AN EXPLORATION OF THE EFFECTS OF MINDFULNESS ON PEOPLE WITH AN HIV POSITIVE DIAGNOSIS LIVING IN THE EASTERN CAPE, SOUTH AFRICA

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Declaration

I, Tracy-Leigh McIntyre 213381583, hereby declare that the dissertation for Magister Artium in Clinical Psychology at the Nelson Mandela Metropolitan University is my own work, except for quotations and summaries, and that it has not previously been submitted for assessment or completion of any postgraduate qualification to another University or for another qualification.

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Summary

Mindfulness research is growing considerably, though there is very little research in the area of HIV and mindfulness. This study explored and described the experience of a sample of HIV positive people, before and after an 8 week Mindfulness Based Stress Reduction (MBSR) programme, to ascertain whether mindfulness can positively impact the CD4 count of the participants, with the consequent improvement to their immune systems. The incidence of depression, anxiety and stress levels were also explored. The research sample consisted of 17 participants recruited from a local hospital clinic. Purposive sampling was used to source participants. The mixed method approach of data gathering was made up of a pre-test post-test battery of questionnaires and blood tests. Mindfulness levels were assessed with the Five Facet Mindfulness Questionnaire (FFMQ) and Mindfulness Attention Awareness Scale (MAAS) at 3 intervals, while depression, anxiety and stress were assessed by means of the Depression Anxiety Stress Scale (DASS-21). Key findings included the following: the drop out rate for this population group was large, mindfulness practices do not always have a positive effect on immune functioning when there are other confounding variables at play, all participants reported they benefited from the 8 week MBSR course, though their results did not always indicate this. In conclusion it is proposed that mindfulness is potentially beneficial.

Keywords: Mindfulness, Mindfulness Based Stress Reduction (MBSR), immune functioning, HIV, MAAS, DASS-21, FFMQ.
Chapter 1

Chapter Overview

This chapter will introduce the study, by presenting a brief overview of the core concepts which provide the foundation for this research, namely mindfulness as an intervention, as well as the Human Immunodeficiency Virus (HIV), and contemporary approaches to assisting people with HIV. Following on from this, a motivation for conducting the study will be provided. The aim and objectives of the research will be discussed and an overview of the chapters will be delineated.

Mindfulness as an Intervention

Mindfulness is about being present to experience, irrespective of what it is and without judgement (Nairn, 2004). This experience refers to external experience eg. sound, as well as internal experience eg. thoughts or emotions. To hold these experiences within our awareness without clouding them with our perceptions and judgements is the essence of mindfulness.

Mindfulness has been introduced to the scientific arena in the form of the 8 week Mindfulness Based Stress Reduction (MBSR) course, the Mindfulness Based Cognitive Therapy (MBCT) as well as other Mindfulness Based Interventions (MBI). Participants of these courses are encouraged to commit to doing a form of mindfulness practice for the duration of the 8 weeks, and this is usually in the form of a sitting practice or mindful movement exercise such as yoga or tai chi. These practices assist the participants in developing a meta cognitive awareness, and consequently developing a different relationship to their experience.

HIV and Contemporary Approaches to Assisting People who are HIV Positive

The HI virus is a virus that attacks the immune system of its host and consequently weakens immune functioning, resulting in the host being less effective at fighting infection.
With no known cure, the primary focus is to prevent transmission (UNAIDS, 2013). Another area of importance is treatment of those already infected with the virus, and this treatment requires a multidisciplinary team to provide a comprehensive treatment (Jonsson et al., 2013).

People with an HIV positive diagnosis are more likely to have mental health disorders, and Jonsson et al. (2013) discusses the complications in treatment thereof. It is because of these complications that a multi-disciplinary team, consisting of psychologists, psychiatrists and nurses, is required.

**Problem Statement**

Over 10% of the South African population is living with HIV, thus, it is an illness that needs serious attention from the public health sector in this country. People living with HIV face numerous problems socially and physically. Social problems include stigmatisation and discrimination (Kang’ethe & Xabendlini, 2014), and physical symptoms may include diarrhoea, fatigue and pain (Albrecht et al., 2007). Individuals with HIV have a compromised immune system, and are at risk for opportunistic infections; in lower socio-economic areas, infections such as tuberculosis (TB) are rife, resulting in a high co-morbid HIV and TB infection (Albrecht et al., 2007).

There are also psychological implications for people living with HIV, and these may include depression, anxiety, post traumatic stress disorder (PTSD) (Olley, Zeier, Seedat & Stein, 2005), as well as psychosis, dementia and mood disorders (Albrecht et al., 2007). As yet, there is no known cure for HIV. With a large portion of the population living with HIV, it is important to assist in the holistic care of the individual, and this includes psychological interventions that support the individual’s psychological functioning.

Mindfulness in the scientific arena began approximately 50 years ago, and since then, extensive research has been conducted to understand the effects of mindfulness on individuals. Mindfulness has been found to be beneficial to individuals suffering from a wide
range of ailments such as anxiety, depression, anorexia to name but a few. Furthermore, it has positive effects on an individuals’ immune system (Davidson et al., 2003).

With mindfulness having the potential to positively influence immune functioning, and HIV being a virus that negatively effects immune functioning, it stands to reason that mindfulness as an intervention should be able to counter some of the negative effects of HIV on the immune system. In no way is this a proposition that mindfulness can cure HIV, but it may be used to support psychological functioning and improve the quality of life of the people living with HIV.

**Primary Research Aims**

The primary research aims are indicated in the following statements:

1. To explore and describe the immune functioning in a sample of HIV positive adults before and after the 8 week MBSR intervention and at 3 months.

2. To explore and describe the levels of mindfulness of a sample of HIV positive adults before and after the 8 weeks MBSR intervention and at 3 months.

3. To explore and describe the levels of in depression, anxiety and stress in a sample of HIV positive adults before and after the 8 week MBSR intervention and at 3 months.

4. To explore and describe the experience of a sample of HIV positive adults before after the 8 week MBSR course and at 3 months.

**Delineation of the Study**

Chapter 1 provides an introduction to the study. Briefly presented in this chapter are an overview of mindfulness as an intervention, as well as an overview of HIV and contemporary approaches to assisting individuals with HIV. The problem statement and motivation, as well as primary objectives of the study are also presented.

Chapter 2 describes the context of the current research. A historical overview into the
origins of mindfulness is provided, as well as the origins of mindfulness within the scientific arena. A brief discussion follows, outlining the effects of mindfulness on immune functioning.

Chapter 3 looks at the pathogenic nature of HIV. It goes on to provide an overview of the extent of the virus within Southern Africa.

Chapter 4 introduces the research methodology as well as the design utilised in this study. It also introduces the sampling procedure, the research measures, the procedure and data analysis before concluding with ethical considerations.

Chapter 5 offers a discussion of the results of the study. The results are discussed from an overall group perspective as well as a case by case review.

Chapter 6 offers the conclusion of this study in line with the research aims. This chapter also reflects on the limitations of this research, as well as recommendations for further research.

Conclusion

This chapter introduced the high prevalence of HIV in South Africa, as well as the psychological and sociological implications of this high prevalence rate. Mindfulness as an intervention that has the potential to positively effect immune functioning has likewise been introduced, and the potential for mindfulness interventions to assist people living with HIV has been put forward.

The exploration of mindfulness for people living with HIV is outlined through the research aims. A delineation of the ensuing chapters was provided, the first of these being the area of mindfulness which will now be discussed.
Chapter 2

Mindfulness as an Intervention

Chapter Overview

This chapter will address the question of what mindfulness is, it will discuss the origins of mindfulness as well as its history within the scientific arena. It will briefly cover mindfulness in the field of cognitive neuroscience as well as neuroplasticity. Mindfulness is been considered to be a psychological tool, and is considered to benefit people with physical illness, as such both areas will be addressed in this chapter.

Mindfulness as a Concept

“Awareness is the spontaneous sensing of what arises in you-of what you are doing, feeling, planning; introspection, in contrast, is a deliberate turning of attention to these activities in an evaluating, correcting, controlling, interfering way; which often, by the very attention paid them, modifies or prevents their appearance in awareness…” Awareness is like the glow of a coal which comes from its own combustion; what is given by introspection is like the light reflected from an object when a flashlight is turned on it. In awareness a process is taking place in the coal (the total organism); in introspection the process occurs in the director of the flashlight (a split-off and highly opinionated part of the organism which we shall call deliberate ego.” (Perls, Hefferline & Goodman, 1951, p. 75)

The above quote illustrates that mindfulness is paying attention, but in a particular way. Attention is paid on purpose, in the present moment, and in a manner that is non-judgemental (Shapiro, Carlson, Astin & Freedman, 2006, p. 375). Many definitions of mindfulness are put forward, from a variety of different authors, but this definition of mindfulness is fairly universal (Nairn, 2004; Kabat-Zinn, 1982).
We tend to believe that we usually pay attention to what we do, yet, when we start to consciously pay attention, we realise how little attention we usually pay. Conscious attention allows us to notice all that arises in our body, mind and environment at any specific moment, and to start becoming aware of how much we block out on a moment to moment basis. By paying deliberate attention to each moment, and we consciously choose to notice what is arising, irrespective of whether it is pleasant or unpleasant. The most important aspect of any mindfulness practice is the aspect of non-judgement, as this component negates the selection of what we notice, resulting in our perception of our experience being a truer fuller experience.

To cultivate mindfulness, mindfulness practices are used. Insight or mindfulness meditation refers to clear seeing into the nature of things (Neale, 2006), that is seeing things as they are, and not through the myriad of cognitive perceptions and preconceived ideas which we have. Mindfulness, which is cultivated through mindfulness practices has three fundamental building blocks: 1) intention, 2) attention and 3) attitude (Shapiro et al., 2006). Intention refers to the reason for practicing mindfulness, as the intention will have an impact on the outcome. Kabat-Zinn (2003) describes intention as setting the stage for what is possible. By paying attention to each passing moment, this practice of attention, and the attitude with which it is paid, will determine the effectiveness of the mindfulness practice. A mindfulness practice consisting of these building blocks will lead to a significant shift in perspective, which Shapiro et al. (2006) calls ‘reperceiving’.

