). The model emphasises that information that is directly relevant to a health domain is critical to the performance of health behaviour in that domain (Misovich et al. 2003). Thus, by making a post that provides information on the epidemiology of TB, TB Proof SA's Facebook page is providing relevant information which is critical in the fight against TB in SA.

**Post 3:** *"Don't underestimate: TB it's the 1st killer among infectious diseases in the world."* (Observatorio Tuberculosis Brasil, April 4, 2017)

This post highlights the fact that TB is the leading cause of death among infectious diseases in the world (Hassan et al. 2017; WHO 2016). Schito, Hanna and Zumla (2017:10) agree with the aforementioned post by indicating, "TB disease is the number one cause of death from a preventable infectious disease worldwide". Tuberculosis has existed for millennia and remains a leading cause of death across the globe (WHO 2016; Sukumani 2012). Tuberculosis (TB) was one of the top 10 causes of death worldwide in 2015 and is responsible for more deaths than HIV and malaria (WHO 2016; Sukumani 2012). Globally, 1.8 million people died from TB in 2015 (WHO 2016; USAID 2016). Therefore, effective measures must be put in place to eradicate the disease.

In Chapter 2, it was explained that TB is one of the leading causes of death worldwide; hence, this post is in line with the literature reviewed in this study. This post also relates to the HBM construct of perceived severity. According to the HBM,

a user of TB Proof SA's Facebook page is more likely to take action and to avoid a potential health risk (contracting TB) if they believe contracting TB would have some negative impact on their life (Janz et al. 2002). This construct of the HBM focuses on one's belief about the seriousness of a medical condition and the sequence of events after diagnosis (Janz et al. 2002). An explanation of the death toll from tuberculosis reveals perceived severity.

**Post 4:** *"Tuberculosis remains the main cause of death for South Africans, accounting for 7.2% of all deaths in 2016, says Statistics SA."* (Stop TB Partnership, March 1, 2017)

According to the WHO (2016), SA has one of the highest tuberculosis (TB) incidence rates in the world with a high HIV and TB co-infection rate and a large drug-resistant TB burden. SA is among the 22 countries that bear the highest global TB burden. An estimated 1% of SA's population of about 55 million people develop TB each year (Fact Sheet 2016). TB remains the leading cause of death in SA since 2007 because of its high prevalence among South Africans (Sukumani 2012; WHO 2016). TB contributes to 7.2% deaths in SA (StatsSA 2016). This finding implies that effective strategies must be put in place to fight TB in SA. This post is consistent with the literature reviewed in Chapter 2 of this study.

It is evident from the above posts that TB Proof SA collaborates with other healthcare organisations by allowing these organisations to post TB-related information on the organisation's Facebook page. This finding is consistent with those discussed in the literature, which suggest that Facebook enables collaboration among healthcare organisations (Henderson, Snyder & Beale 2013; Lapointe, Ramaprasad & Vedel 2014). Collaboration in the context of the present inquiry was aimed at creating awareness of TB, given that collaboration across stakeholders serves a critical role in promoting TB awareness. Tuberculosis awareness is key in tuberculosis prevention (Lapointe, Ramaprasad & Vedel 2014). This finding also addresses the first research question that seeks to investigate the use of TB Proof SA's Facebook page for TB awareness.

Findings from this theme also suggest that there is TB-related information on TB Proof SA's Facebook page. In other words, the organisation's Facebook page

provides information on TB awareness. This finding is consistent with the results from similar studies; for example, findings from a study conducted by Zhang et al. (2013:5) revealed that Facebook interventions for diabetes groups have provided information and support to the users. In addition, findings from a study conducted by Abramson et al. (2015) revealed that Facebook provides information for breast cancer. It is important to note that this finding addresses the first research question, which investigates the effective use of the organisation's Facebook page for TB awareness. This finding is also consistent with the literature reviewed in Chapter 3, which indicated that Facebook could be used to provide health information (Apatula et al. 2011; Farmer et al. 2009; Neiger 2012; Woolley & Peterson 2012).

As noted previously, all the sister organisations that posted on TB Proof SA's Facebook page are international organisations. It follows that Facebook eliminates health borders. This finding correlates with findings from the theme of sharing testimonies where results obtained also revealed that Facebook eliminates health borders.

It is also worth noting that this finding is inconsistent with the findings from online ethnographic observation. Data from online ethnographic observation (as discussed under the theme of western versus traditional medicine) revealed that collaboration between healthcare professionals (western medicine) and traditional health practitioners (traditional medicine) is crucial in the fight against TB in SA. The present theme suggests that collaboration between health organisations is imperative in the fight against tuberculosis.

Findings from the textual analysis are directly associated with the IMB Skills Model discussed in Chapter 4. According to the IMB, two cognitive and one behavioural factor determine TB preventive behaviour; namely, (a) information about tuberculosis transmission and prevention; (b) motivation to reduce the risk of contracting TB, perceived normative support to reduce TB, preventive and behavioural intentions; and, (c) behavioural skills to practice prevention of tuberculosis (Amico, Toronso-Alfonso & Fisher 2005).

Findings from online ethnographic observation reveal that TB Proof SA's Facebook page provides information, motivation and behavioural skills on TB. Information is

evident through the theme of collaboration with sister organisations to promote awareness of tuberculosis. Motivation to reduce the risk of contracting TB, perceived normative support and behavioural intentions are evident through the theme sharing testimonies and the theme of community building.

The themes were triangulated from online ethnographic observation and textual analysis. On a general note, themes from online ethnographic observation and themes from textual analysis created awareness of TB in distinctively different ways. The themes from online ethnographic observation created awareness by discussing issues surrounding the stigmatisation of tuberculosis, the use of western and traditional medicine and TB and HIV and AIDS co-infection, while the themes from textual analysis focused on issues regarding prevention, symptoms, diagnosis and treatment of TB. All these themes were geared towards creating awareness of TB.

#### **6.4 SECTION THREE: FINDINGS FROM VISUAL THEMATIC ANALYSIS**

This section provides a discussion of the findings from visual thematic analysis. Photographs on the TB Proof SA's Facebook page were analysed to obtain the themes under this data collection method. A number of themes and sub-themes emerged as discussed as follows.

##### **6.4.1 Visual thematic analysis**

The procedure for visual thematic analysis included observing and analysing all the photographs during the analysis period on TB Proof SA's Facebook page and generating initial codes from the photographs. Thereafter, codes were broken down into small segments. Additionally, codes were combined to form an overall theme. These themes were reviewed, refined and named. The major themes that emerged from a visual thematic analysis that included an analysis of the photographs posted by TB Proof SA on the organisation's Facebook page included medication and TB patients and healthcare workers raising awareness of tuberculosis. These themes were triangulated with themes from online ethnographic observation and themes from textual analysis. In the next sub-section, the themes that emerged from visual thematic analysis are discussed in detail.

#### **6.4.1.1 Theme 1: TB medication**

TB medication is one of the themes that emerged from visual codes (data) on TB Proof SA's Facebook page. Various codes were combined to form the theme of TB medication. Medication is a substance that is taken into or placed on the body to cure, treat and relieve symptoms and prevent diseases such as TB (Cramer et al. 2008). For the purpose of this analysis, TB medication was identified through photographs of all medication that was posted on the organisation's Facebook page during the period of analysis for this study. Thus, this theme emerged from the photographs of TB medication posted on the organisation's Facebook page. This theme analysed photographs of tuberculosis medication aimed at treating those infected with tuberculosis. These photographs were used to inform users about new TB medication, and to encourage infected patients to follow through with treatment. A selection of photographs that depict this theme follow.



**Figure 6.1 A photograph of a healthcare worker giving medication to a TB patient**

Source: <http://www.Facebook.com/TBproof/> 18 May 2017

This photograph depicts a healthcare worker giving TB medication to a TB patient. The healthcare worker is wearing Doctors without Borders clothing. Doctors without Borders, or Médecins Sans Frontières, is a non-profit, international, independent, medical and humanitarian organisation that seeks to bring healthcare to countries in crisis (Doctors without Borders 2012). Therefore, this photograph suggests that non-governmental organisations, such as Doctors without Borders, help in the fight

against TB. This finding is consistent with findings from the theme of collaboration with sister organisations to create awareness of TB (discussed under “textual analysis”, Section 6.3.1.3).

