

**EXPLORING ANTI-RETROVIRAL THERAPY (ART) ADHERENCE IN THE  
CONTEXT OF TRAIT EMOTIONAL INTELLIGENCE**

by

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Submitted in accordance with the requirements for  
the degree of

**MASTER OF PUBLIC HEALTH**

at the

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**SUPERVISOR: DR M B J MONYEMORE**

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## **DEDICATION**

To Mom and Dad

To My Sisters and Brother

I could never have done this without you.

Thank you for your never ending understanding, patience, support, and  
(UNCONDITIONAL LOVE)

Student number: 4492-580-8

## Declaration

I declare that "Exploring Anti-Retroviral Therapy (ART) adherence in the context of trait emotional intelligence" is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of a comprehensive reference and this work has not been submitted before for any other degree at any other institution.



June, 20, 2013

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Signature

(Dr LT Tessema)

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Date

## ACKNOWLEDGEMENTS

The research would have been incomplete without thanking all those people who assisted me to make it a reality.

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# EXPLORING ANTI-RETROVIRAL THERAPY (ART) ADHERENCE IN THE CONTEXT OF TRAIT EMOTIONAL INTELLIGENCE

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## ABSTRACT

Anti-Retroviral Therapy (ART) adherence is a crucial component of the patient management framework for people living with Human Immune Deficiency Virus (HIV). Trait emotional intelligence is “the constellation of behavioural-dispositions and self-perceived abilities to recognise, process, and utilise emotion-laden information”. The purpose of the study was to determine whether there was a correlation between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.

The study used observational, analytical, and cross-sectional research design. The participants were selected through a proportionally stratified systematic random sampling method. Data collection was through a structured self-report questionnaire format. The findings showed that 79.1% had optimal ART adherence behaviour; 84.4% had average trait emotional intelligence. The research finding showed a statistically significant positive correlation between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence at ( $r = 0.417, n = 392, P < 0.001$ ).

**KEY TERMS** Adherence/non-adherence factors; Anti-Retroviral Therapy (ART); emotionality; HIV/AIDS; regional public hospitals; self-control; sociability; trait emotional intelligence; well-being.

## List of Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ART	Anti-Retroviral Therapy
CDC	Centre for Disease Control and prevention
CD4 cell	Cluster of Differentiation-4 cell
CIA	Central Intelligence Agency
DNA	Deoxyribo-Nucleic Acid
EI	Emotional Intelligence
FHAPCO	Federal HIV/AIDS Prevention and Control Office
HIV	Human Immunodeficiency Virus
MM <sup>3</sup>	Cubic Millimetre
NARTI	Nucleoside Analogue Reverse Transcriptase
NNRTI	Non-Nucleoside Reverse Transcriptase Inhibitor
PI	Protease Inhibitors
RNA	Ribo-Nucleic Acid
SPSS	Statistical Package for Social Science
TEI	Trait Emotional Intelligence
TEI Que-SF	Trait Emotional Intelligence Questionnaire Short Form
UNAIDS	Joint United Nations programme on HIV/AIDS
UNISA	University of South Africa
WHO	World Health Organization

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## **ANNEXURES**

Annexure A: University of South Africa (UNISA) ethical clearance certificate

Annexure B: City Government of Addis Ababa Health Bureau Research Ethics Committee application to conduct research

Annexure C: Informed consent form (English)

Annexure D: Questionnaire (English)

Annexure E: Informed consent form (Amharic translated)

Annexure F: Questionnaire (Amharic translated)

Annexure G: Permission from trait emotional intelligence research program

Annexure H: Letter of approval from the City Government of Addis Ababa Health Bureau Research Ethics Committee

## CHAPTER 1

### ORIENTATION TO THE STUDY

#### 1.1 INTRODUCTION

The infection with Human Immune Deficiency Virus (HIV) continues to be the deadliest confrontation human beings are faced with both in the medical and socio-economic context. Acquired Immune Deficiency Syndrome (AIDS) is a collection of diseases caused by HIV. Globally, in 2009 an estimated 33 million people were living with HIV/AIDS and 22.5 million people were in sub-Saharan countries (Joint United Nations programme on HIV/AIDS: UNAIDS 2010:23, 25). In 2010, an estimated 34 million people were living with HIV/AIDS, the estimated prevalence rate of HIV infection among adults was 0.8% between the age group of 15-24 years (UNAIDS 2011:49). From the global proportion, more than 50% of people infected with HIV/AIDS were reported to be women (UNAIDS 2010:10). The global number of newly infected people living with HIV/AIDS has decreased from 3.1 million in 2001 to 2.7 million in 2010 (UNAIDS 2011:2). The people infected with HIV/AIDS are medically managed by combinations of Anti-Retroviral Therapy (ART) drugs (Pence 2009:636). The ART regimen requires patients to have a lifetime commitment to maintain more than  $\geq 95\%$  level of adherence behaviour (Peltzer, Preez, Ramlagan & Anderson 2010:111; Tiyou, Belachew, Alemseged & Biadgilign 2010:39).

People who are living with HIV/AIDS have been faced with chronic and multi-faceted psychological challenges (Pence 2009:637). The challenges have been identified as disbelief, denial, fear, anxiety, depression, guilt, and stress (Hartzell, Janke & Weintrob 2008:246; Leserman 2008:539; Safren, O'Cleirigh, Tan, Raminani, Reilly, Otto & Mayer 2009:2). These challenges distort the judgements and life decisions of people living with HIV/AIDS in all phases of the disease (Hartzell et al 2008:246; Leserman 2008:539; Safren et al 2009:2). The negative emotions have been linked to changes in poor health behaviours, ART

non-adherence, clinical deterioration, and progression to AIDS (Ironson, O'Cleirigh, Fletcher, Laurenceau, Balbin, Klimas, Schneiderman & Solomon 2005:1020; Kalichman & Grebler 2010:811; Pence 2009:636; Scott-Sheldon, Kalichman, Carey & Fielder 2008:130).

Trait emotional intelligence is “the constellation of behavioural-dispositions and self-perceptions concerning one’s ability to recognise, process, and utilise emotion-laden information” (Petrides & Furnham 2003:39; Petrides & Furnham 2006:554; Petrides, Pita & Kokkinaki 2007:273). Higher trait emotional intelligence has been related to good general health behaviour, adaptive problem solving styles, lowering perceptions of stress with better quality of life, and psychological well-being (Austin, Saklofske & Egan 2005:548; Bastian, Burns & Nettelbeck 2005:1136; Mikolajczak, Roy, Luminet, Fillee & Yimary 2007:1001; Mikolajczak, Nelis, Hansenne & Quiodbach 2008:1357). Understanding the important role of having higher trait emotional intelligence in medicine, the researcher acknowledged the need for further exploration to address ART adherence behaviour in relation to the role of behavioural-dispositions related to trait emotional intelligence by utilising the trait emotional intelligence model.

## **1.2 BACKGROUND INFORMATION ON RESEARCH PROBLEM**

The following section highlights on the source of the research problem and discusses in detail the background to the research problem.

### **1.2.1 Source of the research problem**

In 2010, there were an estimated 1,216,908 people living with HIV/AIDS in Ethiopia (Federal HIV/AIDS Prevention and Control Office: FHAPCO 2010b). In 2010, there were 125,599 female and 100,014 male who were started on ART in Ethiopia, as such, more female were infected and living with HIV/AIDS (FHAPCO 2010a). In Ethiopia, there were inconsistent reports on the level of adherence to ART (dose,schedule,life-style) to be as low as 62%, 74.2%, and

75.7% and as high as 81.2% (Alemu, Haile Mariam, Tsui & Shewamare 2011:266; Markos, Worku & Davey 2008:176; Tadios & Davey 2006; Tiyou et al 2010:41). Ethiopia is a country with limited resources, higher prevalence of people with low socio-economic status, and limited access to educational resources. Normally people are expected to face problems and setbacks in life. Nonetheless, people living with HIV/AIDS have been exposed to bear a huge portion of negative psychological emotions. Hence, the diagnosis of HIV/AIDS can be detrimental for people living with HIV/AIDS on their psychological emotions and ART adherence behaviour.

Trait emotional intelligence is “the constellation of behavioural-dispositions and self-perceptions concerning one’s ability to recognise, process, and utilise emotion-laden information” (Petrides & Furnham 2003:39; Petrides & Furnham 2006:554; Petrides, Pita & Kokkinaki 2007:273). Trait emotional intelligence is considered to be an intrinsically distinctive aspect of peoples emotions that remain stable most of our life time by differing from one individual to the next (Petrides & Furnham 2003:40; Petrides, Furnham & Mavroveli 2007:153). Higher level of trait emotional intelligence has been linked to the potential to better control stress, redirect unconstructive stressful reaction, and emotional impulses.

In addition, higher level of trait emotional intelligence has been related to enhanced ART adherence behaviour through the process of applying self emotion regulation, discipline towards positive health-related behavioural practices, build better communications with health-care providers, and create a stress-coping mind state to deal with health problems (Johnson, Batey & Holdsworth 2009:471; Martins, Ramalho & Morin 2010:554; Zeidner, Matthew & Roberts 2012:7). Higher level of trait emotional intelligence can play a significantly positive role both at an individual and at a community level for managing stressful circumstances. Therefore, the researcher recognised the important role of individual differences on behavioural-dispositions related to trait emotional intelligence in terms of well-being, self-control, emotionality, and sociability on ART adherence behaviour among people living with HIV/AIDS. As

a result, the researcher acknowledged the necessity of a studying ART adherence behaviour using the trait emotional intelligence among HIV/AIDS infected people receiving ART adherence behaviour at the regional public hospitals in Addis Ababa.

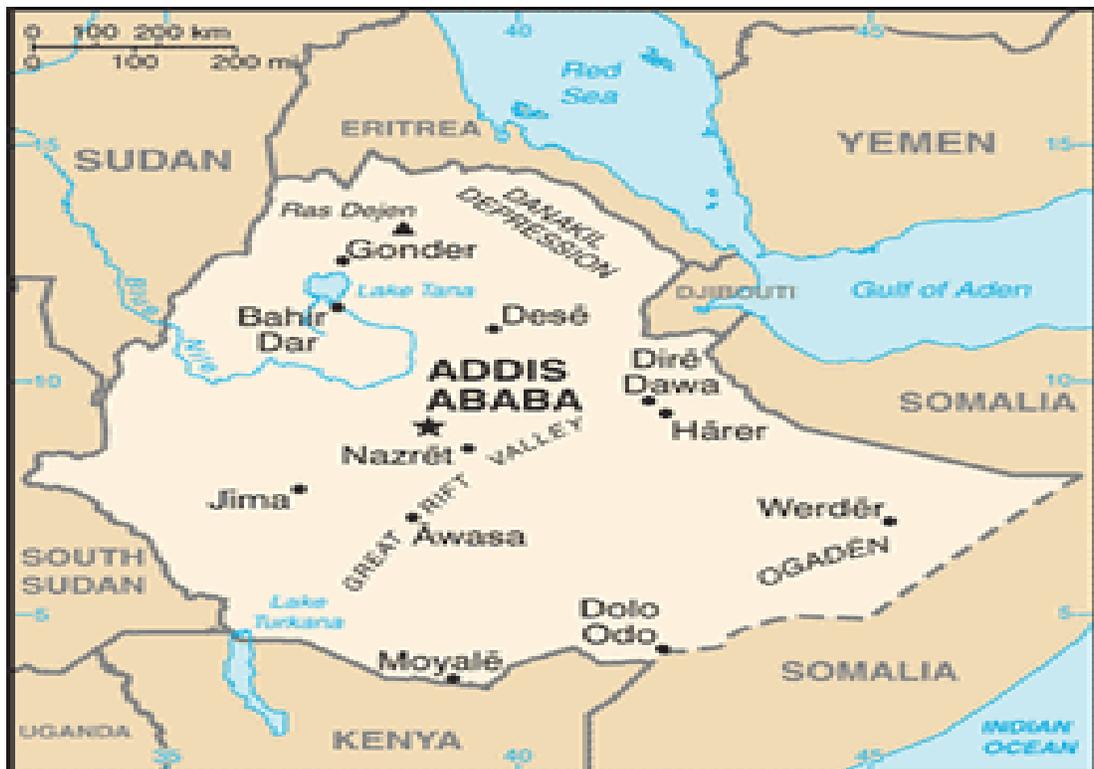
### **1.2.2 Background to the research problem**

Ethiopia is a country on the Easter part of Africa with geographical coordinates of 8 00 N, 38 00 E (Central Intelligence Agency: CIA 2012; Figure 1.1). The country's total population was estimated to be around 91,195,675 (CIA 2012). The capital, Addis Ababa has a geographical coordinates of 9 02 N, 38 42 E (CIA 2012). In 2012, the country had an estimated total population growth rate of 2.9%; the national population growth rate was estimated to be 44.6% between the ages of 0-14 years, 52.6% between the ages of 15-64 years, and 2.8% above the age of 65 years (CIA 2012).

Since 1984 up to the present time, HIV/AIDS epidemic persists to cause pressure in the Ethiopian community (FHAPCO 2007b). In 2010, the national HIV/AIDS prevalence rate was estimated to be 2.8% among adults between the age group of 15-49 years (FHAPCO 2007a). In-terms of gender, the prevalence rate among females was 2.9% and 1.9% among males (FHAPCO 2007a). There were 210,306 people living with HIV/AIDS in Addis Ababa with 85,780 men and 124,609 women (FHAPCO 2010b). In 2010, the estimated adult HIV prevalence rate in Addis Ababa was 9.2% and 1.52% HIV incidence rate, which was higher than the national HIV prevalence rate (FHAPCO 2010b). In 2003, the Ethiopian government launched the provision of free ART services (FHAPCO 2007b). The people commenced on ART must be appropriately counselled to understand the importance of adherence and be able to commit to lifetime treatment (Unge, Sodergard, Marrone, Thorson, Lukhawaro, Carter, Ilako & Ekstrom 2010:1-2). However, a large proportion of people on ART find it difficult to maintain the optimal adherence level due to several reasons (Amico, Barta, Konkle-Parker, Fisher, Cornman, Shuper, & Fisher 2009:67; Osterberg & Blaschke 2005:490; Tiyou et al 2010:41).

### 1.3 RESEARCH PROBLEM

In Ethiopia, various inconsistent study results were reported on ART adherence behaviour and adherence/non-adherence factors. Furthermore, there were no prior research done on trait emotional intelligence and its relationship to ART adherence behaviours in Ethiopia. Therefore, the research problem for the study was stated as “was there a relationship between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa?”



(<https://www.cia.gov/library/publications/the-world-factbook/geos/et.html>)

Figure 1.1 Area map of the research country

### 1.4 AIM OF THE STUDY

This section of the study discusses on the research purpose, research objectives, and research questions.

### **1.4.1 Research purpose**

The purpose of the study was to determine if there was a relationship between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.

### **1.4.2 Research objectives**

The objectives of the study were to:

- Explore the level of ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.
- Determine how adherence enabling factors influence the ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.
- Determine how adherence compromising factors influence the ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.
- Explore the level of behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.
- Determine whether there is a correlation between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.

### **1.4.3 Research questions**

To achieve the purpose of the study, the researcher asked the following questions:

- What is the level of ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa?
- How do adherence enabling factors influence the ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa?
- How do adherence compromising factors influence the ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa?
- What is the level of behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa?
- What is the relationship between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa?

## **1.5 SIGNIFICANCE OF THE STUDY**

In Ethiopia, HIV/AIDS infection is considered as a critical public health problem. There is a need for an innovative approach to address the problem of ART adherence in the Ethiopian health system. Researches implemented on ART adherence behaviour play a significant role on the management of the pandemic. For a successful clinical management of HIV/AIDS patients, ART adherence behaviour is a crucial component of the patient management and care framework. The optimal adherence to ART can guard against viral resistance by suppressing HIV viral replication as a result helps to reduce the rate of morbidity, mortality, and the quality of life for HIV/AIDS infected people within the society.

The purpose of studying emotions is important to describe and explain the individual differences that uniquely characterises the individual, and aid to distinguish individuals from one another. Research on emotions provides

relevant information regarding the mechanisms which link our emotional state and physical health (Zeidner et al 2012:4). In addition, studying humans emotions play a significant role on understanding individual behaviour, decisions, social interaction, cooperation, and learning that are essential for survival (Hughes & Terrell 2007:20; Norman 2004:162; Sparrow & Knight 2006:25). Emotions are an indispensable component of humans' behaviour and the study of emotions in health-related research is a primary concern.

Trait emotional intelligence is “the constellation of behavioural-dispositions and self-perceptions concerning one’s ability to recognise, process, and utilise emotion-laden information” (Petrides & Furnham 2003:39; Petrides & Furnham 2006:554; Petrides, Pita & Kokkinaki 2007:273). Trait emotional intelligence is considered to be the intrinsically distinctive aspect of peoples emotions that remain stable most of our life time by differing from one individual to the next (Petrides & Furnham 2003:40; Petrides, Furnham & Mavroveli 2007:153). Higher trait emotional intelligence has been linked to several theoretical outcomes in all fields of research in terms of psychological and physical well-being (Austin et al 2005:548; Bastian et al 2005:1136; Mikolajczak et al 2008:1357).

People infected with HIV/AIDS have been faced with chronic and multi-faceted psychological challenges. The negative psychological emotions are strongly related to poor adherence behaviour (Kalichman & Grebler 2010:811; Pence 2009:636). Therefore, studying the dynamic dimensions of behavioural-dispositions related to trait emotional intelligence in relation to ART adherence behaviour can be the forefront agenda in the health-care system.

## **1.6 DEFINITIONS OF TERMS**

The study utilised the definition of the following concepts:

### **1.6.1 Anti-Retroviral Therapy (ART)**

Conceptual definition: “therapy for controlling against retroviruses” (Microsoft Encarta 2009). Operational definition: “the treatment of people infected with Human Immunodeficiency Virus (HIV) using anti-HIV drugs”.

### **1.6.2 Behaviour**

Conceptual definition: “the way in which a person, organism, or group response to a specific set of conditions” (Microsoft Encarta 2009). Operational definition: “the individual tendency or the response to act in a particular way”.

### **1.6.3 Adherence**

Conceptual definition: “to be conscientious in supporting or following someone or something” (Microsoft Encarta 2009). Operational definition: “the extent to which an individual behaviour taking Anti-Retroviral Therapy (ART) in terms of the right dose, right time and following life-style changes coincides with medical or health advice”(WHO 2003:3).

### **1.6.4 Trait**

Conceptual definition: “a character or quality that distinguishes somebody” (Microsoft Encarta 2009). Operational definition: “a characteristic of an individual, describing a habitual way of behaving, thinking, and actions” (Petrides 2009:89).

### **1.6.5 Emotion**

Conceptual definition:” an agitation caused by strong feeling about something or somebody” (Microsoft Encarta 2009). Operational definition: “a state of psychological reactions involving subjective feelings and tendencies towards actions” (Sparrow & Knight 2006:25).

### **1.6.6 Intelligence**

Conceptual definition: “the ability to learn facts and skills and apply them, especially when this ability is highly developed” (Microsoft Encarta 2009).

Operational definition: “a generic self-perceived ability to identify, assess, and control the emotional-information related to one-self, and others within the social surroundings” (Petrides 2009:89).

### **1.6.7 Emotional intelligence**

Conceptual definition: “personal attributes that enable people to succeed in life, including self-awareness, empathy, self-confidence, and self-control” (Microsoft Encarta 2009).

Operational definition: “the self perception to monitor one’s own/others emotions, to discriminate among them and to use this information to guide one’s thinking and actions” (Petrides 2009:89).

### **1.6.8 Trait emotional intelligence**

Conceptual definition: “the constellation of behavioural-dispositions and self-perceived abilities to recognise, process, and utilise emotion-laden information” (Petrides & Furnham 2003:39; Petrides & Furnham 2006:554; Petrides, Pita & Kokkinaki 2007:273).

Operational definition: “the self-perceived behavioural-dispositions related to the ability to recognise, process, and utilise emotional information with being HIV infected and adhering to ART regimens in relation to well-being, self-control, emotionality, and sociability (Petrides 2009:89).

## **1.7 FOUNDATIONS OF THE STUDY**

Emotions are an unavoidable component of our existence. Trait emotional intelligence is an intrinsically distinctive aspect of peoples’ emotions that remains stable most of our life-time by differing from one individual to the next (Petrides & Furnham 2003:40). The conceptual foundation of trait emotional intelligence is embedded in the area of psychological research and practices. It

is assumed that trait emotional intelligence can clarify the role of emotions in daily life-outcomes and during the period of considerable adversity (Bastian et al 2005:1135; Zeidner & Olnick-Shemesh 2009:431). Given the significant role of trait emotional intelligence as a coping factor against negative psychological emotions; thus it was important to determine whether trait emotional intelligence model actually served a role in ART adherence behaviour.

### **1.7.1 Trait emotional intelligence model**

The theoretical model for the study was trait emotional intelligence. The theory was developed to organise and capture the individual differences on their behavioural-dispositions to the extent of which people experience, identify, understand, regulate, and utilise their emotions and that of others (Milkolajczak et al 2007:1001; Petrides & Furnham 2003:40; Salovey & Grewal 2005:281-282).

The theoretical framework consists of 4 factors and 15 facets of behavioural-dispositions related to trait emotional intelligence stated as the following (Figure 2.3). The first component is the well-being factor that includes the optimism, happiness, and self-esteem facets. The second component is the self-control factor that includes the emotional regulation, impulsiveness, and the stress management facets. The third component is the emotionality factor that includes the empathy, emotional-perception, emotional-expression, and the relationship facets. The last component is the sociability factor that focuses on social awareness, assertiveness, emotional management, self-motivation, and the facet of adaptability.

## **1.8 RESEARCH DESIGN AND METHOD**

A quantitative research paradigm was suitable for the study. The research design suitable for the study was observational, analytical, and cross-sectional. The design was suitable for the study because of the following reasons. The selected research design was efficient, required less time, and fewer resources

to put into operation. The design facilitated the data collection process on the variables to be implemented at one point in time without intervention in the natural settings. Furthermore, the research design assisted the researcher to determine the existence of a relationship between the variables (Babbie 2007:107, 112; Burns & Grove 2001:223, 256; Joubert & Ehrlich 2007:77, 86).

### **1.8.1 Study area and population**

The study was put into operation in selected regional public hospitals working under the authority of the City Government of Addis Ababa Health Bureau that provides access to ART services in Addis Ababa. The selected regional public hospitals were Yekatit Hospital, Ras Desta Hospital, Minilik 2<sup>nd</sup> Hospital, and Zewditu Hospital. In the study, the population were adults living with HIV/AIDS and receiving first-line ART. The target population in the study were adults older than 18 years of age, living with HIV/AIDS receiving first-line ART for more than 12 months at the regional public hospitals in Addis Ababa.

### **1.8.2 Sampling**

The sampling technique for the study was a proportionate stratified systematic random sampling. This technique is a probability sampling method that involves the selection of the sample using intervals selected randomly from the list of members of the population until the desired sample size is reached (Burns & Grove 2001:373). In the research, the participants were selected proportionally from each regional public hospital with a technique of proportionally stratified systematic random sampling. The participants were selected when they came to receive their ART at regional public hospitals in Addis Ababa from Monday to Friday during working hours. The samples selection involved the inclusion of every 4<sup>th</sup> participant with the starting point of 1 selecting randomly and then selecting at a sampling interval of 4.

A sample inclusion criterion is defined as the characteristics that must be present for the element to be included in the study (Burns & Grove 2001:367).

The study applied the following sample inclusion criteria: 1) HIV/AIDS infected people receiving first-line ART therapy for more than 12 months; 2) Adult persons older than 18 years of age; 3) No history of substance abuse or mental disorder; 4) Having access to ART and medical follow-up at a regional public hospital; 5) Not being pregnant for the duration of the study; 6) A stable clinical condition with the mental ability to provide informed written consent; and 7) Not having required hospitalisation for the duration of the study.

The researcher determined the sample size requirement using the Statistical Package for Social Science (SPSS) software version 17. The available data indicated that in 2010, there were a total of 26,776 people per year with medical follow-up at public ART service centres in Addis Ababa (FHAPCO 2010a). Among the selected regional public hospitals in Addis Ababa, a total of 10,597 people per year were taking ART (FHAPCO 2010a). The recommended total sample size for the study was 422.

### **1.8.3 Data collection**

The data collection method was a self-report method with a structured data collection approach that offered the researcher several benefits. A structured data collection approach had the advantage of being cost-effective and presented with an increased amount of control over the content of the data that were collected. In addition, the approach assisted the researcher to count the data for quantitative data analysis and prevented the participants from interpreting questions on their own.

In the study, three types of questionnaires were put into action, and were designed to address the following questions. The first part is the socio-demographic characteristics. The second part is the trait emotional intelligence was measured with the trait emotional intelligence questionnaire short form (TEI Que-SF). The third part is the ART adherence behaviour was measured with a modified self-report ART adherence behaviour questionnaire. The data

collection process was done by the researcher and trained nurse data collectors while the participants came for their medical follow-up.

#### **1.8.4 Data analysis**

The researcher analysed the data using a statistical package for social science (SPSS) version 17. The data analysis included both descriptive and inferential statistics. The descriptive statistics summarised and described the data with simple statistics such as frequency, percentage, mean, and standard deviation. In addition, the researcher used graphs and figures to describe the distribution of the variables in the study. The inferential statistics utilised the Pearson's correlation coefficient test.

### **1.9 ETHICAL CONSIDERATIONS**

Ethics is defined as “the study of moral standards and how moral standards affect conduct” or “the system of moral principles governing the appropriate conduct for a person or group” (Microsoft Encarta 2009). To generate sound scientific knowledge, the researcher complied with the international standard protocol with respect to the autonomy, beneficence, justice and no falsification or manipulation of the scientific content of the study. In-order to conduct the study in accordance with the internationally accepted protocol, the researcher before contacting potential participants, the study was approved in writing from the Department of Health Studies Higher Degree Committee at the University of South Africa, the City Government of Addis Ababa Health Bureau Research Ethics Committee in Ethiopia, and also from the medical directors of the selected regional public hospitals in Addis Ababa.

#### **1.9.1 Autonomy**

Autonomy is the principle of respect for persons, requiring researchers to obtain informed consent from research participants by providing full information, to protect participants with impaired decision-making capacity, and to maintain the

confidentiality of participants (Burns & Grove 2001:196; Denscombe 2007:144; Joubert & Ehrlich 2007:32; Marczyk, Dematteo & Festinger 2005:240).

In the study, for each potentially eligible participant, the health-care provider was asked to seek the participants' permission to be approached for the study. If the participants' agreed, then a detailed explanation on the study and a written informed consent prior to the enrolment was obtained with-out coercion. The consent form included the purpose of the study, the research protocol, the risk-benefit ratio of the research and informed them about their right to with-draw from the study as well as informed the participants that their actions to withdraw from the study had no impact on their access to ART medical care and other health services at the regional public hospitals.

### **1.9.2 Beneficence**

Beneficence is the principle that requires the research design to be scientifically sound and the risks of the research to be acceptable in relation to the risk/benefit ratio (Burns & Grove 2001:203; Babbie 2007:27; Denscombe 2007:143; Joubert & Ehrlich 2007:32; Marczyk et al 2005:241). Therefore, the researcher abided by this principle and employed the following steps. The researcher verified that the study caused no harm to the participants such as physical-harm, psycho-social harm from stigma and discrimination by excluding sensitive items with emotional impact from the questionnaire. Furthermore, the data collection procedure was put into action by the researcher and the trained nurse data collectors while the participants' came for their medical follow-up.

### **1.9.3 Justice**

Justice is the principle that demands a sense of fairness in the distribution of the benefits and burdens of research treatment or information (Burns & Grove 2001:202; Joubert & Ehrlich 2007:32; Marczyk et al 2005:243). In-order to avoid unfair selection of the participants, the researcher utilised a stratified systematic random sampling technique. A careful research practice was in place in-order to

preserve the participants' confidentiality. The researcher implemented the data collection process in a private room, all specific records were identified by a coded number, and stored securely with access limited to the researcher. Furthermore, the participants' study information can not be released without the written permission of the participants.

### **1.10 SCOPE OF THE STUDY**

The research is centred within the theoretical model of trait emotional intelligence. The trait emotional intelligence is an emotion that remains stable through out our life and related to general health behaviours (Petrides & Furnham 2003:40; Petrides, Furnham & Mavroveli 2007:153). An individual with higher trait emotional intelligence can have the potential for rational decision processing, lower stress level, and better commitments to their health (Austin et al 2005:548; Bastian et al 2005:1136; Milkolajczak et al 2007:1001; Mikolajczak et al 2008:1357).

People living with HIV/AIDS who are on ART have a lifetime commitment to have an optimal adherence to their ART. In the study, the researcher explored to determine if there was a relationship between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa. The measurement tools for the study were trait emotional intelligence questionnaire short form (TEI Que-SF) and a modified self-report ART adherence behaviour questionnaire with questions focused on various factors for adherence and non-adherence. The data analysis included both descriptive (frequency, percentage, mean, and standard deviation) and inferential statistics (Pearson's correlation coefficient test).

### **1.11 STRUCTURE OF THE DISSERTATION**

The dissertation is divided into the following chapters. The first chapter focused on the orientation to the study which contextualised and discussed on how the

research was implemented. The second chapter focuses on literature review where there is a detailed discussion on the elements included in the research questions. The third chapter explains the research design and method of the study. The fourth chapter focuses on the analysis, presentation, and description of the research findings by answering the research questions. The fifth chapter discusses the researcher's reflection with conclusions and recommendations.

## **1.12 CONCLUSION**

The first chapter explored the foundations of the research in the context of the research questions and the research significance that provided a framework for the entire study. Then a brief description of the study paradigm, methodology, and issues on the ethical consideration were discussed. The key concepts were defined and finally concluded with outlining the structure of the dissertation in different chapters. The following chapter provides discussion on research literature review by focusing on relevant issues of the study.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 INTRODUCTION

This chapter provides a review of the relevant literature on Anti-Retroviral Therapy (ART) adherence behaviour and trait emotional intelligence. Literature review is defined as a “systematic and explicit approach to the identification, retrieval, and bibliographic management of independent studies” (Burns & Grove 2001:108). The researcher performed the process of literature review in-order to rationalise future researches and set new findings into the context of existing knowledge. In addition, the literature review process assisted the researcher to formulate a sense of the current research and to manage the information overload. Furthermore, it aided the researcher to create a framework for an enhanced understanding of the problem statement, research design, and data analysis. Moreover, the literature review assisted the researcher to evaluate, analyse, and clarify the relationships between the literature sources (Burns & Grove 2001:43; Joubert & Ehrlich 2007: 66-67; Marczyk et al 2005:32-33).

The primary research problem statement was stated as: “was there a relationship between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa?” Therefore, in the study, the purpose of the literature review was to obtain information that addressed the following points. The literature review provided background for the discussion on HIV/AIDS infection, the psychological impact on people living with HIV/AIDS, on the issues on ART adherence behaviour, the factors affecting ART adherence behaviour, and on the methods for measurement of adherence behaviour. Furthermore, provided discuss on the theoretical perspective, constructs, measurement of trait emotional intelligence, and on the possible links between the research variables.

## **2.2 THE BACKGROUND OF HIV/AIDS INFECTION**

The initial isolates of Human Immunodeficiency Virus (HIV) infection was identified by scientists in 1959 (Pence 2008:330). The Centre for Disease Control and prevention (CDC) reported the earliest known deaths from HIV infection in 1981 (Pence 2008:331). Scientists identified two types of the HIV virus as HIV-1 and HIV-2. Globally, the majority of the HIV infection is caused by HIV-1. The HIV infection spreads from person to person through blood, sharing needles, semen, and vaginal fluids (Simon, Ho & Karim 2006:489-490). The HIV infection infects the helper T lymphocytes and progressively attacks to weaken the human body defence system called the cellular immune system. The HIV performs the replication process by converting the viral genome into the host deoxyribonucleic acid (DNA) and followed by transporting and integrating the DNA into the host's cell nucleus genome (Simon et al 2006:491).

The first stage of the HIV infection can take several years with the majority of people being asymptomatic with no obvious clinical effects. Once contaminated with HIV infection, people sooner or later develop AIDS. Therefore, in the advanced stage of the infection, the Cluster of Differentiation-4 cell (CD4) T-cell count declines significantly, and individuals are exposed to numerous potentially devastating opportunistic infections and cancers (Simon et al 2006:492).

### **2.2.1 Global HIV/AIDS**

In the past few years, due to the socio-cultural and economic factors; the expansion and spread of HIV infection has reached to the level of a pandemic. However, gradually the global incidence rate for HIV/AIDS infection has step by step decreased in 33 countries such as Ghana, Haiti, Ethiopia, Gabon, Kenya, and Uganda (UNAIDS 2011:13-14). Globally, in 2010 an estimated 34 million people were living with HIV/AIDS, the estimated prevalence rate of HIV infection among adults was 0.8% between the age group of 15-24 years; as 0.3% in men and 0.6% in women (UNAIDS 2011:49). The global number of newly infected people living with HIV/AIDS has decreased from 3.1 million in 2001 to 2.7 million

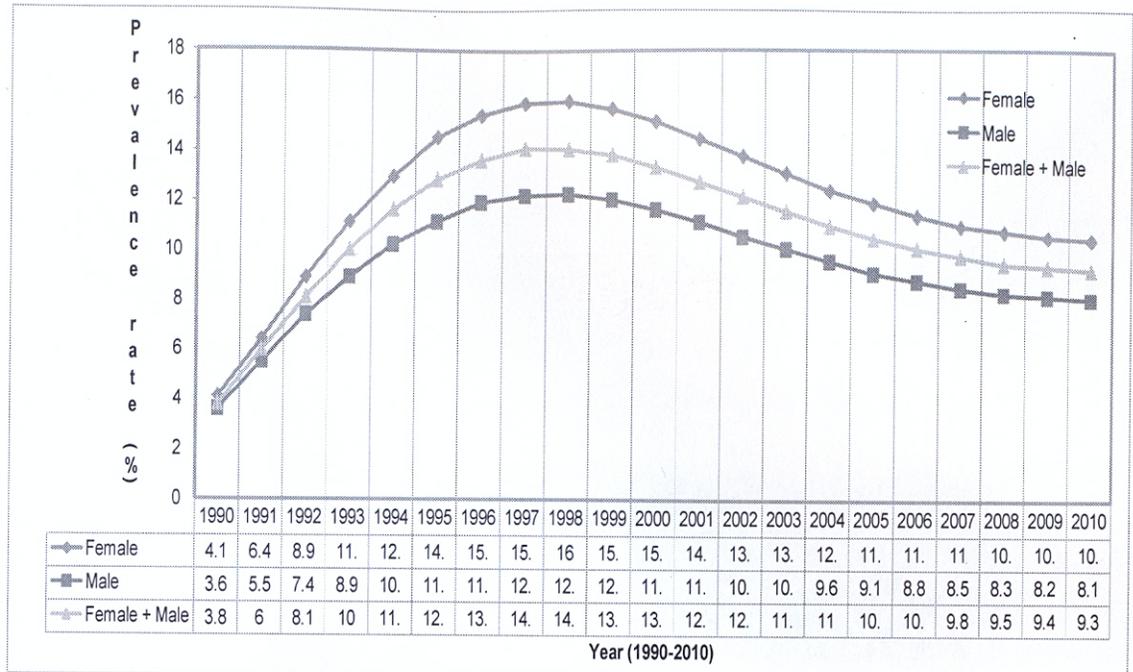
in 2010 (UNAIDS 2011:2). In addition, the number of people dying from HIV/AIDS has stabilised from 2.2 million in 2005 to 1.8 million in 2010 (UNAIDS 2011:18).

Africa is the epicentre of HIV/AIDS pandemic viral wave, accounted for 67% of people living with HIV/AIDS and 72% of the HIV/AIDS deaths (UNAIDS 2011:24). In 2010, in the sub-Saharan regions, there were an estimated 22.9 million people living with HIV/AIDS and 1.9 million newly infected (UNAIDS 2011:49). The prevalence rate among adults is 5% with 1.4% for men and 3.3% for women among the age group of 15-24 years (UNAIDS 2011:49). From the global proportion, more than 59% of HIV/AIDS were women infected with HIV/AIDS in the sub-Saharan regions (UNAIDS 2011:19).

### **2.2.2 HIV/AIDS in Ethiopia**

HIV/AIDS was first identified in Ethiopia in 1984 and the pandemic is persistently causing pressure in the Ethiopian community (FHAPCO 2007b). In 2010, the national HIV/AIDS prevalence rate was 2.8% for adults between the ages of 15-49 years (FHAPCO 2007a). In Ethiopia, the prevalence rate of HIV/AIDS occurs at a higher rate in the urban when compared to the rural areas, with the prevalence rates estimated at 7.7% and 0.9% respectively (FHAPCO 2007a). It was estimated that there were 1,216,908 people living with HIV/AIDS in Ethiopia, with 28,073 HIV/AIDS related-deaths and 137,494 new infections every year with more in the city areas (FHAPCO 2007a; FHAPCO 2010b). Gender-wise, the prevalence rate was the highest for women with 2.9% and 1.9% among men.

Therefore, the government has been boosting efforts to improve uptake of services to reach infected women (FHAPCO 2007a). In the capital, Addis Ababa there was 210,306 people living with HIV/AIDS (FHAPCO 2010b). In 2010, the estimated adult HIV prevalence rate was 9.3% with 85,780 men and 124,609 women living with HIV/AIDS; whereas the incidence rate was 1.52% in the capital city (FHAPCO 2010b; Figure 2.1).



Year and estimated HIV prevalence rate in percent

[http://www.etharc.org/aidsineth/publications/AIDSinEth6th\\_en.pdf](http://www.etharc.org/aidsineth/publications/AIDSinEth6th_en.pdf)

**Figure 2.1 Estimated and projected HIV prevalence rate among adult population (15-49), 1990-2010, urban, Ethiopia**

### 2.2.3 Psychological impact on people living with HIV/AIDS infection

Since most people fail to manage their emotional situations, any challenging circumstances in peoples' lives can pose a significant adaptation crisis. The challenges to cope with demands from chronic illness can cause physical and psychological health problems. In developing countries, due to peoples' low-socioeconomic status, lack of educational background, and limited financial resources, the diagnosis of HIV/AIDS has been detrimental to their well-being (Johnson, Polansky & Matosky 2010:459). People diagnosed with HIV/AIDS have been faced with multi-faceted psychological challenges such as disbelief, denial, fear, anxiety, depression, guilt, and stress (Hartzell et al 2008:246; Leserman 2008:539; Safren et al 2009:2). The distressful emotional state has distorted their judgement and life decisions in all phases of the disease (Hartzell et al 2008:247; Leserman 2008:540; Pence 2009:636; Safren et al 2009:2).