Reperceiving is understood to be a shift in perspective that places some distance between the observer and that which is being observed, namely the internal or external experience. This distance allows the observer to become less identified with the experience as well as less reactive towards it. Reperception enables individuals to distinguish between primary and secondary suffering which will be discussed later in this chapter.
There is a doing aspect and a being aspect to mindfulness (Segal, Williams & Teasdale, 2013). The doing aspect refers to actual mindfulness practices which are engaged with, while the being aspect refers to way of being in the world, which emerges when engaging in these practices over a period of time. What starts out as a trait, becomes a state (Neale, 2006). The doing aspect of mindfulness is the focus of this study, which is the active practice of mindfulness. In this instance, this is specified as mindfulness practices and education offered in an 8 week Mindfulness Based Stress Reduction (MBSR) course.

**The Origins of Mindfulness**

Mindfulness practices, used to cultivate mindfulness, is a form of meditation derived from the Buddhist tradition. Mindfulness is a part of most contemplative traditions, but it is through Buddhism that it has become popularised. Buddhism is considered to be a path of personal transformation through training, self-examination and self-correction (Loizzo, 2006b, as cited in Neale, 2006). Thurman proposed that it can be conceptualised as a psychology or a mind science (as cited in Neale, 2006).

The history of Buddhism may be found in the historical Buddha, who was determined to find a life path free from suffering. In his process of searching for this path, he perceived a model which allowed him to let go of suffering, which he called the four noble truths. Buddha proceeded to teach this model, which is essentially a medical model to deal with suffering. The first noble truth stipulates that there is suffering, thus delineating the symptoms. The second noble truth is that there is a cause of suffering, which is that suffering has discernible origins, thus providing a diagnosis of the suffering. The third noble truth stipulates that there is an end to suffering, thus determining the prognosis. And the fourth noble truth is that there is a path leading away from suffering, thus prescribing treatment to end the suffering (Neale, 2006). For the Buddha this treatment was to be found within what he termed the eightfold path (Neale, 2006).
The eightfold path is seen as a re-education program, and includes training in ethics, mental concentration and wisdom. This path is used as a guideline to counteract the causes of suffering, namely desire, aversion and ignorance. It is only through refining one’s awareness that these causes of suffering can be addressed. Without awareness of our actions and speech, we will not know if their nature is harmful. Without awareness of thought content, we will not be able to develop a concentrated awareness, and it is as a result of this awareness that one can be free of suffering. Buddha believed that the path of self-healing and self-correction is key to the ending of suffering through the uprooting of defensive self habits, and this is achieved through mindful awareness (Loizzo, 2004, as cited in Neale, 2006).

**Mindfulness in the Scientific Arena**

Orme-Johnson and Benson were pioneers in the early research around mindfulness practices in the scientific arena (Neale, 2006). They studied Transcendental Meditation (TM) (Orme-Johnson & Farrow, 1977), and put forward evidence that a concentrative style of meditation practice alters physiology (Neale, 2006). Later Benson, a cardiologist at Harvard Medical School, headed up research studying advanced meditative practices of Buddhist monks, and found substantial evidence of the mind body connection (Neale, 2006). As a consequence of these findings, Benson (1977) developed the Relaxation Response (a mindfulness intervention) to be applied in medical settings (Neale, 2006), which is effective for reducing hypertension, headaches, heart disease and psychiatric disorders such as anxiety (Neale, 2006). The University of Massachusetts (Umass) is also considered one of the pioneers of Mindfulness research in the United States, with its humble beginnings in 1979 (University of Massachusetts Medical School, 2013). Umass started studying mindfulness and incorporating it into the treatment of people suffering from depression, anxiety and chronic pain (Kabat-Zinn, 1982). Oxford University, in the United Kingdom (UK), has the Oxford Mindfulness Centre (OMC) with origins dating back to 1992, when Zindel, Segal,
Teasedale and Williams conducted research into preventing relapse in depression (University of Oxford, 2013). The OMC itself began in 2008.

Up until this point mindfulness was mostly associated with Buddhist practices and was not formally recognised in the scientific field (Kabat-Zinn, 2003). Umass created the MBSR course, and the OMC developed an 8 week Mindfulness Based Cognitive Therapy (MBCT) course. Both courses have proved to be effective in the treatment of depression (Davidson et al., 2003; Hick & Chan, 2010). The OMC was then instrumental in getting the governments’ National Health Service (NHS) in the UK to recognise mindfulness as a more beneficial and cost-effective way of dealing with major depressive disorder, culminating in the NHS agreeing to provide MBCT to patients referred from general practitioners (National Health Services (NHS) UK, 2013) (University of Oxford, 2013; Williams & Kabat-Zinn, 2011).

The mindfulness programme offered at Umass provided some of the groundwork required to bring mindfulness into the scientific arena. Their mindfulness programme spanned 8 weeks, and was conducted in the same way each time. The outcomes of the various courses were measured and quantified, through various measures that have been developed over time (Kabat-Zinn, 2003).

As a result of research findings into the benefits of mindfulness, new psychotherapies have been developed that incorporate mindfulness practices. Acceptance and Commitment Therapy (ACT) (Hayes & Smith, 2005) is designed to help people create a distance between who they perceive themselves to be and their thought content. This encourages behaviour that is guided by personal values (Morris, Johns & Oliver, 2013). ACT is also in the early stages of being used with people with psychosis (Morris et al., 2013).

Dialectical Behavioural Therapy (DBT) (Brodtsky, 2013), a form of psychotherapy that incorporates mindfulness, is designed to deal specifically with people who have been diagnosed as having Borderline Personality Disorder (BPD). Miller, Rathus and Linehan
(2006) see BPD as being a disorder in the emotion regulation system. The mindfulness skill of focusing attention on internal or external experience in a non-judgemental manner, are key to the regulation of emotion.

**Mindfulness and Cognitive Neuroscience**

Modern technology allows us to study the connections between body, brain and mind. This provides information to help understand the effects that meditation has on changing and regulating biological pathways.

One of the avenues that is being explored by neuroscientists is the difference in the neurological markers for meditation and for rest and sleep. Initial research (Holmes, Solomon, Cappo & Greenberg, 1983) found that rest and mindfulness practices decreased autonomic arousal in the same way, though this study was limited to the physiological effects only, and was conducted over brief intervals of time. Neale (2006) pointed out that Holmes et al.’s research did not take into account the psychological effects of mindfulness, as well as the fact that over a longer period of time, brain waves fluctuate as the meditator regulates their awareness. A meditator is able to regulate his or her relaxation, while the individual resting is usually overcome by sleep (Davidson et.al., 2003).

Other avenues of research include shifts in hemispheric dominance, increases in positive affect, and evoking neuroplasticity (Neale, 2006). Shifts in psychological disposition (i.e. from stress-reactive to tranquil) influences neurobiology by boosting immune functioning and healing areas damaged by long-term stress. Recent research (Holzel et al., 2010) on meditation, as taught in the MBSR course, shows an increase in grey matter in regions of the brain that are involved with learning and memory, emotional regulation, self referential processing and perspective taking (Holzel et al., 2010). Some research shows that meditation might lead to greater right hemisphere-specific abilities, which include intuition, visual perception, creativity, negative affect and the unconscious (Davidson, Goleman & Schwartz,
1976). What needs to be taken into account in research that explores the impact of meditation on the brain is the type of meditation being practiced. Loizzo (as cited in Neale, 2006) pointed out that concentration activates right hemisphere dominance, whereas insight meditation activates both hemispheres simultaneously.

One of the important research avenues to highlight is that meditation has been found to help activate positive human qualities ie. resilience, flourishing and well being (Urry et al., 2004). Ekman, Davidson, Ricard and Wallace (2005) reported that happiness is a skill that can be trained, and in this day and age is a necessity to reduce suffering.

**Neuroplasticity**

Loizzo (as cited in Neale, 2006) found that stress can cause neurological consequence if not moderated. Loizzo asserted that the triphasic stress response, if repeatedly activated, results in decreased neurogenesis, long-term damage to neural tissue and a decrease in cortical volume. What is important to learn here, is that the damage caused is not irreversible (Neale, 2006). Neuroplasticity is the ability of the brain to change after a period of training or experience (Neale, 2006). Research has found that mindfulness practices are useful in deactivating the stress response, thus avoiding future neural damage, as well as playing a role in repairing the long-term damage associated with chronic stress (Neale, 2006).

**Mindfulness as a Psychological Tool**

The field of Neuroscience has provided the proof needed to confirm that mindfulness is of physiological as well as psychological benefit. Mindfulness as a psychological tool, is a technique of training the mind. It is usually the thoughts/feelings/emotions regarding events that cause more suffering than the event itself, and it is here that mindfulness becomes useful. Mindfulness develops the meta-cognitive faculty, enabling the individual to view their thinking and experience from a different perspective. Mindfulness helps individuals to
become more aware of their individual thought patterns, from which point individuals can implement changes to the negative thought patterns.

According to Thera (1962) there are four objects of mindfulness; the first is –of the body; the second is –of the feelings, the third is –of the state of mind and the forth is mindfulness of mental contents. When we look at a definition of mindfulness, it is – “mindfulness is knowing what is happening, while it is happening, no matter what it is” (Nairn, 2004). This knowing includes Thera’s four objects (1962), and includes awareness of the body, feelings, mental state and contents, in the moment of their existence. Both the MBSR and MBCT courses focus on developing mindfulness in these four areas.

The mindfulness exercises are varied and do not come in a ‘one-size-fits-all’ package. Exercises are aimed at developing mindfulness of a specific area. For someone who spends a lot of time thinking and ‘being in their head’, mindful movement exercises would be very beneficial to assist them in being more in tune with their embodied experience. For someone who spends a lot of time exercising and being physical or busy, they might benefit from a sitting practice of observing the mind (McCown, Reibel & Micozzi, 2011).

The MBSR course is designed to introduce participants to different mindfulness practices so that they may ultimately select which practices best fits with them as individuals.

Mindfulness practices assist people in developing a meta-cognitive view of their experience, thus being able to view their experience from a different perspective. This shift in perspective changes the relationship with their suffering.

**Primary and Secondary Suffering**

Primary suffering refers to the unpleasant feelings experienced in the body in relation to a stimulus. Secondary suffering refers to all the thoughts, feelings, emotions and memories that are associated with the pain (Burch & Penman, 2013). When individuals consider their suffering, these different experiences merge together and the tendency is to feel helpless and
hopeless in the face of it. By separating out the primary and secondary suffering, the individual feels empowered to be able to do something about a part of their suffering. This is similar to re-perceiving, in that it changes the individual’s relationship to their suffering. Mindfulness practice allows us to bring awareness to the different levels of suffering and in the presence of non-judgemental awareness the suffering gradually decreases/dissolves.