Furthermore, by giving this medication to the patient, the healthcare worker aims to motivate the patient to comply with treatment (Ai et al. 2010). Thus, healthcare workers can influence an individual’s decision to comply with treatment or to adopt a certain behaviour (Ai et al. 2010; Rankosha 2014). As suggested by the literature on the TRA, adopting or not adopting a behaviour results from normative beliefs that are “normative expectations of others and motivation to comply with these expectations” (Ndebele 2012:36). These expectations originate from significant others, such as family members, experts and health practitioners (Raingruber 2013).

“Significant others” in the context of this analysis refers to the health practitioner who is giving the patient the medication. Thus, analysis of this photograph relates to the TRA, and it also relates to the PEN-3 Model discussed in Chapter 4. According to the PEN-3 Model, one’s identity is shaped by persons (such as mothers and healthcare workers), extended family members (such as uncles and grandparents) and neighbourhoods (community members) (Airhihenbuwa 1989). Thus, persons, family members and neighbourhoods influence behavioural outcomes. When related to this analysis, it is evident that the TB patient in the photograph is influenced by the healthcare worker, as they are seen receiving medication from the healthcare worker. Hence, healthcare workers play a pivotal role in the fight against TB (WHO 2016; Von Delft et al. 2017).

The interpretation of this photograph is consistent with findings from the theme of community building discussed under textual analysis. In the theme of community building, community members (users of TB Proof SA’s Facebook page) provide support and care to Aros, who is a TB patient, by making comments that encourage him to follow through with his treatment. In the case of this analysis, the healthcare worker is providing support and care to the TB patient by giving the patient the medication. Both the theme of community building and the theme of TB medication provide support and care to TB patients.

The interpretation of this photograph also relates to the Directly Observed Therapy Strategy (DOTS). The DOTS initiative aims to provide all TB patients with the correct support to ensure that they follow the treatment protocol, which is to take their medication at the right time and for the prescribed duration (Sukumani 2012). The DOTS can be done at a health facility, at home, in a community or at work (WHO 2015). A medical practitioner (for example, a healthcare worker or doctor) a relative, friend, neighbour or family member can operate as a DOTS supporter who is responsible for giving the patient their treatment (Sukumani 2012; WHO 2010). However, patients trust medical practitioners more and thus they are more likely to persist if the medication is given by a medical practitioner (Kagee 2005). Therefore, in DOTS, healthcare workers meet with TB patients individually to watch them take each dose of TB medicine (CDC 2015). In essence, analysis of this photograph could imply two possible scenarios: a healthcare worker implementing the DOTS or a healthcare worker giving a patient medication to encourage them to comply with TB treatment. The finding from this photograph suggests that the TB Proof SA Facebook page promotes DOTS and adherence to TB treatment.

Figure 6.2 also constitutes the theme of TB medication.



**Figure 6.2 A photograph showing the past and current medication for extensively drug-resistant tuberculosis (XDR-treatment)**

Source: <http://www.Facebook.com/TBproof/> 16 February 2017

The photograph in Figure 6.2 above depicts the former and current TB medication for extensively drug-resistant tuberculosis. The photograph clearly illustrates that the current TB medications are fewer in number compared to the former TB medication. In this photograph, “before” represents the former medication that was used for XDR-TB, and “after” represents the current medication that will be used for XDR-TB treatment.

As evident in the photograph, the previous XDR-TB treatment involved taking injections, and 20 pills or more per day. With the current XDR-TB treatment, patients will be given two drugs namely, bedaquiline and linezolid, and pretomanid. As evident in the photograph above, XDR-TB patients will no longer take injections and will only take a total of five pills per day. By posting this photograph, TB Proof SA’s Facebook page is creating awareness of the current TB medication. The analysis of this photograph indicates that there is progress regarding the development of TB medication.

The next photograph (Figure 6.3) also depicts this theme.



**Figure 6.3** A photograph showing child-friendly TB medication: new TB medication in candy flavours

Source: <http://www.Facebook.com/TBproof/> 18 May 2017

The photograph shows a handful of candy-flavoured TB medication for children. The medication has very attractive colours such as green, yellow and orange. It can be assumed that these colours are used as a strategy to attract and motivate TB-infected children to consume the medication. According to Adane et al. (2013), patients need to be motivated to comply with their TB medication and many children do not adhere to treatment due to the bitter taste of the medication (Gibbs et al. 2003). In essence, a lack of pediatric-friendly medication is a barrier to persisting with treatment (Gibbs et al. 2003).

However, research has shown that flavoured medication for children improves their adherence to treatment. For example, a study conducted by Bunepuradah et al. (2006) on the use of a taste-making product flavouring to assist Thai children to ingest genetic antiretrovirals suggested the use of flavouring in medication for juveniles. In 80% of child participants, flavouring helped them take ARVs with more ease by masking the bitter taste of the ARV (Bunepuradah et al. 2006).

A study conducted by Horace and Akbarian-Tefagh (2013) also suggested the use of flavoured medication to improve treatment adherence for children. Therefore, the use of candy-flavoured medication is an important strategy to improve children's adherence to TB treatment.

Implementing all possible strategies will help SA reduce TB infection rates (South African Department of Health 2016). This finding suggests that a lot of effort (attractive colours for medication) is put towards encouraging children to consume TB medication and it is also suggested that there is progress regarding the development of TB medication. By posting the photograph of the candy-flavoured TB medication, TB Proof SA is creating awareness of the existence and availability of candy-flavoured TB medication for children.

The analysis of this photograph (Figure 6.3) relates to the IMB Skills Model discussed in Chapter 4. The model assumes that information, motivation, and behavioural skills are fundamental determinants of TB prevention behaviour (Fisher et al. 2002). Thus, individuals who are well informed and motivated to act and those who possess the behavioural skills to do so are more likely to perform TB preventive behaviour. The photograph in Figure 6.2 provides information on the availability of TB medication; the addition of candy flavours is a strategy to motivate children to consume the medication if they become infected with TB. It is important to note that even though this photograph is linked to the IMB, there is no element of behavioural skills in the photograph, but the IMB constructs of information and motivation are demonstrated in the photograph. The TRA (as discussed in Chapter 4) also emphasises motivation as one of the factors that determine behavioural outcomes. Therefore analysis of this photograph also relates to the TRA.

In the light of the above, data that constituted this theme demonstrated that TB Proof SA's Facebook page provides information on TB through photographs of TB medication. These photographs create awareness in different ways, which include encouraging TB patients to follow through with treatment, informing users about new TB medication, new development regarding TB medication, and adherence to TB treatment. This finding implies that photographs (or visual imagery) help maximise desired effects by encouraging the emotions necessary for persuasion (Seo & Ebrahim 2016). It is important to note that the theme of TB medicine correlates with

the theme of western versus traditional medicine to cure TB (discussed under online ethnographic observation). The focus of both themes is on TB medicine.

The following section provides an explanation on the theme of TB patients

#### **6.4.1.2 Theme 2: TB Patients**

The theme of TB patients was identified through photographs of TB patients that were posted on TB Proof SA's Facebook page during the period of analysis in this study. Codes generated from photographs were combined to form an overall theme of TB medication. A TB patient is someone who has been diagnosed with tuberculosis and has been put on a full course of TB treatment (WHO 2015); this theme provides a discussion of photographs of TB patients that were posted on the organisation's Facebook page. Most of these photographs showed patients consulting with medical doctors. This finding indicates that despite the contagious and deadly nature of TB, some medical doctors are still dedicated to helping patients fight the disease.

These photographs were used as a "scare tactic" to display the reality of TB as it progresses on the human body. Thus, the pictures get worse as the disease progresses. The realities of the stages of TB are depicted in these photographs. A selection of codes (photographs) that constituted this theme is presented as follows.



**Figure 6.4 Photograph of a TB patient consulting with the doctor**

Source: <http://www.Facebook.com/TBproof/> 1 May 2017

This photograph shows an elderly man consulting with a doctor or health practitioner. The man is not lying on a hospital bed; he is at the doctor's office for a consultation, so he is an outpatient, who just came to the hospital for a check-up and (probably) to take his medication and leave.