Most people with HIV/AIDS, during the course of their illness, experienced depression 5-48% or anxieties 4-19% (Hartzell et al 2008:247). Internationally, studies performed on women with HIV/AIDS have been documented with higher prevalence rate of depression and mood disorder (Johnson et al 2010:459; Rabkin 2008:164,166). The negative emotions have been linked to changes in poor health behaviours, ART non-adherence, clinical deterioration, and progression to AIDS (Ironson et al 2005:1014; Kalichman & Grebler 2010:811; Pence 2009:636; Scott-Sheldon et al 2008:130). The psychological situation of patients' has contributed to the HIV/AIDS progression such as depression predicting CD4 decline, the viral load, and mortality (Ironson et al 2005:1013; Leserman 2008: 540,542; Rabkin 2008:164). Safren et al (2009:1) stated that 'after three months of cognitive behavioural therapy for adherence and depression, the patients showed improvement on medication adherence, depression, and reduced viral load'.

During the diagnosis of HIV/AIDS people seek a range of coping strategies to manage their stress. Since the process of psychological adjustment is complex, there has been no strong evidence indicating which interventions were effective in reducing distress. Nevertheless, health-care providers are in a unique position to provide much of the needed guidance and support to individuals with a diagnosis of HIV/AIDS. Thus, addressing issues on developing trait emotional intelligence, this can offer understanding about the role of emotions within the context of ART adherence behaviour.

### **2.3 ANTI-RETROVIRAL THERAPY (ART) DRUGS**

The ART medication is a combination of three or more drugs where one pill contains multiple drugs such as Nucleoside Analogue Reverse Transcriptase Inhibitors (NARTI), Protease Inhibitors (PI) and Non-Nucleoside Reverse Transcriptase Inhibitor (NNRTI) (Simon et al 2006:495). The first ART drugs were commenced in 1996, however, until the present time; there is no definite cure for the HIV infection (UNAIDS 2011:2). Nevertheless, the scientific advancements have contributed to the potential management of HIV/AIDS

infection by substantially improving the mortality rate and disease progression to AIDS (Stirratt & Gordon 2008:10; UNAIDS 2011).

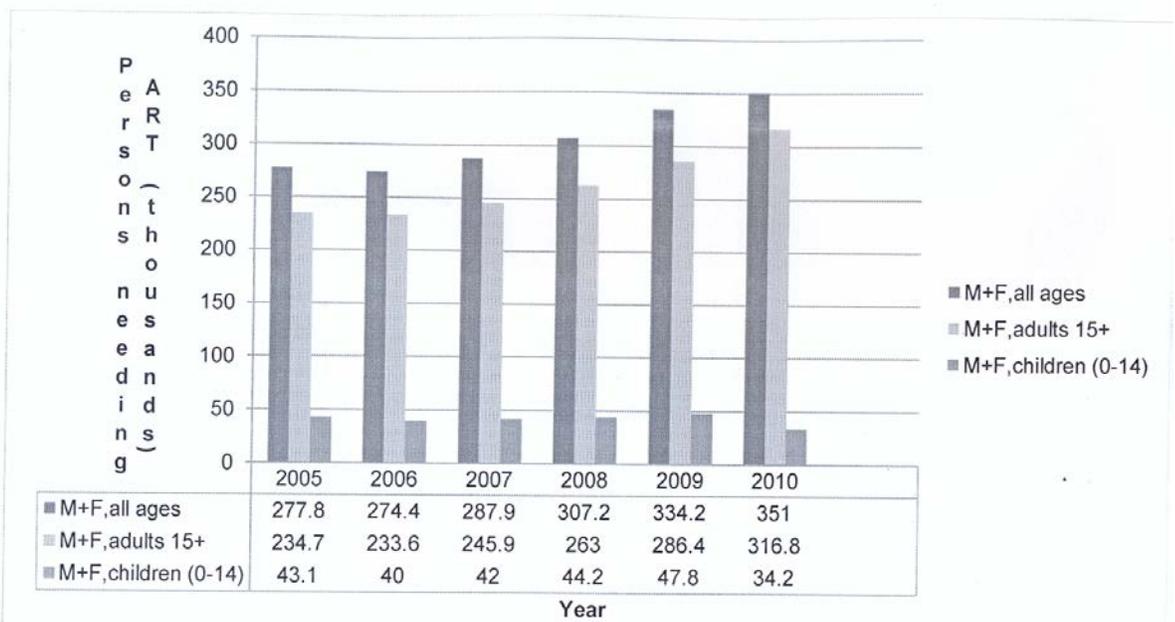
Even though, the virus continues to evolve, the scientists have been focused on developing an advanced treatment drug at the same time. The ART drugs work by attacking the HIV virus at different stages of the virus life cycle. The ART drugs reduce the replication of the virus and allow the immune system to cope from the infection (Simon et al 2006:495). In-order to improve adherence behaviour and to lessen the issue of drug resistance, the ART drugs were intended to have decreased side-effects and simplified drug regimens (Stirratt & Gordon 2008:10). The procedure for initiation of ART medication has a set of criteria based on the principle of the benefit-risk ratio such as the level of plasma viremia, absolute/relative CD4 cell count, and clinical manifestation (Simon et al 2006:495).

In 2010, there were 6.6 million people on ART medication with 47% global coverage (UNAIDS 2011:1, 97). However, the number of people eligible for ART were 14.2 million, which were higher than the 2009 data which were 13.3 million (UNAIDS 2011:97). In sub-Saharan countries, where more people require ART, governments were forced to utilise generic drugs, given that the resources needed to provide long-term ART supplies at affordable prices is seriously limited. In the sub-Saharan regions, it was reported that the ART service coverage has increased from 41% to 49% with an estimated 5 million people on ART (UNAIDS 2011:97). In sub-Saharan countries, the ART coverage was 41% for men and 55% for women with 1.7 million men and 3 million women on ART (UNAIDS 2011:103). In the future, the likely need for ART was estimated to increase to 4.3 million men and 5.6 million women (UNAIDS 2011:103).

The access to ART service was launched in Ethiopia in the early 2003 (Assefa, Jerene, Lulseged, Ooms & Damme 2009:2; FHAPCO 2007b). Initially, the drugs were entering the country through the private sector and were only available for HIV/AIDS infected people who were able to pay for the ART. In 2004, recognising the significant public health problem ignited by HIV/AIDS, the

Ethiopian government initiated the procurement of ART drugs based on national/international health regulation. Along with the support from international funds, all ART drugs have been procured at reasonable prices, good quality, and consistent supply of ART stocks to the health facilities. The HIV/AIDS health-care system has been standardised based on multi-disciplinary health protocols, developed to cover a wide-range of clinical activities, that included patient selection, diagnostic steps, treatments, procedures and referral systems (Assefa et al 2009:1-2).

In Ethiopia, people with HIV infection have been initiated on ART based upon the criteria standardised by the World Health Organisation (Assefa et al 2009:1-2). In 2010, the Ethiopian health-care accesses for ART service coverage was between 50-69% and was lower than other low-middle-income countries (UNAIDS 2011:100). In 2010, there were on average between 290,000-350,000 people in need of ART in Ethiopia, among which 179,183 were initiated on ART and 156,083 adults were on first-line ART (FHAPCO 2010a; Figure 2.1). In comparative terms, the ART accesses have been gradually expanded to 573 ART service sites in Ethiopia (Assefa et al 2009:2; FHAPCO 2010a). In the capital city, working under the authority of the City Government of Addis Ababa Health Bureau, there are 49 ART sites that provide access to 32,690 people initiated on ART (FHAPCO 2010a).



Year and people needing ART (thousands)

[http://www.etharc.org/aidsineth/publications/AIDSinEth6th\\_en.pdf](http://www.etharc.org/aidsineth/publications/AIDSinEth6th_en.pdf)

**Figure 2.2 Projected annual number of people needing Anti-Retroviral Therapy (ART) by gender and age group (2005-2010) in Ethiopia**

## 2.4 MEDICATION ADHERENCE BEHAVIOUR

Medication adherence behaviour refers to the extent to which an individual behaviour in terms of taking medications the right dose, right time and following life-style changes coincides with medical or health advice (WHO 2003:3). Medication adherence is a major challenge which is not unique to HIV/AIDS. Among patients with chronic disease, adherence to medication is a fundamental issue. Adherence behaviour is a characteristic that varies between individuals and the same individual over time. Across different forms of chronic diseases, non-adherence behaviour to medication can range between (17-80%) (Krueger, Berger, Felkey & 2005:314). Among patients who go through treatment for chronic disease, the magnitude of non-adherence in developed and developing countries were more than >50% and less than <50% respectively (WHO 2003:1).

Studies done in 83 systematic reviews in 70 randomised clinical trials on improving adherence in chronic disease showed that 36 of the clinical trials

reported improvement on adherence (Reach 2009:493). Among patients for chronic disease in a clinical trial, the average adherence rate was reported as between 43-78% (Osterberg & Blaschke 2005:487). Studies showed that, adherence for people taking oral hypo-glycemic drugs ranges between 36-93%, among them two-thirds were adherent to their diet, 25% were adherent to advice on exercise and 7% were adherent to all their medical recommendations (Reach 2009:493). Nonetheless, (WHO 2003:95) stated that among HIV/AIDS infected people an estimated one-third of people were adherent to their ART medications as advised by their health-care provider.

#### **2.4.1 Anti-Retroviral Therapy (ART) adherence behaviour**

Globally the management of HIV/AIDS is steadily becoming a sustainable program that provides access to affordable ART for large number of people infected with the disease. ART adherence is a challenge and an epicentre in the management of patients with HIV/AIDS (Johnson, Elliott, Neilands, Morin & Chesney 2006:355; Unge et al 2010:1; WHO 2003:96). The people commenced on ART must be appropriately counselled to understand the importance of adherence and be able to commit to lifetime treatment with minimum adherence level of more than  $\geq 95\%$  (Peltzer et al 2010:111; Tiyou et al 2010:39).

ART adherence can be grouped as optimally adherent with adherence level of more than  $\geq 95\%$ , sub-optimally adherent with adherence rate between 80-94% adherence level, and poorly adherent with less than  $\leq 80\%$  adherence level (Chi, Cantrell, Zulu, Mulenga, Levy, Tambatamba, Reid, Mwango, Mwinga, Bulterys, Saag & Stringer 2009:747). It is critical that people initiated on ART must achieve and maintain high level of ART adherence for the rest of their life-time (Safren et al 2009:2; Stirratt & Gordon 2008:10; WHO 2003:95). However, a large proportion of infected people can find it difficult to maintain the prescribed adherence level because of a range of prerequisites around the medication (Amberbir, Woldemichael, Getachew, Girma & Deribe 2008:266; Amico et al 2009:67; Osterberg & Blaschke 2005:490; Tiyou et al 2010:41).

The adherence to ART plays a significant role on the efficacy of the drugs, on the patients' health status, and on quality of life (Amberbir et al 2008:266; Amico et al 2009:67). Accurate adherence to ART guards against viral resistance by suppressing the HIV viral replication, help to reduce the rate of morbidity and mortality by raising their CD4 count (Chi et al 2009:747; Lohse, Hansen, Gerstoff & Obel 2007:461-462; Tessema, Biadlegne, Mulu, Getachew, Emmrich & Sack 2010:2; Tiyou et al 2010:40). On the contrary, non-adherence can cause drug-resistant strains, treatment failure, and death (Peltzer et al 2010:111; Safren et al 2009:2). Due to non-adherence, studies documented that 80% of the blood samples from newly infected people were found to be resistant to one class ART drug and 26% of the isolates were resistant to several ART drugs (WHO 2003:96).

In a resource limited setting, regarding the management of HIV/AIDS, the issue of emergence of drug resistance is a serious concern (Lyimo, Boogaard, Msoka, Hospers, Van der Ven, Mushi & Bruin 2011:93). However, since recently there have been developments on more potent ART medications that can create effective viral suppression at a lower level of adherence (Stirratt & Gordon 2008:10). Nevertheless, for developing countries like Ethiopia with the limited resources, the availability of these expensive medications can be a target set miles-away. Therefore, in the management and care of HIV/AIDS infected people, the advancement to obtain the highest level of adherence remains to be the indispensable and exclusive option. There were three major components for ART adherence behaviour. In this study, the measurement for ART adherence behaviour focused on the participants' reports on: 1) ART dose adherence; 2) ART schedule adherence; and 3) ART life-style adherence.

#### ***2.4.1.1 Anti-Retroviral Therapy (ART) dose adherence***

ART dose adherence signifies the process of taking all the prescribed treatment doses concerning to the number and proportions of doses every day (Amberbir et al 2008:267; Osterberg & Blaschke 2005:487; Peltzer et al 2010:113; Schönnesson, Diamon, Ross, Williams & Bratt 2006:407). According to a study

done by (Tiyou et al 2010:39), the factors for non-adherence in Ethiopia were reported to be missing drugs 27.3%, running out of medication 21.2%, being away from home 21.2%, and being busy with other things. A similar study done in Ethiopia, documented the factors for non-adherence were due to drug side-effects 31%, other health problems 21.8%, and lack of motivation 2.2% (Tessema et al 2010:6-7).

#### ***2.4.1.2 Anti-Retroviral Therapy (ART) schedule adherence***

ART schedule adherence implies to the practice of taking the ordained doses or the right amount of medication dose at the right time (Amberbir et al 2008:267; Peltzer et al 2010:114; Schönnesson et al 2006:407). Schedule adherence was considered to influence more on total adherence than dose or food adherence (Schönnesson et al 2006:407; WHO 2003:97). A study implemented on self-report adherence documented that people had difficulties in sustaining schedule-adherence were reported as 61% schedule non-adherence (Schönnesson et al 2006:407,411). The possible factors that generate negative impacts on schedule adherence were perceived pressure from the medical staff to take medications, life stress, ART health concern, and on the beliefs on ART prolongs life. On the contrary, the pressure from their close-relative, post-traumatic stress symptoms, and adherence self-efficiency can positively affect schedule adherence (Schönnesson et al 2006:407).

#### ***2.4.1.3 Anti-Retroviral Therapy (ART) life-style adherence***

ART life-style adherence refers to the act of taking the medication dose and the adjustments of daily life-style (food or without food, to avoid raw food items, and alcohol) by following the special instructions. Thus, strictly monitoring and adhering to the requirements of the life-style modifications for effective medical therapy (Amberbir et al 2008:267; Peltzer et al 2010:114; Schönnesson et al 2006:407). A medication regimen that requires life-style alteration can lead to poor adherence (WHO 2003:97). A study implemented on self-report adherence documented that people had difficulties in sustaining food-adherence

(Schönnesson et al 2006:407). According to a study done by (Schönnesson et al 2006:407), it was documented that among people on ART, 37% were reported to consistently maintaining to food adherence and 63% were reported to have food non-adherence. In-order to avoid medication life-style non-adherence, there must be a clear discussion and communication between the health-care providers as well as the patient, in terms of understanding the ART life-style restrictions (WHO 2003:97).

#### **2.4.2 Anti-Retroviral Therapy (ART) adherence behaviour in Ethiopia**

In developing countries with limited access to resources, the issue of ART adherence has been an important element into the management of patients with HIV/AIDS. The challenge of ART adherence is a significant concern over the presence of possible HIV resistance, treatment failure, and disease progression (Markos et al 2008:174). ART adherence behaviour in sub-Saharan countries was documented as 90% and the number of patients discontinuing ART was reported as between 29-40% (Ware, Idoko, Kaaya, Biraro, Wyatt, Agbaji, Chalamilla & Bangsberg 2009:39). Thus, the probability of continuing the ART medication after 2 years was assessed to be 0.65 (Unge et al 2010:2).

In Ethiopia, there were inconsistent reports on the level of optimal adherence to ART (dose, schedule, and life-style) to be as low as 62%, 72.4%, 74.2%, and as high as 81.2%; whereas, non-adherence in Ethiopia was 87% (Alemu et al 2011:266; Markos et al 2008:176; Tadious & Davey 2006; Tessema et al 2010:2 Tiyou et al 2010:41). Other studies done in Ethiopia reported the factors for non-adherence as being busy, simply forgetting, change in daily routine, felt sick, and being away from home (Alemu et al 2011:266; Amberbir et al 2008:265; Markos et al 2008:174; Tadious & Davey 2006).

In addition, other studies reported that the ART dose adherence was 95%, schedule adherence was 79.9%, and diet adherence was 89.7% (Tiyou et al 2010:41). Furthermore, other studies reported the ART dose adherence was 94.3%, the schedule adherence was 97.4%, and the food adherence was 83.3%

(Amberbir et al 2008:269). Additionally, other researcher reported that the dose-schedule adherence was 74.2% and schedule non-adherence was 26.1% (Markos et al 2008:174). The self-reported adherence behaviour for the combined indicator of (dose, time, and life-style) was documented as 75.7% (Amberbir et al 2008:269; Tiyou et al 2010:41).

### **2.4.3 Factors influencing Anti-Retroviral Therapy (ART) adherence behaviour**

A variety of factors have been responsible for influencing individuals to comply with the prescribed treatment regimen, in-order to gain numerous health benefits. The factors that influence adherence can have an impact on other health behaviours. In-order to assess and improve adherence behaviour, the factors responsible for influencing adherence must be considered. The patients enumerated several reasons behind their failure to adhere, and researchers outlined these factors in the following framework such as: 1) Patient-based factors; 2) Provider-based factors; and 3) Treatment-based factors (Rintanaki, Davis, Skripkauskas, Bennett & Wolf 2006:359-360; WHO 2003:103).

#### ***2.4.3.1 Patient-based factors***

The decisive aspect of treatment adherence has been the individual's behaviour which is based on the patient characteristics (WHO 2003:98). For implementing the required intervention, identifying the adherence/non-adherence factors based on the individual characteristics can be a crucial component of the patient management framework. The aspects under the patient-based factor have been documented as the socio-demographic factors, patient knowledge about treatment, culture, health beliefs towards living with the HIV infection, social support, abuse of substance, and the management of psycho-social issues (Table 2.1; WHO 2003:98-99).

In the past studies on ART adherence in relation to socio-demographic has provided inconsistent reports. However, researchers reported that people with

low socioeconomic status, low education level, women, and blacks have been associated with poor adherence behaviour (WHO 2003:98). The patients lack of knowledge regarding the treatment plan has been linked with confusion and forgetfulness (Krueger et al 2005:323-324). In addition, the lack of self-perceived need for treatment, anxieties about possible medication side-effects, and the lack of perception of the health risks related to the disease as well as low treatment expectations have been associated with reduced adherence behaviour (Krueger et al 2005:323-324). The patients' ability to fit their treatment into their daily routine, acknowledging the importance of every dose of medication, recognising the perceived effect of treatment, and the ability to comprehend the consequence of non-adherence have been positively associated medication adherence (Willard 2006:16-17)

The cultural and health related beliefs towards the disease and the treatment benefits have been related with improved adherence behaviour (Krueger et al 2005:323). The patients' motivation to ART adherence depends on the value placed on the benefits of the treatment, the level of patients' confidence in self-efficiency to manage their disease, and the level of self-management skills have been linked with improved adherence behaviour (Krueger et al 2005:323). The presence of social support has been associated with the level of increased adherence behaviour by acting like a coping shield; serve as a source of emotional and daily life support (WHO 2003:99). In addition, the support from health-care providers or close relatives has been related to adherence behaviour through counselling support (WHO 2003:99).

The abuse of substance has been associated with the process of reduced adherence behaviour, the health-care providers can influence the patients ART adherence behaviour by focusing the education on the management and prevention of substance-abuse (WHO 2003:98). The management of psychosocial issues such as stress, hopelessness, depression, and anxiety have been associated with reduced adherence behaviour by affecting self-motivation and the level of treatment instruction comprehension (Lovejoy & Suhr 2009:289; Rintanaki et al 2006:360; WHO 2003:98-99).

### **2.4.3.2 Provider-based factors**

ART adherence is a challenging course, the responsibilities of managing the patients' health-care is a commitment that needs to be met from both the provider and the patient. The issues under the provider-based factor have been stated as the patient-satisfaction with the medical care, exposure to prolonged waiting time for health-care services, the relationship with the health-provider, and the health-care provider knowledge (Table 2.1). The patient-satisfaction with the medical care, a non-judgemental medical service, and open environment for discussion have been positively associated with ART adherence by providing the patient the confidence to trust the treatment plan (WHO 2003:100). Furthermore, the prolonged patient waiting time for health-care services, the limited access to health-care service, and the feeling of negative emotions have been linked with reduced ART adherence behaviour (WHO 2003:100).

In addition, a patient-provider relationship has been recognised to positively influence ART adherence behaviour by establishing trust through clear communication skills (WHO 2003:100). The health-care providers' good knowledge, the provision of clear instruction about medication, and a proficient clinical follow-up have been associated with improved adherence behaviour by motivating the patients' to enhance their understanding of treatment instructions, increase the acceptance of treatment plan, engage the patient to actively participate in the decision process, and accept equal responsibility (WHO 2003:100).

The health-care providers enabling the patient with the capacity on self-management and knowledge on effective personal health management have been associated with improved adherence behaviour (Coetzee, Kagee & Vermeulen 2011:147). The medical follow-up visits with the health-care provider has been linked with improved adherence behaviour through the process of adequately monitoring patients' progress to ART, increasing the frequency of medical visits, creating an adherence buddy from close relatives, and establishing a community adherence support teams (WHO 2003:101).

### **2.4.3.3 Treatment-based factors**

Other deterrents that can hinder the outcome of ART adherence have been identified as the treatment-based factors. The features included within this section were the complexity of the ART regimen, treatment side-effects, and condition related disease symptoms (Table 2.1). The complexity of the ART regimen is concerned with the number of pills, number of daily doses, diet restriction, and medication dose schedule. The complexity of the ART regimen has been linked with negative impact on adherence behaviour by creating inability to fit into the daily life routine. For many chronic diseases, there is increase in the complexity of the drug regimen such as pill burden then the level of adherence decreases (WHO 2003:97). When the drug regimens is simple, taken once a day, and with lesser life-style restriction then patients' have been more inclined to adhere to the treatment regimen (WHO 2003:97).

Treatment side-effects refer to the presence of side-effects from the medication used by the patient. The presence of medication side-effects has been linked to reduced motivation to take medication, diminished quality of life, and negatively shifted their encouragement to adhere their medication (WHO 2003:98, 102). If people experience medication side-effects the health-care providers can immediately change or discontinue their medication (WHO 2003:98). Therefore, health-care providers can assist patients to come up with methods to manage their side-effects by maintaining close contact and communication with people on ART (WHO 2003:102). According to a study done by (Tessema et al 2010:7) in Ethiopia, among the reasons for non-adherence drug side-effects accounted for 31%.

Condition related disease symptoms refers to the severity of the symptoms, level of disability, and the rate of disease progression faced by the individual can affect the ART adherence behaviour. There were incoherent reports on the impact of the presence of condition related disease related to ART adherence. Thus, the presence of serious condition related diseases has been positively associated with adherence behaviour (Lovejoy & Suhr 2009:289; WHO

2003:97). However, other studies documented that the presence of poor health status due to disease symptoms can decrease people ART adherence (Krueger et al 2005:323).

**TABLE 2.1 FACTORS FOR ADHERENCE AND POOR ADHERENCE**

<b>ADHERENCE</b>
Availability of emotional life support
Ability of patients to fit the medications into their daily routine
Understanding the consequence of poor adherence(resistance)
Understanding the necessity of taking medication
Feeling comfortable taking medication in front of people
<b>NON-ADHERENCE</b>
Poor patient-provider relationship
Active drug and alcohol use
Active mental illness(depression)
Lack of patient education
Inability of the patient to identify their medication
Lack of reliable access to medical care
Domestic violence
Social discrimination
Medication side-effects

(Willard 2006:16-17)

#### **2.4.4 Measurement of Anti-Retroviral Therapy (ART) adherence behaviour**

The methods of measuring ART adherence has been addressed on more than one study. Nevertheless, there is still no specific standard for measuring adherence and that resulted in a cascade of challenges (Chesney, Ickovics, Chambers, Gifford, Neidiq, Zwickl & Wu 2000:256; Mannheimer, Thackeray, Hullsiek, Chesney, Gardner, Wu, Telzak, Lawrence, Baxter & Friedland 2008:161). There are several direct and in-direct methods of ART adherence measurement methods (Osterberg & Blaschke 2005:489). In developed countries, a tool called medication event monitoring system is commonly implemented, which records the date and time of each bottle-opening with an electronic micro-chip in the pill-cap. In contrast, developing countries use other adherence measurement means such as self-reports, pill-counts, pharmacy re-

fill data, and therapeutic drug monitoring (Lyimo et al 2011:93; Osterberg & Blaschke 2005:489; Safren et al 2009:2).

The researcher used a self-report method, it is the most commonly used scheme for assessing adherence in HIV/AIDS cases. In this method, patients report on their ART adherence behaviour through a questionnaire. Based on the participants' (dose, schedule, and life-style) adherence level, the participants were grouped into optimal adherent with ART adherence level of more than  $\geq 95\%$ , sub-optimal adherent with ART adherence level between 80-94%, and poor adherent with ART adherence level of less than  $\leq 80\%$ . The method is simple, easy, inexpensive, and enables the individual to be aware of their role for the achievement of optimal adherence (Mannheimer et al 2008:162; Osterberg & Blaschke 2005:489). The method is susceptible to error due to response bias by the participant. However, studies showed a comparable match between self-reported adherence and biomedical markers based on viral load (Mannheimer et al 2008:161-162; Unge et al 2010:3).

## **2.5 EMOTIONAL INTELLIGENCE**

Psychology is defined as the scientific study on the mind and mental states of human and animal behaviour (Microsoft Encarta 2009). The study of personality psychology is the discipline that explores individual differences by focusing on the mental and emotional functions for better understanding on the working of the psychological systems (Mayer 2005:294,303). In psychological research existing at the moment, emotional intelligence is one of the most complex areas of research.

Emotional intelligence is defined as the personal attributes that enables people to succeed in life, including self-awareness, empathy, self-confidence, and self-control" (Microsoft Encarta 2009). In the study, emotional intelligence refers to the process of monitoring one's own feelings and emotions as well as to discriminate among different emotions, and use this emotional information to guide one's own thinking and actions (Petrides 2010:136). Emotional

intelligence is concerned with an individual responsiveness to understand and place an effort to deal effectively with range of emotions to engage and manage the existing circumstance (Hughes & Terrell 2007:3).

Emotional intelligence is used to manage emotions, focus attention, to think constructively, and to direct behaviour prudently. It is believed that reflecting on one's thought, knowing how to express, and managing emotions as well as self-directed behaviour can bring great achievement (Johnson et al 2009:471). Researchers identified emotional intelligence to be a valuable element of personal characteristics that can be acquired or developed through a skill training programs by anyone at anytime. Thus, some individuals are generically more emotionally intelligent when compared with others. However, in-order to effectively change one's behaviour and acquire the necessary characteristics unique to emotional intelligence; then, the individual must experience and practice the required skills consistently in everyday interactions for either short or long-term duration. The manifestation of emotional intelligence in terms of behaviour and skills enable the researcher to follow a quantitative approach in determining the relationship between the trait emotional intelligence and level of adherence to ART.

### **2.5.1 Emotions**

“Emotions are the feelings we experience and interpret when neuro-peptides, the ‘bio-chemicals of emotion’, are released in response to stimuli, both internal and external” (Hromek 2007:5). The scientific studies showed that, in a human brain, there is an area called the Amygdalia that enables humans’ to sense and read others emotions as well as identify mental states (Izard, Woodburn, Finlon, Krauthamer-Ewing, Grossman & Seidenfeld 2011:46).

The mechanisms through which emotions play a significant role in day to day life experiences in humans are stated as the following. Emotions consist of information about us and the surrounding environment for rational decision making process (Baumeister, Vohs, Dewart & Zhang 2007:184). Our emotions

assist us to overcome the cognitive limitations within ourselves and constraints placed upon us within the decision environment by providing information to other psychological sub-systems through a feedback mechanism (Baumeister et al 2007:172; Markič 2009:56). Emotions can help humans to prioritise certain aspirations by assigning values and give motivation and direction to our behavioural actions (Baumeister et al 2007:176; Mayer, Salovey & Caruso 2000:397; Zeelenberg, Nelissen, Breugelmans & Pieters 2008:18; Zeidner & Olnick-Shemesh 2009:431).

Human beings experience a mixture of different types of emotions on a daily basis. In the 21<sup>st</sup> century where there is consistent competition for survival and the demands from the living environment are high; the majority of human health crises are due to stress related factors causing the negative emotions (Scott-Sheldon et al 2008:130). The presence of negative emotions can influence the excess release of stress hormones that can harm the physical body (Milkolajczak et al 2007:1001). When faced with negative emotions, people find it difficult to manage these emotions and instead the emotions control the people. Research on emotions provides relevant information regarding the mechanisms which link our emotional state and physical health (Zeidner et al 2012:4). Therefore, the purpose of studying emotions is important to describe and explain the individual differences that uniquely characterise the individual and aid to distinguish individuals from one another.

### **2.5.2 Models of emotional intelligence**

The construct of emotional intelligence was conceptualised and highlighted with a comprehensive but different models. The model implemented in the study was the trait emotional intelligence model. The next section provides a brief review on the ability and trait models of emotional intelligence respectively.

### ***2.5.2.1 Ability model***

The ability emotional intelligence model was constructed by Salovey and Mayer (Mayer et al 2000:400; Petrides et al 2004:574). The model defines emotional intelligence as the “the ability to perceive emotion, integrate emotion to facilitate thought, understand emotions, and to regulate emotions to promote intellectual and emotional growth in certain adaptive behaviours” (Mayer et al 2000:400). It is considered as an ability that can be learned and acquired through trainings. The model refers to the individual’s definite abilities as the individual express themselves in performance-based measures similar to intelligence quotient-like test. It is investigated with reference to cognitive ability hierarchies. The lowest level branches are related to the emotion expression and regulation, where as the highest level branches involve emotion regulation for positive mental state.

The ability model consists of four branches. The first branch is the emotion perception that addresses the perception and expression of emotions. The second branch is the emotional facilitation of thoughts that addresses the knowledge and skills needed to use emotional states in-order to facilitate problem-solving. The third branch is the emotional understanding that addresses the awareness of how emotions can combine and how emotions relate to timely situations. The fourth branch is the emotion management that addresses the strategic management of one’s own emotions, to reorganise negative emotions, and sustain positive emotions (Brackett, Mayer & Warner 2004:1389; Mayer et al 2000:400; Salovey & Grewal 2005:281).

### ***2.5.2.2 Trait model***

The trait emotional intelligence model was proposed by Konstatin Vasily Petrides (“K.V. Petrides”) (Petrides et al 2004:574). The model incorporates behavioural-dispositions and self-perceived ability that is measured by a self-report method (Petrides & Furnham 2003:40). The construct is considered to be outside the taxonomy of human cognitive ability. The model captures on how much of the knowledge potential concerning emotional perception is translated

into practical context (Zeidner & Olnick-Shemesh 2009:431). Trait models of emotional intelligence put forward a broader idea of emotional intelligence, integrating both personal competencies and qualities (Petrides 2010:136; Zeidner & Olnick-Shemesh 2009:431). The trait model is assessed with orientation to personality hierarchies. Given the significant role of trait emotional intelligence as a coping factor, it can represent as behavioural-disposition that is adaptive against negative psychological emotions and negative life outcomes. Thus, it was important to determine if the model actually serves a role in improving ART adherence behaviour in response to mitigate the factors for non-adherence to ART.

## **2.6 TRAIT EMOTIONAL INTELLIGENCE**

Emotions and human behaviour are unavoidable components of our existence that makes us unique (Kuppens, Stouten & Mesquita 2009:1249). In the past few years, researchers focused their attention on the subject of trait emotional intelligence. Trait emotional intelligence is defined as “a constellation of behavioural-dispositions and self-perceptions concerning one’s ability to recognise, process, and utilise emotion-laden information” (Petrides & Furnham 2003:39; Petrides & Furnham 2006:554; Petrides, Pita & Kokkinaki 2007:273). In addition, trait emotional intelligence is an intrinsically distinctive aspect of peoples’ emotions that remains stable most of our life time by differing from one individual to the next (Petrides & Furnham 2003:40; Petrides, Furnham & Mavroveli 2007:153).

People that are unable to control their emotions often have difficulty in managing emotional interactions in both social and personal problems. The potential to perceive and control one’s emotions in a positive style is very important to function appropriately (Martins et al 2010:554). When an individual is faced with a vague situation, the individual must assess the circumstance based on how she/he feels and think about the situation. The lack of trait emotional intelligence can prevent the individual to process emotional-information to resolve problems in one’s life by facilitating a positive reaction. Thus, trait emotional intelligence

enables the individual to confront the stressful element and the negative emotions for a better performance and good quality of life (Armstrong, Galligan & Critchley 2011:331; Kiamarsi & Abolghasemi 2010:827; Mikolajczak, Petrides, Coumans & Luminet 2009:456).

### **2.6.1 Origin and development of trait emotional intelligence**

The thought of trait emotional intelligence is a concept that has fascinated people in all fields of profession. In the beginning, the concept was hinted by Edward Thorndike (1930) with the insight of “social intelligence” (the ability to get along with other people); then by Gardner (1975) concerning the idea of “multiple intelligence”, later by Wayne Payne with his doctoral dissertation introduced the term “emotional intelligence” (Petrides et al 2004:574). Likewise, Salovey and Mayer (1990), are the earliest researchers that established the formal model for “emotional intelligence”, even so, the concept was popularised by Goleman in (1995) (Petrides et al 2004:574; Petrides 2011:655).

Personality is the organised system that is continually developing the sub-psychological systems into an individual who represents the collective actions, motivations, emotions, cognition, and social planning (Mayer 2005:296). Some researchers consider the trait emotional intelligence to be conceptually related to the personality dimensions and considered as a set of emotion-related dispositions. It is at the lower levels of personality hierarchies and should be evaluated using personality-like questionnaires (Petrides, Pita & Kokkinaki 2007:273; Petrides, Furnham & Mavroveli 2007:151; Zeidner et al 2012:27). However, researchers have documented that when weighing against personality dimensions, the trait emotional intelligence constructs have a significant discriminate, incremental, and criterion validity (Petrides, Perez-Gonzalez & Furnham 2007:26).

### **2.6.2 Constructs of trait emotional intelligence model**

Humans emotions play a significant role on individual behaviour, decisions, social interaction, cooperation, and learning that are essential for survival (Hughes & Terrell 2007:20; Norman 2004:162; Sparrow & Knight 2006:25). Our thoughts and behaviours can easily be rejected by our emotions acting in the moment to moment interaction (Kuppens et al 2009:1249). The construct for the study was based on the model of trait emotional intelligence (Table 2.2). The trait emotional intelligence model provides an approach that recognises the inherent subjectivity of emotional experience (Petrides 2011:660). The research on individual difference in personality and emotions consider emotions to be stable and invariant entities that exist in a person (Kuppens et al 2009:1251).

The construct of trait emotional intelligence is located at the lower level of the personality hierarchies that includes self-perceptions and dispositions based on the subjective nature of emotions (Petrides, Pita & Kokkinaki 2007:274). The trait emotional intelligence factors reflect on the behavioural-dispositions and self-perceived abilities, but do not disclose on the cognitive abilities. The construct of trait emotional intelligence helps to connect and presents a predictive and explanatory advantage to the field of differential psychology (Petrides 2009:88). The construct considers the individual differences to be an affective self-evaluations by incorporating personality related emotion based factors (Petrides & Furnham 2006:554; Petrides, Pita & Kokkinaki 2007:274; Petrides, Vernon, Schermer, Ligthart, Boomsma & Veselka 2010:906).

The construct integrates and organises the emotion-related facets into a comprehensive scientific model (Petrides, Pita & Kokkinaki 2007:287; Petrides 2011:660). The sampling domains of trait emotional intelligence consist of personality trait facets related to emotions such as empathy, emotional expression, adaptability, and self-control (Petrides, Pita & Kokkinaki 2007:274; Petrides 2011:660). Even though emotions are the most fundamental domains of personality; trait emotional intelligence has expanded to include other significant domains such as sociability (Petrides 2011:671). The trait emotional

intelligence construct consists of four emotion based factors such as well-being, self-control, emotionality, and sociability that provide scores on 15 facets (Petrides 2009:89; Petrides 2011:663). The factors present a broader level measurement and the facet level at a sub-scale (Table 2.2).

The factors for the trait emotional intelligence construct were the following. The first is the well-being factor that addresses the facets on optimism, happiness, and self-esteem. The second is the self-control factor that addresses the facets on emotional regulation, impulsiveness, and stress management. The third is the emotionality factor that addresses the facets on empathy, emotional perception, emotional expression, and relationship. The fourth is the sociability factor that addresses the facets on social-awareness, assertiveness, and emotional management, self-motivation, and adaptation (Petrides et al 2004:574; Petrides, Pita & Kokkinaki 2007:274).

### ***2.6.2.1 Well-being Factor***

Well-being is one of the factors of trait emotional intelligence that refers to the behavioural-dispositions and self-perceived abilities on overall health and welfare of the individual. The factor includes “optimism” (the state of having a positive outlook on one’s life for the future), “happiness” (the present state of a positive feeling and satisfaction with one’s life), and “self-esteem” (the level of self-respect and confidence) (Petrides 2009:89). Commonly, people with low score on well-being have low self-worth, are not content with their life at the moment and are disappointed about their present life (Table 2.2).

On the contrary, people with high score on well-being factor are more fulfilled, have positive mood, they are satisfied with life, and resilient against negative circumstance (Petrides 2011:662). In addition, people with high score on well-being factor have a generalised sense of well-being, extending from previous accomplishments to expectations for the future (Petrides 2009:95). People with moderate score on well-being factor have the tendency to exhibit behavioural –

dispositions or self-perceived abilities between the high and low score of well-being factor.

### **2.6.2.2 Self-control Factor**

Self-control is one of the factors of trait emotional intelligence that depicts the behavioural-dispositions and self-perceived abilities to regulate emotions under stressful circumstances. It is a mind state of discipline, calmness, and rational thinking for better decision employed through a strong balance of emotions and reason. The factor includes “emotional regulation” (the potential to focus and control emotions), “impulsiveness” (the act of taking thoughtless decisions) and “stress management” (managing emotion under stressful circumstances) (Petrides 2009:89).

Self-control is the potential to generate emotion, but at the same time reasoning with the emotional state by focusing on multiple perspectives. People with low self-control score can not manage their feelings and mostly engage in impulsive and reckless actions. They find it difficult to act in a stable manner during stressful circumstances, and forward themselves into unjustified pressure. However, people with high self-control score can control their anxiety, they are less impulsive, are energetically motivated, and do not react to difficult situation in an unpredictable manner (Table 2.2). They can understand their own inner thoughts, do not allow their negative emotions to misguide their actions, and make conscious choices in life (Petrides 2009:94; Petrides 2011:662). People with moderate score on self-control factor have the tendency to exhibit behavioural-dispositions and self-perceived abilities between the high and low score of self-control factor.