**The use of Mindfulness with Ill People**

Research has indicated that increased mindfulness practice is correlated with improved immune functioning. This has been indicated immediately after the MBSR 8 week course, at a four month follow up (Davidson et.al, 2003), and at 7, 12 and 15 month follow ups (Kabat-Zinn, Lipworth & Burney, 1985). As individuals learn to manage their stress more effectively their immune functioning improves (Davidson et al., 2003). The MBSR course was originally designed to help people manage their pain. This proved to be very successful. It does not take a person’s pain away, but it changes the individuals’ relationship to the pain. There is pain – 1st order suffering – and then there is the relationship to the pain – 2nd order suffering – mindfulness works at the level of 2nd order suffering. When individuals discover that they have a chronic or terminal illness, this usually brings additional stress into their lives, as they start worrying about the future and about how their lives might have to change in light of the illness. This worry often compounds the problem.

Psychoneuroimmunology (Zachariae, 2009) shows how the mind has a crucial role to play in physical well-being, and that affecting changes to the mind, can consequently affect changes to the body. Psychologists are at the forefront of being able to help people with their state of mind, by employing various psychological techniques. Mindfulness is one technique that can be employed for this purpose.

Mindfulness is recognised on the international stage as being a method of treatment that is very effective (Kabat-Zinn, 2003). Areas of study which have assessed the effectiveness of
mindfulness are numerous, the most popular areas being depression, anxiety and chronic pain (Miller, Fletcher & Kabat-Zinn, 1995; Williams & Kuyken 2012). For example, John Kabat-Zinn (1982) conducted a study with chronic pain sufferers. After attending a mindfulness programme, approximately one third of pain related symptoms of participants were no longer problematic. Participants become more accepting of the pain they experienced, thus changing the nature of their relationship to the pain, and ultimately changing the pain experience (Kabat-Zinn, 1982). In the same study they also found a significant reduction in mood disturbances and psychiatric symptoms.

Another area of study has included eating disorders. DeSole (2010) reviewed various articles where the efficacy of mindfulness interventions in the treatment of eating disorders was assessed. Research into the effectiveness of MBSR in Cancer Care was conducted by Smith, Richardson, Hoffman, and Pilkington (2005), who found that MBSR has the potential to be effective, however research limitations, such as the difficulty of comparative studies due to modifications to the MBSR programme and the lack of qualitative research in this area were noted.

Identified studies that incorporate both mindfulness and HIV include Creswell, Myers, Cole and Irwin (2009), Jam et al. (2010), Gonzalez, Zvolensky, Grover and Parent (2012) and Gayner et al. (2012). In Creswell et al.’s (2009) research, the efficacy of the 8 week MBSR course was compared to a one day control seminar. Creswell et al.’s (2009) study of N=48 participants indicated that the mindfulness intervention had a direct correlation with the increase in CD4+ T lymphocytes count. Jam et al. (2010) had similar findings, though they did not have a control group and the number of participants (N=6) was significantly less, which makes their findings less robust. Gayner et al. (2012) assessed the impact of the MBSR course on HIV positive gay men, compared to a Treatment As Usual (TAU) group, and found a positive correlation between mindfulness and positive affect and improved mood. Leserman
(2008) found that the CD4 count did not predict major depression, but depressive symptoms could predict Acquired Immune Deficiency Syndrome (AIDS). Thus by working at the level of stress, anxiety and depression, the early onset of AIDS in HIV positive patients can be significantly delayed.

Kabat-Zinn (1982) found, using the Medical Symptom Check List (MSCL), that approximately one third of pain related symptoms of participants were no longer problematic after the 10 week course (this course has subsequently become an 8 week course). In the same study they also found a significant reduction in mood disturbances and psychiatric symptoms.

Mindfulness has been applied in diverse areas of study such as Psychopathology, communication processes, education research and developmental psychology (Langer & Moldeveanu, 2000). There are a handful of Mindfulness studies being done in South Africa, including a study conducted in Johannesburg using a Mindfulness Based Intervention (MBI) as a tool to support student teachers (Draper-Clarke, 2012). This brief overview was aimed at providing some insight as to where the field of mindfulness might be of benefit within the field of HIV.

Conclusion

In this chapter we have discussed the definition of mindfulness, its origins, as well as its history within the scientific arena. The chapter briefly covered mindfulness in the field of cognitive neuroscience as well as neuroplasticity. Mindfulness as a psychological tool was discussed as well as its benefit to people with physical illness.

An abundance of research has been conducted on the effects of mindfulness on the immune system, but not in South Africa, and not on HIV in particular. In the following chapter we shall take a brief look at the field of HIV, from treatment to psychological effects,
as well as the global to local impact of the virus. This brief overview will provide some insight as to where the field of mindfulness could be of benefit within the field of HIV.
Chapter 3
HIV and Contemporary Approaches to Assisting People with an HIV Diagnosis

Chapter Overview
This chapter provides an overview and definition of HIV and AIDS, including how it is transmitted and some comments on biological interventions used in treatment. It discusses the spread of HIV, from a global level to a local South African level, and considers the effect that an HIV positive diagnosis has on people physiologically and psychologically, including stigmatisation, anxiety, fear and depression and the impact on families and households. Stressors related to the treatment and care of HIV positive people and people living with AIDS are also mentioned. Finally we look at the contemporary approaches to assisting people with a co-morbid mental illness.

An Overview of the Biology of HIV and AIDS

This section will look at what HIV is, how it is transmitted, and how it can be treated.

Synopsis of the HIV pathogenic process.
The HI virus’ pathogenic process is as yet not completely understood (Mogensen, Melchjorsen, Larsen, & Paludan 2010). What we know is that HIV is a retrovirus belonging to the family of lentiviruses (Albrecht et al., 2007). Viruses in this family have a tendency to follow a course of latency, persistent viral replication and involve the central nervous system (CNS) in doing so (Albrecht et al., 2007). HIV targets the bodies’ immune functioning, by focusing on CD4 lymphocytes, which are considered to be vital to the bodies’ immune functioning. The CD4 cells send messages to other immune cells, to thereby control the body’s immune response. They also send messages to CD8 killer cells (Albrecht et al., 2007), which destroy cells they consider to be infectious, thus maintaining health within the body.

Once the virus enters the body it binds with the CD4 cells, using them as host cells for replication (van Dyk, 2005). The virus creates latent reservoirs which are undetected by the
The body’s immune system (Mogensen et al., 2010). The CD4 cells within the body decrease over time, resulting in a weakened immune system, and the consequent susceptibility to opportunistic infections which the body is unable to fight (Albrecht et al., 2007).

Mogensen et al. (2010) highlighted that there is a deficiency in the ability of the body’s immune system to detect the virus in its early stages. He speculates that detection at this early stage could prevent life-long infection, as latent viral reservoirs are created during the virus’ early pathogenesis, which result in the consequent lifelong infection.

**HIV transmission.**

HIV is transmitted from person to person through four bodily fluids, namely blood, semen, vaginal fluids and breast milk, as these are the fluids in which the virus is found to be significantly high (Evian, 2003; Van Dyk, 2005). HIV can be detected in other bodily fluids such as tears, urine and sweat, but the viral load is not high enough for HIV transmission. There are no documented cases of HIV transmission through non-bloody saliva or tears (Albrecht et al., 2007).

Transmission happens through various means, such as blood transfusions, sharing of surgical needles, sexual intercourse, and maternofetal transmission (Albrecht et al., 2007). There are various factors that affect the likelihood of transmission, and these include ignorance of HIV positive status, as well as having multiple sexual partners – or a partner who has multiple sexual partners. Not knowing ones status results in increased risk of transmission, as the individual feels no need to have protected intercourse. The presence of a mental disorder, such as mood disorders or psychosis, may impact on the individual’s ability to make safe or appropriate decisions. In these circumstances they may engage in promiscuous sexual behaviour without giving thought to protecting themselves or others from HIV transmission. Individuals with a mood disorder or psychosis are also at risk, and are less likely to adhere to their Anti-Retro Viral (ARV) treatment.
**Biological intervention.**

UNAIDS is an organisation focused on treatment of HIV with ARVs, which is medication that is designed to suppress the reproduction of HIV at various stages of its development; this is why many ARVs are required simultaneously. The UNAIDS statistics (UNAIDS, 2012) show that only 8 million of the 34 million infected with HIV have access to ARV treatment, which means that 26 million infected people worldwide do not have access to ARV treatment. Although ARVs appear to be working, HIV treatment is a balancing act between the suppression of the virus and drug toxicity (Albrecht et al., 2007). Although ARVs are designed to help fight the virus, they can cause some unpleasant side effects. As there are numerous ARVs with different drug ingredients, the side effects of ARVs also vary hugely from drug to drug and person to person. Along with the physical side effects, ARVs also have neurological side effects (Albrecht et al., 2007). In some cases the side effects are so severe that it results in the person not wanting to continue with their ARV treatment, and this is a cause for concern.

One of the areas of focus of UNAIDS (2013) is male circumcision. It is projected that circumcising 80% of adult males in areas with high prevalence rates could avert 1 in 5 new transmissions by 2025 (UNAIDS, 2013).

**HIV Epidemiology**

The Human Immuno-deficiency Virus (HIV) is a world-wide problem, with an estimated 35.3 million adults and children infected world-wide, at the end of 2012 (UNAIDS, 2014). In this section the latest epidemiological information will be reviewed. This information will be presented based on global figures, as well as the figures in Sub-Saharan Africa and in South Africa.
Global HIV.

When reviewing the global HIV distribution, it is clear that there is a disproportionate distribution of HIV, as can be seen in Table 1. The information in Table 1 was collated from various sources, namely WHO (2014) and WHO (2015), and is indicated accordingly.