For many TB patients, infectiousness declines rapidly after commencement of appropriate TB treatment and patients with TB can be sent home, provided that the patient is on a standard treatment (CDC 2015; Schaaf et al. 2017; Van Cutsem et al. 2016). The DOTS programme advocates the use of outpatient services so TB patients on treatment can go to doctors just for check-ups (Hongyan et al. 2016).

The WHO DOTS programme advocates monitoring, supervision and support of TB patients during the treatment period (WHO 2010). It must be noted that the hospitalisation of TB patients is indicated only for severe cases or those that are likely to abandon treatment because of their social conditions, in case of complications of the disease, and in cases of retreatment. Caliarì et al. (2007),

Hargreaves et al., (2011) and Hongyan et al. (2016) add that hospitalisation is only essential for severely ill patients, those with co-morbidities or associated conditions and patients with adverse reactions. In these cases, monitoring and support are important during the treatment process (Rankosha 2014; WHO 2010).

It is the responsibility of the health practitioners to provide appropriate monitoring and support to patients undergoing TB treatment (Oblitas et al. 2010; Rankosha 2014). A study conducted by Mkopi et al. (2012) suggested that there is a need for regular monitoring and supervision of TB patients. This study also revealed that monitoring and support for TB patients helps motivate the patients to persevere with treatment. Therefore, TB cases require close monitoring and support.

Figure 6.4 also shows that the doctor is not wearing a mask or gloves which suggests that TB patients who are on a standard treatment (or appropriate treatment) are not infectious (WHO 2016). Therefore, TB patients should not be stigmatised. This finding correlates with the theme of stigmatisation of tuberculosis discussed under online ethnographic observation. The theme of stigmatisation of TB also discourages stigma against TB-infected individuals. Therefore, TB Proof SA uses photographs to discourage the stigmatisation of TB.

Further analysis of Figure 6.4 reveals that the patient and the doctor are having a conversation about the man's treatment. The doctor is standing very close to the patient and looking at the patient very closely while communicating. The doctor's position and body language suggest a caring and good doctor-patient communication. Good doctor-patient communication has been shown to have a positive impact on health outcomes (Hellin 2002; Kaba & Sooriakumran 2009).

A study conducted by Wong and Lee (2006) suggested that good doctor-patient communication improves compliance with treatment, a higher level of patient and clinician satisfaction and a decrease in malpractice risk. The importance of close doctor-patient communication (relationship) can never be overstated because an effective treatment relies directly on the quality of this relationship (Hellin 2002). The interpretation of this photograph suggests that good patient-doctor communication is essential in the fight against TB.

The interpretation of the photograph relates to the IMB Skills Model discussed in Chapter 4. The IMB Model is determined by the extent of an individual's knowledge of TB, the serious consequences of non-adherence to treatment, by personal attitudes towards the taking of TB medication (personal motivation), and by the ability to perform whatever adherence-related tasks are necessary, together with a strong sense of self-efficacy (behavioural skills) (Ware, Wyatt & Bansberg 2006).

According to the IMB, information and motivation make a direct as well as an indirect impact on a patient's desire to continue with TB treatment. Direct information and motivation can help the TB patient to acquire a behaviour to adhere to TB treatment, and indirectly they influence the patient through behavioural skills, because essentially, information and motivation are determinant factors for a TB patient to develop behavioural skills (Fisher et al. 2002; Misovich et al. 2003; Zeleke 2015). In the light of this, the doctor in Figure 6.4 is providing information during consultation and standing very close to the patient and looking into his eyes (motivation); this will help the TB patient to develop behavioural skills (to adhere to his treatment). Figure 6.5 is another photograph that constituted this theme.



**Figure 6.5** A photograph of a TB patient lying on a hospital bed

Source: <http://www.Facebook.com/TBproof/>15 February 2017

Figure 6.5 above portrays a TB patient (a man) sitting in an upright position in a hospital environment or a hospital ward. The TB patient looks pale and sick, and TB Proof SA have posted this picture of him as a “scare tactic” (a means of portraying TB as an illness). Behind the man are two other TB patients (a man and a woman). One can assume that the woman beside him is his wife, his friend or family that has come to visit him. The woman is sitting next to the man, implying that she is there to support and motivate him.

It is worth noting that the interpretation of this photograph relates to the TRA and the IBM Skills Model. As discussed in Chapter 4, the TRA and the IMB indicate that motivational factors also help determine a patient’s attitude for behavioural change (Ajzen & Fishbein 1980; Fishbein & Ajzen 1975; Fisher et al. 2004). This implies that if the TB patient is motivated, his attitude will be favourable towards TB treatment. Motivation in the context of this analysis is provided by the woman sitting next to the TB patient’s bed. The presence of the woman is motivation that someone still cares

about him and thus he should follow through with treatment and get well. This finding suggests that people (family and friends) do care for loved ones who are infected with TB. It is important to note that the interpretation of this photograph is consistent with the sub-theme of support and care discussed under textual analysis. Below is another photograph which constituted this theme.



**Figure 6.6 A photograph of a TB patient during consultation with a healthcare worker**

Source: <http://www.Facebook.com/TBproof/> 4 May 2017

Figure 6.6 above depicts a critically ill TB patient being examined by a healthcare worker or a doctor. As in the previous photograph (Figure 6.5) the photograph is not visually appealing because the patient looks very sick. This suggests that TB Proof SA posts photographs of critically ill TB patients to portray TB as an illness and that the organisation posts photographs of very thin TB patients as a “scare tactic” to encourage TB patients to adhere to TB treatment. Seeing these kinds of photographs on TB Proof SA’s Facebook page will encourage adherence to TB

treatment because users of the Facebook page can see that they will become critically ill (very thin) if they contract TB and do not adhere to a standard TB treatment.

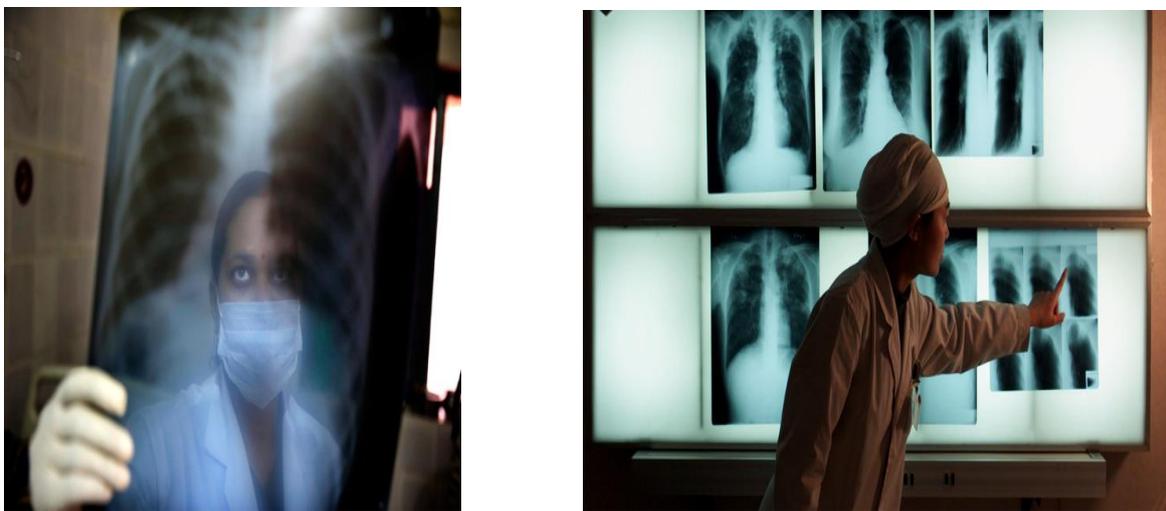
The man in Figure 6.6 above is extremely thin with his ribs jutting out of his chest; his skeletal torso is painfully visible. This photograph suggests that the patient could be suffering from either MDR-TB or extensively drug-resistant TB, the most difficult forms of TB. These forms of TB are chronic, and one of the effects on the patients' body is extreme weight loss (WHO 2016). As evident in the photograph, this patient has lost so much weight that one can see the bones of his body. The interpretation of this photograph correlates with findings from the theme of sharing testimonies (discussed under textual analysis). Chav's story (Post 3) under the theme of sharing testimonies revealed that extreme weight loss is one of the effects of having drug-resistant TB. Chav explained that she suffered from drug-resistant TB and lost so much weight that at one point she was a skeletal 70 pounds (refer to Section 6.3.1.2 for a detailed discussion of Chav's story).