### **2.6.2.3 Emotionality Factor**

Emotionality is one of the factors of trait emotional intelligence that describes the behavioural dispositions and self-perceived abilities to perceive emotions, express emotions, and develop relationships. It consists of “empathy” (the

capacity to be aware of and take into account of other's emotions), "emotional perception" (to understand one's own and of other's emotions), "emotional expression" (the potential to express and communicate emotions to others), and "relationship" (to build and sustain satisfying relationships in one's environment) (Petrides 2009:89).

Emotionality refers to an individual's behavioural-dispositions in identifying, perceiving, expressing their own emotions and that of other. Emotionality assists an individual to utilise their emotions, to directly communicate, to clearly discuss emotions, and to manage emotions in others. People with high score of emotionality are capable of comprehending their emotions and that of others in the environment and they are gifted in forming and sustaining relationships with friends and relatives (Table 2.2). People with low emotionality score are probably unable to recognise their own emotions and that of others, they have difficulty in communicating their emotions to others, and have problem in experiencing pleasing relationships with others (Petrides 2009:94; Petrides 2011:662). People with moderate score on emotionality factor have the tendency to exhibit behavioural-dispositions or self-perceived abilities between the high and low score of emotionality factor.

#### ***2.6.2.4 Sociability Factor***

Sociability is one of the factors of trait emotional intelligence that refers to the behavioural-dispositions and self-perceived abilities to manage and communicate with others. The factor of sociability focuses in-terms of social integrity, managing differences, and the capacity to have social relationships, and social influence in diverse social context. The factor includes facets such "social awareness" (to feel comfortable in different social environments), "assertiveness" (a state of forwarding one's view point and affirming one's own right), "emotional management" (the state of managing others emotions), "self-motivation" (a state of being internally driven by the need to produce high-quality work and unlikely to give up easily), "adaptation" (a state to cope with change and adapt to new things and environments) (Petrides 2009:89).

Sociability is the potential to appropriately handle feeling, use emotions to self-motivate, inspire, and encourage others. People with high sociability level are good listeners, are effective communicators, and have the confidence to mark their place in the world (Table 2.2). On the contrary, people with low sociability are insecure of themselves and are incapable to persuade others during social relations (Petrides 2009:94; Petrides 2011:662). People with moderate score on sociability factor have the tendency to exhibit behavioural–dispositions and self-perceived abilities between the high and low score of sociability factor.

**TABLE 2.2: DESCRIPTION OF THE FACTORS AND SUB-SCALES OF TRAIT EMOTIONAL INTELLIGENCE**

<b>Factors &amp; Facets</b>	<b>Description</b>
<b><i>Well-being</i></b>	
<b>Optimism</b>	Expects positive things to happen in their life and tends to look on the bright side.
<b>Happiness</b>	Is generally cheerful and feels good about their life in general.
<b>Self-esteem</b>	Has a positive view of themselves and their achievements.
<b><i>Self-control</i></b>	
<b>Emotional regulation</b>	Can control their emotions.
<b>Low Impulsiveness</b>	Considers information carefully before making decisions and is unlikely to give in to their urges.
<b>Stress management</b>	Holds up under pressure and is capable of dealing with stress.
<b><i>Emotionality</i></b>	
<b>Empathy</b>	Can see things from another person's point of view.
<b>Emotional Perception</b>	Is good at reading other peoples feelings.
<b>Emotional expression</b>	Is able to express their feelings to others.
<b>Relationships</b>	Has a good and fulfilling personal relationship with the people close to them.
<b><i>Sociability</i></b>	
<b>Social awareness</b>	Has a very good social skill.
<b>Assertiveness</b>	Does not hesitate to stand up for their rights and has leadership qualities.
<b>Emotional Management</b>	Is good at managing other people's emotions by counselling or calming them down.
<b>Self-motivation</b>	Is internally driven by a need to produce high-quality work and is unlikely to give up easily.
<b>Adaptation</b>	Is able to cope with change and adapt to new things and environments.

(Petrides 2011:662)

### 2.6.3 Theoretical perspective

Several important strategies have been proposed to improve ART adherence behaviour among people living with HIV/AIDS. However, the utilisation of behavioural-dispositions related to trait emotional intelligence to deal with negative psychological emotions and attain optimal ART adherence have not been rightfully forwarded. Therefore, in-order to understand and integrate the results of the study, the researcher attempted to study the role of behavioural-dispositions related to trait emotional intelligence in the context of ART adherence behaviour among HIV/AIDS patients.

In literature, the theoretical perspectives for emotional intelligence are numerous. However, in-order to demonstrate the useful values of emotional intelligence to the field of medicine, the study utilised the perspective of behavioural-dispositions related to trait emotional intelligence. Trait emotional intelligence is defined as “a constellation of behavioural-dispositions and self-perceptions concerning one’s ability to recognise, process, and utilise emotion-laden information” (Petrides & Furnham 2003:39; Petrides & Furnham 2006:554; Petrides, Pita & Kokkinaki 2007:273). The scope of the concept of trait emotional intelligence presents a self-perceived ability that links emotion with intelligence to improve thought, behaviour, and actions (Petrides 2010:136). Hence, trait emotional intelligence relates to behavioural-dispositions, non-cognitive skills, and self-perception to recognise as well as utilise emotional information that influences an individual’s daily demand and pressure (Petrides & Furnham 2003:40; Petrides 2011:657, 660; Mikolajczak et al 2008:1356).

The theory was developed to organise and capture the individual differences on their behavioural-dispositions to the extent of which people experience, identify, understand, regulate, and utilise their emotions and that of others (Mikolajczak et al 2007:1001; Petrides & Furnham 2003:40; Salovey & Grewal 2005:281-282). It was assumed that a trait emotional intelligence can clarify on the role of emotions in extensive part of routine life outcomes and during the period of adversity (Bastian et al 2005:1135; Zeidner & Olnick-Shemesh 2009:431).

In general, people are mostly influenced by on what they feel, which then affect their thinking patterns and actions. In our day to day activity, people are presented with limitless choices on how they are going to think, organise, rationalise, and communicate with others. The infection with HIV/AIDS has been linked to create a profound transformation in one's life by causing negative effects on the quality of life and psychological well-being (Safren et al 2009:1). The presence of negative emotions have been documented to affect an individual's reasoning, decision-making and problem-solving skills as well as affecting the potential to prioritise and generate solutions in a constructive manner (Leserman 2008:539; Safren et al 2009:1).

Studies have been documented on the relationship between depression and adherence behaviour among people living with HIV/AIDS and other incurable diseases (Hartzell et al 2008:246; Leserman 2008:539; Safren et al 2009:1). The factors of depression, anxiety, stress, hopelessness, and other negative feelings have been reported to influence patients' adherence behaviour to their medication by limiting their capacity to follow instructions and reduce their self-motivation (WHO 2003:30). Studies done on ART adherence behaviour have been documented that, for every one stressor due to traumatic life events, it was reported that the odds for missing medication increased by 36% (Kalichman & Grebler 2010:811).

Trait emotional intelligence is the behavioural-dispositions that can permit people to distinguish and manage emotions evoked by stressful experiences. Trait emotional intelligence can assist people to avert from the state of negative psychological emotions towards focusing on attaining a healthier life with constructive mental view of optimism, happiness, stress free and become more assertive (Austin et al 2005:548; Choubey, Singh & Pandey 2009:122; Mikolajczak et al 2009:457). People with high trait emotional intelligence proceed through life relatively easy by dismissing the setbacks and irritations as well as manage their emotions and actions easily (Armstrong et al 2011:331; Mikolajczak et al 2009:458). Trait emotional intelligence has been related to

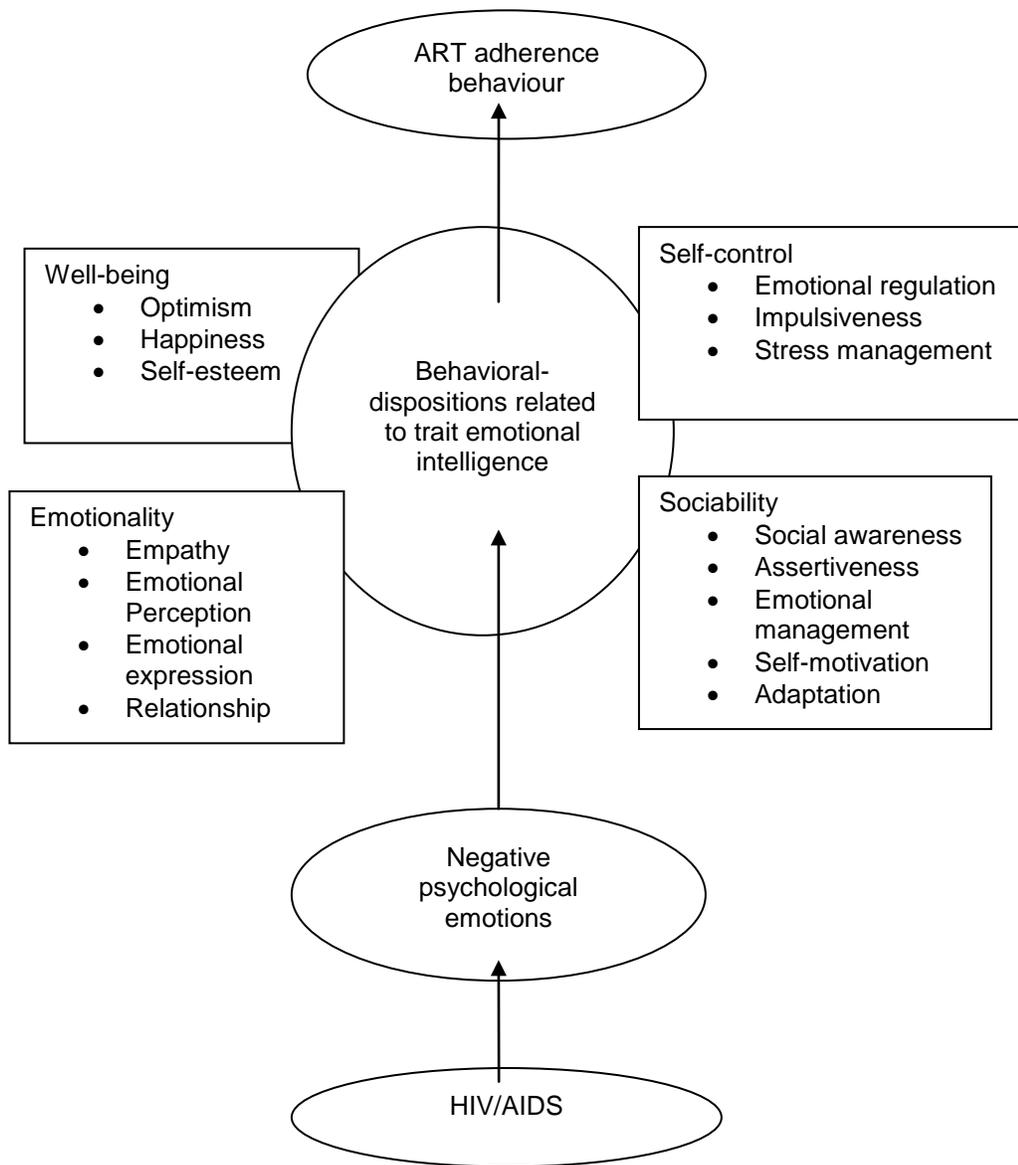
aiding people to achieve a greater social support, enable people to sustain healthy relationships within their surrounding environment, and enhance their ART adherence behaviour (Zeidner et al 2012:7).

Among the components of trait emotional intelligence the factor of well-being refers to the overall health and welfare of individuals' that has a significant role in regulating emotions under stressful circumstances. The well-being factor creates a mind state of discipline, calmness, and forms a rational thinking for better decision employed through a strong balance of emotions and reason. People with high level of well-being factor are more fulfilled, have positive mood, they are satisfied with life, and resilient against negative circumstance (Petrides 2009:95; Petrides 2011:662). The factor of self-control is the potential to generate emotion, but at the same time reasoning with the emotional state by focusing on multiple perspectives. People with high self-control score can control their anxiety, they are less impulsive, are energetically motivated, and do not react to difficult situation in an unpredictable manner. They can understand their own inner thoughts, do not allow their negative emotions to misguide their actions, and make conscious choices in life (Petrides 2009:94; Petrides 2011:662).

Among the component of trait emotional intelligence the factor of emotionality is the behavioural-dispositions in identifying, perceiving, expressing their own emotions and that of other. Emotionality assists an individual to utilise their emotions, to directly communicate, to clearly discuss emotions, and to manage emotions in others. People with high score on emotionality are capable of comprehending their emotions and that of others in the environment and they are gifted in forming and sustaining relationships with friends and relatives (Petrides 2009:94; Petrides 2011:662).

The factor sociability refers to the behavioural-dispositions and self-perceived ability to manage and communicate with others. The factor of sociability focuses in terms of social integrity, managing differences, the capacity to have social relationships, and social influence in diverse social context. Sociability is the

potential to appropriately handle feeling, use emotion to self-motivate, inspire, and encourage others. People with high sociability level are good listeners, are effective communicators, and have the confidence to mark their place in the world (Petrides 2009:94; Petrides 2011:662). Through the above mentioned relations, the behavioural-dispositions related to trait emotional intelligence through the four factors of (well-being, self-control, sociability, and emotionality) and the associated facets can be very effective at preventing and managing negative emotions among HIV/AIDS infected people, in so doing improve ART adherence behaviour.



**Figure 2.3 Research theoretical framework diagram**

#### **2.6.4 Measurement of trait emotional intelligence**

In-order to establish a scientific concept, it is essential to provide a measurement technique for the construct. The measurements of the concept of “emotional intelligence” can radically differ based on their variations of the definitions. The ability model is measured with performance-based instruments that objectively measures using verifiable items that resemble an intelligence test (Petrides et al 2004:575; Petrides & Furnham 2006:576).

The current research utilised the trait emotional intelligence questionnaire short form (TEI Que-SF) devised and developed by K.V Petrides and Furnham (Petrides & Frunham 2006:556). The trait emotional intelligence measurement has been based on a clear theoretical framework (Petrides 2011:663). The instrument is based on trait emotional intelligence theory that aims to capture the emotion based features of personality trait with a method of self-report (Petrides, Pita & Kokkinaki 2007:273; Petrides 2009:87). Thus, the trait emotional intelligence questionnaire focuses on the construct of sampling domain, on the temporal stability of the domains, and the relationship of the construct with basic personality dimensions (Petrides & Frunham 2006:554).

The trait emotional intelligence measurement method was a self-report technique that addressed questions referring to self-judgement of one’s own emotional life. The construct was characterised with the following points. The method assessed the subjective nature of emotional experience, which can give insight into the participants understanding of their level trait emotional intelligence. The concept is seen as a disposition with a typical performance rather than maximal performance (Petrides 2011:658). In addition, the self-report method of measurement is criticised for having response bias.

Nevertheless, the issue of response bias is not a unique problem specific to trait emotional intelligence measures (Petrides et al 2004:575; Petrides & Furnham 2006:576; Petrides, Furnham & Mavroveli 2007:152). The trait emotional intelligence questionnaire short form (TEIQue SF) has been preferred over the

other trait measures because of the instruments clear theoretical framework connection to the theory of trait emotional intelligence, provides a comprehensive coverage of the sampling domain, and due to the instrument greater predictive validity (Cooper & Petrides 2010:449; Gardner & Qualter 2010:6).

### **2.6.5 Trait emotional intelligence and Anti-Retroviral Therapy (ART) adherence behaviour**

Trait emotional intelligence has been documented to be a decisive factor between good and bad health behaviour (Zeidner et al 2012:1, 4). Trait emotional intelligence is “the constellation of behavioural-dispositions and self-perceptions concerning one’s ability to recognise, process, and utilise emotion-laden information” (Petrides & Furnham 2003:39; Petrides & Furnham 2006:554; Petrides, Pita & Kokkinaki 2007:273). Trait emotional intelligence has been related to general health behaviour, adaptive problem solving styles, lowering perceptions of stress with better quality of life and psychological well-being (Austin et al 2005:548; Bastian et al 2005:1136; Milkolajczak et al 2007:1001; Mikolajczak et al 2008:1357). Trait emotional intelligence has been related to general health behaviour, adaptive problem solving styles, rational thinking, lowering perceptions of stress, better quality of life, and psychological well-being (Austin et al 2005:548; Bastian et al 2005:1136; Chamorro-Premuzie, Bennett & Furnham 2007:1634; Mikolajczak et al 2008:1357-1358).

People with high trait emotional intelligence are able to properly handle the negative feelings and express it through a positive interaction. Trait emotional intelligence has been linked to the potential to better control stress, redirect unconstructive stressful reaction, and emotional impulses. In addition, trait emotional intelligence has been related to enhanced ART adherence behaviour through the process of applying emotion regulation, discipline towards positive health-related behavioural practices, build better communications with health-care providers, and create a stress-coping mind state to deal with health problems (Johnson et al 2009:471; Martins et al 2010:554; Zeidner et al 2012:7).

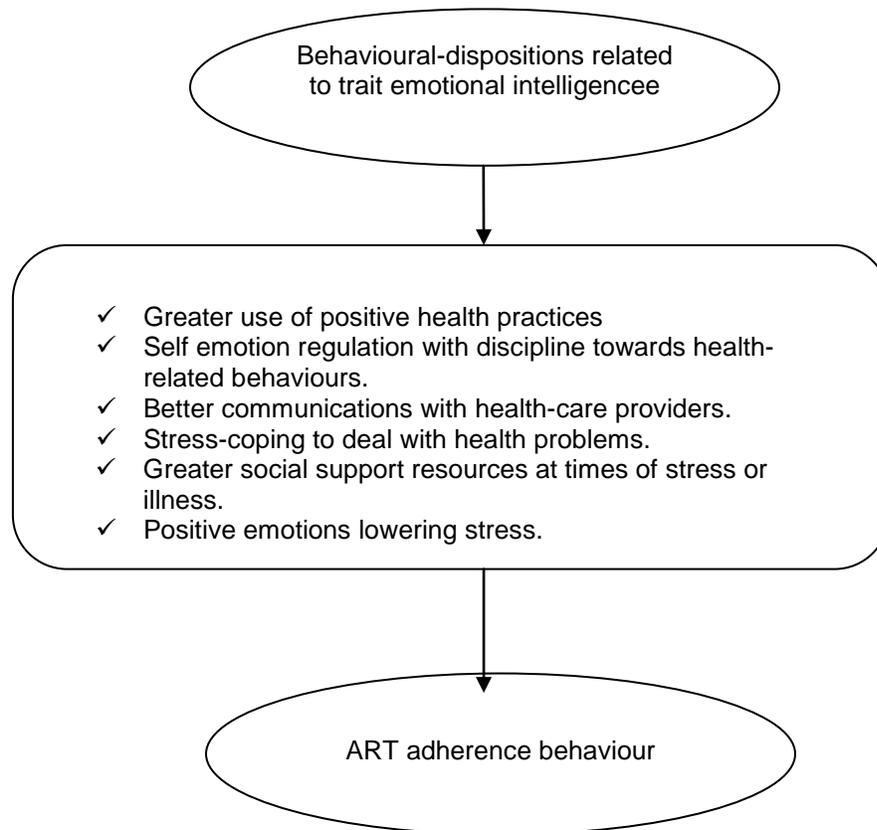
People infected with HIV/AIDS have been faced with complicated psychological challenges such as disbelief, denial, fear, anxiety, depression, guilt, and stress (Hartzell et al 2008:246; Leserman 2008:539; Safren et al 2009:2). The stressful emotional states have been reported to distort their daily life decisions and judgements in all phases of the disease (Hartzell et al 2008:247; Leserman 2008:540; Pence 2009:636; Safren et al 2009:2). The negative psychological emotions such as anxiety, depression, and other negative emotions have been documented to create an impact on the patients' treatment ART adherence, disease course, and other health risks (Kalichman & Grebler 2010:811). The psychological factors experienced by HIV/AIDS infected people have been associated to negatively affect the availability of emotional support from friends and the social support from family, where both have a crucial role for ART adherence behaviour (Johnson et al 2006:356; Rintanaki et al 2006:360).

Trait emotional intelligence has been associated with strong discipline, self-regulation of negative emotions, and achieving good health related behaviour (Milkolajczak et al 2007:1001). Trait emotional intelligence has been linked to lowering the environmental and personal stress levels which have a positive effect on the immune system and ART adherence behaviour (Milkolajczak et al 2007:1001). Individuals with higher trait emotional intelligence have been related to being aware of ones emotions, able to regulate emotions, and experiencing lower level of negative emotions as a result practicing higher level of positive emotions (Mikolajczak et al 2008:1356). Thus, lower trait emotional intelligence has been linked to negative emotions which can contribute to the mental and physical well-being (Milkolajczak et al 2007:1001; Mikolajczak et al 2009:457; Zeidner & Olnick-Shemesh 2009:431).

Trait emotional intelligence has been linked to have a significant impact on lowering the negative psychological emotional situation through stress-coping and develop the mechanism for treatment adherence (Zeidner et al 2012:7). Stress-coping method is a behavioural and psychological effort that an individual utilises to reduce and endure the stressful circumstance (Noorbakhsh, Besharat

& Zarei 2010:819; Petrides, Pita & Kokkinaki 2007:275). Implementing trait emotional intelligence as a stress-coping method has been associated with a better health, quality of life, and treatment seeking behaviour (Zeidner et al 2012:7). People with high trait emotional intelligence have been related to having strong emotions with a positive attitude to deal with stressful events as a result generating various positive courses of action (Austin et al 2005:548; Zeidner et al 2012:5-6).

Trait emotional intelligence has been related to aiding people to achieve a greater social support, enable people to sustain healthy relationships within the surrounding environment, and enhance ART adherence behaviour (Zeidner et al 2012:7). The process of trait emotional intelligence has been related to being aware of one's emotions and regulating emotions to promote the formation of supportive social relationships, to alleviate the state of anxiety, worry, and other stressful factors in ones life (Mikolajczak et al 2009:456). Trait emotional intelligence helps us to control our emotions, communicate our feelings in a positive manner, and understand others feelings as well as have a direct social relationship with others (Austin et al 2005:548). Higher trait emotional intelligence has been related to accomplishing greater social-competence in forming richer social groups and more successful coping strategies that can improve mental and physical well-being (Petrides 2011:668). Hence, in-order to achieve effective patient management with respects to treatment adherence behaviour, it is essential to utilise behavioural-dispositions related to trait emotional intelligence.



(Zeidner et al 2012:7)

**Figure 2.4 Trait emotional intelligence and good health behaviours**

## **2.7 CONCLUSION**

This chapter presented an overview of the literature review related to the study topic by providing the researcher the significant background in terms of attaining the relevant knowledge regarding the study. The chapter has covered extensive discussion on the background of variables (ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence), the theoretical perspective, the measurements, and the possible link between the variables. The next chapter focuses on research design and methodology.

## CHAPTER 3

### RESEARCH DESIGN AND METHOD

#### 3.1 INTRODUCTION

This chapter presents a discussion on the research design and methodology of the study. The research design and methodology of a study is the most important component of any research. It guides the researcher in a strict methodological framework and enables the researcher to fulfil all the requirements of a scientific research. Therefore, this section includes descriptions of the research design, the study population, the sampling technique, the sample size, the research instrument, the validity and reliability of the research instrument, the data collection approach, and methodology. Additionally, there are discussions on the ethical issues related to sampling and data collection as well as the process of data analysis.

The purpose of the study was to determine if there was a relationship between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.

The objectives of the study were to:

- Explore the level of ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.
- Determine how adherence enabling factors influence the ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.
- Determine how adherence compromising factors influence the ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.

- Explore the level of behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.
- Determine whether there is a correlation between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.

To achieve the purpose of the study, the researcher asked the following questions:

- What is the level of ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa?
- How do adherence enabling factors influence the ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa?
- How do adherence compromising factors influence the ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa?
- What is the level of behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa?
- What is the relationship between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa?

A Hypothesis is defined as the formal statement of the expected relationship between two or more variables (Babbie 2007:44; Burns & Grove 2001:172; WHO 2004:50). The formulation of a hypothesis assisted the researcher to indicate the variables to be measured, the population, and the type research as well as direct the conduct of the study (Burns & Grove 2001:172; Marczyk et al

2005:8). For the purpose of the study, the following hypotheses were formulated:

H0: There was no significant relationship between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.

H1: There was a significant relationship between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.

### **3.2 RESEARCH DESIGN**

Research design is defined as “a blueprint for conducting the study that maximises control over factors that could interfere with the validity of the findings and guides the planning and implementation to achieve the intended goal” (Burns & Grove 2001:223; Joubert & Ehrlich 2007:77). In-order to establish the research design, the researcher identified the most appropriate way to structure the research based on the nature of the research questions.

#### **3.2.1 Research paradigm**

A research paradigm is defined as a framework of reference for observation and understanding that shapes both what we see and how we understand (Babbie 2007:32). The research paradigm enabled the researcher to clarify the feature of the study. The research problem and the research questions provided the foundation for the research paradigm. Thus, the researcher selected and utilised a quantitative research paradigm for the study.

A quantitative research is a formal, objective, systematic process in which numerical data are used to obtain information about the world by focusing on description and relationships among the variables (Burns & Grove 2001:26;

Bowling & Ebrahim 2005:190; Denscombe 2007:254; Marczyk et al 2005:17). A quantitative study suited the research due to the following reasons. A quantitative study assisted the researcher to focus on a limited number of variables that were measured. Additionally, the research paradigm aided the researcher to utilise a structured questionnaire with the same sequence of questions for measuring the selected variables in the study. Furthermore, a quantitative paradigm supported the researcher to use a numerical statistical procedures in-order to describe and explore relationships between variables.

### **3.2.2 Research design**

The research design suitable for the study was an observational, analytical, and cross-sectional design. An observational research design is a type of design where the researcher measures or observes exposure and disease occurrence without intervention in the natural setting (Babbie 2007:89; Burns & Grove 2001:248; Joubert & Ehrlich 2007:77; Marczyk et al 2005:149). Analytical research design is a type of design applied to examine the association between variables (Babbie 2007:102; Burns & Grove 2001:256; Joubert & Ehrlich 2007:78; Marczyk et al 2005:3). Cross-sectional research design is a study that involves observations of a representative sample at a single point in time (Babbie 2007:102; Bowling & Ebrahim 2005:120; Burns & Grove 2001:202; Joubert & Ehrlich 2007:85).

The design was suitable for the study because of the following reasons. The design assisted the study as the research lacked adequate background on Anti-Retroviral Therapy (ART) adherence behaviour and trait emotional intelligence. The design directed the primary purpose of the study to describe and explore the relationship between the variables without intervention in a natural-setting. The design supported the study to be efficient, required less time, and fewer resources. In addition, it assisted the researcher to collect the data variables at one point in time and made it easier for the participants' to be involved in the study with a snap-shot data collection process. Moreover, the design aided the

researcher to obtain more information on ART adherence behaviour and behavioural patterns related to trait emotional intelligence.

### **3.3 RESEARCH METHODS**

The research methodology is the entire strategy of the study starting from the point of research problem identification to the arrangement of plans for data collection (Burns & Grove 2001:223). This section describes in detail on how the researcher conducted the study by providing relevant information on the study population, study sample, data collection procedures, and data analysis.

#### **3.3.1 Research setting**

The Ethiopian health-care system is ordered into three level systems that are connected through a referral system. The primary health-care level is composed of a health centres and five satellite health posts that provide services to 15,000-25,000 of the population. In addition, as part of the primary health-care level is the primary hospital that provides health services for an average population of 60,000-100,000. The second health-care level is the general hospital that provides services for 1,000,000 people. The tertiary health-care level is the specialised hospital that serves an average of 5 million people (Federal Democratic Republic of Ethiopia Ministry of Health: 4, 77).

The research setting was the location in which the study was put into operation. The researcher implemented the study in a natural setting where there were no manipulations of the variables in the environment. In the Ethiopian health-care system, the ART accesses have been gradually expanded to 573 ART service sites through out Ethiopia (Assefa et al 2009:2; FHAPCO 2010a). At a national level, there are 179,183 people on ART and 156,083 are on first-line ART. In the capital city, working under the authority of the City Government of Addis Ababa Health Bureau, there are 49 ART sites that provide access to 32,690 people initiated on ART (FHAPCO 2010a). The 49 ART service sites are composed of 17 private hospitals, 5 public hospitals and 27 health centres (FHAPCO 2010a).

The research settings were partitioned into a segment of regional public hospitals in Addis Ababa working under the authority of the the City Government of Addis Ababa Health Bureau that provided ART for people living with HIV/AIDS. The selected regional public hospitals were Yekatit Hospital, Ras Desta Hospital, Minilik 2<sup>nd</sup> Hospital, and Zewditu Hospital. The regional public hospitals were selected because in Addis Ababa there are only five regional public hospitals that provide ART for HIV/AIDS infected people within the geographical area of Addis Ababa. Thus, among which the researcher selected four of the regional public hospitals excluded one of the regional public hospital that provided ART exclusively for pregnant women given that the hospital did not fulfil the research inclusion criteria.

### **3.3.2 Population**

Population is defined as the entire set of individuals or elements that can be studied (Babbie 2007:111; Bowling & Ebrahim 2005:191; Burns & Grove 2001:366; Marczyk et al 2005:18). In the study, the population were adults living with HIV/AIDS and receiving first-line ART. Target population is defined as the group about which the researcher wants to gather data and formulate a conclusion (Babbie 2007:111; Joubert & Ehrlich 2007:94; Marczyk et al 2005:18). The target population for the study were adults older than 18 years of age, living with HIV/AIDS receiving first-line ART for more than 12 months at the regional public hospitals in Addis Ababa.

An accessible population is defined as the proportion of the target population to which the researcher has reasonable access or the aggregate of subjects from which a sample is selected (Babbie 2007:190; Burns & Grove 2001:366). The accessible population for the study were people who come to receive their ART every 2 months at the regional public hospitals in Addis Ababa during the time of data collection and match the inclusion criteria.

### 3.3.3 Sampling

Sampling is the process of selecting a portion of the population to represent the entire population (Joubert & Ehrlich 2005:94). The researcher implemented a probability sampling approach. It is an approach where every member of the population has a probability higher than zero of being selected for a sample (Babbie 2007:189; Bowling & Ebrahim 2005:195; Burns & Grove 2001:370; Denscombe 2007:13). The sampling approach included the following process: the identification of an accessible population, choosing a probability sampling technique, and selecting a sample (Burns & Grove 2001:370). Based on the principles of sampling, the researcher utilised the probability sampling because it selected a sample with reduced systematic bias, decreased sampling errors, and increased representation of the target population (Burns & Grove 2001:370).

A sample frame is defined as the list or representation of every member of the study population from which the sample is taken (Babbie 2007:199; Bowling & Ebrahim 2005:192; Burns & Grove 2001:369; Joubert & Ehrlich 2007:95). The sampling frame must be accurate, complete, and current with no duplicates and apparent patterns on the list. The sampling frames for the study were the people living with HIV/AIDS receiving ART from Monday to Friday during working hours at the regional public hospitals in Addis Ababa.

The sampling technique is the strategy that is used to obtain the sample for the study (Babbie 2007:202; Burns & Grove 2001:369). The researcher used a proportionate stratified systematic random sampling technique. A stratified random sampling is defined as a probability sampling method that involves the separation of the target population into homogeneous segments then samples were proportionally selected from each segment and combined into a single sample (Babbie 2007:202; Burns & Grove 2001:374; Denscombe 2007:14). A systematic random sampling is the selection of the participants' using intervals selected randomly from the list of members of the population until the desired

sample size is reached (Babbie 2007:202; Burns & Grove 2001:373; Denscombe 2007:14).

A proportionate stratified systematic random sampling technique had the following advantages. The sampling technique was easier, simpler, consumed less time, and more efficient since the sample selection was done manually. The sampling technique ensured the sample was adequately spread across the study population and improved the representativeness of the sample. It did not require a numbered sampling frame but only a physical representation in-order to be compiled into the study. The sampling technique also eliminated the possibility of sampling error and reduced the selection bias.

The participants were selected with a proportionate stratified systematic random sampling technique from all the selected regional public hospitals. Thus, the sample size for the study were proportionately taken from each selected regional public hospital in proportion to the size of the study population in each segment of the target population with; Yekatit Hospital (20%), Ras Desta Hospital (10%), Minilik 2<sup>nd</sup> Hospital (17%), and Zewditu Hospital (53%). The samples were selected on every 4<sup>th</sup> participant with a random starting point and proceed by selecting participants' at fixed intervals thereafter.

A sample inclusion criterion is defined as the characteristics that must be present for the element to be included in the study (Burns & Grove 2001:367). The study applied the following sample inclusion criteria: 1) HIV/AIDS infected people receiving first-line ART therapy for more than 12 months; 2) Adult persons older than 18 years of age; 3) No history of substance abuse or mental disorder; 4) Having access to ART and medical follow-up at a regional public hospital; 5) Not being pregnant for the duration of the study; 6) A stable clinical condition with the mental ability to provide informed written consent; and 7) Not having required hospitalisation for the duration of the study.

### 3.3.4 Sample size

Sample size is the number of units included in the sample (Burns & Grove 2001:385). As the sample size increases the representativeness of the sample population increases and minimises sampling error (Babbie 2007:189; Burns & Grove 2001:368). The researcher determined the sample size using the SPSS software version 17. At a national level, there are 179,183 people on ART and 156,083 are on first-line ART (FHAPCO 2010a). In the capital city, working under the authority of the City Government of Addis Ababa Health Bureau, there are 49 ART sites that provide access to 32,690 people initiated on ART (FHAPCO 2010a). The available data indicated that in 2010, there were a total of 26,776 people per year with medical follow-up for ART at health centers and public hospitals in Addis Ababa (FHAPCO 2010a). Thus, among the selected sites a total of 10,597 people per year were receiving ART in the regional public hospitals in Addis Ababa (FHAPCO 2010a).

The researcher calculated the sample size for the study with the following formula.  $[n = t^2 * p(1-p)/m^2]$ , where:  $n$ =required sample size,  $t$ =confidence level at 95 % (standard value of 1.96),  $p$ =estimated prevalence of adherence at 50%,  $m$ =margin of error at 5 % (standard value of 0.05) (Chadha 2006:59). Thus, the recommended total sample size for the study is 380. However, with the anticipation of 10% non-response rate, the researcher calculated the total sample size for the study to be ( $n = 422$ ). Finally the researcher, proportionate took from each selected regional public hospitals by considering a sample size distribution of Yekatit Hospital ( $n=84$ ), Ras Destal Hospital ( $n=42$ ), Minilik 2<sup>nd</sup> Hospital ( $n=72$ ), and Zewditu Hospital ( $n=224$ ). The level of significance was set at 0.05 with two-sided tests of significance were used and  $1-\beta$  to be 80% (Burns & Grove 2001:377; Joubert & Ehrlich 2007:102-103; WHO 2004:52-53).

### 3.4 DATA COLLECTION

Data collection method is the process of gathering data from selected subjects by observing, testing, measuring, questioning or recording, or any combination

of these methods relevant for the research purpose, objectives and questions of the study (Burns & Grove 2001:460). Therefore, in any research process, there must be a systematic data collection process for a valid and reliable data in-order to ensure the integrity of the study.

### **3.4.1 Data collection approach and method**

The study applied a structured data collection approach. A structured approach is a clearly structured format of the questions in a standard way with identical clarification of questions for each respondent (Babbie 2007:246; Bowling & Ebrahim 2005:204; Burns & Grove 2001:421; Joubert & Ehrlich 2007:106). It involves the formulation of questions before the initiation of data collection process that are administered to the participants (Burns & Grove 2001:426; Denscombe 2007:153).

The questionnaires were closed questions whereby the participants can choose from a list of answers in the questionnaire. It offered the researcher the following benefits. The questionnaire format provided the researcher with an increased amount of control over the content of the data that were collected. In addition, it supported the researcher to focus on the study objectives and increased the reliability of the collected data. Furthermore, the questionnaire format had a standardised scoring procedure and made it easy for the researcher to perform a quantitative data analysis in short time. Moreover, the format assisted the researcher to clarify any ambiguous questions and prevented participants from interpreting questions on their own (Burns & Grove 2001:421; Ebrahim 2005:204; Joubert & Ehrlich 2007:107).

On the contrary, the structured questionnaire format had the following limitations. The structured questionnaire format had limited response choices that were not sufficiently comprehensive to accommodate all possible answers and forced participants to select inappropriate answers. In addition, denied the researcher the opportunity to add or remove questions, to alter the wording or sequence of the questions (Ebrahim 2005:204). Therefore, to counteract the

limitations, the researcher utilised a multiple response options with a rating scale for each question. Additionally, the researcher outlined the questions in a simpler arrangement and reviewed the questionnaire forms for completeness.

The researcher used a self-report questionnaire method for the data collection process. The printed self-report form minimised the opportunity for bias and was designed in a way to elicit information that can be obtained through the written responses of the subjects (Babbie 2007:246; Burns & Grove 2001:426; Denscombe 2007:153). The data collection method has the following advantages. The data collection method aided the researcher to uniformly administer the questionnaires anonymously that avoided inconvenience on the part of the participants without interviewer variation. In addition, the method supported the study to generally present less cost and less time consuming to analyse the data as well as assisted the researcher to create a questionnaire that were very well arranged, clear and precise. Furthermore, the method assisted the researcher to cover a wider study areas and helped participants to reconsider their response options. On the contrary, the data collection method had the following disadvantages, the method required the participants to be literate and rendered the researchers with little control over data quality through the provision of false information (Joubert & Ehrlich 2007:108).

#### **3.4.2 Development and testing of the data collection instrument**

In the study, three types of questionnaires were implemented, namely socio-demographic questionnaire, the trait emotional intelligence questionnaire short form (TEI Que-SF) and a self-report ART adherence behaviour questionnaire.

The researcher designed the study instrument into three sections that address the following points. The first section is the socio-demographic that addressed the participants' socio-demographic characteristics. The second section is the trait emotional intelligence that addressed the participants' behavioural-dispositions related to the four trait emotional intelligence factors (well-being, self-control, emotionality, and sociability). The third section is the ART

adherence behaviour that addressed the participants' ART adherence behaviour based on ART (dose, schedule, and life-style). This section also addressed questions on various factors for adherence/non-adherence.

The socio-demographic form, the data were obtained through items on the participants' age, marital status, ethnic background, religious background, education level, occupation and monthly income. The purpose of these data was to provide detailed information regarding the composition and characteristics of the target population.

The trait emotional intelligence questionnaire short form (TEI Que-SF) was a questionnaire devised and developed by K.V Petrides and Furnham. The questionnaire was based on the long-form of the TEI Que which included 153-items that measured behavioural-dispositions on well-being, self-control, emotionality, and sociability (Petrides & Frunham 2006:556). The short form of the questionnaire included two questions from each of the fifteen sub-scales of the trait emotional intelligence questionnaire (TEI Que) (Petrides & Frunham 2006:556). The questions were modified on the response options to a 5-point Likert scale. The questionnaire provided wide-range coverage of the sampling domain of trait emotional intelligence obtained through a self-report method. The instrument had good validity compared to other measures for trait emotional intelligence, with adequate internal consistency of (0.88) and broad coverage of the sampling domain of the construct (Cooper & Petrides 2010:450; Gardner & Qualter 2010:6; Kiamarsi & Abolghasemi 2010:828).