Table 1. World Populations per WHO Region and Corresponding HIV prevalence

<table>
<thead>
<tr>
<th>WHO regions</th>
<th>Total Population</th>
<th>Percentage of Total Population</th>
<th>Total HIV positive in 2012</th>
<th>Percentage of Total HIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>892,7m</td>
<td>13%</td>
<td>24.9m</td>
<td>70.4%</td>
</tr>
<tr>
<td>Americas</td>
<td>981,5m</td>
<td>14%</td>
<td>3.0m</td>
<td>8.5%</td>
</tr>
<tr>
<td>South East Asia</td>
<td>1,8b</td>
<td>26%</td>
<td>3.4m</td>
<td>9.6%</td>
</tr>
<tr>
<td>Europe</td>
<td>899m</td>
<td>13%</td>
<td>2.2m</td>
<td>6.2%</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>605m</td>
<td>9%</td>
<td>0.5m</td>
<td>1.4%</td>
</tr>
<tr>
<td>Western Pacific</td>
<td>1,8b</td>
<td>26%</td>
<td>1.4m</td>
<td>3.9%</td>
</tr>
<tr>
<td><strong>Global Total</strong></td>
<td><strong>6,978b</strong></td>
<td><strong>100%</strong></td>
<td><strong>35.3m</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Note: a (WHO, 2015) b (WHO, 2014)

As can be seen in Table 1, Africa has the largest population of HIV positive people at 70% of the total infected, while only containing 13% of the world’s population; this indicates that Africa has the largest concentration of HIV positive people internationally. The focus of the UNAIDS program (UNAIDS, 2012) is on prevention, with the goal of eliminating new HIV infections. Prevention is vital, and from an overall view of the statistics over time, it appears that the rate of infection is decreasing in most countries (but not all) (UNAIDS, 2014). This implies that prevention campaigns are having some impact world-wide.

Sub-Saharan Africa.

As seen in Table 1, Africa contains the largest HIV positive population at approximately 70%, which equates to 24.9 million people. Furthermore, the majority of the HIV positive
population is in Sub-Saharan Africa, at 23.5 million people. Within this area, the infection rate has reduced by 34% since 2001 (UNAIDS, 2013), which is a significant decline. However, it does not yet meet the UNAIDS target to “Reduce new infections by 50%” by 2015 (UNAIDS, 2013, p.35), and is still the area where the majority of new infections occur (UNAIDS, 2012).

South Africa.

According to UNAIDS (2014) there were an estimated 6.1 million people living with HIV in South Africa in 2012 – the highest number of HIV infected people in any country in the world. The population currently stands at 51.8 million, a figure determined by the 2011 census (Statistics South Africa, 2011). This means that more than 10% of the South African population is infected with HIV, with the majority of infected adults between the ages of 20 and 50 (AVERT, 2013). As indicated in Figure 1, the prevalence of HIV in South Africa was estimated at nearly 11% in 2008, although UNAIDS (2014) reported that the rate of infection is decreasing.

Table 2. Estimated HIV prevalence (%) among South Africans aged 2 years and older, by age, 2002-2008

<table>
<thead>
<tr>
<th>Age</th>
<th>2002 (%)</th>
<th>2005 (%)</th>
<th>2008 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children (2-14 years)</td>
<td>5.6</td>
<td>3.3</td>
<td>2.5</td>
</tr>
<tr>
<td>Youth (15-24 years)</td>
<td>9.3</td>
<td>10.3</td>
<td>8.7</td>
</tr>
<tr>
<td>Adults (25 and older)</td>
<td>15.5</td>
<td>15.6</td>
<td>16.8</td>
</tr>
<tr>
<td>15-49 year olds</td>
<td>15.6</td>
<td>16.92</td>
<td>16.9</td>
</tr>
<tr>
<td>Total (age 2 years to 49 years)</td>
<td>11.4</td>
<td>10.8</td>
<td>10.9</td>
</tr>
</tbody>
</table>

Note. Adapted from AVERT (2014a)

The prevalence of HIV across the different provinces is varied, as seen in Figure 1. The area with the lowest HIV positive population is the Western Cape with 9.2% of the provinces
inhabitants being HIV positive. The area with the highest percentage of HIV positive people is kwaZulu Natal, with 27.6% of the provinces inhabitants being HIV positive.

**Figure 1. HIV Prevalence by Province (15-49 year olds) South Africa 2012**

![HIV Prevalence by Province (15-49 year olds) South Africa 2012](image)

*Note. KZN = KwaZulu Natal; MP = Mpumalanga; FS=Free State; EC = Eastern Cape; NW = North West; GP = Gauteng Province; LP = Limpopo; NC = Northern Cape; WC = Western Cape. Adapted from van der Linde (2013)*

**The Burden of HIV on Individuals**

For many, an HIV positive diagnosis indicates imminent death. This is because many individuals lack education about life with HIV, have inadequate health care or inadequate access to health care, and no financial means to have sufficient food in order to take the ARV treatment, nor to maintain a healthy standard of living where their immune system is functioning optimally. Additionally, the reality is that only 32% of people with an HIV positive diagnosis have access to ARV treatment in Sub-Saharan Africa is (UNAIDS, 2013).

Compounding on this problem in South Africa specifically, is the co-morbid Tuberculosis (TB) infection. TB [in the form of Multi Drug Resistant (MDR)-TB and Extensively Drug Resistant XDR-TB] is predominant in the Eastern Cape and KwaZulu Natal regions. Thus, someone with a compromised immune system, as with a person who is HIV positive, is more susceptible to contracting TB. The most recent figures indicate that the
rate of TB infection has increased by over 400% in the last 15 years (TBFacts.org, 2014). Along with a low socio-economic standard of living for the majority of the South African population, the chances of contracting opportunistic infections are high.

Unemployment in South Africa is at a high of 25.5% (Statistics South Africa, 2014). Unemployment is stressful, as people try to find ways of supporting their families. They have to resort to doing tiring work in low income earning jobs. Individuals in low earning households are usually supporting other people.

One of the stressors affecting people with an HIV positive diagnosis includes stigmatisation by their family, friends and community. This often causes emotional stress for the individual at a time when they most need support from those around them. Kehler, Mthembu, Ngubane-Zungu and Mtambo (2012) found that domestic violence is also likely to increase if one’s status is disclosed to a spouse, as some women reported being beaten and stabbed by their husbands or partners. In their study, Kehler et al. (2012) found that only 10% of the total sample believed that women would be supported by the community if they disclosed their status.

The Physiological Impact of HIV

HIV is considered to progress in either 3 or 4 stages – depending on the resource used. According to Avert (2014b) there are four stages in the progression of HIV. The first stage is the primary HIV infection, which lasts about 2 weeks, and is often accompanied by flu-like symptoms. At this stage the immune system begins responding to the virus, by progressing into the stage known as seroconversion.

The second stage is an asymptomatic stage and can last approximately 10 years. This is where the virus remains active within the body, although there are no physiological symptoms.
The third stage is a symptomatic stage which is activated for one or more of the following reasons: the lymph nodes and tissues have become damaged from years of over-activity; the virus becomes stronger and changes resulting in more T helper cells being destroyed; and/or the body is unable to keep up with replenishing the bodies T helper cells.

The progression from HIV to AIDS is the fourth stage and is usually highlighted by the individual contracting severe opportunistic infections and cancers. The CD4 count is usually below 200.

According to the field of Psychoneuroimmunology (PNI), otherwise referred to as Mind-Body Medicine, psychosocial factors influence the immune system (Bovbjerg, 1991). This means that how individuals think, as well as the environment they live in affects their immune system. The consequence of this is that individuals have the power to influence their own immune system, by changing the way they interact with themselves and their environment (Davidson et al., 2003). A common thread that has emerged through research within the field of HIV is that stressful events, trauma and chronic depression have a negative impact on HIV progression (Leserman, 2008) as measured in CD4 lymphocytes and viral load. Evans et al. (1997) found that severe life events have a direct correlation to an increase in HIV progression.

People with an HIV positive diagnosis have to ensure that their immune system is functioning well in order to avoid opportunistic infections, as the slightest infection could have serious consequences. This research is based on this premise - that positive changes to the mind, can have positive effects on the immune system. A shortage of research exists in the area of managing the immune system through psychological tools.

The Psychological Impact of HIV

Research indicates a higher prevalence of clinical psychiatric disorders among HIV positive individuals than among HIV negative individuals (Brandt, 2009; Olagunju,
Ogundipe, Erinfolami, Akinbode & Adeyemi, 2013). The psychiatric disorders associated with HIV include Anxiety Disorders, Major Depressive Disorder and Substance-Related disorders. There are multiple factors that are possible causes of these disorders i.e. alcohol use (resulting in depression), genetic predisposition and ARV side-effects (Albrecht et al., 2007).

Olagunju et al. (2013) stressed the importance of psychiatric services in HIV care. In their study, Olagunju et al. (2013) found that depression, anxiety and substance abuse was present in 25% of the participants (n=295). In particular, the challenge with depression is that it impacts the functioning of the immune system, which provides further reasons for individuals to feel depressed. Psychiatric disorders can also have an impact on ARV treatment, as the more disordered the person, the less likely they are to take their ARVs. Thus, early diagnosis and treatment is essential to the HIV positive individual’s ultimate well being.

It has been found that HIV causes neurological damage which results in psychological disorders such as HIV dementia, Schizophrenia and mood disorders. HIV related dementia is characterised by severe motor, cognitive and behavioural dysfunction (Ferrer & Rakhmanina, 2013). These psychological conditions put severe strain on an already strained social support network.

Stigmatisation and discrimination due to HIV status effects the psychological well being of individuals. Without social support, individuals experience higher levels of stress which in turn has an effect on their viral load and CD4 count, and consequently their immune system (Kehler et al., 2012).

**Stigmatisation**

Stigmatisation occurs due to a lack of adequate information as well as inaccurate information. Myths about HIV and AIDS also play a significant role in the formation of
stigma (Kang’ethe & Xabendlini, 2014). Kang’ethe and Xabendlini (2014) showed how myths result in the spread of HIV as well as the increase of sexual assaults on women and young girls (Earl-Taylor, 2002). For example, there is a myth in South Africa that suggests sleeping with virgins or albinos can cure HIV and AIDS (Kang’ethe & Xabendlini, 2014). This has directly led to a rise in sexual assaults against women and young girls (Kang’ethe & Xabendlini, 2014). This is indicated by the rise in new infections in children aged 0-14 (UNAIDS, 2013).

There are also myths stemming from traditional healers, whose point of view is held in high regard in the communities, where they claim to be able to cure an individual of HIV and AIDS (Kang’ethe & Xabendlini, 2014). This results in people participating in sexual assault acts, that they otherwise would not have committed, as well as combining traditional medicine with ARV’s (Kang’ethe & Xabendlini, 2014), which are often incompatible. Traditional remedies may induce vomiting, to rid the body of the bad ‘omen’, and if used in conjunction with ARV’s or other supportive medication, medicinal properties are often expelled from the body before they can be of benefit (Kheswa, 2014).