The interpretation of this photograph relates to the HBM construct of perceived severity. The severity of the consequences of acquiring tuberculosis is the premise on the construct of perceived severity (Glanz et al. 2005; Janz et al. 2002; Rosenstock 2000). Assessing severity includes an individual's belief about how severe circumstances would be if they are diagnosed with TB (Janz et al. 2002). Severity is depicted in this photograph by showing the effects of TB on the human body. The TB patient in the photograph looks very sick and thin. Therefore, users of TB Proof SA's Facebook page may adopt TB preventive behaviour because they have seen that contracting TB will make them very sick and thin and thus also affect their work, family and social life (Rajeswari et al. 1999). The interpretation of this photograph suggests that the organisation's Facebook page creates awareness of the severity of TB by posting a photograph of a critically ill TB patient.

#### **6.4.1.3 Theme: healthcare workers raise awareness of tuberculosis**

Visual data from TB Proof SA's Facebook page demonstrated the theme of healthcare workers helping to raise awareness of tuberculosis. The codes generated from photographs of healthcare workers were combined to form this theme. WHO

(2006) defines healthcare workers to be all people engaged in actions whose primary intent is to enhance health. For the purpose of this study, healthcare workers refers to doctors, nurses and laboratory technicians. The theme of healthcare workers emerged from visuals (photographs) on the organisation’s Facebook page. Hence, this theme provides a discussion of the photographs of healthcare workers who aim to create awareness of tuberculosis. An analysis of the visual content of photographs which constituted this theme is provided as follows. The content appears in the photographs (Lacey 1998).



**Figure 6.7 Photographs of a healthcare worker examining a chest x-ray**

Source: <http://www.Facebook.com/TBproof/>25 March 2017

The photographs portray healthcare workers holding the results of chest radiography for a tuberculosis patient. Radiography uses x-rays to visualise the internal structures of a TB patient (WHO 2013). Chest radiography or chest x-ray has historically been one of the primary tools for detecting TB. A chest x-ray is an important tool for “triaging and screening for pulmonary tuberculosis, and it is also useful to aid diagnosis when pulmonary TB cannot be confirmed bacteriologically” (WHO 2016:3). However, it can also be used for diagnosing other forms of TB, such as pericardial TB or tuberculosis effusions (ibid). By posting a photograph of healthcare workers holding a chest x-ray, TB Proof SA is informing users that radiography is available and can be used for TB detection. Anyone who feels any

symptoms of TB should be tested. Figure 6.8 is another photograph depicting this theme.



**Figure 6.8 A photograph of healthcare workers raising awareness of tuberculosis**

Source: <http://www.Facebook.com/TBproof/> 28 June 2017

Figure 6.8 depicts two photographs of healthcare workers holding posters titled “zero stigma” and “unmask stigma” that suggest that these healthcare workers are challenging the stigmatisation of tuberculosis. By doing this, healthcare workers are encouraging and motivating those infected with or affected by TB. This finding is consistent with the theme of stigmatisation of tuberculosis (discussed under the method of online ethnographic observation).

Some TB patients do not adhere to treatment for fear of the stigma associated with the disease (Liefoghe et al. 1997; Nyamvithayopong et al. 2000; Tadesse 2016). Even those who are infected do not disclose their status for fear of stigmatisation, and this leads to the rapid spread of TB (Abney 2010) (refer to Section 6.2.1.2 for a detailed discussion of stigmatisation of tuberculosis).

The interpretation of this photograph also correlates with Figure 6.4 and Figure 6.6. Figure 6.4 and Figure 6.6 clearly depict healthcare workers supporting and

motivating TB patients in a hospital environment. Therefore, healthcare workers play a vital role in the fight against TB.

The photographs also depict some of the healthcare workers holding letters that form the word “TB Proof”. This suggests that TB Proof SA’s Facebook page is challenging tuberculosis by stating that we should all be TB Proof: “TB Proof” implies that everyone should be free of the disease. TB Proof also implies that even those infected should adhere to treatment and be “TB Proof”. The photographs also depict the healthcare workers wearing masks. Pratt et al. (2007) argue that the mask helps prevent respiratory droplets being expelled from the mouth and nose into the environment. WHO (2015) also recommends that healthcare staff should wear masks to protect them from inhaling harmful respiratory particles, for example, multiple-drug-resistant tuberculosis bacteria.

TB in all forms is also a major occupational hazard for healthcare workers (Von Delft et al. 2015). Healthcare workers are on the frontline of the risk of contracting TB (ibid). A study conducted by Joshi, Reingold and Menzies and Pai (2006) on TB incidence in low- and middle-income countries estimated the annual risk of TB infection in healthcare workers to range from 3.9% to 14.3% (with 2.6% and 11.3% attributed to occupational exposure). The results from a study carried out by Baussano et al. (2010) suggested that the average annual risk of developing TB is three times higher for healthcare workers (across all settings) compared to the general population. Healthcare workers must, therefore, also protect themselves from contracting the disease. By posting a photograph with healthcare workers wearing masks, TB Proof SA is creating awareness that even healthcare workers are susceptible to contracting TB and everyone should adopt TB preventive behaviour.

The interpretation of this photograph relates to the HBM construct of perceived susceptibility (discussed in Chapter 4). The HBM construct of perceived susceptibility helps assess an individual’s understanding of the chances of acquiring tuberculosis (Glanz et al. 2005; Janz & Becker 1984; Rosenstock 2000). Wearing a mask suggests that the healthcare workers know that they are susceptible to contracting TB. Analysis of this photograph also suggests that healthcare workers must protect themselves to be able to serve the sick population.

Healthcare workers are deeply committed to supporting and helping their patients (Von Delft 2015). However, they also need to protect themselves from the disease while doing their job (ibid). A single TB patient could infect up to 15 persons (WHO 2016), so by wearing masks, healthcare workers are helping to reduce TB infection rates.

It is worth noting that visual thematic analysis of TB Proof SA's Facebook page suggests that photographs play a major role in creating health awareness. This is evident from the themes that emerged from visual thematic analysis. The themes of the use of TB medication, visual reality of TB as an illness and the theme of healthcare workers create awareness of tuberculosis. This finding concurs with the assertion that visuals (photographs) are a successful option to increase health awareness, decision making, autonomy and engagement (Alegria et al. 2008; Bruggers et al. 2012; Yin et al. 2012). Houts et al. (2006) add that visuals help increase the chances that the target audience will adopt TB preventive behaviours.

The researcher triangulated the themes from online ethnographic observation, textual analysis and visual analysis. Overall, themes from all three data collection methods created tuberculosis awareness in distinctively different ways. The themes from online ethnographic observation created awareness by discussing issues surrounding the stigmatisation of TB, the use of western and traditional medicines and TB and HIV and AIDS co-infection, while the themes from textual analysis focused on issues regarding prevention, symptoms, diagnosis and treatment of tuberculosis.

Furthermore, the themes from visual analysis created awareness through photographs of TB medication, TB patients, and healthcare workers. All the themes were geared towards creating awareness of TB. Additionally, triangulation of theories was also done by using the HBM, the TRA, the IMB and the PEN-3 Model to analyse data. More than one theory was applicable to some of the findings (as explained throughout this chapter), while one theory was applicable in some cases. Areas where the theories were applicable have been explained throughout the chapter to enhance the credibility of these findings.

Table 6.1 highlights instances where triangulation occurred in all three data collection methods.