The modified trait emotional intelligence questionnaire short form (TEI Que-SF) research instrument had 22-items, which required responses according to a 5-point Likert scale; the response ranging from 1="strongly disagree" to 5="strongly agree". During the calculation of the total trait emotional intelligence score, the participants were grouped based on their total score calculated out of 110. The score indicated how the participants responded as compared with other participants in the research. The total trait emotional intelligence

questionnaire short form (TEI Que-SF) score were added and the participants' were grouped into the following.

The participants with total trait emotional intelligence score of more than  $\geq 88$  were grouped as above-average level with high score of trait emotional intelligence as compared to other participants in the study. The reference point for the above-average group was based on the participants' that selected the Likert scale point of above  $\geq 4$ . The participants with total trait emotional intelligence score of less than  $\leq 44$  were grouped as below-average level with low score of trait emotional intelligence as compared to other participants in the study. The reference point for the below-average group was based on the participants' that selected the Likert scale point of less than  $\leq 2$ . The participants with total trait emotional intelligence score between the values of (43-87) were grouped as average level with moderate score of trait emotional intelligence as compared to other participants in the study. The reference point for the moderate score level was based on the participants that selected the Likert scale point between the values of (2-4).

The researcher assessed the ART adherence behaviour with a modified questionnaire developed by the AIDS clinical trials group follow-up format (Chesney et al 2000:256-257). The questions were modified on the areas of: 1) The format for the duration of the ART adherence behaviour was for two months; 2) The research instrument was composed of 3-items with 5-point Likert scale. The response options ranged from 1="Never" to 5="every time". During the study, ART adherence behaviour were analysed under the areas of ART dose adherence, ART schedule adherence and ART life-style instruction adherence (Schönnesson et al 2006:407).

The measures of ART adherence behaviour at each point were used to calculate the total adherence score. The participants were grouped based on their total score calculated out of 15. The dose, schedule, and life-style adherence score were added and then grouped into the following groups. The participants with the total score value of more than  $\geq 12$  were grouped as

optimally adherent with ART adherence level of more than  $\geq 95\%$ . The participants with the total score between the values 7-11 were grouped as sub-optimal adherence with ART adherence level between 80-94%. The participants with the total score value of less than  $\leq 6$  were grouped as poor adherent with ART adherence level of less than  $\leq 80\%$ . Furthermore, the questionnaire included questions on the influence of adherence/non-adherence factors for ART. The instrument was composed of 38-items and the response options consisted of a 4-point Likert scale; the response ranging from 1="Never" to 4="often".

### **3.4.3 Pre-testing of questionnaires**

The English version of both trait emotional intelligence questionnaire short form and the self-report ART adherence behaviour questionnaire were translated into an Amharic language by two individuals who had good knowledge and command of both languages. The professionals were briefed about the construct of the test. The first drafts of the questionnaires were given to three health professionals to obtain their comments regarding the language applicability, content and length of the questionnaires. The agreed Amharic version were then back translated to English to be compared and judged with the original one in order to ensure the accuracy of each questions, instructions, response-options, and consistent ordering of items. The researcher reduced parts of the questions with long-item into manageable sections, and then pre-tested the prepared finalised version of the questionnaires.

A pre-test is implemented with purpose of determining the quality of the research questions and refining the research methodology (Babbie 2007:256; Burns & Grove 2001:49; Joubert & Ehrlich 2007:50). After the completion of the backward translation procedure, the researcher implemented a pre-test on both the Amharic and English version. The researcher employed the pre-test on 20 participants that were not included in the final survey who were living with HIV/AIDS receiving ART at the regional public hospitals.

The experts were consulted again to check for the item's difficulty, clarity and precision and content analysis. Accordingly, their remarks were useful to adjust and finalise the questionnaires. Finally, after the pre-test was done, due to some questions' poor inter-item correlation of  $<0.2$  and lack of clarity (total of 8 and 2 questions) were extracted from the questionnaires listed under section-2 (trait emotional intelligence questionnaire short form) as well as on section-3 (self-report ART adherence behaviour questionnaire) respectively. Hence, the researcher put into action the required changes and finalised the research questions.

#### **3.4.4 Data collection process**

Data collection process is the plan in details on how the study is implemented (Burns & Grove 2001:794). During the research, the data collection procedures were put into operation in the following steps. In the study, for each potentially eligible participant, the health-care provider was asked to seek the participants' permission to be approached for the study when they came to receive their ART. The data were collected for two months from Monday to Friday on every 4<sup>th</sup> participant who came to receive ART with random starting point between 1 and sampling interval.

Then, the researcher and the trained nurse data collectors approached the potential participants' and assessed them based on the sample inclusion criteria. The participants were directed to a private room to be introduced about the objectives of the study, and written consents were taken from each participant after being informed about their right to refuse. The researcher had the responsibility to give one copy of the signed consent form and put one copy in a secured place. The process for data collection was done by the researcher and four trained nurse data collectors, where the participants' filled in the questionnaire. The same data collectors were used for each participating regional public hospitals and made-sure the participants completed the questionnaires.

To easily identify the collected data, while maintaining the hospitals' and the participants' anonymity, there were an identification number placed on each original data collection form for the participating hospitals'. The researcher and the trained nurse data collectors met at the end of each day of data collection for regular communications and gather the completed data collection forms and made-sure all data were recorded and complied on a regular basis. The researcher copied the completed forms and the original copies were kept in a safe place where only the researcher had access.

### **3.5 DATA ANALYSIS**

During a study, the data analysis is a statistical process conducted to reduce, organise and give meaning to the data collected for the purpose of communicating the findings to others (Burns & Grove 2001:794; Marczyk et al 2005:198). The process of data analysis consisted of the following steps: signed informed consent forms and completed questionnaires were maintained by the researcher. Extensive data cleaning procedures were done in preparing the final data set. The data quality assurance mechanisms were developed and put into action in the following steps. All the forms completed were manually checked for completeness and then entered into a computer by the researcher from the copies of the original documents.

The researcher created a regular back-up system in-order to avoid loss of data at any point during the data entry process. The researcher and a statistician coded, entered the data into a computer, then the researcher analysed the data using a statistical package for social science (SPSS) version 17. The data analysis section applied both descriptive and inferential statistics.

#### **3.5.1 Descriptive data analysis**

A descriptive statistic is a statistic that allows the researcher to organise the data in ways that give meaning and facilitate insight and examine a phenomenon from a variety of angles to understand more clearly what is being seen (Burns &

Grove 2001:499; Marczyk et al 2005:209). The descriptive statistics summarised and described the data by simple statistics such as mean, standard deviation, frequency, and percentage as well as described the distribution of the variables in the study by using graphs and figures.

### **3.5.2 Inferential data analysis**

Inferential statistics are an analysis that assists researchers in drawing conclusions from their observations; typically, it involves drawing conclusions about a population from the study of a sample (Babbie 2007:460; Marczyk et al 2005:209, 219). The inferential statistics utilised in the study was a Pearson's product correlation coefficient test.

#### ***3.5.2.1 Pearson correlation coefficient test***

The Pearson correlation coefficient test is a parametric test used to perform correlation analysis and determine the existence of association between the variables (Burns & Grove, 2001:526). In the study, the variables were ART adherence behaviour and behavioral-dispositions related to trait emotional intelligence.

## **3.6 RELIABILITY AND VALIDITY**

The following section provides discussion on the design validity, validity of the instrument, and reliability of the instrument.

### **3.6.1 Design validity**

In-order for the research result to be acceptable, the research instruments must have internal and external validity. Internal validity refers to the extent to which the effects detected in the study are true reflection of reality rather than the result of extraneous variable (Burns & Grove 2001:228; Marczyk et al 2005:158). External validity is relevant in the study as it refers to the extent to

which study findings can be generalised beyond the sample used in the study (Burns & Grove 2001:232; Marczyk et al 2005:174). Based on the fact that, the sample selection for the study design was a proportionate stratified systematic random sampling; hence, the threats to the generalisation of the results from the study was reduced.

### **3.6.2 Validity of the instrument**

In the evaluation of a research instrument, the validity and reliability of the instrument are the crucial elements to be considered. The reliability of an instrument is closely related to the validity. The validity of the instrument refers to the capacity of the instrument to measure and reflect the truth of the concept under consideration (Babbie 2007:146; Burns & Grove 2001:399; Joubert & Ehrlich 2007:156; Marczyk et al 2005:106).

The researcher improved the validity of the data collection instrument by putting into operation the following steps. The research instrument of the study was compiled and adopted by the researcher after reviewing relevant literatures with reference to instrument appropriateness, meaningfulness, and usefulness of the tools. The study utilised a data collection instrument with established face validity and content validity assessed by the research supervisor and three health professionals. Thus, the trait emotional intelligence questionnaire short form instrument had good validity compared to other measures for trait emotional intelligence (Cooper & Petrides 2010:450; Gardner & Qualter 2010:6; Kiamarsi & Abolghasemi 2010:828).

### **3.6.3 Reliability of the instrument**

The reliability of a data collection instrument refers to the repeatability or reproducibility of measurement or research finding if repeated several times (Burns & Grove 2001:395; Babbie 2007:143; Joubert & Ehrlich 2007:155; Marczyk et al 2005:104). Cronbach alpha is a coefficient of reliability. The Cronbach alpha coefficient is used mostly on Likert-scale questionnaire, in-order

to determine the homogeneity, stability, and equivalence of the research instrument (Burns & Grove 2001:396,398). In several studies, the trait emotional intelligence questionnaire short form was documented to have adequate internal consistency of Cronbach's  $\alpha = 0.88$  (men) and  $0.87$  (women) (Cooper & Petrides 2010:450,455; Gardner & Qualter 2010:6; Kiamarsi & Abolghasemi 2010:828).

The researcher improved the reliability of the data collection instrument to enhance the external validity of the research findings by implementing the following steps. The researcher reviewed relevant literature to assemble and organise the research instrument. The researcher obtained an adequate sample size for the study through a proportionate stratified systematic random sampling technique. Furthermore, implemented a pre-test on the research instruments among people living with HIV/AIDS receiving ART in the regional public hospitals in Addis Ababa that were not included in the final sample (the trait emotional intelligence questionnaire short form had a Cronbach's  $\alpha = 0.855$ , where as the self-report ART behaviour had Cronbach's  $\alpha = 0.883$ ).

The researcher employed trained nurse data collectors during the data collection process for the participating regional public hospitals. In addition, the researcher trained the data collector to make certain that the participants understood the instructions of the measurement strategy and made sure participants' completed the questionnaires. Moreover, the researcher made certain that all the collected data were recorded and complied on a regular basis.

### **3.7 ETHICAL CONSIDERATION RELATED TO DATA COLLECTION**

The ethical considerations relating to the process of data collection and sample selection are addressed in the following section. In any research, there are definite ethical issues that need to be taken into consideration. Ethical issues are likely to transpire during the implementation of a study. Therefore, before contacting potential participants in-order to conduct the study in accordance with the internationally accepted protocol, the researcher obtained ethical clearance in writing from the Department of Health Studies Higher Degree Committee at

the University of South Africa, obtained permission to conduct the study from the City Government of Addis Ababa Health Bureau Research Ethics Committee, and also from the medical director of the regional public hospitals. Thus, during the implementation of the study, the researcher had the responsibility to take all the necessary safety measures such as respecting the participants' autonomy, beneficence, confidentiality, anonymity, and justice.

### ***Autonomy***

Autonomy is the principle of respect for persons, requiring researchers to obtain informed consent from research participants' by providing full information, to protect the participants with impaired decision-making capacity, and to maintain the confidentiality of participants (Burns & Grove 2001:196; Denscombe 2007:144; Joubert & Ehrlich 2007:32; Marczyk et al 2005:240). The ethical practices that were put into practice concerning autonomy were the following.

For each potentially eligible participant, the health-care provider was asked to seek the participants' permission to be approached for the study. The consent form included the purpose of the study, the research protocol, the risk-benefit ratio of the research, and information about their right to withdraw from the study. If the participant agreed, then with the right to full disclosure, the researcher provided a detailed explanation of the study and a written informed consent was obtained without coercion prior to enrolment in the study. Each participant was informed that they can withdraw from the study and their action had no impact on their access to ART medical care and other health services at the regional public hospitals.

### ***Beneficence***

Beneficence is the principle that requires the research design to be scientifically sound and the risks of the research to be acceptable in relation to the risk/benefit ratio (Babbie 2007:27; Burns & Grove 2001:203; Denscombe 2007:143; Joubert & Ehrlich 2007:32; Marczyk et al 2005:241). The ethical

practices that were put into action concerning beneficence were to prevent physical harm, psycho-social harm from stigma, and discrimination of participants. The procedures for data collection were put into practice by both trained nurse data collectors and the researcher while the participants' came to receive ART service.

The participants' did not directly benefit from participating in the study. However, they can indirectly benefit in the future from the results of the study. Furthermore, the study findings can assist health-care providers to better understand the factors for ART adherence/non-adherence behaviour and comprehend the ART adherence behaviour in relation to the dynamic dimensions of trait emotional intelligence. Since the results of the study can be helpful to address adherence problems for the whole population on ART. Furthermore, during the data collection process, the researcher main purpose was to generate a sound scientific knowledge, with no falsification or manipulation of the content of the study.

### ***Confidentiality***

Confidentiality is the researcher's management of the participants' private information that must be kept private without the authorisation of the subjects (Babbie 2007:65; Burns & Grove 2001:201; Marczyk et al 2005:244). The ethical practices that were put into action concerning confidentiality were the following. The data collection procedures were implemented in a private room. The study information obtained from each participant would not be released without the written permission of the participants'. The researcher only collected the data that were actually needed and utilised the data for the purpose originally specified. The collected data were kept locked with access limited to the research only.

***Anonymity***

Anonymity is the principle when both the researcher and the readers of the research findings can identify a given response in relation to a given respondent (Babbie 2007:64; Burns & Grove 2001:201). The ethical practices that were implemented concerning anonymity were the following. In-order to avoid any form of social-discrimination and emotional discomfort, the inclusion of participants' in the study were completely anonymous with no reference of any documentation that linked the participants' to the study, and all the study specific records were identified by a coded number.

***Justice***

Justice is the principle that demands a sense of fairness in the distribution of the benefits and burdens of research treatment or information (Burns & Grove 2001:202; Joubert & Ehrlich 2007:32; Marczyk et al 2005:243). Concerning to the principle of justice, in-order to avoid unfair selection of participants, the researcher put into operation a stratified systematic random sampling technique.

**3.8 CONCLUSION**

This chapter presented a detailed discussion on information regarding the study setting, the population, the sampling technique, sample size, the data collection methods, and instruments. In addition, there were discussions on the reliability and validity of the instruments as well as on the statistical data analysis. Furthermore, included within this chapter were the ethical concerns that were taken into account during the participants sampling and data collection.

## CHAPTER 4

### ANALYSIS, PRESENTATION AND DESCRIPTION OF THE RESEARCH FINDINGS

#### 4.1 INTRODUCTION

Chapter 3 presented a discussion on the research design and research methods that were implemented in the study. This chapter deals with the findings that emerged from the data analysis, presentation and description of the results. A description of the participants' socio-demographic data, ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence are presented. The researcher analysed the data and presented the results in frequency, percentages, means, p-values, Pearson's correlation coefficient test and utilised graphs and tables. The purpose of the study was to determine if there was a relationship between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.

The objectives of the study were to:

- Explore the level of ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.
- Determine how adherence enabling factors influence the ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.
- Determine how adherence compromising factors influence the ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.
- Explore the level of behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.
- Determine whether there is a correlation between ART adherence behaviour and behavioural-dispositions related to trait emotional

intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.

In the study, three types of questionnaires were put into operation, namely socio-demographic questionnaire, the trait emotional intelligence questionnaire short form (TEI Que-SF) and a self-report ART adherence behaviour questionnaire. The researcher designed the instrument into three sections to address the following points.

The first section is the socio and demographic variables that addressed the participants' age, gender, marital status, religious background as well as ethnic background, level of education, occupation and monthly gross income. The second section is the trait emotional intelligence variables that addressed the participants' behavioural-dispositions related to the four trait emotional intelligence factors (well-being, self-control, emotionality, and sociability). The third section is the ART adherence behaviour variables that addressed the participants' ART adherence behaviour based on ART (dose, schedule, and life-style). This section also addressed questions on various factors for adherence and non-adherence.

The study population were adults living with HIV/AIDS and on first-line ART medications. The study applied the following sample inclusion criteria: 1) HIV/AIDS infected people receiving first-line ART therapy for more than 12 months; 2) Adult persons older than 18 years of age; 3) No history of substance abuse or mental disorder; 4) Having access to ART and medical follow-up at a regional public hospital; 5) Not being pregnant for the duration of the study; 6) A stable clinical condition with the mental ability to provide informed written consent; and 7) Not having required hospitalisation for the duration of the study.

#### **4.2 DATA MANAGEMENT AND ANALYSIS**

The researcher implemented the data collection for the study between the months of August and September 2012. The researcher and the trained nurse

data collectors made sure the participants completed the questionnaires. The researcher and the trained nurse data collectors met at the end of each day of data collection for regular communications and gather the completed data collection forms. The researcher ensured all data were recorded on a regular basis, made certain the completed forms were copied and kept in a safe place where only the researcher had access. For the research, the recommended total sample size for the study was 422. The anticipated response proportion was about 50%, 10% non-response rate with 5% margin of error and 95% confidence interval. However, during the data collection process, the researcher finalised the data collection with 7% non-response rate; therefore, the total sample size for the study was adjusted accordingly to a sample size of 392. Thus, the regional public hospitals had a sample size distribution of Yekatit Hospital (n=78), Ras Desta Hospital (n=39), Menilik 2<sup>nd</sup> Hospital (n=67) and Zewditu Hospital (n=208).

The data analysis was based on a data collected from a total sample size of 392. The researcher and a statistician performed the data analysis using the statistical package for social science version 17 (SPSS). The study included descriptive statistics such as frequency, percentage, mean, standard deviation, graphs and tables to represent the results. Furthermore, the researcher implemented inferential statistics with Pearson correlation coefficient test set at a 0.05 statistical significance. The data results are presented in terms of various sections of items on the questionnaire.

### **4.3 RESEARCH RESULTS**

The following section of the study provides a detailed presentation of the research findings.

#### ***4.3.1 Sample characteristics***

This section presents the participants' data regarding on gender, age, marital status, and religious background. In addition, it presents the participants'

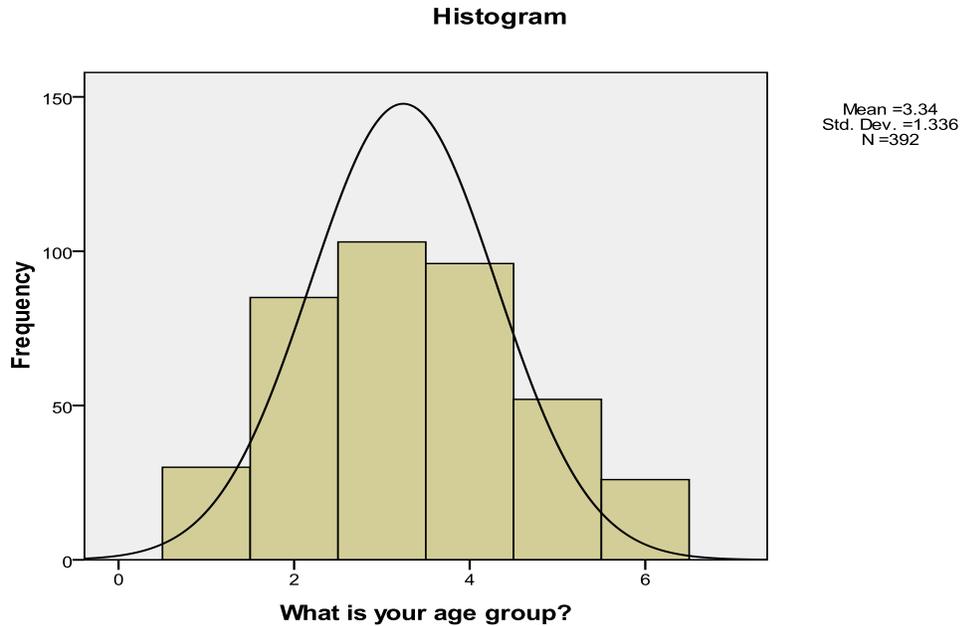
characteristics such as ethnicity, level of education, occupation, and monthly gross income.

#### **4.3.1.1 Age**

The participants were asked questions about their age in-terms of the specific age ranges on the questionnaire. Among the total number of participants (n=392), 7.7% (n=30) were between the age group of 18-24 years of age; 21.7% (n=85) were between 25-31 years of age; 26.3% (n=103) were between 32-38 years of age; 24.5% (n=96) were between 39-45 years of age; 13.3% (n=52) were between 46-52 years of age; and 6.6% (n=26) were more than  $\geq 53$  years of age (Table 4.1). The finding indicated that the majority of the participants 72.5% were between the age group of 25-45 years. The mean (*M*) and the standard deviation (*SD*) values were (*M*=3.34 and *SD*=1.34) (Figure 4.1).

The research result on the age group frequency distribution was comparable to other research findings done in Ethiopia among people living with HIV/AIDS (Alemu et al 2011:265; Amberbir et al 2008:268; Markos et al 2008:175; Tiyou et al 2010:41). The finding of this study can perhaps be due to the largest proportion of the population in Ethiopia are among the age group of 15-64 years (CIA 2012).

<b>AGE GROUPS</b>	<b>FREQUENCY</b>	<b>PERCENT</b>
18-24	30	7.7
25-31	85	21.7
32-38	103	26.3
39-45	96	24.5
46-52	52	13.3
$\geq 53$	26	6.6
Total	392	100.0



**Figure 4.1** Frequency distribution of age of the participants (n=392)

#### **4.3.1.2 Gender**

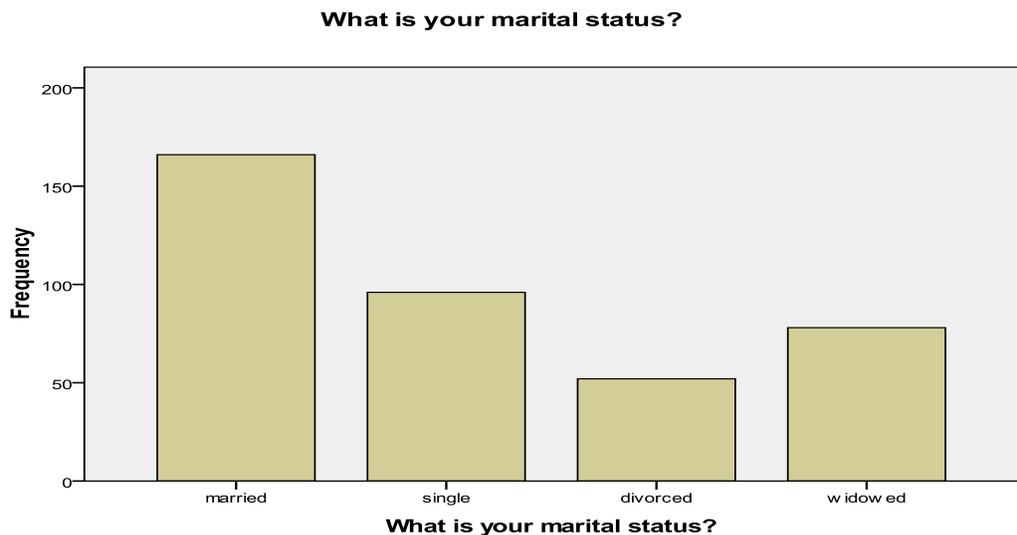
The participants were asked about their gender in the questionnaire. Among the total number of participants (n=392), there were 36.2% (n=142) male and 63.8% (n=250) were female (Table 4.2). The result showed that the majority of the participants were females living with HIV/AIDS on ART. The research result corresponded with other research findings done in Ethiopia among people living with HIV/AIDS (Alemu et al 2011:265; Amberbir et al 2008:268; Tessema et al 2010:6; Tiyou et al 2010:41). The finding of this study can perhaps be due to the women's economic status and other socio-cultural factors. In addition, women constitute a larger proportion of the population in Ethiopia (CIA 2012).

<b>GENDER</b>	<b>FREQUENCY</b>	<b>PERCENT</b>
Male	142	36.2
Female	250	63.8
Total	392	100.0

### 4.3.1.3 Marital status

The participants were asked to fill out their marital status in the questionnaire. Among the total number of participants (n=392), there were 42.3% (n=166) married; 24.5% (n=96) were single; 13.3% (n=52) were divorced; and 19.9% (n=78) were widowed (Table 4.3). The finding depicted that the majority of the participants 42.3% were married. The research result corresponded with other research results done in Ethiopia among people living with HIV/AIDS on ART (Alemu et al 2011:265; Amberbir et al 2008:268; Tiyou et al 2010:41). The finding of this study can perhaps be due to the majority of people living with HIV/AIDS are women; hence, women may prefer to continue being in a relationship because of the need for emotional and economic support from their spouses.

<b>MARITAL STATUS</b>	<b>FREQUENCY</b>	<b>PERCENT</b>
Married	166	42.3
Single	96	24.5
Divorced	52	13.3
Widowed	78	19.9
Total	392	100.0



**Figure 4.2 Frequency distribution of the participants marital status (n=392)**

#### **4.3.1.4 Ethnic background**

The participants were asked about their ethnic background in the study. Among the total number of participants (n=392), 48.2% (n=189) were from the Amhara ethnic background; 22.4% (n=88) were from the Oromo ethnic background; 15.8% (n=62) were from Tigre ethnic background; 11% (n=43) were from the Gurage ethnic background; and 2.6% (n=10) stated their ethnic background under the heading of “others” (Table 4.4). The research finding showed that the majority of the participants 48.2% were from the Amhara ethnic group. The research result corresponded with other research results done in Ethiopia among people living with HIV/AIDS on ART (Markos et al 2008:175; Tessema et al 2010:6). The finding of this study can perhaps be due to a larger proportion of the population that live in the capital city are from the Amhara ethnic group.

<b>ETHNIC BACKGROUND</b>	<b>FREQUENCY</b>	<b>PERCENT</b>
Amhara	189	48.2
Oromo	88	22.4
Tigre	62	15.8
Gurage	43	11.0
Other	10	2.6
Total	392	100.0

#### **4.3.1.5 Religious background**

The participants were asked to fill out the question about their religious background. Among the total number of participants (n=392), 68.4% (n=268) were from an Orthodox religious background; 14.5% (n=57) were from a Muslim religious background; 13.8% (n=54) were from a Protestant religious background; and 3.3% (n=13) were from a Catholic religious background (Table 4.5). The finding showed that the majority of the participants 68.4% were from the Orthodox religious background. The research result corresponded with the research results done in Ethiopia among people living with HIV/AIDS (Alemu et al 2011:265; Markos et al 2008:175; Tessema et al 2010:6). The finding of this

study can perhaps be due to a larger proportion of religious group in the country are from an Orthodox background (CIA 2012).

<b>RELIGIOUS BACKGROUND</b>	<b>FREQUENCY</b>	<b>PERCENT</b>
Orthodox	268	68.4
Muslim	57	14.5
Protestant	54	13.8
Catholic	13	3.3
Total	392	100.0

#### **4.3.1.6 Level of education**

The participants were asked about their level of education that they attained. Among the total number of participants (n=392), 11.2% (n=44) had no formal education; 26.5% (n=104) had a primary level of education; 39.3% (n=154) had a secondary level of education; 16.1% (n=63) had a college diploma level of education; 6.6% (n=26) had a university degree level of education; and 0.3% (n=1) stated their level of education under the heading of “others”( beyond the level of university degree) (Table 4.6).

The result of the study showed that the majority of the participants 65.8% acquired the basic level of education. The research result corresponded with other research results done in Ethiopia among people living with HIV/AIDS (Alemu et al 2011:265; Amberbir et al 2008:268; Tiyou et al 2010:41).

<b>LEVEL OF EDUCATION</b>	<b>FREQUENCY</b>	<b>PERCENT</b>
No formal education	44	11.2
Primary education	104	26.5
Secondary education	154	39.3
College diploma	63	16.1
University degree	26	6.6
Other	1	0.3
Total	392	100.0

#### 4.3.1.7 Occupation

The participants were asked about their current occupation. Among the total number of participants (n=392); 19.1% (n=75) were a government employee; 32.4% (n=127) were employed in the private sector; 8.7% (n=34) were in the self-employed sector; 13.3% (n=52) were house wives; 11.5% (n=45) work in the non-governmental organisation sector; 12% (n=47) were jobless; 2.3% (n=9) were on pensioner; and 0.8% (n=3) stated their occupation background under the heading of “others” (Table 4.7). The finding showed that the majority of the participants (32.4%) were working in the private sector. The research result corresponded with other research result done in Ethiopia among people living with HIV/AIDS (Tiyou et al 2010:41).

<b>OCCUPATION</b>	<b>FREQUENCY</b>	<b>PERCENT</b>
Government employee	75	19.1
Private employee	127	32.4
Self-employed	34	8.7
House wife	52	13.3
NGO	45	11.5
Jobless	47	12.0
On pensioner	9	2.3
Other	3	0.8
Total	392	100.0

#### 4.3.1.8 Gross monthly income

The participants were asked about their gross monthly income to fill out in the questionnaire. Among the total number of participants (n=392), there were 37% (n=145) that had a gross monthly income of Ethiopian birr less than ≤500 birr/month; 33.9% (n=133) had a monthly income between 501-1,500 birr/month; 16.3% (n=64) had a monthly income between 1,500- 2,600 birr/month; 3.6% (n=14) had a monthly income between 2,600- 3,700 birr/month; 8.9% (n=35) had a gross monthly income between 3,700- 4,800 birr/month; and 0.3% (n=1) had a gross monthly income of more than ≥4,800 birr/month (Table 4.8).

The finding showed that the majority participants 37% had a gross monthly income of less than  $\leq 500$  Ethiopian birr/month. The research result corresponded with other research results done in Ethiopia among people living with HIV/AIDS (Alemu et al 2011:265; Markos et al 2008:175; Tessema et al 2010:6; Tiyou et al 2010:41). The finding can perhaps be due to the majority of the Ethiopian population are from a low socio-economic background and HIV/AIDS affect people with low socio-economic background.

<b>GROSS MONTHLY INCOME</b>	<b>FREQUENCY</b>	<b>PERCENT</b>
$\leq 500$ birr/month	145	37.0
501-1500 birr/month	133	33.9
1501-2600 birr/month	64	16.3
2601-3700 birr/month	14	3.6
3701-4800 birr/month	35	8.9
$\geq 4801$ birr/month	1	0.3
Total	392	100.0

### ***Summarised findings on socio-demographic***

Summary of the data collected from the participants (n=392) showed that, the majority of the participants 72.5% were between the age group of 24-45 years of age; 63.8% were female; 42.3% were married; the majority of the participants 48.2% were from the Amhara ethnic group; 68.4% were from the Orthodox religious group; 65.8% acquired the basic level of education; 32.4% worked in the private sector; and 37% had a gross monthly income of less than  $\leq 500$  Ethiopian birr/month.

#### **4.3.2 Trait emotional intelligence**

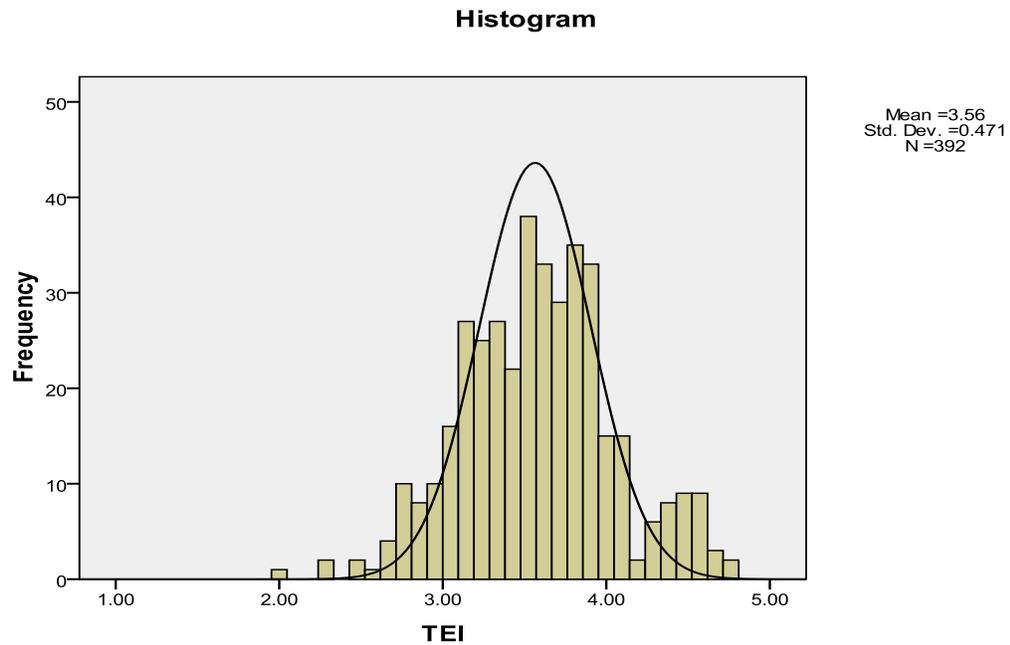
The participants were asked questions about their behavioural-dispositions related to trait emotional intelligence. The questions focused on the four factors (well-being, self-control, emotionality, and sociability factors) and the associated facets of each factor as indicated in the trait emotional intelligence model (Figure

2.3). The responses obtained were grouped in terms of above-average, average, and below-average as compared with an acceptable level of trait emotional intelligence.

Findings about the general level of trait emotional intelligence of the participants were the following. Among the total number of participants ( $n=392$ ), 15.6% ( $n=61$ ) had an above-average level of trait emotional intelligence; 84.4% ( $n=331$ ) had an average level of trait emotional intelligence; and there were no participants ( $n=0$ ) that had a below-average level of trait emotional intelligence (Table 4.9). The mean and the standard deviation values were ( $M=3.56$  and  $SD=0.471$ ) (Figure4.3). The finding showed that the majority of participants 84.4% had an average trait emotional intelligence level.

The level of trait emotional intelligence score was calculated against the behaviour reported by the participants in terms of the facets of the four factors of trait emotional intelligence. The finding of the study showed that the majority of the participants 51.5% had an above-average level of the well-being factor; the majority of the participants 69.6% had an average level of the self-control factor; the majority of the participants 67.6% had an average level of the emotionality factor; and the majority of the participants 79.3% had an average level of the sociability factor.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Above-average level	61	15.6
2.Average level	331	84.4
3.Below-average level	0	0
Total	392	100.0



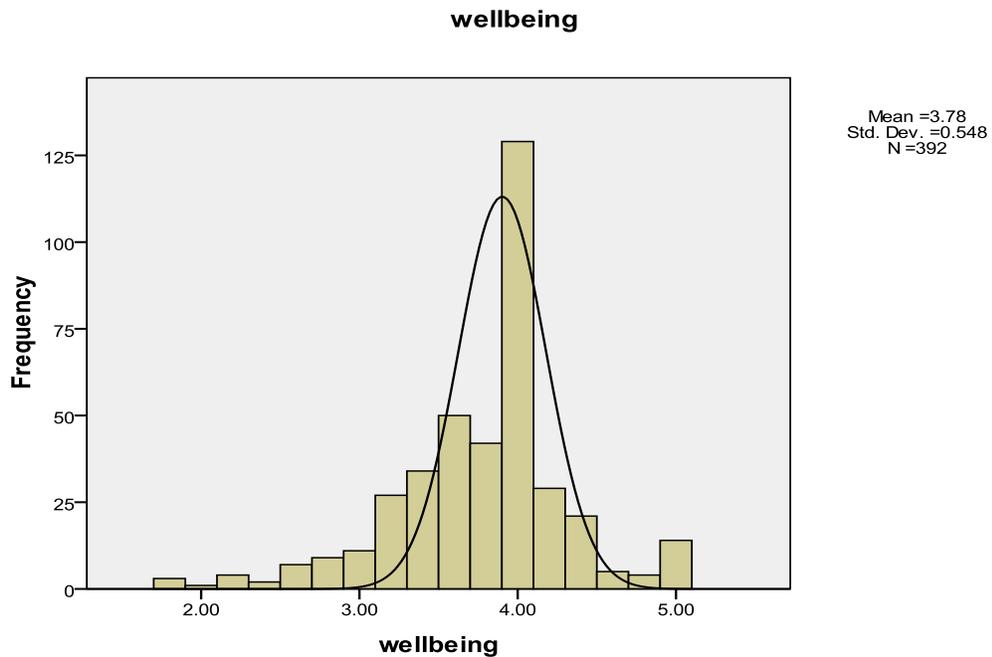
**Figure 4.3 Frequency distribution of trait emotional intelligence (n=392)**

#### **4.3.2.1 Well-being factor**

The participants were asked questions on the behaviour related to the factor of well-being in terms of the facets of happiness, optimism and self-esteem. The responses obtained were used to group the participants' responses on the well-being factor as above-average, average, and below-average level.

The level of the well-being score was calculated against the responses reported by the participants in terms of the facets of well-being. Among the total number of participants (n=392), 51.52% (n=202) had an above-average of the well-being factor; 47.4% (n=186) had an average level of the well-being factor; and 1% (n=4) had a below-average level of the well-being factor (see 4.10). The mean and the standard deviation values were ( $M=3.78$  and  $SD=0.548$ ) (Figure 4.4). The finding showed that the majority of the participants 51.52% had an above-average level of the well-being factor.

TABLE 4.10 FREQUENCY DISTRIBUTION OF THE WELL-BEING FACTOR (n=392)		
	FREQUENCY	PERCENT
1.Above-average	202	51.5
2.Average	186	47.4
3.Below-average	4	1.0
Total	392	100.0



**Figure 4.4 Frequency distribution of the well-being factor (n=392)**

#### 4.3.2.1.1 Happiness facet

Analysis of the data on the happiness facet showed that the participants were not sure on this facet. The participants did not find life to be enjoyable, but on the other hand, they were pleased with their lives.

The participants were asked a question related to the happiness facet: “I generally do not find life enjoyable” (Table 4.11).

Among the total number of participants (n=392), 4.1% (n=16) strongly disagreed to life not being enjoyable; 13.5% (n=53) disagreed to life not being enjoyable; 4.8% (n=19) were not sure to life not being enjoyable; 59.2% (n=232) agreed to

life not being enjoyable; and 18.4% (n=72) strongly agreed to life not being enjoyable (Table 4.11). The mean and the standard deviation values were ( $M=3.74$  and  $SD=1.038$ ). The finding showed that the majority of the participants 77.6% did not find life to being enjoyable in general. Thus, the majority of the participants' were not in content and were not cheerful about their life in general.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	16	4.1
2.Disagree	53	13.5
3.Not sure	19	4.8
4.Agree	232	59.2
5.Strongly agree	72	18.4
Total	392	100.0

Another question asked on the happiness facet was formulated as follows: "*on the whole, I am pleased with my life*" (Table 4.12).