The lack of proper information leads to fear which in turn leads to stigmatisation, and could contribute to family and friends rejecting the HIV positive individual for fear that they might contract the virus by spending too much time with them or even sharing a meal together (Letamo, 2013). People’s fear of being discriminated against or stigmatised results in them not wanting to know their status, which also has an impact on HIV transmission (Kang’ethe & Xabendlini, 2014). Discovering that one is HIV positive has been shown to be a traumatic event for most people (Olley et al., 2005), and it is during times of trauma and stress that the individual’s social support system has a huge role to play in how they manage the trauma/stress (Olley et al., 2005). However, it is often at this point when the community ostracises the HIV positive individual (Kehler et al., 2012) which means their social support
structures are removed, resulting in the individual experiencing an increase in stress which has psychological and physiological consequences.

**Stressors Related to the Treatment and Care of People with HIV**

Poverty is one of the primary stressors related to adherence to ARV treatment (Kheswa, 2014). Although clinics don’t charge for the ARV treatment, individuals still need to pay for transport to get to the clinics, which means they require money that they often don’t have (Kheswa, 2014). The lack of financial resources also impacts on the individuals’ diet, as they are often only able to eat one meal per day and it usually consists of mealie meal (samp), and little else (Kheswa, 2014). Taking ARV’s without food has negative consequences. These include: ulcers, internal bleeding and meningitis (Mills in Kheswa, 2014).

There is a recent rise in ‘smoking’ ARV’s, which also impacts treatment adherence. Either this is done by the person for whom the ARV’s are intended, or the ARV’s are stolen from them by relatives. There have been reports of individuals being robbed of their ARV’s as they collect them from the clinics.

Another major concern on a governmental level, is that clinics run out of medication at times (Peltzer, Sikwane & Majaja, 2011). This has a significant negative impact on individuals’ treatment adherence.

The people providing support to HIV and AIDS infected people are often family members or even children who do often not have sufficient training in dealing with the psychological intricacies that emerge. As a result, they might not be as sensitive to the individuals’ needs as someone with more training. The carers are usually overworked and are possibly not sufficiently emotionally supported through their work, which in turn affects the quality of their work (Jonsson et al., 2013).
Impact of HIV on Households

Specifically in low socio-economic households, the impact of HIV and AIDS infections and death is huge. The virus is found predominantly in the 15-45 age group (UNAIDS, 2012), which is also predominantly the prime child bearing and income earning years. As a result, young children are orphaned and live in households run by the older children, or they are cared for by their grandparents who barely survive on their government pensions (Skovdal & Daniel, 2012). This means that communities are under a lot of stress to support their young children financially and emotionally. For the children, the loss of their social support and the financial difficulties result in education not being a priority – as finding food and shelter (just surviving) becomes the predominant focus (Lyons, 1998).

As mentioned previously, the mere knowledge of an individuals’ status results in stigma and discrimination within the family, which results in changes in family and community relationships and increased stress (Kehler, 2012).

Contemporary Approaches to Management of HIV

Management of HIV is to be done on multiple levels, namely biological, psychological and social. All of these areas have an impact on the immune functioning of the individual and are to be addressed holistically if the individual is to have quality of life.

Jonsson et al. (2013) published a guideline for management of mental health disorders in HIV positive patients in Southern Africa. In order for management to be effective the physical, psychological and social issues are to be addressed, and as such a co-operative multi-disciplinary team is required. This team should consist of professionals such as nurses, psychiatrists as well as psychologists to provide holistic care to the patient (Jonsson et al., 2013). Jonsson et al. (2013) highlights several areas that provide complications in treatment, namely, is the HIV the primary cause of the mental disorder, or was there a pre-existing mental disorder that is co-morbid with an HIV positive diagnosis? Or are the symptoms a
result of the ART? Once the HIV positive individuals’ medication is administered and adhered to, other issues, such as the psychological and social issues, can be addressed.

Earlier in this chapter we discussed stigmatisation and the effect of inaccurate or insufficient information has on societal perceptions of HIV. This matter requires education on a social/community level in order for stigmatisation to be eradicated (Kang’ethe & Xabendlini, 2014).

From a psychological perspective, specific therapies are required to deal with multitude of difficulties that People Living with HIV and AIDS (PLWHA) face. Delaney and O’Brian (2011) discuss how acceptance is associated with healthier outcomes in certain medical populations. In their study on HIV positive war veterans, they hypothesised that acceptance is related to better mental health, and they found this to be mostly true. They found that individuals who were more accepting of their thoughts and feelings reported less depression and a better quality of life. Similarly, Moitra, Herbert and Forman (2011) found that an acceptance based therapy was effective with an HIV positive population, by assisting to overcome barriers associated with poor treatment adherence. Creswell et al. (2008) addressed the question of whether mindfulness practices can positively affect immune functioning, and they concluded that mindfulness does positively affect immune functioning.

When looking at the definition of mindfulness, as discussed in Chapter 2, it is awareness of what is happening and the unconditional acceptance of it that makes mindfulness practices effective.

Evidence based therapies recommended for PLWHA and are con-currently depressed include Cognitive Behavioural Therapy (CBT), Interpersonal Therapy (IPT) and Group Interpersonal Therapy (IPT-G) (Jonsson et al., 2013). CBT is beneficial in addressing maladaptive or dysfunctional thoughts, whereas IPT is more oriented towards mood
stabilisation through the therapeutic alliance. IPT-G has the same aim as IPT, but works at a group level.

**Conclusion**

This chapter has served as a basic introduction to the biological facts of HIV as well as its transmission and treatment. We briefly discussed the psychological and social impacts, including stigmatisation, impact on the household and stressors related to the treatment and care of HIV. It has looked at this epidemic from the global perspective to the local South African perspective and has briefly discussed the contemporary approach to managing an HIV positive individual with a multi-disciplinary team. Also considered were different types of therapies that might be of specific benefit to someone with HIV. Included in these beneficial therapies were mindfulness and acceptance based therapies.
Chapter 4
Research Design and Methodology

Chapter Overview

This chapter will look at the research aims, the design as well as the sampling method. A brief overview will be given of the research measures as well as interpretation of research measures, before addressing the research procedure and ethical guidelines.

Research Aims

The focus of this research was to assess the effects of Mindfulness training on people with an HIV positive diagnosis in the South African context. The main aim of the study was to explore and describe the immune functioning, and the levels of depression, anxiety and stress in a sample of HIV positive adults before, after, and 3 months after an 8 week Mindfulness Based Stress Reduction (MBSR) intervention.

The specific aims of this study, through pre- and post-course findings, was to:

1. To explore and describe the immune functioning in a sample of HIV positive adults before and after the 8 week MBSR intervention and at 3 months.
2. To explore and describe the levels of mindfulness of a sample of HIV positive adults before and after the 8 weeks MBSR intervention and at 3 months.
3. To explore and describe the levels of in depression, anxiety and stress in a sample of HIV positive adults before and after the 8 week MBSR intervention and at 3 months.
4. To explore and describe the experience of a sample of HIV positive adults after the 8 week MBSR course and at 3 months.
Research Design

The research may be understood within a mixed method paradigm, as it used both qualitative and quantitative data collection methods. When describing the results, this multi-method approach provides a more holistic picture of the test results.

A number of data gathering questionnaires and measures were employed to gather the data for the study. These are indicated in Table 3 and will be further explained under the heading Research Measures below.

Table 3. Structure of Research Design

<table>
<thead>
<tr>
<th>Pre-test Measures</th>
<th>Post-test Measures</th>
<th>3 Month Follow Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biographical questionnaire</td>
<td>Post-test questionnaire</td>
<td>Post-test questionnaire</td>
</tr>
<tr>
<td>FFMQ</td>
<td>FFMQ</td>
<td>FFMQ</td>
</tr>
<tr>
<td>DASS</td>
<td>DASS</td>
<td>DASS</td>
</tr>
<tr>
<td>MAAS</td>
<td>MAAS</td>
<td>MAAS</td>
</tr>
<tr>
<td>Blood results</td>
<td>Blood results</td>
<td>Blood results</td>
</tr>
</tbody>
</table>

It was exploratory descriptive in nature and used a one group pre-test post-test design. The proposed study was exploratory in nature, as research into the application of mindfulness practices in an HIV positive population is limited, both nationally and internationally.

Furthermore, it was aimed at exploring the applicability of mindfulness practices in the target sample, as this may lead to further research in this area. The study is descriptive in nature because it assesses the opinions of participants in order to gain a greater understanding of the aims of this study.

An advantage of the proposed research design was that there was an assessment of Mindfulness as well as Depression, Anxiety and Stress before the intervention, after the
intervention and at a three month follow up, to ascertain if there had been a change in these variables over the course of time. A disadvantage of the proposed research design is that the quantitative data was predominantly obtained from self-report questionnaires, which could have been affected by participants not being truthful when answering the questionnaires. In order to minimise this issue, the researcher reminded the participants of the confidentiality of the study, and encouraged them to be honest in their answers. Another disadvantage of this research design is that the sample was relatively small, which limits the generalisability of the results. The researcher is aware of this limitation, and is reminded that this was a pilot study which is hoped to stimulate further research in the future. Another disadvantage is that there was no control group, though this was a limitation that was a result of the scope of this research.

There were numerous confounding variables to this study, the main one being the drop-out rate, which was a threat to the internal validity. Various studies using the MBSR course have indicated high drop-out rates (Campbell, Labelle, Bacon, Faris & Carlson, 2012), and have indicated that people have dropped out due to lack of time to continue. Campbell et al. (2012) found that number of years of education was the only identifier when comparing drop-outs to completers, individuals with more years of education were more likely to complete the course, while Creswell et al. (2009) found that age was the only significant variable, related to dropout, with younger participants being more likely to dropout than older participants. In Baer’s (2003) critical analysis of various mindfulness based studies, the range of attrition/dropouts, ranged from 0 to 40%, the highest being of an inner-city Latino study done by Roth and Creaser (1997). Another confounding variable that could have an impact on the drop-out rate, is that the participants might become ill during the course and would be unable to complete it. In order to take into account this possible high drop-out rate in this
Participants’ change in medication use over the research period was a variable that was considered. Participants may or may not have been on ARV treatment when they began the course—this in itself was not a problem, as this added an additional dimension to the research data. The problem would arise if the participant changed the nature of their ARV treatment, i.e. began ARV treatment mid-way through the course, switched to different ARV medication, or took the medication irregularly. Apart from ARV medication, the participants could be taking anti-depressants and other medication which could also influence the results.