**Table 6.1 Summary of triangulation: findings**

Theme	Triangulation process
<p><b>Collaboration with sister organisations to promote awareness of tuberculosis</b></p>	<p>Triangulation occurred from the two methods, namely, textual and visual analysis:</p> <p>From the textual analysis, the posts made by Action, TB Alliance, Observatorio Tuberculosis Brasil, and Stop TB Partnership provide awareness of diagnosis and treatment of TB.</p> <p>From the visual analysis, triangulation occurred in Figure 6.1, which depicts a healthcare worker from Médecins Sans Frontières, giving a TB patient medication. TB Proof collaborates with Médecins Sans Frontières to create awareness of TB.</p>
<p><b>Stigmatisation of tuberculosis</b></p>	<p>Triangulation occurred from online ethnographic observation and visual analysis:</p> <p>From online ethnographic observation, the posts (Posts 1, 2 and 3) made by TB Proof SA focused on encouraging users to fight the stigmatisation of TB to create a TB-Free world.</p> <p>From visual analysis, Figure 6.8 shows a photograph of healthcare workers holding a photograph titled “no stigma”.</p>
<p><b>Support and care</b></p>	<p>Triangulation occurred from online ethnographic observation, textual analysis and visual analysis. These will be discussed below:</p> <p>From online ethnographic observation, Post 1 (under the theme of stigmatisation of TB), which was made by TB Proof SA emphasises the need to</p>

Theme	Triangulation process
	<p>“support people with TB”.</p> <p>Triangulation also occurred from textual analysis. This is evident in the responses to Aros’ comment. Reag and Rahu respond to Aros’s comment by encouraging him to “hang in there” and to follow through with his TB treatment.</p> <p>Chav also emphasises the importance of support and care to TB patients.</p> <p>From visual analysis, Figure 6.1 (a photograph of a healthcare worker giving medication to a TB patient) and Figure 6.4 (a photograph of a TB patient consulting with the doctor) depicts healthcare workers providing support and care to TB patients. Figure 6.6 also shows a wife supporting and caring for a sick husband.</p>
<p><b>Collaboration with sister organisations to promote awareness of tuberculosis</b></p>	<p>Triangulation occurred from the two methods, namely, textual and visual analysis:</p> <p>From textual analysis, posts made by Action, TB Alliance, Observatorio Tuberculosis Brasil and Stop TB Partnership promote awareness about prevention, diagnosis and treatment of TB.</p> <p>From visual analysis, triangulation occurred since Figure 6.1 depicts a healthcare worker from Médecins Sans Frontières giving a TB patient medication.</p>
<p><b>TB medication</b></p>	<p>Triangulation occurred from online ethnographic observation, textual analysis and visual analysis:</p> <p>From online ethnographic observation, comments by Heven, Dolin, Janey and Reag emphasise the use of traditional versus western medicine.</p>

Theme	Triangulation process
	<p>Triangulation also occurred with textual analysis, when Zee, Chav, Tendah and Ran share their stories on how TB medication affected them.</p> <p>From visual analysis triangulation occurred since Figure 6.1 (a photograph of a healthcare worker giving medication to a TB patient), Figure 6.2 (a photograph showing the past and current medication for extensively drug-resistant tuberculosis [XDR-treatment]) and Figure 6.3 (a photograph showing child-friendly TB medication: new TB medication in candy flavours) depicts photographs of TB medication.</p>
<p><b>TB patients</b></p>	<p>Triangulation occurred from textual analysis and visual analysis:</p> <p>From textual analysis, Aros and Reag, who were TB patients, made comments about the difficulties they face during TB treatment.</p> <p>Triangulation occurred from visual analysis since Figure 6.4 (a photograph of a TB patient consulting with the doctor), Figure 6.5 (a photograph of a TB patient lying on a hospital bed) and Figure 6.6 (photograph of a TB patient during consultation with a healthcare worker) depict photographs of TB patients.</p>

The next section provides a summary of the research findings from online ethnographic observation, textual analysis and visual analysis.

## 6.5 SUMMARY OF RESEARCH FINDINGS

The major strength of this study was the use of different data collection methods (online ethnographic observation, textual analysis and visual analysis) and different theoretical frameworks (HBM, TRA, the IMB Skills Model and the PEN-3 Model),

which enabled triangulation of study findings. Data from the previously mentioned research methods was triangulated in-text and results have provided insights on the use of TB Proof SA's Facebook page for creating TB awareness. The data collected was analysed so that it answered the research questions and established information describing how to solve the problems that were stated in Chapter 1.

Results of the data analysis suggested that TB Proof SA's Facebook page creates awareness of tuberculosis. This was evident from the themes that emerged from all data collection methods. For example, the theme of stigmatisation of tuberculosis (discussed under online ethnographic observation), the theme of sharing testimonies (discussed under textual analysis) and the theme of TB patients (discussed under visual analysis) all created awareness of TB.

Findings from this study also suggested collaboration with health organisations to enhance awareness of TB. This is evident from results in textual analysis (as discussed under the theme of collaboration with sister organisations to create awareness of TB). These organisations (such as Action, Stop TB Partnership, and The Union) posted information on the prevention, symptoms, diagnosis and treatment of TB. Collaboration with other health organisations helped to promote the goal of the page, which was to promote awareness of TB. This finding suggests that other health organisations should collaborate with their sister organisations to create health awareness.

Results from this study also suggested collaboration between healthcare professionals and traditional health practitioners. It was observed that comments on TB Proof SA's Facebook page emphasised the use of both western and traditional medicine in the fight against tuberculosis in SA. Therefore, recognising the role that traditional health practitioners could play, and acknowledgement of their existence, should form part of the strategy to fight the TB pandemic.

## **6.6 SUMMARY**

The aim of this chapter was to discuss the results of the study by providing an in-depth analysis of data collected from online ethnographic observation, textual analysis and visual analysis. Furthermore, discussions on the findings of online ethnographic observation, textual analysis, and visual analysis have been provided

with reference to the literature and the theoretical frameworks adapted for this study. A summary of findings from all three data collection methods has also been presented relating to the triangulation of data. The next chapter proposes recommendations based on the results and a conclusion to the study.

## **CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS**

### **7.1 INTRODUCTION**

The primary purpose of this study was to explore the use of TB Proof SA's Facebook page for creating awareness of TB. This chapter discusses the conclusions and recommendations arrived at, based on the key findings, and the pre-defined research questions stated in Chapter 1. This chapter presents a summary of the qualitative case study approach for the analysis of the organisation's Facebook page as undertaken by this research. The research questions are also answered. Furthermore, the strengths and limitations of the study are discussed. Recommendations for future research, TB Proof SA, and the Department of Health are also provided and the chapter finishes by offering concluding remarks to complete the study.

### **7.2 THE QUALITATIVE CASE STUDY APPROACH FOR ANALYSIS OF TB PROOF SA'S FACEBOOK PAGE**

The present research adopted a qualitative case study approach to analyse the TB Proof SA's Facebook page for creating TB awareness. A qualitative case study approach enabled data to be collected through multiple data collection methods, namely, online ethnographic observation, textual analysis and visual analysis. Data was collected in an online setting from the organisation's Facebook page, as discussed in Chapter 5.

The use of three data collection methods enabled triangulation to take place, thus ensuring the validity and reliability of the results. The focus on a qualitative research design enabled an in-depth analysis of the use of TB Proof SA's Facebook page for creating awareness (Yin 2014). Through an in-depth analysis of the page, interesting themes emerged, such as TB and HIV/AIDS co-infection, community building and TB medication. The findings of this study produced valid and reliable data that explored and described the use of the organisation's Facebook page for creating TB awareness.

### **7.3 ANSWERING THE RESEARCH QUESTIONS: THE RESEARCH FINDINGS**

In this section, the findings of the study are synthesised and presented based on the research questions set out in Chapter 1. As was previously stated, this study aimed at answering the following research questions:

- How does TB Proof SA's Facebook page create awareness of TB as an illness?
- How does TB Proof SA's Facebook page use health promotion to create TB awareness?
- What are the characteristics of the TB Proof SA's Facebook page? Specifically, who are participants on this page and what activities do they perform on the page?

In the next section, the research questions are answered.

#### **7.3.1 Research Question One: How does TB Proof SA's Facebook page create awareness of TB as an illness?**

Findings from this study suggested that TB Proof SA's Facebook page creates awareness of tuberculosis. The findings from online ethnographic observation suggested the theme of stigmatisation of tuberculosis, TB and HIV and AIDS co-infection and the theme of western versus traditional medicine. The theme of stigmatisation of tuberculosis focused on issues related to TB stigma. Posts and comments that constituted this theme focused on bringing users' attention to the fact that stigmatisation of tuberculosis is detrimental to the fight against TB in SA.