Among the total number of participants (n=392), 2.8% (n=11) strongly disagreed to being pleased with their life; 10.5% (n=41) disagreed to being pleased with their life; 15.8% (n=62) were not sure if they were pleased with their life; 58.4% (n=229) agreed to being pleased with their life; and 12.5% (n=49) strongly agreed to being pleased with their life (Table 4.12). The mean and the standard deviation values were ( $M=3.67$  and  $SD=0.922$ ). The finding showed that the majority of the participants 70.9% were pleased with their life on the whole. Thus, the majority of the participants' were in a pleasant emotional state and feel good about their life in general.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	11	2.8
2.Disagree	41	10.5
3.Not sure	62	15.8
4.Agree	229	58.4
5.Strongly agree	49	12.5
Total	392	100.0

#### 4.3.2.1.2 Optimism facet

Among the total number of participants (n=392), 2% (n=8) strongly disagreed to believing things working out fine in their life; 2% (n=8) disagreed to believing things working out fine in their life; 10.5% (n=41) were not sure to believing things working out fine in their life; 69.1% (n=271) agreed to believing things working out fine in their life; and 16.3% (n=64) strongly agreed to believing things working out fine in their life (Table 4.13). The mean and the standard deviation values were ( $M=3.96$  and  $SD=0.730$ ).

The finding showed that the majority of the participants 85.4% believed things will work out fine in their life. Thus, the majority of the participants' expected positive things to happen in their life with the tendency to look on the bright side and tend to look for positive opportunities rather than threats in their lives.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	8	2.0
2.Disagree	8	2.0
3.Not sure	41	10.5
4.Agree	271	69.1
5.Strongly agree	64	16.3
Total	392	100.0

#### 4.3.2.1.3 Self-esteem facet

Analysis of the data on the self-esteem facet showed that the majority of the participants' had a high self-esteem. The participants' had a positive view of themselves with high level of self-respect of their achievements.

The participants were asked question related to the self-esteem facet: "I feel that I have a number of good qualities" (Table 4.14).

Among the total number of participants (n=392), 1.3% (n=5) strongly disagreed to having a number of good qualities; 8.2% (n=32) disagreed to having a number of good qualities; 18.6% (n=73) were not sure to having a number of good qualities; 62% (n=243) agreed to having a number of good qualities; and 9.9% (n=39) strongly agreed to having a number of good qualities (Table 4.14). The mean and the standard deviation values were ( $M=3.71$  and  $SD=0.803$ ). The finding showed that the majority of the participants 71.9% felt that they had a number of good qualities. Thus, the majority of the participants' had a positive view of themselves with high level of self-respect.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	5	1.3
2.Disagree	32	8.2
3.Not sure	73	18.6
4.Agree	243	62.0
5.Strongly agree	39	9.9
Total	392	100.0

Another question asked on the self-esteem facet was formulated as follows: "*I believe I am full of personal strengths*" (Table 4.15).

Among the total number of participants (n=392), 1.5% (n=6) strongly disagreed to believing they were full of personal strengths; 4.3% (n=17) disagreed to believing they were full of personal strengths; 16.6% (n=65) were not sure if they were full of personal strengths; 66.6% (n=261) agreed to believing they were full of personal strengths; and 11% (n=43) strongly agreed to believing they were full of personal strengths (Table 4.15). The mean and the standard deviation values were ( $M=3.81$  and  $SD=0.743$ ).

The finding showed that the majority of the participants 77.6% believed that they were full of personal strengths. Thus, the majority of the participants' had a positive view of their achievements.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	6	1.5
2.Disagree	17	4.3
3.Not sure	65	16.6
4.Agree	261	66.6
5.Strongly agree	43	11.0
Total	392	100.0

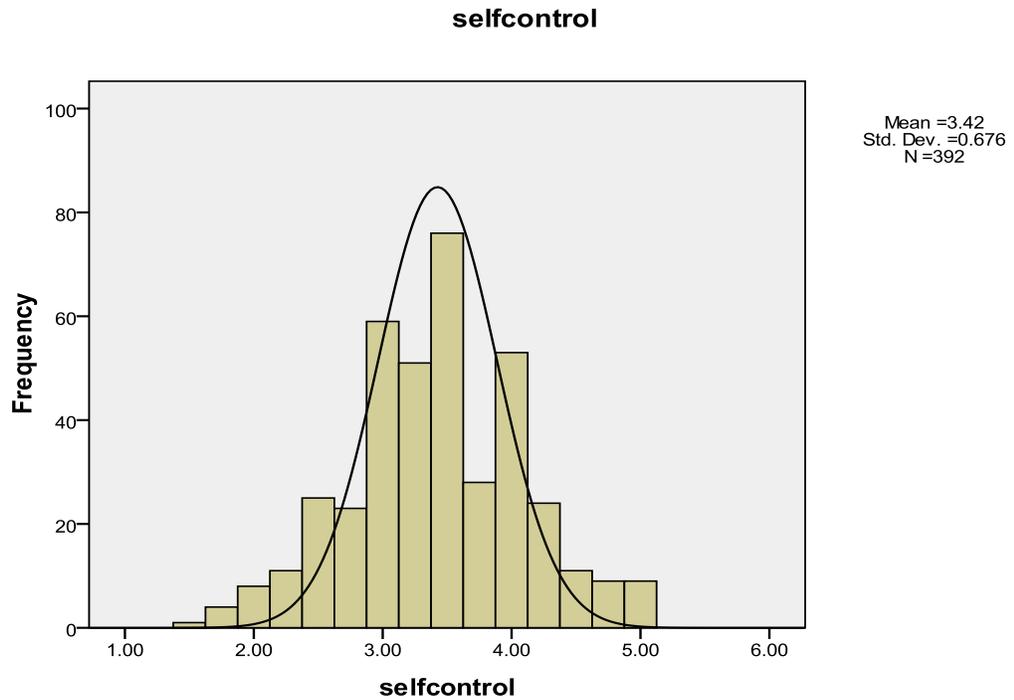
#### **4.3.2.2 Self-control factor**

The participants were asked questions on the behaviour related to the self-control factor in terms of the facets of emotional regulation, impulsiveness and stress management. The responses were used to group the participants' responses on the self-control factor as above-average, average, and below-average.

Among the total number of participants (n=392), 27% (n=106) had an above-average level of the self-control factor; 69.6% (n=273) had an average level of the self-control factor; and 3.3% (n=13) had a below-average level of the self-control factor (Table 4.16). The mean and the standard deviation values were ( $M=3.42$  and  $SD=0.676$ ) (Figure 4.5).

The level of the self-control score was calculated against the responses reported by the participants in terms of the facets of self-control. The finding showed that the majority of the participant 69.6% had an average level of the self-control factor. Thus, the majority of the participants' were on average able to regulate external pressure and on average able to control their stress and impulses.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1. Above-average	106	27.0
2. Average	273	69.6
3. Below-average	13	3.3
Total	392	100.0



**Figure 4.5 Frequency distribution on the self-control factor (n=392)**

#### 4.3.2.2.1 Emotional regulation facet

Among the total number of participants (n=392), 1.8% (n=7) strongly disagreed to finding ways to controlling emotions; 10.7% (n=42) disagreed to finding ways to controlling emotions; 12.5% (n=49) were not sure to finding ways to controlling emotions; 63.5% (n=249) agreed to finding ways to controlling emotions; and 11.5% (n=45) strongly agreed to finding ways to controlling emotions (Table 4.17). The mean and the standard deviation values were ( $M=3.72$  and  $SD=0.868$ ).

The finding showed that the majority of the participants 75% were able to find ways to control their emotions when they want to. Thus, the majority of the participants' perceived that they were able to stay focused and remain calm in upsetting situation to achieve what they want instead of their emotions dominating them.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	7	1.8
2.Disagree	42	10.7
3.Not sure	49	12.5
4.Agree	249	63.5
5.Strongly agree	45	11.5
Total	392	100.0

#### 4.3.2.2.2 *Impulsiveness facet*

The participants were asked question related to the impulsiveness facet: “*I tend to change my mind frequently*” (Table 4.18).

Among the total number of participants (n=392), 3.8% (n=15) strongly disagreed to the tendency in changing their mind frequently; 43.6% (n=171) disagreed to the question asked; 9.7% (n=38) were not sure to the question asked; 33.2% (n=130) agreed to the question asked; and 9.7% (n=38) strongly agreed to the question asked (Table 4.18). The mean and the standard deviation values were ( $M=3.01$  and  $SD=1.145$ ).

Among the participants, 42.9% had the tendency to changing their mind frequently and they do not prefer to plan ahead, do not take time to gather information and do not evaluate evidence before making decisions. On the contrary, 47.4% of the participants had no tendency to changing their mind frequently and they considered information carefully before making decisions and were unlikely to give in to their urges. Thus, the finding showed that there were almost equal proportions of participants' that had the tendency to change their mind frequently and people that did not.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	15	3.8
2.Disagree	171	43.6
3.Not sure	38	9.7
4.Agree	130	33.2
5.Strongly agree	38	9.7
Total	392	100.0

#### 4.3.2.2.3 Stress management facet

The analyses of the data on the stress management facet showed that the majority of the participants had high potential to manage stress. The participants' were able to deal with stressful circumstances and manage the situation by being relaxed.

The participants were asked question related to the stress management facet: “*others admire me for being relaxed*” (Table 4.19).

Among the total number of participants (n=392), 1.3% (n=5) strongly disagreed to others admired them for being relaxed; 23% (n=90) disagreed to others admired them for being relaxed; 20.7% (n=81) were not sure to others admired them for being relaxed; 43.9% (n=172) agreed to others admired them for being relaxed; and 11.2% (n=44) strongly agreed to others admired them for being relaxed (Table 4.19). The mean and the standard deviation values were ( $M=3.41$  and  $SD=1.002$ ). The finding showed that the majority of the participants 55.1% thought that others admired them for being relaxed. Thus, the majority of the participants' perceived that they were capable of managing their stressful life circumstances and under pressure.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	5	1.3
2.Disagree	90	23.0
3.Not sure	81	20.7
4.Agree	172	43.9
5.Strongly agree	44	11.2
Total	392	100.0

Another question asked on the stress management facet was formulated as follows: “*on the whole, I am able to deal with stress*” (Table 4.20).

Among the total number of participants (n=392), 3.1% (n=12) strongly disagreed to being able to deal with stress; 16.6% (n=65) disagreed to being able to deal with stress; 17.1% (n=67) were not sure to being able to deal with stress; 50.8% (n=199) agreed to being able to deal with stress; and 12.5% (n=49) strongly agreed to being able to deal with stress (Table 4.20). The mean and the standard deviation values were ( $M=3.53$  and  $SD=1.008$ ). The finding showed that the majority of the participants 63.3% believed that they were able to deal with stress. Thus, the majority of the participants’ perceived that they were capable of stress management and were capable of dealing with stress.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	12	3.1
2.Disagree	65	16.6
3.Not sure	67	17.1
4.Agree	199	50.8
5.Strongly agree	49	12.5
Total	392	100.0

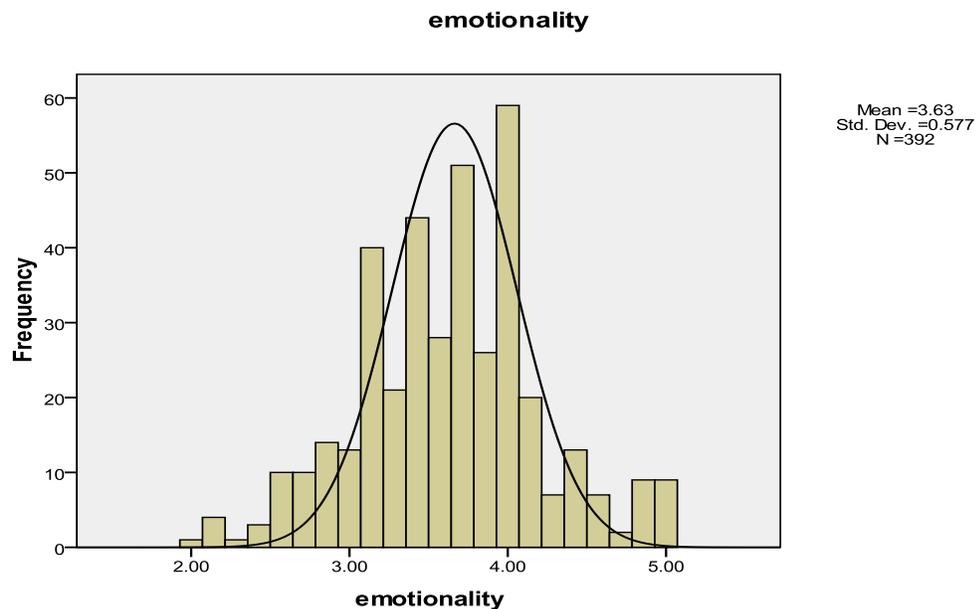
#### **4.3.2.3 Emotionality factor**

The participants were asked questions on the behaviour related to the factor of emotionality in terms of the facets of empathy, emotional perception, emotional expression, and relationships facets. The responses were used to group the

participants' responses on the emotionality factor as above-average, average, and below-average level.

Among the total number of participants ( $n=392$ ), 32.1% ( $n=126$ ) had an above-average level of the emotionality factor; 67.6% ( $n=265$ ) had an average level of the emotionality factor; and 0.3% ( $n=1$ ) had a below-level of the emotionality factor (Table 4.21). The mean and the standard deviation values were ( $M=3.63$  and  $SD=0.577$ ) (Figure 4.6). The level of the emotionality score was calculated against the responses reported by the participants in terms of the facets of emotionality. The finding showed that the majority of the participants 67.6% had an average level of the emotionality factor. They were on average able to think about their emotions, able to express their emotions and understand others point of view.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1. Above-average	126	32.1
2. Average	265	67.6
3. Below-average	1	0.3
Total	392	100.0



**Figure 4.6 Frequency distribution of the emotionality factor (n=392)**

#### 4.3.2.3.1 Empathy facet

Among the total number of participants (n=392), 0.8% (n=3) strongly disagreed to the difficulty of see things from another person's viewpoint; 23.2% (n=91) disagreed to the difficulty of see things from another person's viewpoint; 13.3% (n=52) were not sure to the difficulty of see things from another person's viewpoint; 53.8% (n=211) agreed to the difficulty of see things from another person's viewpoint; and 8.9% (n=35) strongly agreed to the difficulty of see things from another person's viewpoint (Table 4.22). The mean and the standard deviation values were ( $M=3.47$  and  $SD=0.970$ ).

The finding showed that the majority of the participants 62.7% had difficulty to see things from another person's viewpoint. Thus, the majority of the participants' had low level of empathy. They were not able to understand others' viewpoints, others' reasons for feelings and actions.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	3	.8
2.Disagree	91	23.2
3.Not sure	52	13.3
4.Agree	211	53.8
5.Strongly agree	35	8.9
Total	392	100.0

#### 4.3.2.3.2 Emotion perception facet

The analyses of the data on the facet of perceptions about emotion showed that the majority of the participants were not sure on the responses to the emotional perception facet. The participants were able to think about their emotions, but they had difficulty to figure out what emotions they were feeling.

The participants were asked question related to the emotion perception facet:" *many times, I can not figure out what emotions I am feeling*" (Table 4.23).

Among the total number of participants (n=392), 1% (n=4) strongly disagreed to not being able to figure out their emotions; 24.5% (n=96) disagreed to not being able to figure out their emotions; 13.8% (n=54) were not sure to not being able to figure out their emotions; 49.7% (n=195) agreed to not being able to figure out their emotions; and 11% (n=43) strongly agreed to not being able to figure out their emotions (Table 4.23). The mean and the standard deviation values were ( $M=3.45$  and  $SD=1.010$ ).

The finding showed that the majority of the participants 60.7% were not able to figure out what emotions they were feeling. The majority of the participants' had low emotional perceptions and poor insight of their own emotions as well as felt emotionally confused and unable to decode other emotional signals.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	4	1.0
2.Disagree	96	24.5
3.Not sure	54	13.8
4.Agree	195	49.7
5.Strongly agree	43	11.0
Total	392	100.0

Another question asked on emotional perception facet was formulated as follows:" *I often pause and think about my feelings*" (Table 4.24).

Among the total number of participants (n=392), 1.8% (n=7) strongly disagreed to pausing and thinking about their feelings; 14% (n=55) disagree to pausing and thinking about their feelings; 8.9% (n=35) were not sure to pausing and thinking about their feelings; 67.9% (n=266) agreed to pausing and thinking about their feelings; and 67.9% (n=266) strongly agreed to pausing and thinking about their feelings (Table 4.24). The mean and the standard deviation values were ( $M=3.65$  and  $SD=0.875$ ). The finding showed that the majority of the participants 75.3% were able to pause and think about their feelings and emotions.

<b>TABLE 4.24 "I OFTEN PAUSE AND THINK ABOUT MY FEELINGS." (n=392)</b>		
	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	7	1.8
2.Disagree	55	14.0
3.Not sure	35	8.9
4.Agree	266	67.9
5.Strongly agree	29	7.4
Total	392	100.0

#### *4.3.2.3.3 Emotional expression facet*

Data analysis on the facet of emotional expression showed that the participants were ambivalent about their ability of giving expression of their emotions. The participants were able to express their emotions in words, but had the difficulty to show emotions to people close to them.

The participants were asked question related to the emotional expression facet: "expressing my emotions with word is not a problem for me" (Table 4.25)

Among the total number of participants were (n=392), 2.6% (n=10) strongly disagreed to the problem of expressing their emotions with words; 17.1% (n=67) disagreed to the problem of expressing their emotions with words; 6.4% (n=25) were not sure to the problem of expressing their emotions with words; 59.9% (n=235) agreed to the problem of expressing their emotions with words; and 14% (n=55) strongly agreed to the problem of expressing their emotions with words (Table 4.25). The mean and the standard deviation values were ( $M=3.66$  and  $SD=1.002$ ). The finding showed that the majority of the participants 73.9% were able to express their emotions with words. Thus, the majority of the participants' were able to express and communicate their feelings with words to others.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	10	2.6
2.Disagree	67	17.1
3.Not sure	25	6.4
4.Agree	235	59.9
5.Strongly agree	55	14.0
Total	392	100.0

Another question asked on the emotional expression facet was formulated as follows: “*I often find it difficult to show my affection to those close to me*” (Table 4.26).

Among the total number of participants (n=392), 0.3% (n=1) strongly disagreed to the difficulty in showing their affection to people close to them; 12.8% (n=50) disagreed to the difficulty in showing their affection to people close to them; 10.5% (n=41) were not sure of the difficulty in showing their affection to people close to them; 59.2% (n=232) agreed to the difficulty in showing their affection to people close to them; and 17.3% (n=68) strongly agreed to the difficulty in showing their affection to people close to them (Table 4.26). The mean and the standard deviation values were ( $M=3.81$  and  $SD=0.881$ ). The finding showed that the majority of the participants 76.5% had difficulty to show affection to those close to them. Thus, they had low emotional expression and were not able to express their affection to others.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	1	0.3
2.Disagree	50	12.8
3.Not sure	41	10.5
4.Agree	232	59.2
5.Strongly agree	68	17.3
Total	392	100.0

#### 4.3.2.3.4 Relationships facet

Analysis of the data on the facet of relationships included questions such as *Those close to me often complain that I do not treat them right* (Table 4.27) and *I find it difficult to bond well even with those close to me* (Table 4.28). The responses showed that the participants' had low relationship forming potential. The participants' has difficulty in forming relationships and those close to them complained that they do not treat them right.

Among the total number of participants responding to the question on the treatment of others (n=392), 1% (n=4) strongly disagreed to others complaining that they do not treat them right; 10.5% (n=41) disagreed to others complaining that they do not treat them right; 16.3% (n=64) were not sure to others complaining that they do not treat them right; 53.3% (n=209) agreed to others complaining that they do not treat them right; and 18.9% (n=74) strongly agreed to others complaining that they do not treat them right (Table 4.27). The mean and the standard deviation values were ( $M=3.79$  and  $SD=0.905$ ). The finding showed that the majority of the participants 72.2% had concerns with others complaining that they do not treat them right. Thus, the majority of the participants' had poor relationships and were not good at forming relationship with the people close to them.

**TABLE 4.27 "THOSE CLOSE TO ME OFTEN COMPLAIN THAT I DO NOT TREAT THEM RIGHT" (n=392)**

	FREQUENCY	PERCENT
1.Strongly disagree	4	1.0
2.Disagree	41	10.5
3.Not sure	64	16.3
4.Agree	209	53.3
5.Strongly agree	74	18.9
Total	392	100.0

Among the total number of participants (n=392), 1.3% (n=5) strongly disagreed on the difficulty to bond well with people close to them; 20.7% (n=81) disagreed on the difficulty to bond well with people close to them; 9.4% (n=37) were not sure on the difficulty to bond well with people close to them; 53.6% (n=210)

agreed on the difficulty to bond well with people close to them; and 15.1% (n=59) strongly agreed on the difficulty to bond well with people close to them (Table 4.28). The mean and the standard deviation values were ( $M=3.60$  and  $SD=1.016$ ). The finding showed that the majority of the participants 68.6% had difficulty to bond well with people close to them. Thus, the majority of the participants' did not have the potential to form sustainable personal relationships. They indicated that they did not have people they can rely on for support on aspects such as social enjoyment, emotional support during difficult times and information.

**TABLE 4.28 "I FIND IT DIFFICULT TO BOND WELL EVEN WITH THOSE CLOSE TO ME" (n=392)**

	FREQUENCY	PERCENT
1.Strongly disagree	5	1.3
2.Disagree	81	20.7
3.Not sure	37	9.4
4.Agree	210	53.6
5.Strongly agree	59	15.1
Total	392	100.0

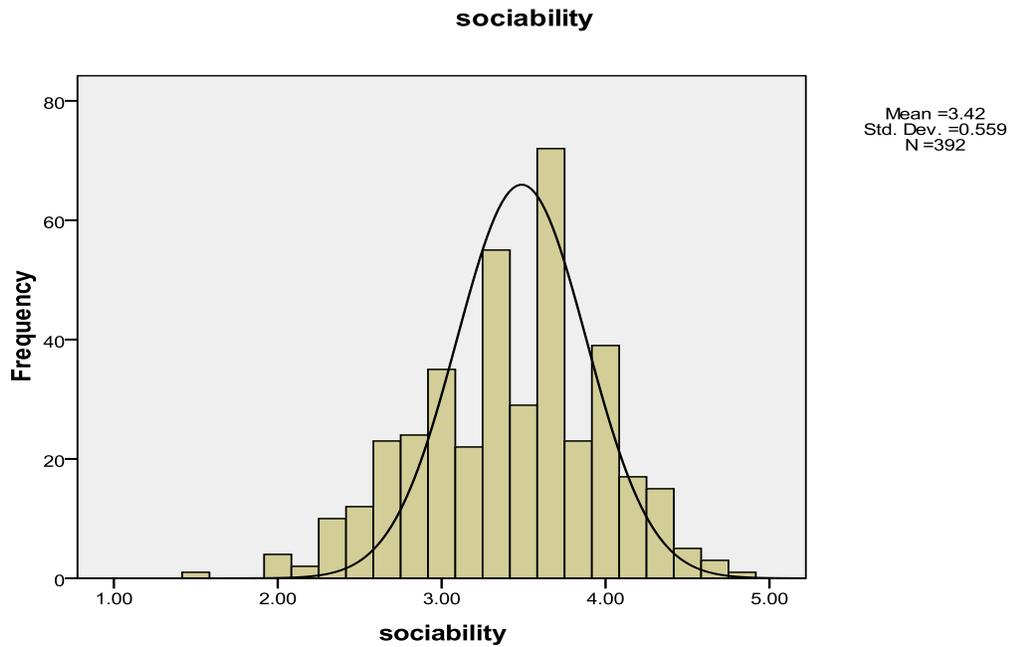
#### **4.3.2.4 Sociability factor**

The participants were asked questions on the facets related to the social awareness, assertiveness and emotional management facets as well as adaptation and self-motivation facets. The responses were used to group the participants' responses on the sociability factor as above-average, average, and below-average level.

Among the total number of participants (n=392), 20.4% (n=80) had an above-average level of the sociability factor; 79.3% (n=311) had an average level of the emotionality factor; and 1% (n=0.3) had a below -average level of the emotionality factor (Table 4.29). The mean and the standard deviation value were ( $M=3.42$  and  $SD=0.559$ ) (Figure 4.7). The level of the sociability score was calculated against the responses reported by the participants in terms of the facets of sociability. The finding showed that the majority of the participants

79.3% had an average level of the sociability factor. The participants' had average capacity to socialise, to manage different social environments and communicate with others.

<b>TABLE 4.29 FREQUENCY DISTRIBUTION OF THE SOCIABILITY FACTORS (n=392)</b>		
	<b>FREQUENCY</b>	<b>PERCENT</b>
1. Above-average	80	20.4
2. Average	311	79.3
3. Below-average	1	0.3
Total	392	100.0



**Figure 4.7 Frequency distribution of the sociability factor (n=392)**

**4.3.2.4.1 Social awareness facet**

Data (n=392) on the question " I can deal effectively with people" (Table 4.3), showed that 1% (n=4) strongly disagreed to dealing with people effectively; 10.7% (n=42) disagreed to dealing with people effectively; 11.5% (n=45) were not sure to dealing with people effectively; 66.1% (n=259) agreed to dealing with people effectively; and 10.7% (n=42) strongly agreed to dealing with people

effectively (Table 4.30). The mean and the standard deviation values were ( $M=3.75$  and  $SD=0.825$ ). The finding showed that the majority of the participants 76.8% were able to deal effectively with people. Thus, the majority of the participants' had good social skill and can interact in different social context.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	4	1.0
2.Disagree	42	10.7
3.Not sure	45	11.5
4.Agree	259	66.1
5.Strongly agree	42	10.7
Total	392	100.0

#### 4.3.2.4.2 Assertiveness facet

In terms of the facet of assertiveness, participants were asked questions on their ability to stand up for their right and to make decisions based on them being convinced that they are right. Analysis of the data on this facet showed that the participants did not have high levels of assertiveness.

Response (n=392) on the question: "*I often find it difficult to stand up for my rights*" (Table 4.31) showed that, 2.6% (n=10) strongly disagreed on the difficulty to stand up for their rights; 18.4% (n=72) disagreed on the difficulty to stand up for their rights; 8.7% (n=34) were not sure on the difficulty to stand up for their rights; 54.6% (n=214) agreed on the difficulty to stand up for their rights; and 15.8% (n=62) strongly agreed on the difficulty to stand up for their rights (Table 4.31). The mean and the standard deviation values were ( $M=3.63$  and  $SD=1.036$ ). The finding showed that the majority of the participants 70.4% had difficulty to stand up for their rights. Thus, the majority of the participants' had poor assertiveness and hesitate to stand up for their rights as well as for their point of view or belief.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	10	2.6
2.Disagree	72	18.4
3.Not sure	34	8.7
4.Agree	214	54.6
5.Strongly agree	62	15.8
Total	392	100.0

In terms of the question: "*I tend to back down even if I know I am right*" (Table 4.32) the following was determined:

Two percent 2% (n=8) strongly disagreed on the tendency to back down when they know they were right; 26.3% (n=103) disagreed on the tendency to back down when they know they were right; 14% (n=55) were not sure on the tendency to back down when they know they were right; 45.4% (n=214) agreed on the tendency to back down when they know they were right; and 12.2% (n=48) strongly agreed on the tendency to back down when they know they were right (Table 4.32). The mean and the standard deviation values were ( $M=3.40$  and  $SD=1.065$ ). The finding showed that the majority of the participants 57.6% had poor assertiveness. Thus, they had the tendency to back down even they know they were right and poor leadership qualities with poor decision making qualities.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	8	2.0
2.Disagree	103	26.3
3.Not sure	55	14.0
4.Agree	178	45.4
5.Strongly agree	48	12.2
Total	392	100.0

#### 4.3.2.4.3 Emotional management facet

The responses (n=392) regarding the question on the facet of emotional management “I am able to influence the way other people feel” (Table 4.33) showed the following.

Among the total number of participants (n=392), 12% (n=47) strongly disagreed to being able to influence the way others felt; 44.6% (n=175) disagreed to being able to influence; 20.2% (n=79) were not sure to being able to influence; 22.2% (n=87) agreed to being able to influence; and 1% (n=4) strongly agreed to being able to influence (Table 4.33). The mean and the standard deviation values were ( $M=2.56$  and  $SD=0.997$ ). The finding showed that the majority of the participants 56.6% were not able to influence the way other people felt. Thus, the majority of the participants’ were not able to manage other peoples’ emotions by counselling them or calming them down.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	47	12.0
2.Disagree	175	44.6
3.Not sure	79	20.2
4.Agree	87	22.2
5.Strongly agree	4	1.0
Total	392	100.0

#### 4.3.2.4.4 Adaptation facet

Among the total number of participants (n=392), 1.3% (n=5) strongly disagreed to the difficult to adjusting their life according to the circumstances; 22.4% (n=88) disagreed to the difficult to adjusting their life according to the circumstances; 10.7% (n=42) were not sure to the difficult to adjusting their life according to the circumstances; 54.1% (n=212) agreed to the difficult to adjusting their life according to the circumstances; and 11.5% (n=45) strongly agreed to the difficult to adjusting their life according to the circumstances (Table

4.34). The mean and the standard deviation values were ( $M=3.52$  and  $SD=1.004$ ).

The finding showed that the majority of the participants 65.6% had difficult to adjust their life according to the circumstances. The participants' had poor adaptability, were not able to cope with change and were not able to adapt to new things or environments.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	5	1.3
2.Disagree	88	22.4
3.Not sure	42	10.7
4.Agree	212	54.1
5.Strongly agree	45	11.5
Total	392	100.0

#### 4.3.2.4.5 Self-motivation facet

The facet of self-motivation ("*I normally find it difficult to keep myself motivated*") (Table 4.35) seems to be a limitation in terms of trait emotional intelligence.

Among the total number of participants (n=392), 2% (n=8) strongly disagreed to the difficulty of keeping them-selves motivated; 15.6% (n=61) disagreed to the difficulty; 9.2% (n=36) were not sure to the difficulty; 58.4% (n=212) agreed to the difficulty; and 14.8% (n=58) strongly agreed to the difficulty (Table 4.35). The mean and the standard deviation values were ( $M=3.68$  and  $SD=0.974$ ). The finding showed that the majority of the participants 73.2% had difficulty to keep themselves motivated. They had poor self-motivation and were not internally driven with likely to give up easily and lack internal standard which they applied to their daily lives.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Strongly disagree	8	2.0
2.Disagree	61	15.6
3.Not sure	36	9.2
4.Agree	229	58.4
5.Strongly agree	58	14.8
Total	392	100.0

### ***Summarised findings on trait emotional intelligence***

The summarised data analysis on the participants trait emotional intelligence: the majority of the participants 84.4% had an average level of the trait emotional intelligence, 15.6% had an above-average level, and there were no participants that had a below-average level of the trait emotional intelligence; on the well-being factor level with 51.5% had an above-average level, 47.4% had an average level, and 1% had a below-average level; on the self-control factor level with 27% had an above-average level, 69.6% had an average level, and 3.3% had a below-average level; on the emotionality factor level with 32% had an above-average level, 67.6% had an average level, and 0.3% had a below-average level; on the sociability factor level with 20.4% had an above-average level, 79.3% had an average level, and 0.3% had a below-average level. Thus, the participants were able to use on average their behavioural-dispositions related to trait emotional intelligence as a coping factor against negative psychological emotions, life’s challenges, and adapt to the negative life outcomes.

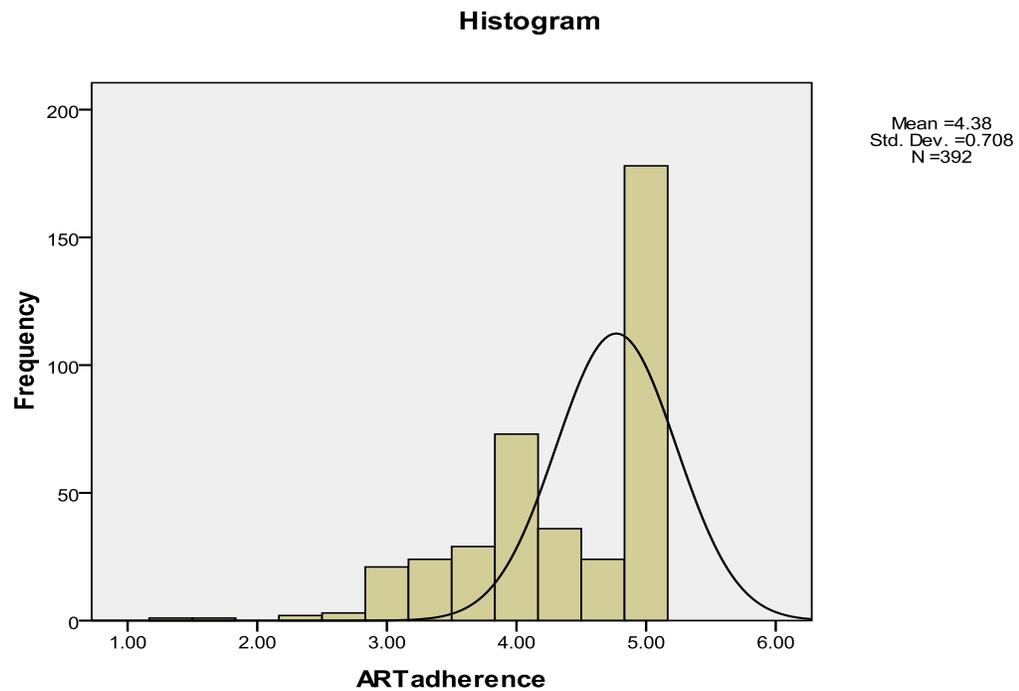
### **4.3.3 Anti-Retroviral Therapy (ART) adherence behaviour**

This section assesses data regarding ART adherence behaviour. The participants were asked about their ART adherence behaviour (dose, schedule, and life-style). The responses were used to calculate the participants’ ART adherence behaviour score as measured against the following criteria: the participants with the total score value of more than  $\geq 12$  were grouped as

optimally adherent with ART adherence level of more than  $\geq 95\%$ . The participants with the total score between the values 7-11 were grouped as sub-optimal adherence with ART adherence level between 80-94%. The participants with the total score value of less than  $\leq 6$  were grouped as poor adherent with ART adherence level of less than  $\leq 80\%$ .

Among the total number of participants ( $n=392$ ), 79.1% ( $n=310$ ) were optimally adherent to their ART; 19.9% ( $n=78$ ) were sub-optimally adherent; and 1% ( $n=4$ ) were poorly adherent to their ART (Table 4.36). The mean and the standard deviation values were ( $M=4.37$  and  $SD=0.701$ ) (Figure 4.8). The result of the study showed that the majority of the participants 79.1% had an optimal adherence to their ART. In addition, the finding of the study showed that the majority of the participants 89.6% had an optimal adherence to their ART dose; 76.2% had optimal adherence to their ART schedule; and 81.9% had optimal adherence to their ART life-style.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Optimally adherent	310	79.1
2.Sub-optimally adherent	78	19.9
3.Poorly adherent	4	1.0
Total	392	100.0



**Figure 4.8 Frequency distribution of Anti-Retroviral Therapy (ART) adherence behaviour (n=392)**

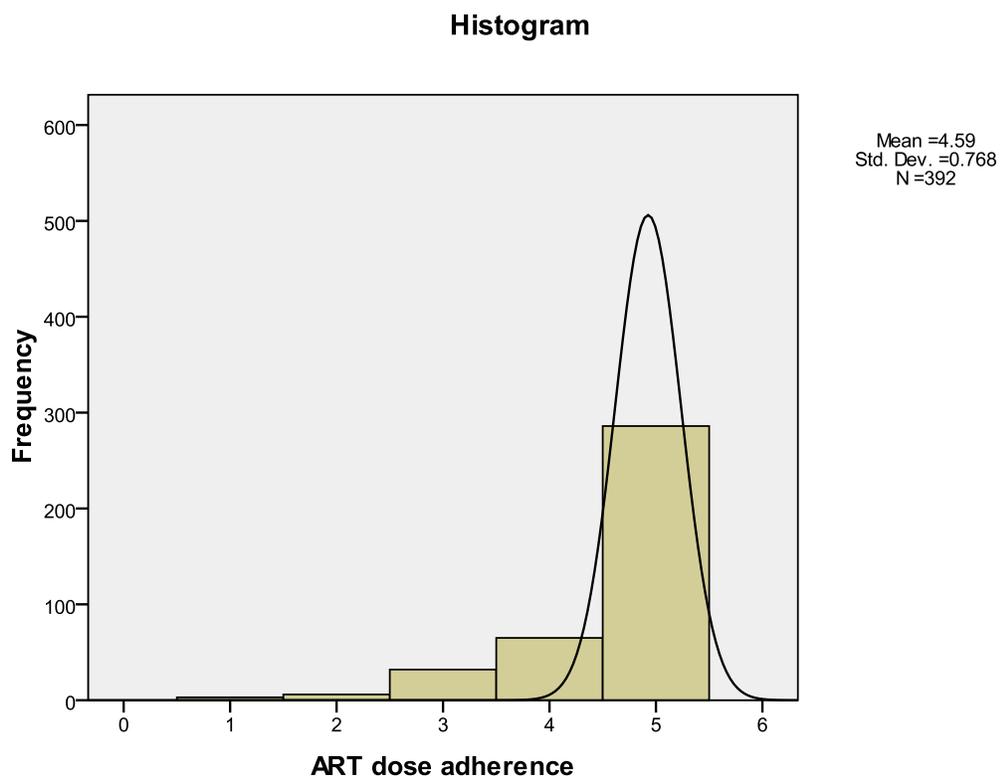
#### **4.3.3.1 Anti-Retroviral Therapy (ART) dose adherence behaviour**

The participants were asked question about their behaviour in terms of adhering to the prescribed ART dosage. The responses were used to calculate the participants' ART dose adherence behaviour score as optimally adherent, sub-optimally adherent and poorly adherent.