**Sampling**

The research participants were recruited from various HIV support groups and clinics affiliated with the Eastern Cape Department of Health in the Port Elizabeth area. Consequently, the sampling method used was a non-probability purposive sample method, as the participants were hand-picked to participate in this research. The drawback to using this type of sampling is that the final research participants were not representative of the larger population, making it harder to generalise the research findings. Larger sample sizes, offer more meaningful results, but are also limited by time and financial resources. This research aimed to provide meaningful statistics, and in light of the limitations, the researcher aimed at obtaining a minimum of 20 participants.

The sample inclusion criteria were as follows:

i. Participant had an HIV positive diagnosis for at least 6 months.

ii. Participant was between the ages of 20 - 45.

iii. Participant was not addicted to drugs or alcohol. Studies have shown that mindfulness has a positive effect on participants with substance disorders (Zgierska, Rabago, Chawla, Kushner, Koehler, & Marlatt, 2009) though this...
specific course is not designed to deal with the requirements of Substance Use Disorders.

iv. Participant was not diagnosed with Schizophrenia (Walsh & Roche, 1979) or Bipolar affective disorder (Williams, Teasdale, Segal & Soulsby, 2000).

v. Participant was not diagnosed with any communicable diseases, other than HIV. This was necessary to prevent further illness as well as the confounding of variables as a result of illness.

Participants had to have a reading level of Grade 8 in order to be able to complete the questionnaires. Tests were administered in English, though the researcher was fluent in English and Afrikaans and was on hand to translate where required.

Research Measures

Six instruments were used in the collection of data for this research. They were a biographical questionnaire, the 21 item Depression Anxiety and Stress Scale (DASS-21) (Lovibond & Lovibond, 1995), the 15 item Mindfulness Attention and Awareness scale (MAAS) (Self Determination Theory, 2013), the 49 item Five Facet Mindfulness Questionnaire (FFMQ) (Association For Behavioural And Cognitive Therapies, 2013), a semi-structured questionnaire completed after the course as well as blood test results. Each battery of tests at Pre-, Post- and the three month follow up, took about an hour in total to complete.

Biographical questionnaire.

In order to obtain essential background information from participants, a biographical questionnaire was completed. The questions asked in this questionnaire were directly relevant for data analysis purposes, and did not include any questions that would result in the identification of individuals. An example of this questionnaire is attached in Appendix A.
**Depression Anxiety and Stress Scale (DASS).**

The Depression Anxiety Stress Scale (consisting of a 21-item scale) was designed in Australia by the University of New South Wales (Lovibond & Lovibond, 1995). This scale assesses levels of depression, anxiety and stress. Although this measure is not currently normed for the South African population, the DASS correlates (0.74) (Lovibond & Lovibond, 1995) with the Beck Depression Index (BDI), and the Beck Anxiety Index (0.81) (Lovibond & Lovibond, 1995). The lower correlation with the BDI is due to certain items included in the BDI which are not specific to depression, namely loss of libido, weight loss, irritability and loss of appetite (Lovibond & Lovibond, 1995). The DASS shows greater separation in factor loadings (Lovibond & Lovibond, 1995), all of which have an impact on immune functioning and this is why it was been selected over the BDI.

**Five Facet Mindfulness Questionnaire (FFMQ).**

The FFMQ was designed by Baer et al. (2008) of Kentucky University (USA), and was constructed through analysis of other mindfulness scales, with the intention of creating a broader measure of mindfulness. This measure is a 39 item self-report scale, and is based on the premise that mindfulness is multifaceted. The results provide a multi-faceted description of the mindfulness of a person.

As mindfulness is in its infancy in the research arena, and more specifically in South Africa, both mindfulness measures were used to assess whether the findings were correlated. The FFMQ has been used on a diverse sample group in South Africa (Draper-Clark, 2012), and found to be an effective measure. The FFMQ was used in a recent South African study by Kok (2010) the FFMQ was used, though the sample size in this study was too small to use Cronbach’s Alpha to assess reliability.
Mindfulness Attention and Awareness Scale (MAAS).

The MAAS is a 15 item self-report scale which was developed in the United States of America to measure a unique quality of consciousness that differentiates mindfulness practitioners from others. It has been found to be a valid instrument in the measurement of mindfulness (Brown & Ryan, 2003). A South African study that has used this scale on a sample of participants working in a bank in Johannesburg (N=207), found it to be reliable with a Cronbach’s Alpha of (0.904) (Ismail, 2010).

Post-test & 3 month follow up questionnaire.

A semi-structured post-test 3 month follow up questionnaire was designed to provide the researcher with more insight into the individual participants’ experience. It also gathered further information regarding possible confounding variables that affected the research results, such as changes in medication. Thus, this questionnaire was designed to provide an added dimension to the study, It is attached as Appendix B.

Blood test results.

The researcher arranged for bloods to be taken at the first meeting, the last meeting as well as the three month follow up. The blood was sent to Pathcare for analysis. The results were given to Dr Margo de Kooker, a qualified and HPCSA registered medical doctor, who provided the results directly to the participants, who in turn provided them to the researcher.

Interpretation of Research Results

DASS results.

The DASS results are indicated by three separate scales, namely Depression Scale, Anxiety Scale and Stress Scale. The table below indicates the significance of the scores by providing scale descriptors.
Table 4. DASS Scale Descriptors

<table>
<thead>
<tr>
<th></th>
<th>Depression</th>
<th>Anxiety</th>
<th>Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>0 - 9</td>
<td>0 – 7</td>
<td>0 – 14</td>
</tr>
<tr>
<td>Mild</td>
<td>10 – 13</td>
<td>8 – 9</td>
<td>15 – 18</td>
</tr>
<tr>
<td>Moderate</td>
<td>14 – 20</td>
<td>10 – 14</td>
<td>19 – 25</td>
</tr>
<tr>
<td>Severe</td>
<td>21 – 27</td>
<td>15 – 19</td>
<td>26 – 33</td>
</tr>
<tr>
<td>Extremely Severe</td>
<td>28+</td>
<td>20+</td>
<td>34+</td>
</tr>
</tbody>
</table>

Note. Adapted from Black Dog Institute (2014)

FFMQ results.

The FFMQ measures five facets of a general tendency to be mindful, namely: Observing, Describing, Acting with Awareness, Non-judging of inner experience and Non-Reactivity to inner experience. Norms were collated for four different groups as indicated in the table below. For the purposes of this research, Group 2 (community) has been selected as being the nearest to the sample group of this research.

Table 5. Means, SD’s Univariate FTests in Four Samples

<table>
<thead>
<tr>
<th>Facet</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Students</td>
<td>Community</td>
<td>Educated</td>
<td>Meditators</td>
<td></td>
</tr>
<tr>
<td>Observe</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>24.32</td>
<td>4.84</td>
<td>24.32</td>
<td>5.48</td>
<td>27.04</td>
</tr>
<tr>
<td>Describe</td>
<td>26.46</td>
<td>6.01</td>
<td>24.63</td>
<td>7.06</td>
<td>30.01</td>
</tr>
<tr>
<td>ActAware</td>
<td>25.31</td>
<td>5.77</td>
<td>24.57</td>
<td>6.57</td>
<td>28.32</td>
</tr>
<tr>
<td>Nonjudge</td>
<td>27.75</td>
<td>5.90</td>
<td>23.85</td>
<td>7.33</td>
<td>29.13</td>
</tr>
<tr>
<td>Nonreact</td>
<td>20.50</td>
<td>3.82</td>
<td>19.53</td>
<td>4.88</td>
<td>22.82</td>
</tr>
</tbody>
</table>

Note. For the nonreact facet, possible range of scores is 7-35. For all other facets, possible range is 8-40. *p<.0001. Adapted from Baer et al. (2008, P. 337)
MAAS results.

This Scale measures “individual differences in the frequency of mindful states over time” (Brown & Ryan, 2003, p. 824). As such, participants’ scores are compared over a period of time in order to indicate an increase or decrease in mindfulness traits. Higher scores indicate higher levels of mindfulness traits.

Blood Results.

Blood tests were taken at three intervals, and the CD4 count as well as the T-cell count were measured. In Chapter 3 it was discussed that a lower CD4 count is equivalent to a weakened immune system as a result of the HIV.

Research Procedure

The researcher obtained permission from the Human Ethics Committee at NMMU to commence with the research, and approached the East Cape Department of Health, to inform them of the research project, and request local government approval. This approval was given (Appendix C), and a gate keeper at the clinic at Livingstone Hospital was named as a contact person, and assisted the researcher with contacting local support groups that could identify potential research participants.

The researcher had meetings within the community discussing with the various community leaders the nature of the research as well as the criteria that potential participants would need to meet in order to participate in the research. Potential participants were given the contact details of the researcher and the decision was left to them to contact the researcher to participate in the research. If they decided that they would prefer the researcher to contact them, they signed a written consent with the organisation, authorising them to provide the researcher with their contact details. When the potential participant made contact with the researcher, they were given a clear outline of what the research entailed, as well as what the
ethical concerns are, so that their consent was informed. Individual sessions with potential participants were arranged,

The researcher conducted an intake interview/ biographical questionnaire, to ascertain whether the participant was suitable to participate in the 8 week MBSR course. They were also asked to complete the FFMQ and MAAS questionnaires to assess their trait mindfulness, as well as the DASS to assess their depression, anxiety and stress levels.

Research participants were chosen based on whether they met the inclusion criteria for the study, which was ascertained from their answers to the intake questionnaire. The participants participated in an 8 week MBSR course, which consisted of 8 weekly sessions of 2 hours as well as 1 day of approximately 6 hours (around the 7th week). The course was held at the NMMU Missionvale campus. The course was run by a trained facilitator that is registered with the HPCSA. The participants were given an MP3 player to take home with them each week in order to listen to the guided meditations – this was to counter any situation where a person may not have access to a CD player.

The researcher arranged for blood samples to be taken by Pathcare at the first meeting, the last meeting as well as the three month follow up. The blood results were sent from Pathcare to Dr Margo de Kooker, who provided the results directly to the participants, who in turn provided them to the researcher.

At the end of the course, they were given the MP3 player to keep, but they were not made aware of this at the beginning of the course, so it could not be seen as an incentive to continue participating in the course. If the participants’ mp3 player was reported lost or stolen, an alternative arrangement was made so that they had access to the mindfulness practices.
Participants were asked to complete the test battery at the end of the 8 week course, and were asked to return three months after the course ended in order to complete further measures and to have bloods taken. This was done to assess change over a period of time.