The posts and comments that constituted this theme, therefore, called on users to fight stigma by supporting those affected by or currently infected with tuberculosis. This theme can be associated with the HBM discussed in Chapter 4. According to the HBM, the posts and comments on the TB Proof SA's Facebook page should provide knowledge or information about cues to actions against TB. The posts and comments that constituted the theme of stigmatisation of TB encouraged users to take action against TB by providing support to those affected by or currently infected with TB.

In addition, the theme of TB and HIV and AIDS co-infection created awareness of the reality that HIV is a key driver of TB. Furthermore, the theme of western versus traditional medicine suggested the importance of having an understanding about the use of both western and traditional medicine in the fight against TB. The lack of knowledge of either decreases the chances of intervention strategies being successful (Ncube 2014). The theme of western versus traditional medicine is associated with the criticisms of the HBM, the TRA, and the IBM Models discussed in Chapter 4.

Even though most of the constructs of these models are applicable in this study (as discussed throughout Chapter 6), the HBM, the TRA and the IMB do not consider the cultural factor that has great influence on individual's behaviour. Behaviour patterns are not influenced by individual decisions but they are deeply embedded within the cultural norms, including consuming traditional medicine (Somma & Bodiang 2003). Vaughn, Jacquez and Baker (2009:65) add, "Different cultural groups have diverse beliefs systems with regard to health and healing".

Cultural beliefs greatly influence behavioural outcomes within a given community. Edginton, Sekane and Goldstein (2002) argue that in SA, "there is a strong belief in some communities that tuberculosis is contracted as a result of breaking cultural rules" (Edginton, Sekane & Goldstein 2002:1075). Hence, some South Africans consume herbal remedies to cure TB. Therefore, the HBM, the TRA and the IMB have limitations when applied to investigating the use of TB SA's Facebook page for TB awareness. This is essentially because culture plays an important role in health decision making in a South African context.

In addition, the results obtained from online ethnographic observation correlated with findings from textual analysis in terms of enhancing awareness of TB. The themes that emerged from textual analysis include community building, sharing testimonies and collaboration with sister organisations to promote awareness of tuberculosis. TB Proof SA's Facebook page serves as a platform where users discuss TB-related issues and also provide support for those who were infected or affected by TB.

Former TB patients also use the platform to share personal stories. Through sharing personal stories on the organisation's Facebook page, TB "survivors" are able to

offer information about TB to users by basing information on experiences (Kgatitswe 2012; WHO 2010). These stories help motivate TB patients to become hopeful that they will be cured of TB if they adhere to the treatment.

Furthermore, findings from textual analysis also revealed that TB Proof collaborates with other sister organisations to create awareness of TB. Sister organisations such as the Stop TB Partnership posted TB-related information on TB Proof SA's Facebook page.

As was the case with online ethnographic observation, visual analysis also suggested that TB Proof SA's Facebook page equally enhances awareness of TB. This was evident through photographs of TB medication, TB patients and healthcare workers. Photographs of TB medication enhanced awareness in different ways, which include encouraging TB patients to follow through with treatment, informing users about new TB medication, new developments in connection with TB medication, and adherence to TB treatment.

Visual analysis also revealed photographs of TB patients in a hospital environment. TB Proof used these photographs to portray the reality of TB as an illness. It must be noted that healthcare workers were attending to most of the patients in these photographs. By using the TRA and the IMB as lenses, it is possible to view the role of the healthcare workers as being a key to motivating TB patients to adhere to TB treatment or to overcome difficult situations (Ajzen 1985; Raingruber 2013). Healthcare workers, therefore, play a pivotal role in the fight against TB in SA.

In summary, triangulation of themes across all three data collection methods revealed themes that create awareness of TB. Posts, comments, and visuals on TB Proof in the data collection period primarily focused on tuberculosis. This finding is unsurprising given that the goal of TB Proof SA's Facebook page is to "TB Proof" the South African population by creating greater awareness of TB as an illness (TB Proof 2012). In line with the above discussion, it can be concluded that the organisation's Facebook page creates awareness of tuberculosis as an illness.

Therefore the study succeeded in meeting the first research question: to determine how TB Proof SA's Facebook page create awareness of TB as an illness. Previous studies highlighted in Chapter 3 indicated that Facebook could be used as a platform

to create health awareness (Abramson, Keefe & Chou 2015; Apatula et al. 2011; Buchanan & Beckett 2014; Chou et al. 2013; Farmer et al. 2009; Neiger 2012; Woolley & Peterson 2012).

Results from this study are consistent with the literature reviewed in Chapter 3, as themes that emerged from all three data collection methods (online ethnographic observation, textual analysis and visual analysis) suggested that TB Proof SA's Facebook page is used to create TB awareness.

### **7.3.2 Research Question Two: How does TB Proof SA's Facebook page use health promotion to create TB awareness?**

The aim of this research question was to analyse how health promotion is used to create TB awareness through social media, specifically TB Proof SA's Facebook page. Health promotion is intended to carry an educational role by ensuring that health information is disseminated to the intended audience (Kincaid 2005).

In the light of the popularity and the fast adoption of SNS in the past few years, there has been increasing interest in optimising the use of social media in health promotion (Lapointe, Ramaprasad & Vedel 2014; Thackeray & Neiger 2009). Health promotion via social media has been used to combat many illnesses, and when delivered appropriately, it has yielded optimal results (Harris et al. 2012; Zhang He & Sang 2013).

The findings from TB Proof SA's Facebook page suggested that health promotion via social media (that is, the organisation's Facebook page) creates TB awareness in SA. This is essentially because the themes that emerged from online ethnographic observation, textual analysis and visual analysis were primarily focused on creating awareness of TB. Therefore, Facebook is an appropriate health promotion channel (Chou et al. 2015; Lapointe, Ramaprasad and Vedel 2014; Zhang, He & Sang 2013).

Interestingly, the analysis of TB Proof SA's Facebook page also suggested that the objective of creating awareness (about tuberculosis) can be achieved in distinctively different ways. Based on data generated from this study, the organisation's Facebook page creates awareness of tuberculosis through posts, comments and visuals. This reflects the ideas presented in the literature that health promotion via

social media can create health awareness (Chou et al. 2013; Lapointe, Ramaprasad & Vedel 2014; Sharma et al. 2013).

### **7.3.3 Research Question Three: What are the characteristics of TB Proof SA's Facebook page? Specifically, who are participants on this page and what activities do they perform on this page?**

#### ***7.3.3.1 Characteristics of TB Proof SA's Facebook page***

Findings from this study suggested that TB Proof SA's Facebook page is similar to other health-related Facebook pages. The organisation's Facebook page consisted of users who share a common interest. In other words, this page consisted of users who are interested in discussing TB-related issues. Anyone with a Facebook account can access the page. The administrator of the page, TB Proof SA, is the owner of the page. Users have free access to information, which includes posts, comments and visuals on the organisation's Facebook page.

#### ***7.3.3.2 Participants on TB Proof SA's Facebook page***

Data revealed that participants on the TB Proof SA's Facebook page were mostly healthcare workers because the page was created by healthcare workers in SA. The theme of healthcare workers creating awareness of TB justifies the fact that healthcare workers were participants of this page. Other participants included TB patients (theme of support and care) who were currently taking TB treatment, TB survivors (theme of sharing testimonies: positive cases from TB survivors) and ordinary Facebook users who were other participants on the page (for example theme of stigmatisation of tuberculosis and theme of TB and HIV/AIDS co-infection). The participants also included several sister organisations, such as the Stop TB Partnership (theme of collaboration with sister organisations to create awareness of TB).

#### ***7.3.3.3 Activities on TB Proof South Africa's Facebook page***

The primary activities on TB Proof South Africa's Facebook page included reading, posting and commenting. Users of the page could provide responses in the form of comments on the page. For example, users provided responses to the comment made by Arosa, who was a TB patient. He commented that he was a TB patient and

that TB treatment was very difficult. In response to this comment, users of the page made comments that provided support to Arosa.