Among the total number of participants (n=392), 73% (n=286) were adherent to their ART dose every time they had to take treatment; 16.6% (n=65) were adherent to their ART dose almost every time while; 8.2% (n=32) were sometimes adherent to their ART dose; 1.5% (n=6) were almost never adherent to their ART dose; and 0.8% (n=3) were never adherent to their ART dose (Table 4.37). The mean and the standard deviation values were ( $M=4.59$  and  $SD=0.768$ ) (Figure 4.9). The finding of the study showed that the majority of the participants 73% were adherent to their ART dose for the last 2 months. Analysis of the data showed that 89.6% of the participants had optimal

adherence to their ART dose; 8.2% had sub-optimal adherence to their ART dose; 2.3% had poor adherence to their ART dose. The finding of the study showed that the majority of the participants 89.6% had an optimal adherence to their ART dose.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	3	0.8
2.Almost never	6	1.5
3.Sometimes	32	8.2
4.Almost every time	65	16.6
5.Every time	286	73.0
Total	392	100.0



**Figure 4.9 Frequency distribution of Anti-Retroviral Therapy (ART) dose adherence behaviour (n=392)**

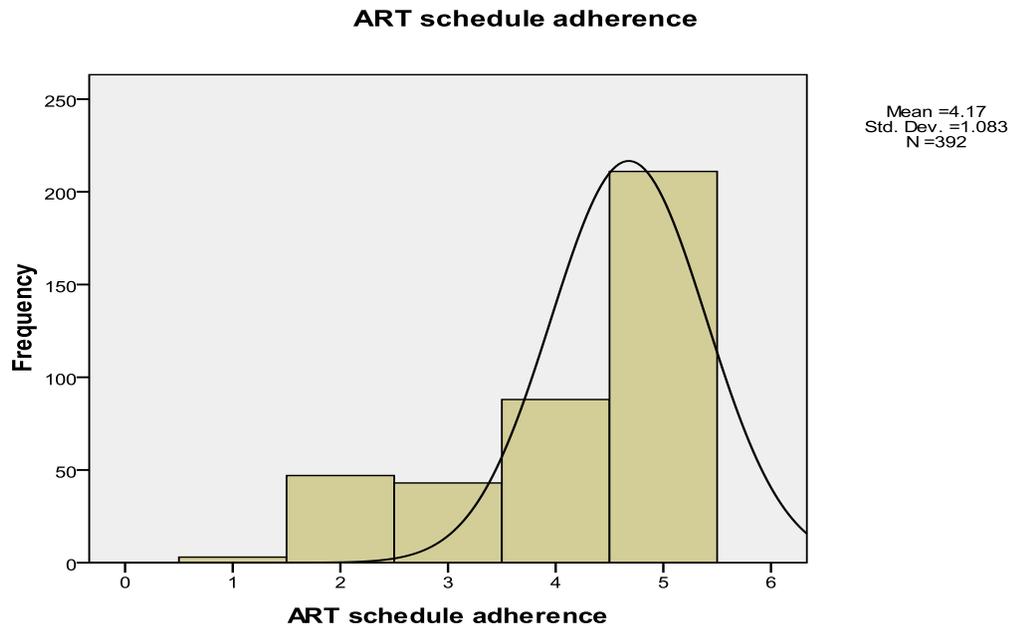
#### 4.3.3.2 Anti-Retroviral Therapy (ART) schedule adherence behaviour

The participants were asked to respond on adhering to their ART schedule. These responses were used to calculate the participants' ART schedule adherence behaviour score as optimally adherent, sub-optimally adherent and poorly adherent.

Among the total number of participants (n=392), 53.8% (n=211) were adherent to their ART schedule every time; 22.4% (n=88) were adherent to their ART schedule almost every time; 11% (n=43) were sometimes adherent to their ART schedule; 12% (n=47) were almost never adherent to their ART schedule; and 0.8% (n=3) were never adherent to their ART schedule (Table 4.38). The mean and the standard deviation values were ( $M= 4.17$  and  $SD=1.083$ ) (Figure 4.10).

The finding of the study showed that the majority of the participants 53.8% were every time adherent to their ART schedule. Analysis of the data showed that 76.2% of the participants had optimal adherence to their ART schedule; 11% had sub-optimal adherence to their ART schedule; 12.8% had poor adherence to their ART schedule. The finding of the study showed that the majority of the participants 76.2% had optimal adherence to their ART schedule.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	3	0.8
2.Almost never	47	12.0
3.Sometimes	43	11.0
4.Almost every time	88	22.4
5.Every time	211	53.8
Total	392	100.0



**Figure 4.10 Frequency distribution of Anti-Retroviral Therapy (ART) schedule adherence behaviour (n=392)**

#### **4.3.3.3 Anti-Retroviral Therapy (ART) life-style adherence behaviour**

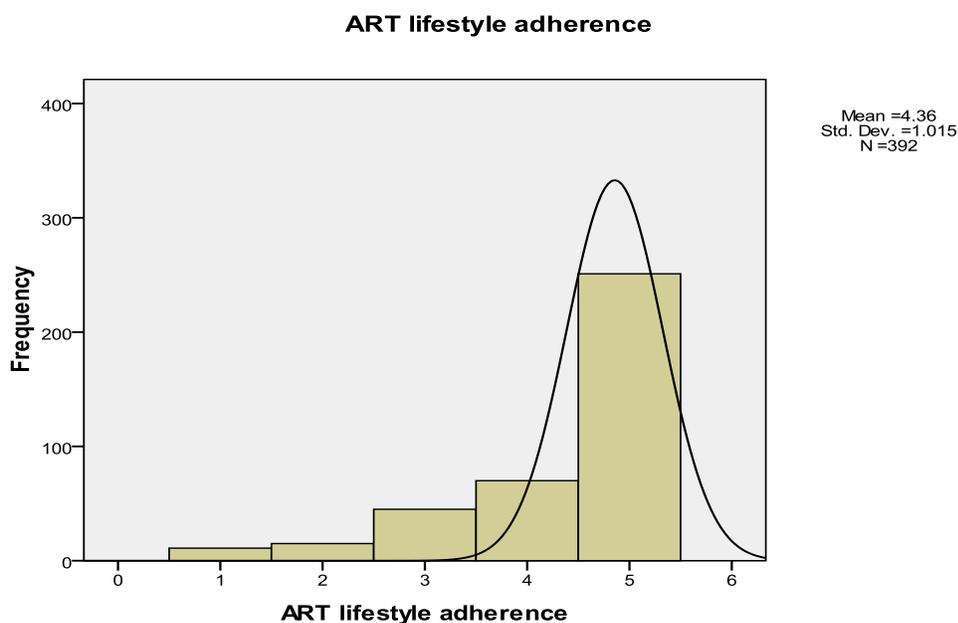
The participants were asked question regarding their ART life-style adherence behaviour. The responses were used to calculate the participants' ART life-style adherence behaviour score as optimally adherent, sub-optimally adherent and poorly adherent.

Among the total number of participants (n=392), 64% (n=251) were adherent to their ART life-style every time; 17.9% (n=70) were adherent to their ART life-style almost every time; 11.5% (n=45) were sometimes adherent to their ART life-style; 3.8% (n=15) were almost never adherent to their ART life-style; and 2.8% (n=11) were never adherent their ART life-style (Table 4.39). The mean and the standard deviation values were ( $M= 4.36$  and  $SD=1.015$ ) (Figure 4.11).

The finding of the study showed that the majority of the participants 64% were every time adherent to their ART life-style. Analysis of the data showed that 81.9% of the participants had optimal adherence to their ART life-style; 11.5%

had sub-optimal adherence to their ART life-style; 6.6% had poor adherence to their ART life-style. The finding of the study showed that the majority of the participants 81.9% had optimal adherence to their ART life-style.

<b>TABLE 4.39 FREQUENCY DISTRIBUTION OF ANTI-RETROVIRAL THERAPY (ART) LIFE-STYLE ADHERENCE BEHAVIOUR (n=392)</b>		
	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	11	2.8
2.Almost never	15	3.8
3.Sometimes	45	11.5
4.Almost every time	70	17.9
5.Every time	251	64.0
Total	392	100.0



**Figure 4.11 Frequency distribution of Anti-Retroviral Therapy (ART) life-style adherence behaviour (n=392)**

#### **4.3.4 Adherence enabling factors on Anti-Retroviral Therapy (ART) adherence behaviour**

The section below shows the frequency distribution of the participants' responses to the questions regarding the influence of possible adherence enabling factors on ART adherence behaviour.

#### 4.3.4.1 “Having emotional support from family”

The participants were asked to evaluate the influence of having an emotional support from family on their ART adherence behaviour. Among the total number of participants (n=392), 19.1% (n=75) were never influenced by having an emotional support from family; 16.3% (n=64) were rarely influenced; 13.5% (n=53) were sometimes influenced; and 51% (n=200) were often influenced (Table 4.40). The mean and the standard deviation values were ( $M=2.96$  and  $SD=1.2$ ). The finding showed that the majority of the participants 80.8% were influenced by having an emotional support from family, but the other 19.1% were never influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	75	19.1
2.Rarely	64	16.3
3.Sometimes	53	13.5
4.Often	200	51.0
Total	392	100.0

#### 4.3.4.2 “Having a simplified medication regime”

The participants were asked to evaluate the influence of having a simplified medication regimen on their ART adherence behaviour. Among the total number of participants (n=392), 26.5% (n=104) were never influenced by having a simplified medication regime; 11.2% (n=44) were rarely influenced; 12.5% (n=49) were sometimes influenced; and 49.7% (n=195) were often influenced (Table 4.41). The mean and the standard deviation values were ( $M=2.86$  and  $SD=1.2$ ). The finding showed that the majority of the participants 73.5% were influenced by having a simplified medication regime, but the other 26.5% were never influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	104	26.5
2.Rarely	44	11.2
3.Sometimes	49	12.5
4.Often	195	49.7
Total	392	100.0

#### **4.3.4.3 “Having compartmentalised pill box to take medication every day”**

The participants were asked to respond on how having a compartmentalised pill box to take their medication every day influenced their ART adherence behaviour. Among the total number of participants (n=392), 34.4% (n=135) were never influenced by having a compartmentalised pill box to take medication; 10.5% (n=41) were rarely influenced; 17.3% (n=68) were sometimes influenced; and 37.8% (n=148) were often influenced (Table 4.42). The mean and the standard deviation values were ( $M=2.58$  and  $SD=1.3$ ). The finding showed that the majority of the participants 65.6% were influenced by having a compartmentalised pill box to take medication, but the other 34.4% were never influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	135	34.4
2.Rarely	41	10.5
3.Sometimes	68	17.3
4.Often	148	37.8
Total	392	100.0

#### **4.3.4.4 “Using a time reminder to take daily medication”**

The participants were asked to evaluate on how the use of a time reminder to take daily medication influenced their ART adherence behaviour. Among the total number of participants (n=392), 7.9% (n=31) were never influenced by using a time reminder to take daily medication; 9.7% (n=38) were rarely

influenced; 12.8% (n=50) were sometimes influenced; and 69.6% (n=273) were often influenced (Table 4.43). The mean and the standard deviation values were ( $M=3.44$  and  $SD=0.958$ ). The finding showed that the majority of the participants 93.1% were influenced by using a time reminder to take daily medication, but the other 7.9% were never influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	31	7.9
2.Rarely	38	9.7
3.Sometimes	50	12.8
4.Often	273	69.6
Total	392	100.0

#### **4.3.4.5 “Asking a close relative to remind me to take medication”**

The participants were asked to evaluate the influence of asking a close relative to remind them to take the ART on their treatment adherence behaviour. Among the total number of participants (n=392), 42.3% (n=166) were never influenced by asking a close relative to remind them to take their medication; 23% (n=90) were rarely influenced; 17.1% (n=57) were sometimes influenced; and 17.6% (n=69) were often influenced (Table 4.44). The mean and the standard deviation were ( $M=2.10$  and  $SD=1.137$ ). The finding showed that the majority of the participants 57.7% were influenced by asking a close relative to remind them to take their medication, but almost an equal proportion of participants 42.3% were never influenced by the same factor.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	166	42.3
2.Rarely	90	23.0
3.Sometimes	67	17.1
4.Often	69	17.6
Total	392	100.0

#### 4.3.4.6 “Having a good knowledge on the consequences of non-adherence”

The participants were asked to evaluate the use of having a good knowledge on the consequences of non-adherence influenced their ART adherence behaviour. Among the total number of participants (n=392), 3.6% (n=14) were never influenced by having good knowledge on the consequence of non-adherence; 9.9% (n=39) were rarely influenced; 12.2% (n=48) were sometimes influenced; and 74.2% (n=291) were often influenced (Table 4.45). The mean and the standard deviation values were ( $M=3.57$  and  $SD=0.812$ ). The finding showed that the majority of the participants 96.4% were influenced by having good knowledge on the consequence of non-adherence, but the other 3.6% were never influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	14	3.6
2.Rarely	39	9.9
3.Sometimes	48	12.2
4.Often	291	74.2
Total	392	100.0

#### 4.3.4.7 “Having the motivation to be healthy”

Responses on how their motivation to be healthy influenced their ART adherence behaviour showed that among the total number of participants (n=392), 1.3% (n=5) were never influenced by having the motivation to be healthy; 8.2% (n=32) were rarely influenced; 13.8% (n=54) were sometimes influenced; and 76.8% (n=301) were often influenced (Table 4.46). The mean and the standard deviation values were ( $M=3.66$  and  $SD=0.682$ ). The finding showed that the majority of the participants 98.7% were influenced by having the motivation to be healthy, but the other 1.3% of the participants was never influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	5	1.3
2.Rarely	32	8.2
3.Sometimes	54	13.8
4.Often	301	76.8
Total	392	100.0

#### ***4.3.4.8 “Having a positive feeling and satisfaction with one’s life”***

The participants were asked to evaluate the use of having a positive feeling and satisfaction with one’s life influenced their ART adherence behaviour. Among the total number of participants (n=392), 2% (n=8) were never influenced by having a positive feeling and satisfaction with one’s life; 14% (n=55) were rarely influenced; 23.7% (n=93) were sometimes influenced; and 60.2% (n=236) were often influenced (Table 4.47). The mean and the standard deviation values were ( $M=3.42$  and  $SD=0.805$ ). The finding showed that the majority of the participants 98% were influenced by having a positive feeling and satisfaction with one’s life, but the other 2% were never influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	8	2.0
2.Rarely	55	14.0
3.Sometimes	93	23.7
4.Often	236	60.2
Total	392	100.0

#### ***4.3.4.9 “Having the confidence to manage my health”***

The participants were asked to evaluate the use of having the confidence to manage their health influenced their adherence behaviour. Among the total number of participants (n=392), 1.8% (n=7) were influenced by having the confidence to manage health; 12.2% (n=48) were rarely influenced; 18.1% (n=71) were sometimes influenced; and 67.9% (n=266) were often influenced (Table 4.48). The mean and the standard deviation values were ( $M=3.52$  and

$SD=0.777$ ). The finding showed that the majority of the participants 98.2% were influenced by having the confidence to manage health, but the other 1.8% were never influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	7	1.8
2.Rarely	48	12.2
3.Sometimes	71	18.1
4.Often	266	67.9
Total	392	100.0

#### ***4.3.4.10 “Having the potential to manage stressful circumstances”***

The participants were asked to evaluate the use of having the potential to manage stressful circumstances influenced their adherence behaviour. Among the total number of participants (n=392), 3.8% (n=15) were never influenced by having the potential to manage stressful circumstances; 12.8% (n=50) were rarely influenced; 25.8% (n=101) were sometimes influenced; and 57.7% (n=226) were often influenced (Table 4.49). The mean and the standard deviation values were ( $M=3.37$  and  $SD=0.849$ ). The finding showed that the majority of the participants 96.2% were influenced by having the potential to manage stressful circumstances, but the other 3.8% were never influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	15	3.8
2.Rarely	50	12.8
3.Sometimes	101	25.8
4.Often	226	57.7
Total	392	100.0

#### ***4.3.4.11 “Having the potential to express oneself and communicate with others”***

The responses (n=392) on how having the potential to express themselves and communicate with others influenced their adherence behaviour, 9.4% (n=37)

were never influenced by having the potential to express themselves and communicate with others; 19.1% (n=75) were rarely influenced; 20.7% (n=81) were sometimes influenced; and 50.8% (n=199) were often influenced (Table 4.50). The mean and the standard deviation values were ( $M=3.13$  and  $SD=1.031$ ). The finding showed that the majority of the participants 90.6% were influenced by having the potential to express them-selves and communicate with other, but the other 9.4% were never influenced.

**TABLE 4.50 “HAVING THE POTENTIAL TO EXPRESS ONESELF AND COMMUNICATE WITH OTHERS” (n=392)**

	FREQUENCY	PERCENT
1.Never	37	9.4
2.Rarely	75	19.1
3.Sometimes	81	20.7
4.Often	199	50.8
Total	392	100.0

***4.3.4.12 “Having the potential to feel comfortable in different social environments to take medication”***

The participants were asked to evaluate the use of having the potential to feel comfortable in different social environments to take medication influenced their adherence behaviour. Among the total number of participants (n=392), 27.6% (n=108) were never influenced by having the potential to feel comfortable in different environments to take medication; 17.6% (n=69) were rarely influenced; 15.6% (n=61) were sometimes influenced; and 39.3% (n=154) were often influenced (Table 4.51). The mean and the standard deviation values were ( $M=2.67$  and  $SD=1.250$ ). The finding showed that the majority of the participants 72.4% adherence behaviours were influenced by having the potential to feel comfortable in different environments, but the other 27.6% were never influenced.

**TABLE 4.51 “HAVING THE POTENTIAL TO FEEL COMFORTABLE IN DIFFERENT SOCIAL ENVIROMENTS TO TAKE MEDICATION” (n=392)**

	FREQUENCY	PERCENT
1.Never	108	27.6
2.Rarely	69	17.6
3.Sometimes	61	15.6
4.Often	154	39.3
Total	392	100.0

#### ***4.3.4.13 “Having good relationship with the health-care provider”***

Among the total number of participants (n=392), 1.5% (n=6) were never influenced by having a good relationship with the health-care provider; 7.9% (n=31) were rarely influenced; 15.8% (n=62) were sometimes influenced; and 74.7% (n=293) were often influenced (Table 4.52). The mean and the standard deviation values were ( $M=3.64$  and  $SD=0.694$ ). The finding showed that the majority of the participants 98.5% were influenced by having a good relation with health-care provider and the other 1.5% were been influenced.

**TABLE 4.52 “HAVING GOOD RELATIONSHIP WITH THE HEALTH-CARE PROVIDER” (n=392)**

	FREQUENCY	PERCENT
1.Never	6	1.5
2.Rarely	31	7.9
3.Sometimes	62	15.8
4.Often	293	74.7
Total	392	100.0

#### ***4.3.4.14 “Having the potential to form close and fulfilling personal-relationships”***

The participants were asked to evaluate the factor of having the potential to form close and fulfilling personal relationships influenced their adherence behaviour. Among the total number of participants (n=392), 2% (n=8) were never influenced by having the potential to form close and fulfilling personal relationships; 8.9% (n=35) were rarely influenced; 24.2% (n=95) were sometimes influenced; and 64.8% (n=254) were often influenced (Table 4.53). The mean and the standard

deviation values were ( $M=3.52$  and  $SD=0.743$ ). The finding showed that the majority of the participants 98% were influenced by having the potential to form close and fulfilling personal relationships and the other 2% were never influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	8	2.0
2.Rarely	35	8.9
3.Sometimes	95	24.2
4.Often	254	64.8
Total	392	100.0

#### **4.3.4.15 “Pressure from medical staff to take medication”**

The participants were asked to evaluate the factor of pressure from the medical staff to take medication influenced their adherence behaviour. Among the total number of participants (n=392), 8.4% (n=33) were influenced by the pressure from medical staff to take medication; 12% (n=47) were rarely influenced; 17.9% (n=70) were sometimes influenced; and 61.7% (n=242) were often influenced (Table 4.54). The mean and the standard deviation values were ( $M=3.33$  and  $SD=0.984$ ). The finding showed that the majority of the participants 91.6% were influenced by the pressure from the medical staff to take medication, but the other 8.4% were never influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	33	8.4
2.Rarely	47	12.0
3.Sometimes	70	17.9
4.Often	242	61.7
Total	392	100.0

### 4.3.5 Adherence compromising factors on Anti-Retroviral Therapy (ART) adherence behaviour

This section below shows the frequency distribution of the participants' responses to the questions regarding the influence of the possible adherence compromising factors to their non-adherence behaviour.

#### 4.3.5.1 "Being away from home"

The participants were asked to evaluate the factor of being away from home influenced their ART non-adherence behaviour. Among the total number of participants (n=392), 56.9% (n=223) were never influenced by being away from home; 26.5% (n=104) were rarely influenced; 12% (n=51) were sometimes influenced; and 3.6% (n=14) were often influenced (Table 4.55). The mean and the standard deviation values were ( $M=1.63$  and  $SD=0.843$ ). The finding showed that the majority of the participants 56.9% were never influenced by being away from home, but the 43.1% were influenced by being away from home.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	223	56.9
2.Rarely	104	26.5
3.Sometimes	51	13.0
4.Often	14	3.6
Total	392	100.0

#### 4.3.5.2 "Being busy with other non-medical life matters"

The participants were asked to evaluate the factor of being busy with other non-medical life matters influenced their ART non-adherence behaviour. Among the total number of participants (n=392), 50.5% (n=293) were never influenced by being busy with other non-medical life matters; 32.1% (n=126) were rarely influenced; 13.8% (n=54) were sometimes influenced; and 3.6% (n=14) were often influenced (Table 4.56). The mean and the standard deviation values were

( $M=1.70$  and  $SD=0.837$ ). The finding showed almost equal proportions of the participants 50.5% were never influenced by being busy with other non-medical life matters, but the other 49.5% were influenced by being busy with other non-medical life matters.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	198	50.5
2.Rarely	126	32.1
3.Sometimes	54	13.8
4.Often	14	3.6
Total	392	100.0

#### **4.3.5.3 “Simply forgot to take medication”**

The responses (n=392) on how simply forgetting to take their medication influenced their ART non-adherence behaviour, 62.5% (n=245) were never influenced by simply forgetting to take medication; 24% (n=94) were rarely influenced; 11.7% (n=46) were sometimes influenced; and 1.8% (n=7) were often influenced (Table 4.57). The mean and the standard deviation values were ( $M=1.53$  and  $SD=0.770$ ). The finding showed that the majority of the participants 62.5% were never influenced by simply forgetting to take medication, but the other 37.5% were influenced by simply forgetting to take medication.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	245	62.5
2.Rarely	94	24.0
3.Sometimes	46	11.7
4.Often	7	1.8
Total	392	100.0

#### **4.3.5.4 “Experiencing side-effects from the medication”**

The participants were asked to evaluate the factor of experiencing side-effects from the medication influenced their ART non-adherence behaviour. Among the total number of participants (n=392), 73.7% (n=289) were never influenced by

the experience of side-effects from the medication; 15.3% (n=60) were rarely influenced; 8.9% (n=35) were sometimes influenced; and 2% (n=8) were often influenced (Table 4.58). The mean and the standard deviation values were ( $M=1.39$  and  $SD=0.735$ ). The finding showed that the majority of the participants 73.7% were never influenced by the experience of side-effects from the medication, but the other 26.3% were influenced by the experience of side-effects from medication.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	289	73.7
2.Rarely	60	15.3
3.Sometimes	35	8.9
4.Often	8	2.0
Total	392	100.0

#### **4.3.5.5 “Did not want others to notice me taking the medication”**

The responses (n=392) on how not wanting others to notice them taking the medication influenced their ART non-adherence behaviour; 57.4% (n=289) were never influenced by not wanting others to notice them taking the medication; 17.6% (n=69) were rarely influenced; 11.2% (n=44) were sometimes influenced; and 13.8% (n=54) were often influenced (Table 4.59). The mean and the standard deviation values were ( $M=1.81$  and  $SD=1.098$ ). The finding showed that the majority of the participants 57.4% were never influenced by not wanting others to notice them taking the medication, but the other 42.6% were influenced by not wanting others to notice them taking the medication.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	225	57.4
2.Rarely	69	17.6
3.Sometimes	44	11.2
4.Often	54	13.8
Total	392	100.0

#### 4.3.5.6 “Due to a change in my daily routine”

The participants were asked to evaluate the factor of changing their daily routine had influenced their ART non-adherence behaviour. Among the total number of participants (n=392), 69.9% (n=274) were never influenced by the change in daily routine; 17.3% (n=68) were rarely influenced; 9.9% (n=39) were sometimes influenced; and 2.8% (n=11) were often influenced (Table 4.60). The mean and the standard deviation values were ( $M=1.46$  and  $SD=0.786$ ). The finding showed that the majority of the participants 69.9% were never influenced by the change in daily routine, but the other 30.1% were influenced by the change in daily routine.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	274	69.9
2.Rarely	68	17.3
3.Sometimes	39	9.9
4.Often	11	2.8
Total	392	100.0

#### 4.3.5.7 “Felt like the drugs were toxic/ harmful to my health”

The participants were asked to evaluate the factor of feeling the drug toxicity/ harmful to their health influenced their ART non-adherence behaviour. Among the total number of participants (n=392), 86.2% (n=338) were never influenced by feeling the drug was toxic or harmful to health; 8.4% (n=33) were rarely influenced; 4.6% (n=18) were sometimes influenced; and 0.8% (n=3) were often influenced (Table 4.61). The mean and the standard deviation values were ( $M=1.20$  and  $SD=0.546$ ). The finding showed that the majority of the participants 86.2% were never influenced by feeling the drugs were toxic/ harmful to health, but the other 13.8% were influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	338	86.2
2.Rarely	33	8.4
3.Sometimes	18	4.6
4.Often	3	0.8
Total	392	100.0

#### **4.3.5.8 “Fall asleep through the medication time”**

The responses (n=392) on how falling asleep through the medication time influenced their ART non-adherence behaviour, 71.4% (n=280) were never influenced by falling asleep through medication time; 20.4% (n=80) were rarely influenced; 7.9% (n=31) were sometimes influenced; and 0.3% (n=1) were often influenced (Table 4.62). The mean and the standard deviation values were ( $M=1.37$  and  $SD=0.638$ ). The finding showed that the majority of the participants 71.4% were never influenced by falling asleep through medication time, but the other 28.6% were influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	280	71.4
2.Rarely	80	20.4
3.Sometimes	31	7.9
4.Often	1	0.3
Total	392	100.0

#### **4.3.5.9 “Felt too sick or ill to take the medication”**

The participants were asked to evaluate the factor of feeling too sick or ill to take their medication influenced their ART non-adherence behaviour. Among the total number of participants (n=392), 83.4% (n=327) were never influenced by the feeling of sickness/illness to take medication; 12% (n=47) were rarely influenced; 4.3% (n=17) were sometimes influenced; and 0.3% (n=1) were often influenced (Table 4.63). The mean and the standard deviation values were ( $M=1.21$  and  $SD=0.521$ ). The finding showed that the majority of the participants

83.4% were never influenced by the feeling of sickness/illness to take medication, but the other 16.6% were influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	327	83.4
2.Rarely	47	12.0
3.Sometimes	17	4.3
4.Often	1	0.3
Total	392	100.0

#### ***4.3.5.10 “Depressed/unhappy/ hopeless to take medication”***

The participants were asked to evaluate the factor of feeling depressed/ unhappy/ hopeless to take their medication influenced their ART non-adherence behaviour. Among the total number of participants (n=392), 77.8% (n=305) were never influenced by the feeling of depression/ unhappiness/ hopelessness; 15.1% (n=59) were rarely influenced; 6.1% (n=24) were sometimes influenced; and 1% (n=4) were often influenced (Table 4.64). The mean and the standard deviation values were ( $M=1.30$  and  $SD=0.629$ ). The finding showed that the majority of the participants 77.8% were never influenced by the feeling of depression/unhappiness/hopelessness, but the other 22.2% were influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	305	77.8
2.Rarely	59	15.1
3.Sometimes	24	6.1
4.Often	4	1.0
Total	392	100.0

#### ***4.3.5.11” Running out of pills due to missed appointments”***

The responses (n=392) on how running out of pills due to missed appointments influenced their ART non-adherence behaviour. Among the total number of participants (n=392), 78.6% (n=308) were never influenced by running out of pills due to missed appointments; 16.6% (n=65) were rarely influenced; 4.1%

(n=16) were sometimes influenced; and 0.8% (n=3) were often influenced (Table 4.65). The mean and the standard deviation values were ( $M=1.27$  and  $SD=0.571$ ). The finding showed that the majority of the participants 78.6% were never influenced by running out of pills due to missed appointments, but the other 21.4% were influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	308	78.6
2.Rarely	65	16.6
3.Sometimes	16	4.1
4.Often	3	0.8
Total	392	100.0

#### **4.3.5.12 “Felt healthy or good about my health”**

The participants were asked to evaluate the factor of feeling healthy or good about their health influenced their ART non-adherence behaviour. Among the total number of participants (n=392), 80.1% (n=314) were never influenced by feeling healthy or good about their health; 11.5% (n=45) were rarely influenced; 5.4% (n=21) were sometimes influenced; and 3.1% (n=12) were often influenced (Table 4.66). The mean and the standard deviation values were ( $M=1.31$  and  $SD=0.712$ ). The finding showed that the majority of the participants 80.1% were never influenced by feeling healthy or good about their health, but the other 19.9% were influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	314	80.1
2.Rarely	45	11.5
3.Sometimes	21	5.4
4.Often	12	3.1
Total	392	100.0

#### 4.3.5.13 “Lack of education on the consequence of non-adherence”

The participants were asked to evaluate the factor of lack of education on the consequence of non-adherence behaviour influenced their ART non-adherence behaviour. Among the total number of participants (n=392), 84.7% (n=332) were never influenced by the lack of education on the consequence of non-adherence; 11.5% (n=45) were rarely influenced; 3.3% (n=13) were sometimes influenced; and 0.5% (n=2) were often influenced (Table 4.67). The mean and the standard deviation values were ( $M=1.20$  and  $SD=0.505$ ). The finding showed that the majority of the participants 84.7% were never influenced by the lack of education on the consequence of non-adherence, but the other 15.3% were influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	332	84.7
2.Rarely	45	11.5
3.Sometimes	13	3.3
4.Often	2	0.5
Total	392	100.0

#### 4.3.5.14 “Lack of motivation to take medication”

Among the total number of participants (n=392), 84.4% (n=331) were never influenced by the lack of motivation to take medication; 8.9% (n=35) were rarely influenced; 5.6% (n=22) were sometimes influenced; and 1% (n=4) were often influenced (Table 4.68). The mean and the standard deviation values were ( $M=1.23$  and  $SD=0.594$ ). The finding showed that the majority of the participants 84.4% were never influenced by the lack of motivation to take medication, but the other 15.6% were influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	331	84.4
2.Rarely	35	8.9
3.Sometimes	22	5.6
4.Often	4	1.0
Total	392	100.0

#### **4.3.5.15 “Want to start fasting”**

The responses (n=392) on how wanting to start fasting influenced their ART non-adherence behaviour, 75.3% (n=295) were never influenced by wanting to start fasting; 18.6% (n=73) were rarely influenced; 5.6% (n=22) were sometimes influenced; and 0.5% (n=2) were often influenced (Table 4.69). The mean and the standard deviation values were ( $M=1.31$  and  $SD=0.599$ ). The finding showed that the majority of the participants 75.3% were never influenced by wanting to start fasting, but the other 24.7% were influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	295	75.3
2.Rarely	73	18.6
3.Sometimes	22	5.6
4.Often	2	0.5
Total	392	100.0

#### **4.3.5.16 “Want to take holy-water”**

The participants were asked to evaluate the factor of wanting to take holy water influenced their ART non-adherence behaviour. Among the total number of participants (n=392), 80.6% (n=316) were never influenced by wanting to take holy-water; 13.3% (n=52) were rarely influenced; 4.8% (n=19) were sometimes influenced; and 1.3% (n=5) were often influenced (Table 4.70). The mean and the standard deviation values were ( $M=1.27$  and  $SD=0.609$ ). The finding showed that the majority of the participants 80.6% were never influenced by wanting to take holy-water, but the other 19.4% were influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	316	80.6
2.Rarely	52	13.3
3.Sometimes	19	4.8
4.Often	5	1.3
Total	392	100.0

#### **4.3.5.17 “Too many pills to be taken daily”**

The participants were asked to evaluate the factor of taking too many pills daily influenced their ART non-adherence behaviour. Among the total number of participants (n=392), 81.6% (n=320) were never influenced by taking too many pills to take; 12.8% (n=50) were rarely influenced; 4.6% (n=18) were sometimes influenced; and 1% (n=4) were often influenced (Table 4.71). The mean and the standard deviation values were ( $M=1.25$  and  $SD=0.584$ ). The finding showed that the majority of the participants 81.6% were never influenced by taking too many pills to take, but the other 18.4% were influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	320	81.6
2.Rarely	50	12.8
3.Sometimes	18	4.6
4.Often	4	1.0
Total	392	100.0

#### **4.3.5.18 “Experiencing domestic violence”**

The participants were asked to evaluate the factor of experiencing domestic violence influenced their ART non-adherence behaviour. Among the total number of participants (n=392), 85.5% (n=335) were never influenced by experiencing domestic violence; 12% (n=47) were rarely influenced; 1.3% (n=5) were sometimes influenced; and 1.3% (n=5) were often influenced (Table 4.72). The mean and the standard deviation values were ( $M=1.18$  and  $SD=0.503$ ). The

finding showed that the majority of the participants 85.5% were never influenced by experiencing domestic violence, but the other 14.5% were influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	335	85.5
2.Rarely	47	12.0
3.Sometimes	5	1.3
4.Often	5	1.3
Total	392	100.0

#### **4.3.5.19 “Poor relations with the health-care provider”**

The participants were asked to evaluate the factor of having poor relations with health-care provider influenced their ART non-adherence behaviour. Among the total number of participants (n=392), 81.6% (n=320) were never influenced by having poor relations with the health-care provider; 12.5% (n=49) were rarely influenced; 4.8% (n=19) were sometimes influenced; and 1% (n=4) were often influenced (Table 4.73). The mean and the standard deviation values were ( $M=1.25$  and  $SD=0.590$ ). The finding showed that the majority of the participants 81.6% were never influenced by having poor relations with the health-care provider, but the other 18.4% were influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	320	81.6
2.Rarely	49	12.5
3.Sometimes	19	4.8
4.Often	4	1.0
Total	392	100.0

#### **4.3.5.20 “Experiencing life stresses”**

The participants were asked to evaluate the factor of experiencing life stresses influenced their ART non-adherence behaviour. Among the total number of participants (n=392), 74.2% (n=292) were never influenced by the experience of life stresses; 17.6% (n=69) were rarely influenced; 6.4% (n=25) were sometimes

influenced; and 1.8% (n=7) were often influenced (Table 4.74). The mean and the standard deviation values were ( $M=1.36$  and  $SD=0.682$ ). The finding showed that the majority of the participants 74.2% were never influenced by influenced by the experience of life stresses, but the other 25.8% were influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	291	74.2
2.Rarely	69	17.6
3.Sometimes	25	6.4
4.Often	7	1.8
Total	392	100.0

#### **4.3.5.21 “Pressure from medical staff to take medication is too much”**

The participants were asked to evaluate the factor of pressure from the medical staff to take medication influenced their ART non-adherence behaviour. Among of the total number of participants (n=392), 77.6% (n=304) were never influenced by too much pressure from medical staff to take medication; 10.5% (n=41) were rarely influenced; 9.9% (n=39) were sometimes influenced; and 2% (n=8) were often influenced (Table 4.75). The mean and the standard deviation values were ( $M=1.41$  and  $SD=0.734$ ). The finding showed that the majority of the participants 77.6% were never influenced by too much pressure from medical staff to take medication, but the other 22.4% were influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	304	77.6
2.Rarely	41	10.5
3.Sometimes	39	9.9
4.Often	8	2.0
Total	392	100.0

#### **4.3.5.22” Do not believe the medication prolongs life”**

The participants were asked to evaluate the factor of not believing the medication prolongs life influenced their ART non-adherence behaviour. Among of the total number of participants (n=392), 72.2% (n=283) were never influenced by the belief that medication does not prolong life; 16.6% (n=65) rarely influenced; 9.4% (n=37) were sometimes influenced; and 1.8% (n=7) were often (Table 4.76). The mean and the standard deviation values were ( $M=1.41$  and  $SD=0.734$ ). The finding showed that the majority of the participants 72.2% were never influenced by the belief that medication does not prolong life, but the other 27.8% were influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	283	72.2
2.Rarely	65	16.6
3.Sometimes	37	9.4
4.Often	7	1.8
Total	392	100.0

#### **4.3.5.23 “Absence of emotional life support”**

The participants were asked to evaluate the factor of absence of emotional life support influenced their ART non-adherence behaviour. Among the total number of participants (n=392), 74.7% (n=293) were never influenced by the absence of emotional life support; 13.3% (n=52) were rarely influenced; 8.2% (n=32) were sometimes influenced; and 3.8% (n=15) were often influenced (Table 4.77). The mean and the standard deviation values were ( $M=1.41$  and  $SD=0.798$ ). The finding showed that the majority of the participants 74.4% were never influenced by the absence of emotional life support, but the other 25.6% were influenced.

	<b>FREQUENCY</b>	<b>PERCENT</b>
1.Never	293	74.7
2.Rarely	52	13.3
3.Sometimes	32	8.2
4.Often	15	3.8
Total	392	100.0

### ***Summarised findings on ART adherence behaviour***

The summarised findings on the participants ART adherence behaviour were: 79.1% were optimally adherent to their ART, 19.9% were sub-optimally adherent to their ART, and 1% were poorly ART adherent; on the ART dose adherence behaviour, 89.6% were optimally adherent to their ART dose, 8.2% were sub-optimally adherent to their ART dose, and 2.3% were poorly adherent to their ART dose; on the ART schedule adherence behaviour, 76.2% were optimally adherent to their ART schedule, 11% were sub-optimally adherent ART schedule, and 12.8% were poorly adherent ART schedule; on the ART life-style adherence behaviour, 81.9% were optimally adherent, 11.5% were sub-optimally adherent, and 6.6% were poorly adherent. Among the adherence enabling factors the aspect of having the motivation to be healthy was the most significant factor to influence ART adherence behaviour with mean value of ( $M=3.66$ ). Whereas, the adherence compromising factors the aspect of not wanting others to notice them taking the ART was the most significant to influence non-adherence behaviour with mean value of ( $M=1.81$ ).

### **4.3.6 Inferential data analysis**

This section of the report presents the inferential statistical analysis performed to determine the level of trait emotional intelligence, the level of ART adherence behaviour and assess the existence of association between the different groups of ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence. In addition, the researcher performed inferential data

analysis between ART adherence behaviour and the factors of trait emotional intelligence (well-being, self-control, emotionality, and sociability) factors.

#### ***4.3.6.1 Anti-Retroviral Therapy (ART) adherence behaviour and trait emotional intelligence***

People living with HIV/AIDS experience a psychological negative emotions that have been linked to changes in poor health behaviours, ART non-adherence, clinical deterioration and progression to AIDS (Ironson et al 2005:1020; Kalichman & Grebler 2010:811; Pence 2009:636; Scott-Sheldon et al 2008:130). Among the most important factors of adherence behaviour, the approaches through which individuals handle their negative psychological have been considered to be the most significant factor. Several studies have been documented regarding the influence of trait emotional intelligence on adherence behaviour through the process of general health behaviour, adaptive problem solving styles, coping strategy, rational thinking, lowering perceptions of stress with better quality of life, and psychological well-being (Austin et al 2005:548; Bastian et al 2005:1136; Chamorro-Premuzie et al 2007:1634)

The researcher performed a Pearson correlation test to determine the existence of correlation between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence. There was a moderate positive correlation between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence at ( $r=0.417$ ,  $n=392$ ,  $P<0.001$ ) (Table 4.78). Thus, the findings of the study further provided a supportive evidence for the correlation between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence.