**Data Analysis**

The data collected was independently analysed by an independent statistician at NMMU. The data obtained was analysed in accordance with the primary research aims. Descriptive statistics were used to report on the first three aims of this study namely, immune functioning, mindfulness levels and depression, anxiety and stress levels, using the results from the blood results, DASS, MAAS and FFMQ. Results from these measures were analysed using means, modes, medians and standard deviations. The semi-structured questionnaire addressed the forth aim of this study and provided quantitative and qualitative data regarding the clients’ own perceptions of their participation in the 8 week course. This was interpreted using quantitative data analysis.

**Ethical Considerations**

Permission to conduct this study was received from the Faculty Research Technology and Innovations Committee (FRTI), the NMMU Human Ethics Committee (REC-H) as well as the Eastern Cape Department of Health. There are a variety of ethical issues that emerged in this research project. As the research group contained people with an HIV positive diagnosis, they faced the risk of meeting others in the group that they knew, who were as yet unaware of their status, or that they may meet in the future; thus they became aware of the HIV status of others, and their own status becoming more public. The research participants needed to be made aware of this fact before committing to the research, so that they did not find themselves in a position that compromised their confidentiality. The possibility that someone on the course might know a relative or friend of another participant, and might divulge the participants’ status to them also needed to be considered. Participants were
informed prior to their acceptance of joining the study, of these possible problems, and their written consent to participate was obtained.

Research participants were sourced from HIV community support groups supervised by the East Cape Department of Health, so participants had previous experience in a group setting. Information letters were handed to the community organisations (Appendix D), and they handed these out to potential participants, outlining the nature of the research as well as the researchers contact details. Consequently no confidences were broken as the researcher did not receive any participant details from the organisation without written consent; it was entirely up to the individual to decide whether they wish to participate or not and to make contact with the researcher.

There was no charge for the participation on the course – though currently a participant could expect to pay nearly R4 000,00 each to participate on such a course. This was not seen to be an ethical concern. The participants received an MP3 player to use for the duration of the course, and at the end of the course they were allowed to keep it. They were not made aware of this at the beginning of the course, so this was not considered as a motivating factor to participate in the course.

If participants did not have access to transport to get to the course, transport was reimbursed by the researcher, so that there was no cost attached to participating in the research. There was no financial compensation for attending the course. All blood test results (CD4 count) were obtained directly from participants. According to the HPCSA (Health Professions Council of South Africa [HPCSA], 2008), blood test results are not to be given to anyone other than the medical person responsible. The guidelines further stipulate that participants need to be informed of the purpose of the blood test and the necessity of the result (HPCSA, 2008). It was emphasised that the researcher wants to assess the fluctuations in the CD4 count over time. The researcher did not indicate that the MBSR course could
improve the CD4 count, as this could have resulted in some people thinking they no longer need to take their ARVs or adhere to medical advice.

The ethics of the handling of blood results were such that only a registered Medical Practitioner could receive the results. Consequently participants were handed their blood test results by a medical practitioner and then forwarded to the researcher at the three intervals. The researcher paid for the blood tests, and it was arranged that an independent company conduct the drawing of blood. The participants have regular tests through the government clinics, though it was stated by government that these results could not be used for the purposes of this study for ethical reasons.

During the course, if a participant disclosed that he or she was conducting him/herself in such a manner as to be infringing on another person’s constitutional rights, the researcher would have ethically been required to take the necessary action. To avoid any breach of confidentiality, participants were made aware of this ethical stance prior to accepting to participate on the course.

Conclusion

In this chapter we looked at the research aims, the design as well as the sampling method. A brief overview was provided of the research measures as well as interpretation of research measures, before addressing the research procedure and ethical guidelines.

In the next chapter we will discuss the findings of this research. A brief overview of the research sample will be provided before looking at each participants’ results individually.
Chapter 5

Findings and Discussion

Chapter Overview

The following is a presentation of findings and discussion thereon, in line with the aims of the research, namely: exploring and describing the effects of mindfulness on people with an HIV positive diagnosis. In this chapter a biographical description is initially provided to gain an overall view of the sample. The findings are discussed from an individual case study perspective.

Biographical Description of the Sample

Roth and Creaser (1997) asserted that the attrition rate for this type of course, with a sample population that is in the low socio-economic bracket, is expected to be high. Consequently, the researcher intended to start with a large sample group to accommodate the expected attrition, but signed up 17 participants, fewer than originally hoped. Of the 17 participants that originally signed up and completed the biographical questionnaire, 10 arrived for the start of the 8 week mindfulness course. Two did not return after the first session and reported family difficulties as being the reason for non-attendance. One more participant dropped out prior to the end of the 8 week course as she found employment which required her to work at the same time as the scheduled course, leaving 7 participants to complete the 8 week mindfulness course. Of the original sample (N=17), 41% completed the 8 week course, resulting in an attrition rate of 59%. Of the 10 who started the course, 70% completed the 8 week course resulting in an attrition rate of 30%. 2 participants were unable to attend the 3 month follow up. The researcher was unable to contact one of the participants as she did not have a fixed address or phone number, and the other participant was unable to attend due to family matters. This indicates an attrition rate of 50% from the 10 participants
that started the 8 week mindfulness course. The researcher focused on participant data that was complete, thus the final participants included in this dissertation were n=5.

Biographical information was collated from the biographical questionnaires completed by willing participants prior to the start of the research workshops, at the end of the 8 week MBSR course, and at the three month follow up. The original sample (N=17) consisted of 16 female participants and 1 male participant, ranging in age from 18 to 50+. Of the N=17, 4 had a grade 12 education or higher, and two of those four were among the final n=5. Campbell et al. (2012) indicated that level of education has an impact on the attrition rate, although this was not clearly evident in this study.

All participants spoke English as their second language, with either Afrikaans or Xhosa as their first language. All participants at the start of the research were without any evident opportunistic infections, as this would have precluded them from the study.

Of the N=17, 24% were employed at the start of the research, and of the n=5 completers, 2 were employed at the start of the research. At the three month follow up, all of the completers n=5 were employed, meaning that three participants that were unemployed at the start of the research managed to find employment by the three month follow up, the remaining two participants who were employed at the start of the research, remained employed.
Table 6. Biographical data of original sample group (N=17) compared with the biographical data of the 5 participants that completed the course as well as attended the 3 month follow up (n=5)

<table>
<thead>
<tr>
<th></th>
<th>N=17</th>
<th>n=5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>At start of course</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>94%</td>
<td>100%</td>
</tr>
<tr>
<td>Male</td>
<td>6%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Language</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Afrikaans</td>
<td>47%</td>
<td>40%</td>
</tr>
<tr>
<td>English</td>
<td>18%</td>
<td>40%</td>
</tr>
<tr>
<td>Xhosa</td>
<td>35%</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-29 years</td>
<td>29%</td>
<td>40%</td>
</tr>
<tr>
<td>30-39 years</td>
<td>47%</td>
<td>60%</td>
</tr>
<tr>
<td>40-49 years</td>
<td>18%</td>
<td>0%</td>
</tr>
<tr>
<td>50+</td>
<td>6%</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school</td>
<td>6%</td>
<td>0%</td>
</tr>
<tr>
<td>Grade 10</td>
<td>70%</td>
<td>60%</td>
</tr>
<tr>
<td>Grade 12</td>
<td>18%</td>
<td>20%</td>
</tr>
<tr>
<td>Diploma</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Undergraduate</td>
<td>6%</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Employment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>24%</td>
<td>40%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>76%</td>
<td>60%</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;R1 500,00</td>
<td>82%</td>
<td>60%</td>
</tr>
<tr>
<td>R1 501 - R3 000</td>
<td>6%</td>
<td>20%</td>
</tr>
<tr>
<td>R3 001 - R5 000</td>
<td>6%</td>
<td>20%</td>
</tr>
<tr>
<td>R5 001 - R7 500</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>R7 501 - R10 000</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>&gt;R10 000</td>
<td>6%</td>
<td>20%</td>
</tr>
<tr>
<td><strong>ARV's</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>65%</td>
<td>20%</td>
</tr>
<tr>
<td>No</td>
<td>35%</td>
<td>80%</td>
</tr>
<tr>
<td><strong>Previous</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>35%</td>
<td>40%</td>
</tr>
<tr>
<td>No</td>
<td>65%</td>
<td>60%</td>
</tr>
<tr>
<td><strong>Mental Disorders</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Findings as Individual Case Studies

The individual case studies are based on the n=5 participants that completed the 8 week course and were present at the three month follow up. Those that completed the 8 week course but did not arrive for the three month follow up were excluded from these findings.

The results are presented according to the aims of the study, while taking into account individual differences for each participant. Data was gathered through self-report questionnaires, blood tests as well as open-ended follow up questions asked at the conclusion of the research.

Participant 1

Participant 1 is a female aged between 20 and 29 years, with a Grade 12 education and unemployed at the outset of the research. She was not on ARVs when first interviewed and this did not change during the research period.

Blood Results.