Additionally, users also made comments that reflected their opinions on certain issues regarding tuberculosis. For example, users made comments that expressed their views regarding the use of western versus traditional medication for TB treatment.

The TB Proof South Africa's Facebook page also provided more social networking functions, allowing users to share posts and also to like posts, comments and visuals. It was observed that the users of the page were generous in issuing likes to posts, comments and visuals on the page. These activities work towards creating awareness of TB.

In the next sub-section, the strengths and limitations of the study are discussed

#### **7.4 STRENGTHS AND LIMITATIONS OF THE STUDY**

The strengths of this study will be discussed as follows:

##### **7.4.1 Strengths**

A major strength of this study was the use of four different theoretical frameworks, namely, the HBM, the TRA, the IMB and the PEN-3 Model. These four theoretical frameworks enabled theoretical triangulation of findings and thus ensured validity and reliability of results. In addition, the strength of this study also pertains to adopting and highlighting the triangulation research approach in online health promotion research. This approach enables the exploration of phenomena, particularly the use of TB Proof South Africa's Facebook page, from various angles, notably, online ethnographic observation, textual analysis and visual analysis.

The study provides a detailed description of the use of TB Proof South Africa's Facebook page for promoting TB awareness (online health communication). Facebook has been perceived mostly as a platform for people networking with friends, but in recent years, a significant number of Facebook pages have been used to create health awareness (Chou et al. 2015; Zhang, He & Sang 2013). Given the vast number of users and networks that Facebook hosts, it is necessary to understand how Facebook pages are used for TB awareness.

The strength of this study relates to a demonstration of the basic characteristics of an active TB awareness Facebook page (TB Proof South Africa's Facebook page), specifically the participants and their activities. In the next section, an explanation of the limitations of the study is provided.

#### **7.4.2 Limitations of the study**

The current study was limited as it represents only one Facebook page, that is, TB Proof South Africa's Facebook page, on a singular topic of tuberculosis awareness. Findings from this study cannot, therefore, be generalised to all health-related Facebook pages. However, the aim of the study was not to generalise findings, it was to analyse the use of TB Proof South Africa's Facebook page for TB awareness at an in-depth level, and a qualitative case study methodology was adopted.

Another limitation relates to the fact that the study's findings are not directly replicable. This is because the content on Facebook pages continues to evolve and change (Abramson, Keefe & Chou 2015; Chou et al. 2013). There is no record of any user comment, post or visual that may have been altered or deleted prior to the analysis period. Therefore, it is possible that TB Proof South Africa had engaged in monitoring activities (deleting or editing inaccurate or inappropriate comments, posts and visuals). Hence, the results of this study should be read with the above unavoidable caveat in mind.

### **7.5 RECOMMENDATION FOR FUTURE RESEARCH**

It is recommended that further research can be conducted on a large scale with more Facebook pages that promote different illnesses. Therefore, comparative studies that investigate the use of other health-related Facebook pages are recommended. Further research can compare different Facebook pages to better explore the use of Facebook for promoting TB awareness. Furthermore, experimental research is also needed to assess the effectiveness of health promotion strategies that use social media for TB awareness.

#### **7.5.1 Recommendation for TB Proof South Africa**

Based on the findings of this study, cultural tolerance should be catered for in health promotion interventions (Edginton, Sekane & Goldstein 2002; Somma & Bodiang 2003; Vaughn, Jacquez & Baker 2009). Hence, the TB Proof administration should

consider the cultural backgrounds of users of TB Proof South Africa's Facebook page when posting TB information. It is recommended that TB Proof South Africa should make posts that reflect and recognise the role of traditional healers, respect and reconcile community health beliefs and practices with western health systems (Liverpool et al. 2004; Ncube 2014).

### **7.5.2 Department of Health: administration**

As evident from the findings from this study, social media, Facebook, in particular, is effective in creating awareness of TB. This indicates that provincial health departments in South Africa should play an active role in initiating the use of social media platforms for TB awareness. Provincial governments should initiate online health promotion campaigns. Not only should the provincial departments initiate the use of social media for creating TB awareness, but also be the watchdog to ensure that TB awareness information is communicated on social media in an effective way.

## **7.6 CONCLUDING REMARKS**

“Social media provides a channel for social support and facilitates a sense of connectedness among individuals. These online tools let users share information that is consumer-centric and consumer controlled, enabling anonymity or personal connection as preferred, and can be an inexpensive way to reach large audiences. All of these features make social media well suited and popular tools for health promotion” (Korda & Itani 2013:17).

The current study focused on exploring the use of TB Proof South Africa's Facebook page for TB awareness. The qualitative methodology was suitable for providing an in-depth analysis of the use of the organisation's Facebook page for TB awareness. The study revealed that TB Proof South Africa's Facebook page is creates TB awareness, as evidenced by the answers to the research questions. Therefore, health promotion via social media can be used as one of the strategies to combat TB in South Africa. Future recommendations have been suggested in the light of the limitations of the study. This study has contributed to knowledge in the field of health promotion and has also enhanced existing literature that is useful in future academic research.

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## APPENDIX A: LAYOUT AND FUNCTIONS OF A FACEBOOK PAGE

The image shows a screenshot of the Facebook page for 'Facebook' (the company). The page layout includes a cover photo of a world map, a profile picture of the Facebook logo, and a navigation menu with options like Photos, Facebook Stories, Newsroom, and Investor Relations. A 'Like' button is visible next to the page name. Below the navigation menu, there are sections for 'Highlights', '10 Friends Like Facebook', and a list of 'Likes' from other pages like 'Facebook + Media', 'Facebook Interns', and 'Facebook en Español'. A wall post is visible, featuring a video thumbnail and text about 'Speeding Up Science'. Callout boxes provide explanations for various elements: the 'Like' button, page applications, the wall, wall posts, and commenting.

**“Like” button:** When clicked, allows user to follow updates from organization.

**Page applications:** Click to navigate to other sections of the Page (e.g., photos, events).

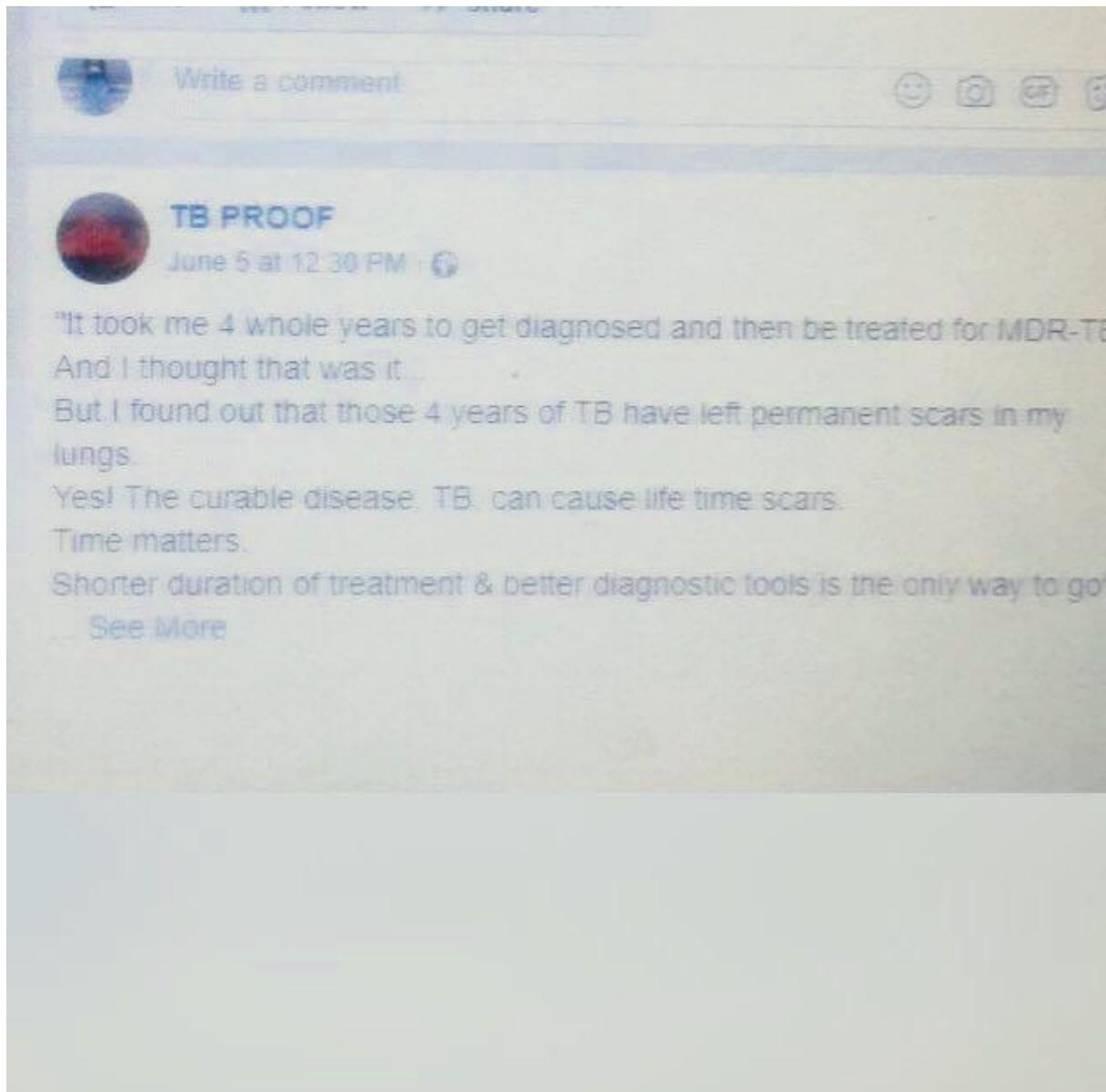
**The Wall:** Space where organization or Facebook user can post content.