		TEI	ART adherence behaviour
TEI	Pearson Correlation	1	.417**
	Sig. (2-tailed)		.000
	N	392	392
ART adherence behaviour	Pearson Correlation	.417**	1
	Sig. (2-tailed)	.000	
	n	392	392

\*\* . Correlation is significant at the 0.01 level (2-tailed).

#### **4.3.6.2 Anti-Retroviral Therapy (ART) adherence behaviour and well-being factor**

Among the components of trait emotional intelligence the factor of well-being refers to the overall health of individuals and has a significant role in regulating emotions under stressful circumstances (Petrides 2009:89). The factor includes optimism, happiness, and self-esteem. The well-being factor creates a mind state of positive mood, satisfaction with life, being resilient against negative circumstance, and a generalised sense of well-being extending from previous accomplishments to expectations for the future (Petrides 2009:95; Petrides 2011:662). Zeidner et al (2012:7) stated that the behaviour of ART adherence can improve the process of lowering stress, greater use of positive health practices, and resilience against the negative psychological states.

The researcher performed a Pearson correlation test to determine the existence of correlation between ART adherence behaviour and well-being factor. There was a positive correlation between ART adherence behaviour and the well-being factor of trait emotional intelligence at ( $r = 0.325$ ,  $n=392$ ,  $P < 0.001$ ) (Table 4.79). Thus, the finding of the study provided further evidence for the correlation between ART adherence behaviour and well-being factor of trait emotional intelligence.

		Well-being factor	ART adherence behaviour
Well-being factor	Pearson Correlation	1	.325**
	Sig. (2-tailed)		.000
	n	392	392
ART adherence behaviour	Pearson Correlation	.325**	1
	Sig. (2-tailed)	.000	
	n	392	392

\*\* . Correlation is significant at the 0.01 level (2-tailed).

#### **4.3.6.3 Anti-Retroviral Therapy (ART) adherence behaviour and self-control factor**

Self-control is one of the factors of trait emotional intelligence that depicts the behavioural-dispositions and self-perceived abilities to regulate emotions under stressful circumstances. The factor includes emotional regulation, impulsiveness, and stress management (Petrides 2009:89). It is a mind state of discipline, calmness, and rational thinking for better decision employed through a strong balance of emotions and reason. It is a behavioural-disposition to understand one's own inner thoughts, to prevent negative emotions to mis-guide one's actions, and to make conscious choices in life (Petrides 2009:94; Petrides 2011:662). (Zeidner et al 2012:7) stated that the process of self emotion regulation with discipline towards health related behaviours and with stress-coping to deal with health related problems can enhance ART adherence behaviour.

The researcher performed a Pearson correlation test to determine the existence of correlation between ART adherence behaviour and self-control factor. There was a positive correlation between ART adherence behaviour and the self-control factor of trait emotional intelligence at ( $r = 0.348$ ,  $n = 392$ ,  $P < 0.001$ ) (Table 4.80). Thus, the finding of the study provided further evidence for the correlation between ART adherence behaviour and self-control factor of trait emotional intelligence.

**TABLE 4.80 CORRELATION BETWEEN ANTI-RETROVIRAL THERAPY (ART) ADHERENCE BEHAVIOUR AND SELF-CONTROL FACTOR (n=392)**

		Self-control factor	ART adherence behaviour
Self-control factor	Pearson Correlation	1	.348**
	Sig. (2-tailed)		.000
	n	392	392
ART adherence behaviour	Pearson Correlation	.348**	1
	Sig. (2-tailed)	.000	
	n	392	392

\*\* . Correlation is significant at the 0.01 level (2-tailed).

#### **4.3.6.4 Anti-Retroviral Therapy (ART) adherence behaviour and Emotionality factor**

Among the factors of trait emotional intelligence the component of emotionality is the behavioural-dispositions that describe the potential to perceive, express emotions, to develop and maintain relationships. The factor of emotionality consists of empathy, emotional perception, emotional expression, and relationship (Petrides 2009:89). Emotionality assists an individual to comprehend their emotions and that of others, utilise their emotions to directly communicate, to clearly discuss emotions, and are gifted in forming and sustaining relationships (Petrides 2009:94; Petrides 2011:662). Zeidner et al (2012:7) stated that the process of better communication with health-care provider and sustaining relationships among close relatives/friends can improve ART adherence behaviour.

The researcher performed a Pearson correlation test to determine the existence of correlation between ART adherence behaviour and emotionality factor. There was a positive correlation between ART adherence behaviour and the emotionality factor of trait emotional intelligence at ( $r = 0.306$ ,  $n = 392$ ,  $P < 0.001$ ) (Table 4.81). Thus, the finding of the study provided further evidence for the correlation between ART adherence behaviour and emotionality factor of trait emotional intelligence.

		Emotionality factor	ART adherence behaviour
Emotionalityfactor	Pearson Correlation	1	.306**
	Sig. (2-tailed)		.000
	n	392	392
ART adherence behaviour	Pearson Correlation	.306**	1
	Sig. (2-tailed)	.000	
	n	392	392

\*\* . Correlation is significant at the 0.01 level (2-tailed).

#### **4.3.6.5 Anti-Retroviral Therapy (ART) adherence behaviour and sociability factor**

The factor sociability refers to the behavioural-dispositions and self-perceived ability to socialise, manage and communicate with others. The factor includes facets such social awareness, assertiveness, emotional management, self-motivation, and adaptation (Petrides 2009:89). The factor of sociability focuses in terms of social integrity, managing differences, the capacity to have social relationships, and social influence in diverse social context (Petrides 2009:94; Petrides 2011:662). (Zeidner et al 2012:7) stated that the process of having greater social support resources at times of stress, ability to manage and communicate with others can improve ART adherence behaviour.

The researcher performed a Pearson correlation test to determine the existence of correlation between ART adherence behaviour and sociability factor. There was a positive correlation between ART adherence behaviour and the sociability factor of trait emotional intelligence at ( $r=0.372$ ,  $n=392$ ,  $P<0.001$ ) (Table 4.82). Thus, the finding of the study provided further evidence for the correlation between ART adherence behaviour and sociability factor of trait emotional intelligence.

**TABLE 4.82 CORRELATION BETWEEN ANTI-RETROVIRAL THERAPY (ART) ADHERENCE BEHAVIOUR AND SOCIABILITY FACTOR (n=392)**

		Sociability factor	ART adherence behaviour
Sociabilityfactor	Pearson Correlation	1	.372**
	Sig. (2-tailed)		.000
	n	392	392
ART adherence behaviour	Pearson Correlation	.372**	1
	Sig. (2-tailed)	.000	
	n	392	392

\*\* . Correlation is significant at the 0.01 level (2-tailed).

#### 4.4 OVERVIEW OF THE RESEARCH FINDINGS

Analysis of the data collected from all the participants (n=392), the majority of the participants 72.5% were between the age group of 24-45 years of age; 63.8% were female; 42.3% were married; the majority of the participants 48.2% were from the Amhara ethnic group; 68.4% were from the Orthodox religious group; 65.8% acquired the basic level of education; 32.4% worked in the private sector; and 37% had a gross monthly income of less than ≤500 Ethiopian birr/month.

Regarding the participants trait emotional intelligence, the majority of the participants 84.4% had an average level of the trait emotional intelligence, 15.6% had an above-average level, and there were no participants that had a below-average level of the trait emotional intelligence; the well-being factor level with 51.5% had an above-average level, 47.4% had an average level, and 1% had a below-average level; the self-control factor level with 27% had an above-average level, 69.6% had an average level, and 3.3% had a below-average level; the emotionality factor level with 32% had an above-average level, 67.6% had an average level, and 0.3% had a below-average level; the sociability factor level with 20.4% had an above-average level, 79.3% had an average level, and 0.3% had a below-average level. Thus, the participants were able to use on average their behavioural-dispositions related to trait emotional intelligence as a coping factor against negative psychological emotions, life's challenges, and adapt to the negative life outcomes.

The participants had ART adherence behaviour levels with 79.1% were optimally adherent to their ART, 19.9% were sub-optimally adherent to their ART, and 1% were poorly ART adherent; the ART dose adherence behaviour levels with 89.6% were optimally adherent to their ART dose, 8.2% were sub-optimally adherent to their ART dose, and 2.3% were poorly adherent to their ART dose; the ART schedule adherence behaviour with 76.2% were optimally adherent to their ART schedule, 11% were sub-optimally adherent ART schedule, and 12.8% were poorly adherent ART schedule; the ART life-style adherence behaviour with 81.9% were optimally adherent, 11.5% were sub-optimally adherent, and 6.6% were poorly adherent.

Among the adherence enabling factors the aspect of having the motivation to be healthy was the most significant factor to influence ART adherence behaviour with mean value of ( $M=3.66$ ). Whereas, the adherence compromising factors the aspect of not wanting others to notice them taking the ART was the most significant to influence non-adherence with mean value of ( $M=1.81$ ). The inferential statistical analysis of the study showed that there was a statistical significant positive correlation between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence. In addition, the inferential statistical analysis showed the statistical positive correlation between ART adherence behaviour and the facets of tait emotional intelligence (well-being, self-control, emotionality, and sociability).

#### **4.5 CONCLUSION**

This chapter presented a detailed depiction of the relevant findings and interpretations of the study in reference to the descriptive, correlation, and inferential statistics. In reference with the inferential statistical analysis, the null hypothesis was rejected based on the statistical results. The next chapter addresses the presentation of conclusions, limitations, and recommendations for potential research in the future.

## CHAPTER 5

### CONCLUSION AND RECOMMENDATIONS

#### 5.1 INTRODUCTION

This chapter focuses on addressing the research questions/objectives stated in chapter one. The discussion on the findings and interpretations of the data obtained from the study are used to answer the questions/objectives. A review on the research design and methodology of the study are followed by a summary and interpretation of the research findings. Then the chapter concludes with a section on recommendations, contributions from the study, limitations of the study and final reflections on concluding remarks.

#### 5.2 RESEARCH DESIGN AND METHOD

The study used observational, analytical, and cross-sectional research design. The target population in the study were adults older than 18 years of age, living with HIV/AIDS receiving first-line ART for more than 12 months at the regional public hospitals in Addis Ababa. The sampling technique in the study was a proportionate stratified systematic random sampling. The researcher selected every 4<sup>th</sup> participant from members of the target population who came to receive their ART from Monday to Friday. The recommended total sample size for the study was 392. The data collection method was a self-report method with a structured data collection approach. The data analysis included both descriptive and inferential statistics.

The objectives of the study were to:

- Explore the level of ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.
- Determine how adherence enabling factors influence the ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.

- Determine how adherence compromising factors influence the ART adherence behaviour among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.
- Explore the level of behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.
- Determine whether there is a correlation between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa.

### **5.3 SUMMARY AND INTERPRETATION OF FINDINGS**

The following section addresses a discussion and interpretation from the research findings (in chapter 4) by providing an answer to the research questions/objectives stated in chapter 1 and 3. The findings that were obtained from the study are discussed below in the similar order in which the objectives/questions of the study were stated.

#### **5.3.1 Anti-Retroviral Therapy (ART) adherence behaviour**

ART adherence behaviour the extent to which an individual behaviour in terms of taking medications the right dose, right time and following life-style changes coincides with medical or health advice” (WHO 2003:3). The people commenced on ART must be appropriately counselled to understand the importance of adherence and be able to commit to lifetime treatment with minimum adherence level of more than  $\geq 95\%$  (Peltzer et al 2010:111; Tiyou et al 2010:39).

ART adherence can be grouped as optimally adherent with adherence level of more than  $\geq 95\%$ , sub-optimally adherent with adherence rate between 80-94% adherence level, and poor adherence with less than  $\leq 80\%$  adherence level (Chi et al 2009:747). Based on the results from the study, 79.1% had optimal

adherence to their ART; 19.9% had sub-optimal adherence to their ART; and the 1% had poor adherence to their ART (Table 4.36).

The finding indicated that the majority of the participants 79.1% had optimal adherence behaviour to their ART. This finding indicates that the majority of the participants' can avoid the development of viral resistance, attain adequate viral suppression and improve their immunological recovery. The finding on optimal ART adherence behaviour of the study is higher than the results from other researches reported as 74.2% and 72.4% implemented on different regions in Ethiopia (Markos et al 2008:176; Tiyou et al 2010:41). In addition, the finding on optimal ART adherence behaviour of the study is higher than the result from South Africa reported as 70.8% (Peltzer et al 2010:115).

However, the finding on optimal ART adherence behaviour of the study is considerably lower than the result from other sub-Saharan countries reported as 90% (Ware et al 2009:39). In addition, the finding on optimal ART adherence behaviour of the study is lower 79.1%, when compared to previous study done in Addis Ababa reported as 81.2% (Tadiou & Davey 2006). Thus, it is critical for the health-care providers to reconsider the challenges in improving the level of adherence behaviour and mitigating the development of medication resistance as more patients continue to have access to ART treatment services.

The optimal ART adherence behaviour level is moderately declining through time and the finding can probably be due to the following reasons. The participants' failure to manage their challenging life circumstances while on ART, their vulnerability to attain sufficient support from the health-care providers in building non-judgemental relationships and manage communication. In addition, the participants are probably unable to comprehend about the consequence of non-adherence, probably the lack of satisfaction and content with their lives, and the lack of confidence as well as failure on self-motivation to manage health. Furthermore, the participants are probably on ART for longer duration of time, as a result the patients are gradually neglectful or have disinterest about their ART.

### 5.3.1.1 Anti-Retroviral Therapy (ART) dose adherence behaviour

ART dose adherence signifies the process of taking all the prescribed treatment doses concerning to the number and proportions of doses every day (Amberbir et al 2008:267; Osterberg & Blaschke 2005:487; Peltzer et al 2010:113; Schönnesson et al 2006:407). Among the total number of participants of the study, 89.6% had optimal adherence behaviour to their ART dose; 8.2% had sub-optimal adherence behaviour to their ART dose; 2.3% had poor adherence behaviour to their ART dose (Table 4.37). The finding indicated that the majority of the participants 89.6% had optimal dose adherence to their ART.

The finding on optimal ART dose adherence behaviour of the study 89.6% is among the reports from other studies done in other regions in Ethiopia reported as 74.2% and 94.3% (Amberbir et al 2008:269; Markos et al 2008:176; Tiyou et al 2010:41). However, when compared to other research result done in Addis Ababa, the optimal ART dose adherence behaviour was 62%; the finding of the study is higher 89.6% (Alemu et al 2011:266). Conversely, the finding of this study is higher, when compared to the studies on optimal ART dose adherence behaviour in both Sweden and South Africa reported as 61% and 84.5% respectively (Peltzer et al 2010:115; Schönnesson et al 2006:411).

The proportions of participants with optimal ART dose adherence have relatively increased through time. Thus, the health-care providers and the health-policy makers can continue the expansion and implementation of the necessary ART dose adherence enabling factors. The increment in ART dose adherence behaviour through time can perhaps be due to the following reasons. The participants are perhaps able to utilise multiple-dose envelopes, probably able to access a simplified ART medication regimen as well as perhaps capable to access a convenient and regular medical follow-up visits for medication refill.

### **5.3.1.2 Anti-Retroviral Therapy (ART) schedule adherence behaviour**

ART schedule adherence implies to the practice of taking the ordained doses or the right amount of medication dose at the right time (Amberbir et al 2008:267; Peltzer et al 2010:114; Schönnesson et al 2006:407). Schedule adherence was considered to influence more on total adherence than dose or food adherence (Schönnesson et al 2006:407; WHO 2003:97). Among the total number of participants, 76.2% had optimal adherence behaviour to their ART schedule; 11% had sub-optimal adherence to their ART schedule; 12.8% had poor adherence to their ART schedule (Table 4.38). The finding indicated that the majority of the participants 76.2% had an optimal ART schedule adherence behaviour.

The finding of this study on optimal ART schedule adherence was 76.2% which is lower than the results from other researches done in Ethiopia as 73.9%, 79.9%, and 97.2% (Amberbir et al 2008:269; Markos et al 2008:176; Tiyou et al 2010:41). Similarly, when compared with the study done in Addis Ababa on the optimal ART schedule adherence behaviour 94%, the finding of this study is lower 76.2% (Alemu et al 2011:266). The finding of this study is higher, when compared with the study done in Sweden on optimal ART schedule adherence reported as 61% (Schönnesson et al 2006:411).

The proportions of participants with optimal ART schedule adherence have relatively declined. The health-care providers and health-care policy makers need to employ resources focusing more attention on the importance of ART schedule adherence factors. The possible factors that generate negative impacts on schedule adherence were perceived pressure from the medical staff to take medications, life stress, ART health concern, and on the beliefs on ART prolongs life. On the contrary, the pressure from their close-relative, post-traumatic stress symptoms, and adherence self-efficiency can positively affect schedule adherence (Schönnesson et al 2006:407). The decline in ART schedule adherence behaviour through time can perhaps be due to the following reasons. The participants are probably incapable to understand and

comprehend instructions on the significance of ART schedule adherence, the failure to manage their challenging life circumstances while on ART, and are perhaps helpless to bring into play a family support to remind them to take medication. In addition, the participants are perhaps unable to properly utilise electronic time reminders to take their ART, can fall sleep through medication time, and possibly lack motivation to sustain their ART schedule.

### **5.3.1.3 Anti-Retroviral Therapy (ART) life-style adherence behaviour**

ART life-style adherence refers to the act of taking the medication dose and the adjustments of daily life-style (food or without food, to avoid raw food items, and alcohol) by following the special instructions. Thus, strictly monitoring and adhering to the requirements of the life-style modifications for effective medical therapy (Amberbir et al 2008:267; Peltzer et al 2010:114; Schönnesson et al 2006:407). Among the total number of participants, 81.9% of the participants had optimal adherence behaviour to their ART life-style; 11.5% had sub-optimal adherence to their ART life-style; 6.6% had poor adherence to their ART life-style (Table 4.39).

The finding indicated that the majority of the participants 81.9% had optimal adherence behaviour to their ART life-style. The finding of this study on optimal ART life-style adherence 81.9% is lower than the results from other studies done in Ethiopia reported as 84.5%, 94.5%, and 97.2% (Amberbir et al 2008:269; Markos et al 2008:176; Tiyou et al 2010:44). The finding of this study is higher 81.9%, when compared to other research result done in Sweden on optimal ART life-style adherence behaviour reported as 37% (Schönnesson et al 2006:411).

The proportions of participants with optimal ART life-style adherence have relatively declined. The health-care providers and health-care policy makers need to employ resources focusing more on the importance ART life-style adherence factors. . In-order to avoid medication life-style non-adherence, there must be a clear discussion and communication between the health-care

providers as well as the patient, in terms of understanding the ART life-style restrictions (WHO 2003:97). The decline in ART life-style adherence behaviour through time can perhaps be due to the following factors. The majority of the participants acknowledge the importance of good knowledge on the consequence of non-adherence. However, the participants are probably unable to understand or comprehend the instructions on their ART life-style and are probably unable to retain the information about the consequence of non-adherence. In addition, the participants perhaps lack the confidence and the motivation to manage their health and also possibly feel good about their health as a result affecting their ART life-style adherence behaviour. Furthermore, the participants are perhaps mostly away from home or have a change in daily routine which can create difficulty to adhere to the ART life-style.

### **5.3.2 Adherence enabling factors influence the Anti-Retroviral Therapy (ART) adherence behaviour**

In Ethiopia, as ART programs scale-up, it is vital for the health-care providers and health-care policy makers to progressively focus more attention on adherence behaviour before time passes and renders more patients to require second-line ART drugs. The ART adherence behaviour has a demanding course, the critical aspect of treatment adherence behaviour is considered to be the patients' characteristics. Nevertheless, the responsibility of patients' ART management is a commitment that required to be met by both the health-care providers and the patients. Significant proportions of the participants were influenced by the adherence enabling factors. Among the enabling factors for adherence behaviour, the researcher documented the following findings.

The factor of having emotional support from family influenced 80.9%, but never influenced 19.1% (Table 4.40); having a simplified medication regimen influenced 65%, but never influenced 34% (Table 4.41), the finding on the factor of simplified medication regimen is significantly lower than other research result reported as 97.6% (Markos et al 2008:177). The factor of having a compartmentalised pill box to take their medication every day influenced 65.6%,

but never influenced 34.4% (Table 4.42); having a time reminder to take their medication influenced 93.1%, but never influenced 7.9% (Table 4.43), the finding on the factor of using a time reminder is comparable to other research result reported as 98.8% (Amberbir et al 2008:269).

The majority of the participants acknowledge the presence of emotional support from family to have a significant impact on their adherence behaviour. The presence of emotional support can probably assist patients to confront stressful elements in their lives and aid them make the right decisions. In addition, the majority of the participants recognise the importance of simplified ART regimen, utilising compartmentalised pill box as well as electronic time reminder. These essentials can aid patients to reduce the level of stress associated with adhering to their ART (dose, schedule, and life-style), reduce treatment confusion, and forgetfulness.

The factor of asking a close relative to remind them to take medication influenced 57.7%, but never influenced 42.3% (Table 4.44); having good knowledge on the consequence of non-adherence influenced 96.4%, but never influenced 3.6% (Table 4.45), the finding on good knowledge on the consequence of non-adherence is significantly higher than other research result reported as 68% (Markos et al 2008:175). In addition, the factor of motivation to be healthy influenced 98.7%, but never influenced 1.3% (Table 4.46), the finding is comparable to other research results reported as 97.8% and 95% (Alemu et al 2011:266; Tessema et al 2010:6). The factor of having a positive feeling and satisfaction with one's life influenced 98%, but never influenced 2% (Table 4.47), the finding is comparable to other research results reported as 98%, 98.3%, and 88.3% (Alemu et al 2011:266; Markos et al 2008:175; Tessema et al 2010:6). The factor of having the confidence to manage their own health influenced 98.2%, but the 1.8% were never influenced (Table 4.48).

The presence of a close relative in one's life can probably aid patients on a variety of things such as social enjoyment, emotional support, and remind them to take medication as a result improving the patients' adherence behaviour. A

comparable proportion of participants are influenced by the factor of close relative to remind them to take medication and an almost equal proportion is never influenced by the same factor. The findings can perhaps be due to failure of the patients to form lasting relations with others or the other proportion of the participants are self-sufficient and do not need a close relative to remind them to take the medication. The majority of the participants recognise the importance and significance of good knowledge on the consequence of non-adherence. The realisation of the importance of good knowledge can probably create a standpoint for patients to gather educational information on instructions on guidelines on ART, medication precautions, reduce treatment anxieties as well as increase perception of health-risks related to the health problems and increase awareness on side-effects. The majority of the participants identify the role of motivation to be healthy, the positive feeling to be healthy, and the confidence to manage health. The presence of these factors in one's life can probably encourage patients to place high value on the benefits of the medication to their health, increase commitment to maintaining their health and enhance their capacity in self-efficiency to manage their health. As a result, provide patients a sense of hope, positive out-look for life, and improve their adherence behaviour.

Furthermore, the finding of this study revealed that, the factor of the potential to manage stressful circumstances influenced 96.2%, but never influenced 3.8% (Table 4.49); the potential to express and communicate with others influenced 90.6%, but the 9.4% were never influenced (Table 4.50). The majority of the participants acknowledge the relevance of managing stress. The capacity to manage stress can probably aid patients to reduce the negative emotions in their lives and to follow through health commitments as a result improving their adherence behaviour. In addition, the potential to self-express and communicate with others can provide the required psychological support to reduce patients' insecurity and enhance ART adherence behaviour.

The factor of having the potential to feel comfortable in different social environments to take medication influenced 72.4%, but never influenced 27.6% (Table 4.51), the finding is amid other research results reported as 49.4%,

52.2% and 82.2% (Alemu et al 2011:266; Markos et al 2008:175; Tessema et al 2010:6). The factor of having good relationship with the health-care provider influenced 98.5%, but never influenced 1.5% (Table 4.52), the finding is comparable to other research results reported as 94.4% and 98.6% (Markos et al 2008:175; Tessema et al 2010:6). The factor of the potential to form close and fulfilling personal relationships influenced 98%, but never influenced 2% (Table 4.53); having pressure from the medical-staff to take medication influenced 91.6%, but never influenced 8.4% (Table 4.54), the finding is higher than other researcher result reported as 82.1% (Markos et al 2008:175). The majority of the participants are aware of the importance of the above-mentioned factors. These factors can probably assist patients to build-up their self-confidence, establish trust to form emotional support as a result enhance their ART adherence behaviour.

### **5.3.3 Adherence compromising factors influence the Anti-Retroviral Therapy (ART) adherence behaviour**

There is a growing recognition that non-adherence hinges on the process of viral suppression and on the improvements of patients' biological immunity. Based on the data collected from this study, there were significant proportions of participants' who are still influenced by the adherence compromising factors.

Among the compromising factors for adherence, the factor of being away from home influenced 43.1%, but never influenced 56.9% (Table 4.55), the finding of the study is higher than other research results reported as 21.1% and 42.2% (Alemu et al 2011:266; Tiyou et al 2010:45). The factor of being busy with other non-medical life matters influenced 49.5%, but never influenced 50.5% (Table 4.56), the finding is amid the range of other research results reported as 18%, 21.2%, and 57.5% (Alemu et al 2011:266; Amberbir et al 2008:269; Tiyou et al 2010:45). The factor of simply forgetting to take the medication influenced 37.5%, but the 62.5% were never influenced (Table 4.57), the finding is comparable to other research results reported as 37.8%, 43.7% and 65.6% (Alemu et al 2011:266; Amberbir et al 2008:269; Tiyou et al 2010:45).

The experience of side-effects from the medication influenced 26.3%, but never influenced 73.7% (Table 4.58), the finding is amid the range of other research results reported as 20.4% and 31% (Amberbir et al 2008:269; Tessema et al 2010:6). The factor of not wanting others to notice them taking their medication influenced 42.6%, but never influenced the other 57.4% (Table 4.59), the finding is amid the range of other research results reported as 17.8% and 50.6% (Alemu et al 2011:266; Tessema et al 2010:6).

The factor of being away from home is probably due to the lack of practices of holding extra medication with multi-dose envelopes whenever people on ART were away from home. Additionally, the factor of being busy with non-medical life matters and simply forgetting to take their ART can perhaps influence adherence behaviour due to the patients' inability to face the challenges of everyday life stresses and the inability to adapt the practice of prioritising daily life tasks. The factor of experiencing side-effects from medication can probably be due to failure of the health-care providers to timely identify side-effects and make alterations to their medication by providing the patients with the necessary frequent follow-up visits. In addition, the factor of not wanting others to notice them take their medication can possibly be due to the absence of regular educational classes integrated into the routine follow-up programs focusing on the patients' social awareness skills and emotional management skills.

The finding of the study revealed that, the non-adherence due to change in their daily routine influenced 30.1%, but never influenced 69.9% (Table 4.60), the finding is higher than other research results reported as 9.1% and 9.4% (Amberbir et al 2008:271; Markos et al 2008:174). The feeling the drugs were toxic/harmful to health influenced 13.8%, but never influenced 86.2% (Table 4.61), the finding is amid other research results reported as 4% and 19.5% (Amberbir et al 2008:270; Tiyou et al 2010:45); the falling asleep through medication time influenced (28.6%), but never influenced 71.4% (Table 4.62), the finding is higher than other research results reported as 6.8% and 18.2% (Amberbir et al 2008:271; Markos et al 2008:177). The feeling ill/sick to take the

medication influenced 16.6%, but never influenced 83.4% (Table 4.63), the finding is lower than other research results previously reported as 19.5% (Amberbir et al 2008:270; Tiyou et al 2010:45). The feeling depression/ unhappiness/ hopelessness to take medication influenced 22.2%, but never influenced 77.8% (Table 4.64), the finding is higher than other research results reported as 1.7% and 11.7% (Markos et al 2008:175; Tessema et al 2010:6).

The factor of running out of pills due to missed appointments influenced 21.4%, but never influenced the other 78.6% (Table 4.65), the finding is higher than other research results reported as 12.6% (Amberbir et al 2008:270; Tiyou et al 2010:45). The feeling healthy or good about their health influenced 19.9%, but never influenced 80.1% (Table 4.66), the finding is higher than other research result reported as 4.5% (Markos et al 2008:177). The lack of education on the consequence of non-adherence influenced 15.3%, but never influenced 84.7% (Table 4.67), the finding is higher than other research result reported as 9% (Osterberg & Blaschke 2005:490). The lack of motivation to take medication influenced 15.6%, but never influenced 84.4% (Table 4.68), the finding is higher than other research result reported as 2.2% (Tessema et al 2010:6).

The factor of non-adherence due to change in daily routine and falling asleep through the medications time can probably be due to the inability of the patients to develop the skills to adapt to new environments, due to failure to manage their daily routines, and forgetfulness to take their ART. The factor of feeling that the drugs were toxic or harmful to their health can possibly be due to the failure of the health-care provider to offer adequate education for patients to understand about the benefits and risk of the ART, and also the limited ability of the patients to understand the advice provided by the health-care provider. In addition, the patients can perhaps fail to utilise the advantages of regular time reminder to take medication, probably lack the skill to be internally driven to take medication and surrender easily to the challenges in their lives daily.

Furthermore, the non-adherence factor can probably be due to failure to acquire a reminder letter to refill medication or get a reminder call from the health-care

providers to make sure patients refill their medications as well as lack of perception of patients about their health risks related to the disease. The factor of feeling depression/unhappiness/hopelessness to take medication can perhaps be due to inability of resist the negative emotions affecting their self-motivation, diminishing their level of comprehension regarding instructions to medications and understanding the complications from non-adherence.

The findings from this study revealed that, the factor for non-adherence from wanting to start fasting influenced 24.7%, but never influenced 75.3% (Table 4.69), the finding is higher than other research result reported as 4.5% (Markos et al 2008:177). The factor of wanting to take holy-water influenced 19.4%, but never influenced 80.6% (Table 4.70); the finding is higher than other research result previously reported as 9.1% (Amberbir et al 2008:270). The factor of taking too many pills daily influenced 18.4%, but never influenced 81.4% (Table 4.71), the finding is higher than other research result previously reported as 2.4% (Markos et al 2008:177). The experience of domestic violence influenced 14.5%, but never influenced 85.5% (Table 4.72), the finding is higher than other research results previous reported as 4.5% (Markos et al 2008:177).

The factor of having poor relationship with the health-care provider influenced 18.4%, but never influenced 81.6% (Table 4.73), the finding is comparable to other research results previous reported as 5.6% and 17.9% (Markos et al 2008:175; Tessema et al 2010:6). The experience of life stresses influenced 25.8%, but the 74.2% were never influenced (Table 4.74). The pressure from the medical-staff to take medication influenced 22.4%, but never influenced 77.6% (Table 4.75), the finding is higher than other research result reported as 17.9% (Markos et al 2008:175). The factor of having no belief that the medication prolongs life influenced 27.8%, but never influenced 72.2% (Table 4.76), the finding is comparable to other research result reported as 28.8% (Markos et al 2008:175). The absence of emotional life support influenced 25.6%, but the 74.4% were never influenced (Table 4.77).

The factor of non-adherence due to wanting to start fasting/holy-water can probably be due to the patients' deep-rooted religiousness and failure among the religious leaders to counsel patients on the consequence of ART non-adherence during religious gatherings. The pressure to take medication and poor relationship from the health-care providers can probably influence non-adherence due to failure of the health-care providers to build encouraging relationship and create supportive social environments. Furthermore, patients can have a low treatment expectation and lack health belief that the treatment prolongs their lives. These can perhaps be due to the health-care providers' failure to provide educations on the benefits of ART which can support to strengthen the patients treatment expectation and health beliefs regarding ART. The absence of emotional support can probably affect reasoning, problem-solving skills, and negatively affecting decision-making capacity as a result making it difficult to generate solutions to support the patients' ART adherence behaviour.

#### **5.3.4 Trait emotional intelligence**

Trait emotional intelligence is defined as "a constellation of behavioural-dispositions and self-perceptions concerning one's ability to recognise, process, and utilise emotion-laden information" (Petrides & Furnham 2003:39; Petrides & Furnham 2006:554; Petrides, Pita & Kokkinaki 2007:273). Trait emotional intelligence includes factors such as well-being, self-control, emotionality and sociability factors. Trait models of EI put forward a broader idea of emotional intelligence, integrating both personal competencies and qualities (Petrides 2010:136; Zeidner & Olnick-Shemesh 2009:431). Trait emotional intelligence is the behavioural-dispositions that can permit people to distinguish and manage emotions evoked by stressful experiences. Trait emotional intelligence can assist people to avert from the state of negative psychological emotions towards focusing on attaining a healthier life with constructive mental view of optimism, happiness, stress free and become more assertive (Austin et al 2005:548; Choubey et al 2009:122; Mikolajczak et al 2009:457). It was assumed that a trait emotional intelligence can clarify on the role of emotions in extensive part of

routine life outcomes and during the period of adversity (Bastian et al 2005:1135; Zeidner & Olnick-Shemesh 2009:431).

People with higher trait emotional intelligence have been related to having strong emotions and a positive attitude to deal with stressful events, generating various positive courses of action as well as linked to the potential to control emotional impulses (Austin et al 2005:548; Zeidner et al 2012:5-6). Individuals with higher trait emotional intelligence have been related to being aware of ones emotions, able to regulate emotions, experience lower level of negative emotions, and the practice of higher level of positive emotion (Mikolajczak et al 2008:1356). Petrides (2011:668) stated that higher trait emotional intelligence has been related to accomplishing greater social competence in forming richer social groups and more successful coping strategies that can improve their mental, physical well-being, and adherence behaviour. Thus, lower trait emotional intelligence has been linked to negative emotions which can contribute to their mental and physical well-being (Milkolajczak et al 2007:1001; Mikolajczak et al 2009:457; Zeidner & Olnick-Shemesh 2009:431).

Among the total number of participants, 15.6% had an above-average level of trait emotional intelligence; 84.4% had an average level of trait emotional intelligence; and there were no participants who had a below-average level of trait emotional intelligence (Table 4.9). The finding of the study showed that the majority of the participants 84.4% had an average level of trait emotional intelligence with moderate score. People with moderate score on trait emotional intelligence factor have the tendency to exhibit behavioural-dispositions and self-perceived abilities between the high and low score. The finding show that the majority of the participants tend to have an average self-perceived ability on their behavioural disposition to process emotional-information, average self-perceived ability to resolve problems in their lives and confront stressful elements for better quality of life. In addition, majority of the participants have average self-perceived ability to manage their emotional problems in both social and personal environments.

It is predominantly known that people diagnosed with HIV/AIDS have been faced with multi-faceted psychological challenges such as disbelief, denial, fear, anxiety, depression, guilt, and stress (Hartzell et al 2008:247; Johnson et al 2010:459; Safren et al 2009:2). Thus, with the diagnosis of HIV/AIDS, majority of the participants are expected to have a below-average level of trait emotional intelligence with low score of trait emotional intelligence. Nevertheless, the participants have an average potential to use their trait emotional intelligence to deal with their stressful life circumstance. The finding can perhaps be due to the participants' average inherent potential to express their emotions in an exact manner, average capacity to formulate correct decisions about their lives during stressful-times, and the average ability to build on their self-motivation to improve their ART adherence.

#### ***5.3.4.1 Well-being factor***

Well-being is one of the factor of trait emotional intelligence that refers to the behavioural-dispositions and self-perceived abilities on overall health and welfare of the individual. The well-being factor refers to the facets of happiness, optimism and, self-esteem facets. People with low score on well-being have low self-worth and are not content with their life at the moment and are disappointed about their present life (Table 2.2). Whereas, people with high score on well-being factor are more fulfilled, have positive mood, they are satisfied with life, and resilient against negative circumstance (Petrides 2011:662). In addition, people with high score on well-being factor have a generalised sense of well-being, extending from previous accomplishments to expectations for the future (Petrides 2009:95).

Among the total number of participants, 51.5% had an above-average level of the well-being factor; 47.4% had an average level of the well-being factor; and 1% had a below-average level of the well-being factor (Table 4.10). People living with HIV/AIDS have been expected to have a below-average level of well-being factor. The finding of the study showed that the majority of the participants 51.5% had an above-average level of the well-being factor with high score.

Hence, the finding shows that the majority have the above-average capacity to utilise their innate psychological well-being potential to manage their challenges in life. The finding of the study can perhaps be due to the majority of the participants have an above-average level positive view of themselves with high self-respect on their achievements and are above-average pleased with their life.

#### **5.3.4.2 Self-control factor**

Self-control is one of the factors of trait emotional intelligence that depicts the behavioural-dispositions and self-perceived abilities to regulate emotions under stressful circumstances. The self-control factor refers to the facets of emotional regulation, impulsiveness, and stress management facets. It is a mind state of discipline, calmness, and rational thinking for better decision employed through a strong balance of emotions and reason. In addition, it is the potential to generate emotion, but at the same time reasoning with the emotional state by focusing on multiple perspectives.

People with low self-control score can not manage their feelings and mostly engage in impulsive and reckless actions. They find it difficult to act in a stable manner during stressful circumstances, and forward themselves into unjustified pressure. However, people with high self-control score can control their anxiety, they are less impulsive, are energetically motivated, and do not react to difficult situation in an unpredictable manner (Table 2.2). They can understand their own inner thoughts, do not allow their negative emotions to misguide their actions, and make conscious choices in life (Petrides 2009:94; Petrides 2011:662).

Among the total number of participants, 27% had an above-average level of the self-control factor; 69.6% had an average level of the self-control factor; and 3.3% had a below-average level of the self-control factor (Table 4.16). People living with HIV/AIDS have been expected to have low score of the self-control factor. However, the finding showed that the majority of the participants 69.6% had an average level of the self-control factor with moderate score. People with

moderate score on self-control factor have the tendency to exhibit behavioural-dispositions and self-perceived abilities between the high and low score of self-control factor. Therefore, the majority of the participants are on average able to regulate their emotions under pressure to control their impulses. In addition, the participants are on average able to stay focused with discipline, calmness, rational thinking, and strong balance of emotions for better decision. The finding of the study can perhaps be due to the participants' average capacity to utilise their innate psychological self-control potential and manage their challenges in life. In addition, the finding can perhaps be due to the participants' average potential to control their impulsive feelings as well as the average potential to reconnect and react to negative emotions.