**Wall post:** Content generated by the Page administrator. Distributed to all persons who “like” the Page.

**Commenting:** Users can comment on Wall posts, allowing for interaction and conversation.

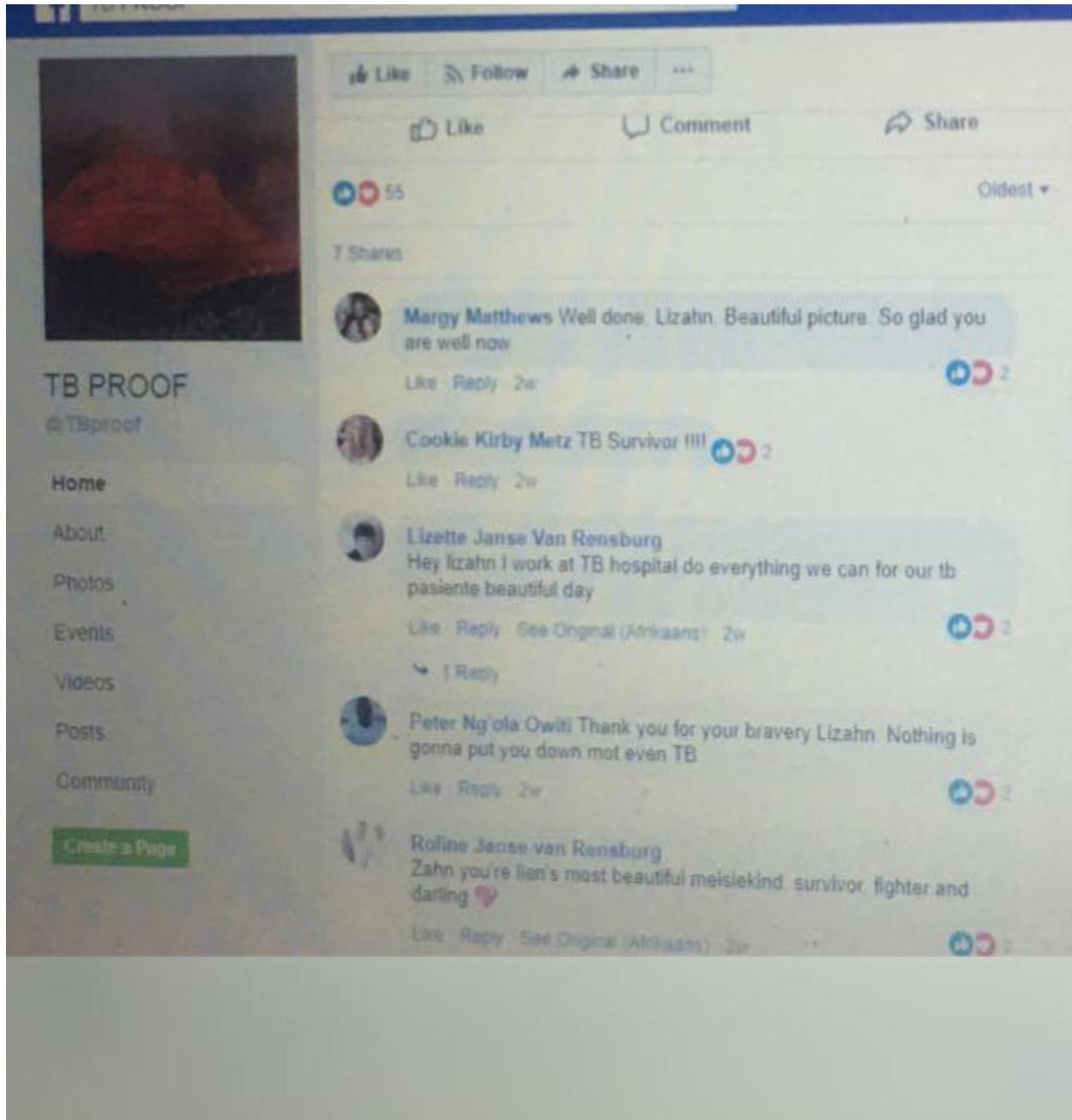
Facebook Page [Screenshot] (2018). Retrieved from <https://www.Facebook.com/Facebook?ref=ts>

**APPENDIX B: SAMPLE OF A POST ON TB PROOF SOUTH AFRICA'S FACEBOOK PAGE**



FacebookPage [Screenshot] (2018). Retrieved from <http://www.Facebook.com/TBproof/> on 25 March 2018

**APPENDIX C: SAMPLE OF COMMENTS ON TB PROOF SOUTH AFRICA'S FACEBOOK PAGE**



FacebookPage [Screenshot] (2018). Retrieved from <http://www.Facebook.com/TBproof> on 25 March 2018

**APPENDIX D:  
SOUTH AFRICA**

**ETHICAL CLEARANCE LETTER FROM THE UNIVERSITY OF**



College of Human Sciences  
Department of Communication Science  
30 June 2017

**Reference number: 2017\_CHS\_Staff\_CommSt\_011**

**Proposed title: Tuberculosis awareness created through Facebook: A case study approach of TB Proof South Africa's page.**

**Principle investigator: Ndemaze Asongu, Department of Communication Science**

**Approval status recommended by reviewers: Approved**

The Ethics Review Committee of the Department of communication Sciences at the University of South Africa has reviewed the research proposal and considers the methodological, technical and ethical aspects of the study to be appropriate.

Mrs Ndemaze Asongu is requested to maintain the confidentiality of all data collected from or about research participants, and maintain security procedures for the protection of privacy. The committee needs to be informed should any part of the research methodology as outlined in the Ethics application (Ref. Nr.2017\_CHS\_Staff\_CommSt\_011) change in any way.

It is the responsibility of the principal investigator to ensure that the research project adheres to the values and principles expressed in the UNISA Research Ethics Policy, which can be found at the following website:

[http://staffcmsys.unisa.ac.za/cmsys/staff/contents/departments/res\\_policies/docs/Policy%20on%20Research%20Ethics%20-%20rev%20appr%20-%20Council%20-%2015.09.2016.pdf](http://staffcmsys.unisa.ac.za/cmsys/staff/contents/departments/res_policies/docs/Policy%20on%20Research%20Ethics%20-%20rev%20appr%20-%20Council%20-%2015.09.2016.pdf)

This certificate is valid for two years.

Sincerely

Prof K Khan  
Chair: Departmental Research Committee  
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