#### ***5.3.4.3 Emotionality factor***

Emotionality is one of the factors of trait emotional intelligence that describes the behavioural disposition and self-perceived abilities to perceive emotions, express emotions, and develop relationships. The emotionality factor refers to the empathy, emotional perception, and emotional expression and relationships facets. Emotionality assists an individual to utilise their emotions, to directly communicate, to clearly discuss emotions, and to manage emotions in others. People with high score of emotionality are capable of comprehending their emotions and that of others in the environment and they are gifted in forming and sustaining relationships with friends and relatives (Table 2.2). People with low emotionality score are probably unable to recognise their own emotions and that of others, they have difficulty in communicating their emotions to others, and have problem in experiencing pleasing relationships with others (Petrides 2009:94; Petrides 2011:662).

Among the total number of participants, 32.1% had an above-average level of the emotionality factor; 67.6% had an average level of the emotionality factor; and 0.3% had a below-average level of the emotionality factor (Table 4.21). Among people living with HIV/AIDS, the factor of emotionality has been anticipated to be low. However, the finding showed that the majority of the

participants 67.6% had an average level of the emotionality factor with moderate score. People with moderate score on emotionality factor have the tendency to exhibit behavioural-dispositions and self-perceived abilities between the high and low score of emotionality factor. Thus, the participants are on average able to regulate their emotional pressure to control impulses, utilise their emotions to directly communicate and clearly discuss their emotions. The finding of the study can perhaps be due to the participants' average capacity to utilise their inborn emotional potential to cope with their stressful circumstances, their average capacity to understand their emotions, average ability to communicate with others and form good interactions with people to build lasting relationships.

#### **5.3.4.4 Sociability factor**

Sociability is one of the factors of trait emotional intelligence that refers to the behavioural-disposition or self-perceived ability to manage and communicate with others. The sociability factor refers to the facets on social awareness, assertiveness, and emotional management as well as adaptation and self-motivation facets. The factor of sociability focuses in terms of social integrity, managing differences, the capacity to have social relationships, and social influence in diverse social context. Sociability is the potential to appropriately handle feeling, use emotion to self-motivate, inspire, and encourage others. People with high sociability level are good listeners, are effective communicators, and have the confidence to mark their place in the world (Table 2.2). Whereas, people with low sociability score are insecure of themselves and are incapable to persuade others during social interactions (Petrides 2009:94; Petrides 2011:662).

Among the total number of participants, 20.4% had an above-average level of the sociability factor; 79.3% had an average level of the emotionality factor; and 1% had a below-average level of the emotionality factor (Table 4.29). The finding showed that the majority of the participants 79.3% had an average level of the sociability factor with moderate score. People with average level of sociability factor have the tendency to exhibit behavioural-dispositions or self-

perceived abilities between the high and low score of sociability factor. Therefore, the majority of the participants have average capacity to socialise in different social environments and average capacity to communicate with others to handle feelings. The participants have average level potential to use emotions to self-motivate, inspire, and encourage themselves. The finding of the study can perhaps be due to the participants' average potential to manage their emotions in healthy manner, average capacity to identify ways to adapt to the changing life circumstances, and average capacity to discover ways to understand and strengthen their self-motivation.

### **5.3.5 Anti-Retroviral Therapy (ART) adherence behaviour and trait emotional intelligence**

People that are unable to control their emotions often have difficulty in managing emotional interactions in both social and personal problems. The potential to perceive and control one's emotions in a positive style is very important to function appropriately (Martins et al 2010:554). The infection with HIV/AIDS has been linked to create a profound transformation in one's life by causing negative effects on the quality of life and psychological well-being (Safren et al 2009:1). The negative emotions have been documented to affect an individual's reasoning, decision-making, and problem-solving skills in a constructive manner (Leserman 2008:540; Pence 2009:636). The negative psychological emotions such as anxiety, depression, fear, and other negative emotions have been documented to create an impact on the patients' ART adherence behaviour, disease course, and other health risks (Kalichman & Grebler 2010:811).

Trait emotional intelligence can be a decisive factor between good and bad health behaviour (Zeidner et al 2012:1,4). Trait emotional intelligence is a variable that has been related to other variables such as good general health behaviour, adaptive problem solving styles, lowering perceptions of stress with better quality of life, and psychological well-being (Austin et al 2005:548; Bastian et al 2005:1136; Mikolajczak et al 2008:1357). Several studies have been documented on the influence of trait emotional intelligence on adherence

behaviour through the process of general health behaviour, adaptive problem solving styles, coping strategy, rational thinking, lowering perceptions of stress, better quality of life, and psychological well-being (Austin et al 2005:548; Bastian et al 2005:1136; Chamorro-Premuzie et al 2007:1634; Mikolajczak et al 2008:1357-1358). Trait emotional intelligence has been linked to lowering the environmental and personal stress levels which have a positive effect on the immune system and ART adherence behaviour (Milkolajczak et al 2007:1001).

Trait emotional intelligence has been linked to have a significant impact on lowering negative psychological emotions through stress-coping and improve treatment adherence (Zeidner et al 2012:7). Implementing trait emotional intelligence as a stress-coping method has been associated with a better health, quality of life, and treatment seeking behaviour (Zeidner et al 2012:7). In addition, trait emotional intelligence can support people to have strong discipline and self-regulation of negative emotions towards achieving a good health-related behaviour and improve treatment adherence behaviour. The lowering or resisting of environmental and personal stress levels can have a positive effect on the immune system and ART adherence behaviour (Zeidner et al 2012:7). Furthermore, trait emotional intelligence has been related to aid people to have a greater social support, enable people to sustain healthy relationships within their surrounding environment, and enhance their ART adherence behaviour (Austin et al 2005:548; Zeidner et al 2012:7).

According to (Johnson et al 2009:471 and Martins et al 2010:554) emotional intelligence can enhance ART adherence behavior by applying self emotion-regulation with discipline towards positive health-related behavioural practices, better communications with health care professionals, stress-coping to deal with health problems, for greater social support resources at times of stress or illness and having positive emotions with lower stress. People with higher trait emotional intelligence have been related to having strong emotions and the positive attitude to deal with stressful events, and the potential to control emotional impulses (Austin et al 2005:548; Zeidner et al 2012:5-6). Individuals with higher trait emotional intelligence have been linked to being aware of ones

emotions, being able to regulate emotions, and to experience a lower level of negative emotions (Mikolajczak et al 2008:1356). Higher trait emotional intelligence has been related to accomplishing greater social competence and forming more successful coping strategies that can improve the capacity on their mental, physical well-being, and adherence behaviour (Petrides 2011:668). Thus, lower trait emotional intelligence has been linked to negative emotions which can lower to their mental and physical well-being (Milkolajczak et al 2007:1001; Mikolajczak et al 2009:457; Zeidner & Olnick-Shemesh 2009:431).

The present study expands the extensive empirical support for the concept that trait emotional intelligence has been related to various good health behaviours and ART adherence behaviour. The finding of the study showed that there was a moderate positive correlation between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence at ( $r = 0.417$ ,  $n=392$ ,  $P < 0.001$ ) (Table 4.78). Trait emotional intelligence is an innate aspect of the individual that can be learned and strengthened through time with hard work (Petrides, Furnham & Mavroveli 2007:151). Trait emotional intelligence is expected to be very effective at preventing and managing negative emotions among HIV/AIDS infected people as a result improving the ART adherence behaviour. Based on the finding of this study, the role of trait emotional intelligence to improve patients ART adherence behaviour can be rightfully forwarded to the health system in Ethiopia.

#### ***5.3.5.1 Anti-Retroviral Therapy (ART) adherence behaviour and well-being factor***

Well-being is one of the factor of trait emotional intelligence that refers to the behavioural-dispositions and self-perceived abilities on overall health and welfare of the individual. The well-being factor refers to the facets of “optimism” (the state of having a positive outlook on one’s life for the future), “happiness” (the present state of a positive feeling and satisfaction with one’s life), and “self-esteem” (the level of self-respect and confidence) (Petrides 2009:89). People with low level of well-being have low self-worth and are not content with their life

at the moment and are disappointed about their present life. Whereas, people with high score on well-being factor are more fulfilled, have positive mood, they are satisfied with life, and resilient against negative circumstance (Petrides 2011:662). In addition, people with high well-being factor have a generalised sense of well-being, extending from previous accomplishments to expectations for the future (Petrides 2009:95).

Well-being factor can assist people to avert from the state of negative psychological emotions towards focusing on attaining a healthier life with constructive mental view of optimism, happiness, stress free and become more assertive. Negative psychological emotions have been linked to changes in poor health behaviours, ART non-adherence, clinical deterioration and progression to AIDS (Ironson et al 2005:1020; Kalichman & Grebler 2010:811; Pence 2009:636; Scott-Sheldon et al 2008:130). (Zeidner et al 2012:7) stated that the the process of lowering stress, the greater use of positive health practices, and the resilience against negative psychological states can increase ART adherence behaviour. The present study expands the support for the concept that the well-being factor of trait emotional intelligence has been related to ART adherence behaviour. The finding of the study showed that there was a positive correlation between ART adherence behaviour and well-being factor related to trait emotional intelligence at ( $r=0.325$ ,  $n=392$ ,  $P<0.001$ ) (Table 4.79).

#### ***5.3.5.2 Anti-Retroviral Therapy (ART) adherence behaviour and self-control factor***

Self-control is the potential to generate emotion, but at the same time reasoning with the emotional state by focusing on multiple perspectives. The self-control factor includes the facets of “emotional regulation” (the potential to focus and control emotions), “impulsiveness” (the act of taking thoughtless decisions), and “stress management” (the management emotion under stressful circumstances) (Petrides 2009:89). People with low level of self-control can not manage their feelings and mostly engage in impulsive and reckless actions (Petrides 2009:94; Petrides 2011:662). They find it difficult to act in a stable manner during stressful

circumstances, and forward themselves into unjustified pressure. However, people with high self-control can control their anxiety, they are less impulsive, are energetically motivated, and do not react to difficult situation in an unpredictable manner (Petrides 2009:94; Petrides 2011:662). They can understand their own inner thoughts, do not allow their negative emotions to misguide their actions, and make conscious choices in life (Petrides 2009:94; Petrides 2011:662). The management of psycho-social issues as stress, hopelessness, depression and anxiety have shown to diminish patient's medication adherence through negatively affecting their self-motivation and level of comprehending instructions to medication (Lovejoy & Suhr 2009:289; Rintanaki et al 2006:360; WHO 2003:98-99). In addition, the process of stress management can be linked to lowering environmental and personal stress levels which can have a positive effect on the immune system and ART adherence behaviour (Milkolajczak et al 2007:1001).

The process of self emotion regulation with discipline towards health related behaviours and with stress-coping to deal with health related problems can enhance ART adherence behaviour (Zeidner et al 2012:7). The present study can build the support for the concept that the self-control factor of trait emotional intelligence has been related to ART adherence behaviour. The finding of the study showed that there was a positive correlation between ART adherence behaviour and self-control factor of trait emotional intelligence at ( $r = 0.348$ ,  $n=392$ ,  $P < 0.001$ ) (Table 4.80).

### ***5.3.5.3 Anti-Retroviral Therapy (ART) adherence behaviour and emotionality factor***

Emotionality refers to an individual's behavioural-dispositions in identifying, perceiving, maintaining relationships, expressing their own emotions and that of other. The factor emotionality consists of the facets of "empathy" (the capacity to be aware of and take into account of other's emotions), "emotional perception" (to understand one's own and of other's emotions), "emotional expression" (the potential to express and communicate emotions to others), and "relationship" (to

build and sustain satisfying relationships in one's environment) (Petrides 2009:89).

Emotionality assists an individual to utilise their emotions, to directly communicate, to clearly discuss emotions, and to manage emotions in others. It is believed that reflecting on one's thought, knowing how to express and managing emotions as well as self-directed behavior can bring great achievement (Johnson, Batey & Holdsworth 2009:471). It is expected that the process of being aware of one's emotions and regulating it promotes social relationships for support and affects the experience of emotions related to the stressful factors in life by alleviating the state of anxiety and worry (Mikolajczak et al 2009:456).

People with high emotionality are capable of comprehending their emotions and that of others in the environment and they are gifted in forming and sustaining relationships with friends and relatives (Petrides 2011:662). People with low level of emotionality are probably unable to recognise their own emotions and that of others, they have difficulty in communicating their emotions to others, and have problem in experiencing pleasing relationships with others (Petrides 2009:94; Petrides 2011:662). (Zeidner et al 2012:7) stated that the process of having better communication with health-care provider, managing emotions, and sustaining relationships can improve ART adherence behaviour. The present study expands the support for the concept that the emotionality factor of trait emotional intelligence has been related to ART adherence behaviour. The finding of the study showed that there was a positive correlation between ART adherence behaviour and emotionality factor of trait emotional intelligence at ( $r=0.306$ ,  $n=392$ ,  $P<0.001$ ) (Table 4.81).

#### ***5.3.5.4 Anti-Retroviral Therapy (ART) adherence behaviour and sociability factor***

Sociability is the potential to appropriately handle feeling, use emotion to self-motivate, inspire, and encourage others. The sociability factor includes the

facets of “social awareness” (to feel comfortable in different social environments), “assertiveness” (a state of forwarding one’s view point and affirming one’s own right), “emotional management” (the state of managing others emotions), “self-motivation” (a state of being internally driven by the need to produce high-quality work and unlikely to give up easily), “adaptation” (a state to cope with change and adapt to new things and environments) (Petrides 2009:89). The factor of sociability focuses in terms of social integrity, managing differences, the capacity to have social relationships, and social influence in diverse social context. People with high sociability are good listeners, are effective communicators, and have the confidence to mark their place in the world. On the contrary, people with low level of sociability are insecure of themselves and are incapable to persuade others during social relations (Petrides 2009:94; Petrides 2011:662).

The psychological factors experienced by HIV/AIDS infected people have been associated to negatively affect the availability of emotional support from friends and the social support from family, where both have a crucial role for ART adherence behaviour (Johnson et al 2006:356; Rintanaki et al 2006:360). The presence of social support for people living with HIV/AIDS can serve as a source of emotional and daily life supporting method (WHO 2003:99). Zeidner et al (2012:7) stated that the presence of having greater social support resources at times of stress, with the ability to manage and communicate with others can improve ART adherence behaviour. The present study expands the support for the concept that the sociability factor of trait emotional intelligence has been related to ART adherence behaviour. The finding of the study showed that there was a positive correlation between ART adherence behaviour and sociability factor of trait emotional intelligence at ( $r=0.372$ ,  $n=392$ ,  $P<0.001$ ) (Table 4.82).

#### **5.4 CONCLUSIONS**

There is a significant concern on the issue with the consequence of ART poor adherence behaviour among people living with HIV/AIDS. There is a considerable challenge to attain optimal adherence level for all. The path of

attaining optimal ART adherence behaviour can significantly improve the patients' quality of life. In-order to benefit from ART, people need to comprehend and adhere to their ART (dose, schedule, and life-style).

Trait emotional intelligence is “the constellation of behavioural-dispositions and self-perceptions concerning one’s ability to recognise, process, and utilise emotion-laden information” (Petrides & Furnham 2003:39; Petrides & Furnham 2006:554; Petrides, Pita & Kokkinaki 2007:273). Trait emotional intelligence has been related to good general health behaviour, adaptive problem solving styles, lowering perceptions of stress with better quality of life, and psychological well-being (Austin et al 2005:548; Bastian et al 2005:1136; Milkolajczak et al 2007:1001; Mikolajczak et al 2008:1357). Trait emotional intelligence can motivate people to make use of positive health practices, use the potential to regulate their emotion with discipline, better communicate with the health-care providers, cope with depressing emotions in their lives, and have greater social support for stressful times.

The finding of the study showed a positive correlation between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence. In addition, the finding of the study showed a positive correlation between ART adherence behaviour the factors of well-being, self-control, sociability, and emotionality. Therefore, health-care providers can perhaps utilise trait emotional intelligence to improve patients ART adherence behaviour. In conclusion, based on the findings of the research, this chapter concludes by discussing the limitations, making recommendations for monitoring ART adherence strategies, future studies concerning the factors for adherence/non-adherence behaviour, and trait emotional intelligence.

## **5.5 RECOMMENDATIONS**

The following segment of the research considers a discussion on the recommendations of the study acknowledged by the researcher.

Even though there are no limits to identify and recommend suggestions for health-care policy makers, health-care providers and other researchers in other fields of study. However, based on the findings of the study, the researcher made the following recommendations on ART adherence behaviour enabling factors and trait emotional intelligence in terms of (monitoring strategies, health-care policy makers, patients' education, and future studies).

### ***Monitoring strategies***

Health-care providers and health-care policy makers can advocate more on the importance of periodic monitoring strategies on ART (dose, schedule, and life-style) adherence behaviour and integrate the practice into regular clinical follow-ups. Health-care providers can improve the level of ART adherence behaviour by specifically addressing the patient-related factors that can pose a challenging circumstance for people on ART. Health-care providers can formulate suitable strategies to make follow-up visits more convenient and frequent, in-order to identify side-effects and make early alterations on the patients treatment. Furthermore, health-care providers and researchers can put into practice a continuous measurement of adherence/non-adherence factors to identify when interventions are required.

### ***Health-care policy makers***

Health-care policy makers can further facilitate the uninterrupted provision of a simplified regimen of ART within the health-care program. Health-care policy makers can allocate resources on assisting health-care providers to acquire the necessary training on ways to assist patients to face the challenges of improving ART treatment adherence behaviour. The training skills for the health-care providers can focus on the development of stress-management skills, communications skills, and counselling skills on ways to reconnect with unpleasant emotions. In addition, the training skills for the health-care providers can target on ways to encourage patients to develop their self-confidence, counselling on ways to reduce their insecurity through developing their self-

expression and communication-skill with others. Furthermore, health-care providers can be trained on attaining skills on motivating patients to develop the capacity to manage their health and commitment to their health.

### ***Patients' education***

Health-care providers can make more progress towards enhancing the ART adherence behaviour by providing education among patients and their close relatives through community support groups for emotional support. Health-care providers can further facilitate the steps forward on educating patients on the benefits of using time reminders to take their medication, facilitate the formation of a reminder supporting group, and provide access to the use of pill-boxes. In addition, provide education to develop the practice of holding extra medication with multi-dose envelopes whenever patients are away from home.

The health-care providers can educate patients with clear written instructions on ART treatment guidelines, medication precautions, and the consequence of non-adherence translated into their native language. Health-care providers can give a refill reminder letter and even phone text to make sure patients do not forget to refill their medications or run-out of medication. Furthermore, health-care providers and religious leaders can counsel to educate the patients with obvious instruction on not to interrupt their intake of the ART during gatherings related to religious activities.

The health-care providers can educate patients on how emotions affect their thoughts, on the emotional component of communication with others, and ways of forming good interaction with people to establish lasting relationships in their surroundings. The educational programs that target on well-being factor can focus on supporting patients to regulate their emotions under stressful circumstances to create a psychological state of calmness, discipline, positive mood, and be resilient against negative circumstance. The educational programs on self-control factor can focus on ways to control anxieties, ways on to understand their own inner thoughts, and the approaches to make conscious

choices in life. In addition, the educational programs that focus on emotionality can assist patients to develop the approaches to identifying, perceiving, expressing their own emotions, and forming sustainable relationships with friends and relatives. Furthermore, the educational programs on sociability factor can target sessions on ways on managing social interactions and communicating with others.

### ***Future research***

In resource limited setting like Ethiopia, health-policy makers and health-care providers can focus their attention on further identifying the factors that contribute to ART adherence/ non-adherence on a larger scale. Researchers can assess the ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence by taking into account other health facilities that provide access to ART services. Researchers need to be put into operation a longitudinal design researches on ART adherence behaviour and trait emotional intelligence that can further shed light on the correlation among people living with HIV/AIDS and other chronic diseases. Furthermore, future studies are warranted on the causal relations between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence.

Researchers in Ethiopia can focus their attention in areas of trait emotional intelligence which can have extensive benefit for any individual on the management of their daily life struggles. It is important to put into action a comparison studies by utilising different measures of trait emotional intelligence among people living with HIV/AIDS. In addition, researcher can assess the role of trait emotional intelligence in improving the quality of life, ways to cope with stress, and ways on managing disease progression. Especially for countries with limited resources like Ethiopia, the role of trait emotional intelligence in the management and leadership sector is essential. Nevertheless, there are no available research data on the factor of trait emotional intelligence. Therefore, the researcher emphasises the necessity of studies to be performed on trait emotional intelligence in all fields of study in the Ethiopian context. Moreover, it

can be stated that there is a need for trait emotional intelligence questionnaire appropriate for the Ethiopian socio-cultural context instead of using scales developed abroad.

## **5.6 CONTRIBUTIONS OF THE STUDY**

Internationally, extensive studies have been implemented on the role of trait emotional intelligence in varies health/non-health-related variables. However, in Ethiopia, several strategies have been proposed to improve ART adherence behaviour among people living with HIV/AIDS. Nevertheless, the utilisation of trait emotional intelligence to enable patients to manage their negative psychological emotions and achieve optimal ART adherence have not been justly forwarded. The following segment of the research discusses on the contributions of the study acknowledged by the researcher.

As ART programs continue to expand and the coverage of ART increases in Ethiopia, the role of behavioural-dispositions related to trait emotional intelligence can be a crucial component of a comprehensive management strategy for an optimised ART adherence behaviour. The researcher believes that the results of the study can benefit health-care providers, health-care policy makers and researchers to successfully augment the existing national ART program by addressing the following issues.

The findings from the research can assist health-care providers to better-understand patient-based behavioural aspect of ART adherence/non-adherence factors as well as enhancing the knowledge of health-policy makers to adequately tackle challenges faced during further scale-up of ART treatment programs. The study can assist to create different strategies for educating and supporting people living with HIV/AIDS to improve their long-term ART adherence behaviour. Furthermore, the findings can aid the health-care providers to gain an improved understanding about the factors related to adherence/non-adherence in relation to trait emotional intelligence. The

research findings can also be a stepping stone for non-medical researchers wanting to implement further studies on trait emotional intelligence in Ethiopia.

## **5.7 LIMITATIONS OF THE STUDY**

The following segment of the research focuses on the limitations of the study acknowledged by the researcher.

The study utilised a self-report questionnaire format that can generate an information bias from the participants' responses to the questions. The participants can over/underestimate data for ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence. In addition, the issue with social desirability bias can influence the reliability and validity of the collected data, since the participants can provide unreliable data to the questions asked. Additionally, the non-response rate can modify the composition of the sample due and reduce the effectiveness of the collected data.

The study was put into operation at the regional public hospitals in Addis Ababa. Therefore, it was a challenge to generalise the results of the study on ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence to other health facilities in the country. The researcher had a limitation with time and financial resources and used a cross-sectional design. The data collection process was done at one point in time over a period of 2 months and was difficult to reflect on the dynamic nature of ART adherence behaviour that varies over in time. Moreover, the assessment of adherence behaviour was not based on the viral load count and CD4 count analysis due to lack of access to laboratory set-up in the country.

The implementation of a cross-sectional design hindered the researcher to attain control over the variables. The research design has limited the researcher to investigate the causal relationships between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence. The application of a cross-section design has created difficulty to limit the influence of confounding

variables which can cause an effect on the internal validity of the results of the study. Furthermore, the research had the prospect of committing errors in the process of translating the questionnaires from English to Amharic.

## **5.8 CONCLUDING REMARKS**

In-order to describe and explain the individual differences that uniquely characterises and distinguishes individuals; it is important to study trait emotional intelligence. Despite the fact that living in a country with limited resources, trait emotional intelligence can have extensive benefit for any individual in relation to managing daily life struggles. The finding of the study showed that there was a moderate positive correlation between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence. In addition, the finding of the study showed a positive correlation between ART adherence behaviour and the factors of trait emotional intelligence (well-being, self-control, emotionality, and sociability).

Trait emotional intelligence can be a crucial component of a successful patient management framework in the context of ART adherence behaviour. Trait emotional intelligence can assist the health-care providers to improve ART adherence behaviour and create different strategies for educating and supporting people living with HIV/AIDS.

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**ANNEXURES**

**Annexure A: University of South Africa (UNISA) ethical clearance certificate**

**UNISA**   
university of south africa

**UNIVERSITY OF SOUTH AFRICA  
Health Studies Higher Degrees Committee  
College of Human Sciences  
ETHICAL CLEARANCE CERTIFICATE**

**HS HDC 39/2011**

Date of meeting: 28 October 2011      Student No: 4492-580-8

Project Title: Exploring art adherence in the context of trait emotional intelligence.

Researcher: Lulit Tamene Tessema

Degree: Masters in Public Health      Code: DIS4986

Supervisor: Prof E Potgieter  
Qualification: D Litt et Phil  
Joint Supervisor:

**DECISION OF COMMITTEE**

Approved       Conditionally Approved

  
**Prof E Potgieter**  
**CHAIRPERSON: HEALTH STUDIES HIGHER DEGREES COMMITTEE**

  
**Prof MC Bezuidenhout**  
**ACADEMIC CHAIRPERSON: DEPARTMENT OF HEALTH STUDIES**

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PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRES

**Annexure B: City Government of Addis Ababa Health Bureau Research Ethics Committee application to conduct research**

**REQUESTING PERMISSION TO CONDUCT A RESEARCH STUDY**

**To: City Government of Addis Ababa Health Bureau Research Ethics Committee**

Dear Sir/Madame,

I am a student in the University of South Africa (UNISA) enrolled in the department of health studies. I request an authorisation to conduct a research study as a fulfilment of Master of Public Health (MPH). The selected public hospitals for the study are Yekatit Hospital, Minilik 2<sup>nd</sup> Hospital, Ras Destal Hospital and Zewditu Hospital that are working under the city government of Addis Ababa regional health bureau.

**Title of the Study**

“Exploring Anti-Retroviral Therapy (ART) adherence in the context of trait emotional intelligence”

**Purpose of the study**

The purpose of the study is to determine if there is a relationship between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people who have access to free ART services at the regional public hospitals working under the authority of the city government of Addis Ababa.

## **Objectives of the Study**

The objectives of the study are to:

- Explore the level of ART adherence behaviour among HIV/AIDS infected people on ART at the regional public hospitals in Addis Ababa.
- Determine how adherence enabling factors influence the ART adherence behaviour among HIV/AIDS infected people on ART at the regional public hospitals in Addis Ababa.
- Determine how adherence compromising factors influence the ART adherence behaviour among HIV/AIDS infected people on ART at the regional public hospitals in Addis Ababa.
- Explore the level of behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people on ART at the regional public hospitals in Addis Ababa.
- Determine whether there is a correlation between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people on ART at the regional public hospitals in Addis Ababa.

## **Research Instrument**

The data collection instrument is prepared after relevant literature review and will be applied on selected individuals at the ART regional public hospitals with stratified systematic random sampling method by the researcher and the trained nurse data collectors.

## **Research Ethics**

In-order to avoid any form of social-discrimination and emotional discomfort, the inclusion of participants in the study is strictly voluntary and completely anonymous. There will be no reference of any documentation that links the

participant to the study. At any stage of the study, the participants can withdraw from the study and their action will not affect their medical care or access to other services at the hospital. Furthermore, the benefits of the study are high for the reason that the results can be helpful to address adherence behaviour problems for the HIV/AIDS infected population on ART.

Thank you for taking your time for considering this application.

With Regards,

Lulit Tamene Tessema (M.D)

**Annexure C: Informed consent form (English)****INFORMED CONSENT FORM**

Dear Participant,

My name is Dr. Lulit Tamene, I am a student in the University of South Africa (UNISA) enrolled in the department of Health Studies and conducting a research study as a fulfilment of Master's of Public Health (MPH). The title of my study is "Exploring Anti-retroviral Therapy (ART) adherence in the context of trait emotional intelligence".

The invitation to participate in the study is completely voluntary and no harm is associated with participating in this research. The information in this document is provided to assist you to understand and help you to decide in participating in the study, if you have any concerns, please feel free to ask. You are being asked to participate in the study because you qualify the eligibility criteria for the study, which are: 1) HIV/AIDS infected people receiving first-line ART therapy for more than 12 months; 2) Adult persons older than 18 years of age; 3) No history of substance abuse or mental disorder; 4) Having access to ART and medical follow-up at a regional public hospital; 5) Not being pregnant for the duration of the study; 6) A stable clinical condition with the mental ability to provide informed written consent and 7) Not having required hospitalisation for the duration of the study.

The purpose of the study is to determine if there is a relationship between ART adherence behaviour and behavioural-dispositions related to trait emotional intelligence among HIV/AIDS infected people receiving ART at the regional public hospitals in Addis Ababa. You may not directly benefit from participating in the study. However, you can benefit in the future from the results of the study, given that, the study findings can assist health-care providers to better understand the factors for ART adherence/non-adherence behaviour and also

comprehend the ART adherence behaviour in relation to the dynamic dimensions of trait emotional intelligence.

The study addresses questions on socio-demographic, trait emotional intelligence and ART adherence behaviour. Please remember that, it is very important that you provide a truthful response for the questions asked. The questionnaires will be filled out anonymously with no names. Your confidentiality will be respected; no information that discloses your identity and treatment information will be released. If you do not want to participate in the study, you can leave at any stage of the research, you do not have to provide any reason for your decision for not participating nor will your decision compromise the current health-care service you obtain in any manner. You having read the information provided above, your signature indicates that you have chosen to participate. It will take you on average 30-35 minutes to fill-out and complete the questionnaire. Thank you for taking your time to participate in the study.

Signature of the Participant

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Date

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Signature of the Interviewer

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Date

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For more information regarding the research, contact the main researcher with this Address: Dr Lulit Tamene (Tel: 251-910-789328)

**Annexure D: Questionnaire (English)****DATA COLLECTION QUESTIONNAIRE**

Date: (\_\_\_\_/\_\_\_\_/\_\_\_\_)

**SECTION 1: SOCIO-DEMOGRAPHIC QUESTIONNAIRE**

The following questions focus on your socio-demographic background. Please circle the appropriate answer or write your answer in cases where you can not find an answer among the presented choices.

1.1 How old are you?

- |                |                |                |
|----------------|----------------|----------------|
| 1) 18-24 years | 2) 25-31 years | 3) 32-38 years |
| 4) 39-45 years | 5) 46-52 years | 6) ≥53 years   |

1.2 What is your gender?

- |         |           |
|---------|-----------|
| 1) Male | 2) Female |
|---------|-----------|

1.3 What is your marital status?

- |            |           |             |            |               |
|------------|-----------|-------------|------------|---------------|
| 1) Married | 2) Single | 3) Divorced | 4) Widowed | 5) Other_____ |
|------------|-----------|-------------|------------|---------------|

1.4 What is your ethnic background?

- |           |          |          |           |               |
|-----------|----------|----------|-----------|---------------|
| 1) Amhara | 2) Oromo | 3) Tigre | 4) Gurage | 5) Other_____ |
|-----------|----------|----------|-----------|---------------|

1.5 What is your religious background?

- |             |           |               |             |               |
|-------------|-----------|---------------|-------------|---------------|
| 1) Orthodox | 2) Muslim | 3) Protestant | 4) Catholic | 5) Other_____ |
|-------------|-----------|---------------|-------------|---------------|

1.6 What is your level of education?

- |                        |                      |                        |
|------------------------|----------------------|------------------------|
| 1) No formal education | 2) Primary education | 3) Secondary education |
| 4) Collage diploma     | 5) University degree | 6) Other_____          |

1.7 What is your occupation?

- 1) Government employee      2) Private employee      3) Self-employed  
 4) House wife      5) Non-governmental organisation (NGO) employee  
 6) Jobless      7) on-pension      8) Other\_\_\_\_\_

1.8 How much is your monthly gross income in Birr?

- 1) ≤500 birr/month      2) 501-1,500 birr/month  
 3) 1,501-2,600 birr/month      4) 2,601-3,700 birr/month  
 5) 3,701-4,800 birr/month      6) ≥4,801 birr/month

## **SECTION 2: TRAIT EMOTIONAL INTELLIGENCE QUESTIONNAIRE**

Please select the appropriate answer from response options from (1-5) by placing (X) in the appropriate area.

- 1= (strongly disagree)      2= (disagree)      3= (not sure)      4= (agree)  
 5= (strongly agree)

No	Questions	Response options				
		1	2	3	4	5
2.1	I generally do not find life enjoyable.					
2.2	I generally believe that things will work out fine in my life.					
2.3	On the whole, I am pleased with my life.					
2.4	I feel that I have a number of good qualities.					
2.5	I believe I am full of personal strengths.					
2.6	Others admire me for being relaxed.					
2.7	On the whole, I am able to deal with stress.					
2.8	I am usually able to find ways to control my emotions when I want to.					
2.9	I tend to change my mind frequently.					
2.10	Expressing my emotions with words is not a problem for me.					
2.11	I often find it difficult to see things from another person's viewpoint.					
2.12	Many times, I can not figure out what emotions I am feeling.					
2.13	Those close to me often complain that I do not treat them right.					
2.14	I often find it difficult to show my affection to those close to me.					
2.15	I often pause and think about my feelings.					
2.16	I find it difficult to bond well even with those close to me.					
2.17	I can deal effectively with people.					
2.18	I often find it difficult to stand up for my rights.					
2.19	I am usually able to influence the way other people feel.					
2.20	I tend to "back down" even if I know I am right.					
2.21	I often find it difficult to adjust my life according to the circumstance.					
2.22	I normally find it difficult to keep myself motivated.					

### **SECTION 3: ANTI-RETROVIRAL THERAPY (ART) ADHERENCE BEHAVIOUR QUESTIONNAIRE**

#### **Section-3a**

This section of the questionnaire inquires about ART adherence behaviour over the past 2months. Please circle the appropriate answer.

1= (never) 2= (almost never) 3= (sometimes) 4= (almost every time)

5= (every time)

No	Questions	Response Options				
		1	2	3	4	5
3a.1	Have you been taking the right dose of your ART medications regularly every day over the past two months?					
3a.2	Have you been taking your ART medications regularly at the same time every day over the past two months?					
3a.3	ART medications require a special life-style instruction, such as 'take with food', 'to take on an empty stomach', 'to be careful on taking fatty food', and 'to take with plenty of fluids' and also 'to be careful on taking alcohol'. Have you been regularly following the instructions of your ART medications every day over the past two months?					

#### **Section-3b**

Are the following factors helpful for adhering to your ART regimen? Please select the appropriate answer from response options from (1-4) by placing (X) in the appropriate area.

1= (never)                      2= (rarely)                      3= (sometimes)                      4= (often)

No	Factors	Response options			
		1	2	3	4
3b.1	Having emotional support from family.				
3b.2	Having a simplified medication regime (one tablet per day).				
3b.3	Having a compartmentalized pill box to take my medication every day.				
3b.4	Using a time reminder to take daily medication.				
3b.5	Asking a close relative to remind me to take medication.				
3b.6	Having good knowledge of the consequences of non-adherence (viral resistance).				
3b.7	Having the motivation to be healthy.				
3b.8	Having a positive feeling and satisfaction with one's life.				
3b.9	Having the confidence to manage my health.				
3b.10	Having the potential to manage stressful circumstances.				
3b.11	Having the potential to express oneself and communicate with others.				
3b.12	Having the potential to feel comfortable in different social environments to take my medication.				
3b.13	Having good relationship with the health-care provider.				
3b.14	Having the potential to form close and fulfilling personal relationships.				
3b.15	Pressure from medical staff to take medication.				

Section-3c

To what extent do the following factors influence you to be non-adherent to your ART regimen? Please select the appropriate answer from response options from (1-4) by placing (X) in the appropriate area.

1= (never)                      2= (rarely)                      3= (sometimes)                      4= (often)

No	Factors	Response options			
		1	2	3	4
3c.1	Being away from home.				
3c.2	Being busy with other non-medical life matters.				
3c.3	Simply forgot to take medication.				
3c.4	Experiencing side-effects from the medication.				
3c.5	Did not want others to notice me taking the medication.				
3c.6	Due to a change in my daily routine.				
3c.7	Felt like the drugs were toxic/ harmful to my health.				
3c.8	Fall asleep through the medication time.				
3c.9	Felt too sick or ill to take the medication.				
3c.10	Felt depressed or unhappy or hopeless or angry to take my medication.				
3c.11	Running out of pills due to missed appointments.				
3c.12	Felt healthy or good about my health.				
3c.13	Lack of education on the consequence of non-adherence (viral resistance).				
3c.14	Lack of motivation to take medication.				
3c.15	Want to start fasting.				
3c.16	Want to take holy-water.				
3c.17	There are too many pills to be taken daily.				
3c.18	Experiencing domestic violence.				
3c.19	Poor relations with the health-care provider.				
3c.20	Experiencing life stresses.				
3c.21	The pressure from medical staff to take my medication is too much.				
3c.22	Do not believe the medication prolongs life.				
3c.23	Absence of emotional life support.				







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**Annexure G: Permission from trait emotional intelligence research program**

**From:** "Petrides,Dino"<k.petrides@ucl.ac.uk>

**To:** LulitTamene<lulitt2002@yahoo.com>

**Sent:** Sunday,September18,201111:17PM

**Subject:** RE: Application to Request Permission

Dear Dr. Tamene,

Thank you for getting in touch about this. All TEI Que versions and forms are available free of charge for academic research purposes as stated in the academic website: [www.psychometriclab.com](http://www.psychometriclab.com)

I am delighted to grant you permission to translate the short form into Amharic on the clear understanding that the instrument is to be used solely for scientific research purposes.

I hope this helps and wish you good luck with your research,

Dino

London Psychometric Laboratory (UCL)

[www.psychometriclab.com](http://www.psychometriclab.com)

**Annexure H: Letter of approval from the City Government of Addis Ababa  
Health Bureau Research Ethics Committee**

**ETHICAL REVIEW COMMITTEE**

Tel: + 251 115 513911

P.O. Box 30738

Fax No. +251 115 515689

**Research title:** "Exploring ART Adherence in the context of Trait Emotional intelligence "

**Principal Investigator** Dr. Lulit Tamene

CRITERIA/ITEM	RATING	
1. consent form a. Does the consent contain all the necessary information that the subject should be aware of?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not attached	<input type="checkbox"/> Requires revision <input type="checkbox"/> Not applicable
2. Are the objectives of the study clearly stated?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
3. Are provisions to overcome risks well described and accepted? a. Justice b. Beneficence c. Respect for a person	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> Not well described <input type="checkbox"/> Not applicable	<input type="checkbox"/> No
4. Are the safety procedures in the use of vaccines, drugs and other biological products acceptable?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable	<input type="checkbox"/> No
5. Are the procedures to keep confidentiality well described?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> N <input type="checkbox"/> Not applicable
6. Are the proposed researchers competent to carry out the study in a scientifically sound way?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> Not applicable	<input type="checkbox"/> No <input type="checkbox"/> Unable to assess
7. Does it have material transfer agreement?	<input type="checkbox"/> Yes <input type="checkbox"/> Not applicable	<input checked="" type="checkbox"/> No
8. Recommendation	<input checked="" type="checkbox"/> Approved with condition	
9. Remarks		

**Ethical Clearance Committee Members:**

Name

Signature

Name

Signature

1. Ato Alemu Haile mariam
2. Dr. Addis Akalu

3. Ato Ezra Muluneh
4. Ato Tadesse Wordofa