Table 7. Blood results for Participant 1 at three intervals

<table>
<thead>
<tr>
<th>Observed Values</th>
<th></th>
<th>Differences</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Post 3</td>
<td>Post - Pre</td>
</tr>
<tr>
<td>Blood TCell</td>
<td>1915</td>
<td>1970</td>
<td>2465</td>
<td>55</td>
</tr>
<tr>
<td>CD4</td>
<td>558</td>
<td>564</td>
<td>793</td>
<td>6</td>
</tr>
</tbody>
</table>

Participant 1’s blood results, as seen in Table 7, indicate a consistent rise in the CD4 count, the most prominent rise being between the conclusion of the 8 week course and the three month follow up. The difference between the start of the course and the end, was negligible at a 6 point difference, however the difference between the end of the course and the three month follow up was an increase of 40% in the CD4 count.
**DASS Results.**

Table 8. DASS results for Participant 1 over three intervals

<table>
<thead>
<tr>
<th>Observed Values</th>
<th>Pre</th>
<th>Post</th>
<th>Post 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression Scale</td>
<td>5</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>Anxiety Scale</td>
<td>24</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Stress Scale</td>
<td>17</td>
<td>28</td>
<td>10</td>
</tr>
</tbody>
</table>

Figure 2. DASS Results for Participant 1

Participant 1’s DASS results shown in Table 8 and Figure 2 indicate that at the start of the research she measured normal on the Depression Scale, extremely severe on the Anxiety Scale and mild on the Stress Scale. At the conclusion of the 8 week course, the results for Participant 1 indicated moderate depression, mild anxiety, and severe on the stress scale. At the three month follow up, Participant 1 showed no signs of depression, mild levels of anxiety and normal levels of stress according to the DASS Scale descriptors.
**Table 9. Participant 1 FFMQ Results Compared to Community Norms**

<table>
<thead>
<tr>
<th>Facet</th>
<th>Group 2 Community #</th>
<th>Pre</th>
<th>SD</th>
<th>Post</th>
<th>SD</th>
<th>Post 3</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observe</td>
<td>24.32 5.48</td>
<td>28 &lt;1</td>
<td>25 &lt;1</td>
<td>22 &lt;1</td>
<td>1.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Describe</td>
<td>24.63 7.06</td>
<td>29 &lt;1</td>
<td>26 &lt;1</td>
<td>32 1.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ActAware</td>
<td>24.57 6.57</td>
<td>16 1.3</td>
<td>18 1</td>
<td>27 &lt;1</td>
<td>1.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonjudge</td>
<td>23.85 7.33</td>
<td>13 1.48</td>
<td>19 &lt;1</td>
<td>26 &lt;1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonreact</td>
<td>19.53 4.88</td>
<td>8 2.36</td>
<td>11 1.75</td>
<td>18 &lt;1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. # Community norms adapted from (Baer et al., p337, 2008)

**Figure 3. FFMQ Results for Participant 1**

Table 9 and Figure 3 indicate Participant 1’s scores on the FFMQ across 3 intervals, as well as compares the scores with the normative sample (Baer et al., 2008). Higher scores indicate increased mindfulness and for Participant 1 there appears a steady increase in all of the reported mindfulness traits, except for the Observing facet, which appears to have shown a steady decline.
**MAAS results.**

**Figure 4. MAAS Results for Participant 1**

Participant 1’s results on the MAAS, as indicated in Figure 4, indicates a progressive increase in mindfulness traits, across the three intervals, according to the MAAS scale (Brown & Ryan, 2003).

**Follow up questions.**

When Participant 1 was asked about her experience of the course, she responded that she “really enjoyed doing the course”. When asked what she thought of the course now that it was finished, she responded by saying “It was helpful – the exercises, the eating plan. I am now more mindful when I am eating food”. When asked if she would recommend the course to her friends, and in what way she thought they might benefit, she replied that she would recommend it to friends, and they would benefit by “being more mindful, and relax more”.

When asked if there were any mindfulness skills that she learned on the course that she used in her everyday life, she specified that “I used the bringing awareness to the body exercise about 2 or 3 times a day. I also use the “eating mindfully” exercise”.
When asked if there was any part of her life that had changed significantly during the course or within the 3 months after the course, she responded by saying that she had found a job and had started a new relationship 1 ½ months prior to the 3 month follow up session.

When asked if there were any other matters that she wanted to discuss that might be relevant, she responded saying “I have changed my diet, by eating more fish, eggs and cheese. Eating less bread and oily foods and cheap cold drinks and no more processed foods.” She went on to add, that her family has been very supportive of her, and this has been a great comfort.

**Discussion.**

When interpreting Participant 1’s results in context of the additional information that she provided, it appears that her continued mindfulness practice has increased her mindfulness traits, as indicated by the MAAS and FFMQ results. The DASS showed reduced scores by the 3 month follow up, indicating that her observed symptoms of Depression, Anxiety and Stress have decreased. Participant 1’s increase in her CD4 count over the research period also indicate the likelihood that she is experiencing reduced stress. Her continued mindfulness practice, healthier eating plan, newfound job as well as new relationship could all be contributing factors to her results at the three month follow up.

**Participant 2**

Participant 2 is a female aged between 30 and 39 years, with a Grade 10 education and unemployed at the outset of the research. She was taking ARV’s at the start of the research, and this did not change during the research period.

**Blood Results.**

**Table 10. Blood results for Participant 2 at three intervals**

<table>
<thead>
<tr>
<th></th>
<th>Observed Values</th>
<th>Differences</th>
<th>% Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Post 3</td>
</tr>
<tr>
<td>Blood T Cell</td>
<td>1782</td>
<td>1718</td>
<td>2071</td>
</tr>
<tr>
<td>CD4</td>
<td>713</td>
<td>767</td>
<td>926</td>
</tr>
</tbody>
</table>
Blood results for Participant 2, as seen in Table 10, indicate that there was an increase in her CD4 count from the start of the 8 week course to the end of the course, and a marked rise in CD4 count at the 3 month follow up.

_DASS Results._

Table 11. DASS results for Participant 2 over three intervals

<table>
<thead>
<tr>
<th>Observed Values</th>
<th>Pre</th>
<th>Post</th>
<th>Post 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression Scale</td>
<td>20</td>
<td>27</td>
<td>40</td>
</tr>
<tr>
<td>Anxiety Scale</td>
<td>23</td>
<td>27</td>
<td>41</td>
</tr>
<tr>
<td>Stress Scale</td>
<td>13</td>
<td>25</td>
<td>36</td>
</tr>
</tbody>
</table>

Figure 5. DASS Results for Participant 2

Participant 2’s DASS results, as indicated in Table 11 and Figure 5, indicate that at the start of the research she measured moderate on the Depression Scale, extremely severe on the Anxiety Scale, and normal on the Stress Scale. At the conclusion of the 8 week course, the results for Participant 2 measured severe on the depression scale, extremely severe on the anxiety scale, and moderate on the stress scales. At the three month follow up, Participant 2 measured extremely severe on all three scales.
**FFMQ Results.**

Table 12. Participant 2 FFMQ Results Compared to Community Norms

<table>
<thead>
<tr>
<th>Facet</th>
<th>Group 2 M</th>
<th>SD</th>
<th>Pre Score</th>
<th>SD</th>
<th>Post Score</th>
<th>SD</th>
<th>Post 3 Score</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observe</td>
<td>24.32</td>
<td>5.48</td>
<td>23</td>
<td>&lt;1</td>
<td>34</td>
<td>1</td>
<td>22</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Describe</td>
<td>24.63</td>
<td>7.06</td>
<td>28</td>
<td>&lt;1</td>
<td>22</td>
<td>&lt;1</td>
<td>21</td>
<td>&lt;1</td>
</tr>
<tr>
<td>ActAware</td>
<td>24.57</td>
<td>6.57</td>
<td>24</td>
<td>&lt;1</td>
<td>18</td>
<td>&lt;1</td>
<td>21</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Nonjudge</td>
<td>23.85</td>
<td>7.33</td>
<td>27</td>
<td>&lt;1</td>
<td>20</td>
<td>&lt;1</td>
<td>23</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Nonreact</td>
<td>19.53</td>
<td>4.88</td>
<td>15</td>
<td>-1</td>
<td>23</td>
<td>&lt;1</td>
<td>27</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. # Community norms adapted from (Baer et al., 2008, p. 337)

Figure 6. FFMQ Results for Participant 2

Table 12 and Figure 6 indicate Participant 2’s scores on the FFMQ across 3 intervals, as well as compares the scores with the normative sample (Baer et al., 2008). Higher scores indicate increased mindfulness and for Participant 2 there appears a steady increase in the Non-React facet and a steady decline in the Describe Facet. The Observing facet spikes at the conclusion of the 8 week course, and then declines at the three month follow up. The Act with
Awareness and the Non-Judgement Facet both decline at the end of the 8 week course and then increase slightly at the three month follow up.

**MAAS results.**

**Figure 7. MAAS Results for Participant 2**

![Graph showing MAAS results for Participant 2](image)

Participant 2’s MAAS scores, shown in Figure 7, indicate an increase in mindfulness over the duration of the 8 week course as well as at the 3 month follow up session.

**Follow up questions.**

When participant 2 was asked how she experienced the mindfulness course, she responded that she “experienced a lot, learned a lot. The exercises helped me a lot, so when I am stressed I remember my exercise. I feel like a different person.” When asked if she would recommend the course to her friends and how they might benefit, she responded with “Yes, it’s going to help them a lot. I am going to give my notes to my cousin.”

Participant 2 said that she used the Tai Chi and yoga exercises, as well as the warm up exercises. She occasionally continues to use the body scan on her mp3. When asked if there was any significant change in her life during the 8 week course, or in the three months after the course, she responded saying: “I got a job in January. In March I was experiencing a lot of stress with my boyfriend.”
Participant 2 was asked if there was anything else she wished to discuss, she responded saying, “Before the course I was in the closet, after the course I didn’t feel the shame about my status. It really helped me a lot.”

**Discussion.**

Participant 2’s results provide a mixed picture that could be a result of inaccurate reporting on the self-report measures. The CD4 blood results indicate a steady improvement across the research period, while the DASS results indicate that there was a significant increase in all three facets of Depression, Anxiety and Stress. This could be seen in context of her score on the FFMQ for the Observing facet which increased significantly at the end of the 8 week course, indicating that Participant 2 was now more aware of her depression, anxiety and stress at the end of the 8 week course. Her MAAS results indicate a significant increase in her traits Mindfulness at the three month follow up, and similarly to the observing facet of the FFMQ, could indicate that her increased mindfulness results in her being more aware of the stress she is experiencing. Participant 2 was taking ARV’s for the duration of the research and this also needs to be factored in as a possible contributing factor to her change in CD4 count.

**Participant 3**

Participant 3 is a female aged between 20 and 29 years, with a Grade 10 education and unemployed at the outset of the research. She was not on ARV’s when first interviewed and this did not change during the research period.

**Blood results.**

Table 13. Blood results for Participant 3 at three intervals

<table>
<thead>
<tr>
<th></th>
<th>Observed Values</th>
<th>Differences</th>
<th>% Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Post 3</td>
</tr>
<tr>
<td>Blood T Cell</td>
<td>1473</td>
<td>1735</td>
<td>1318</td>
</tr>
<tr>
<td>CD4</td>
<td>316</td>
<td>422</td>
<td>287</td>
</tr>
</tbody>
</table>
Participant 3’s Blood results in Table 13 indicate an increase in CD4 count between the start and end of the 8 week course, and a decline in CD4 count at the 3 month follow up – to a level below that of when first taken.

**DASS results.**

**Table 14. DASS results for Participant 3 over three intervals**

<table>
<thead>
<tr>
<th>Observed Values</th>
<th>Pre</th>
<th>Post</th>
<th>Post 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression Scale</td>
<td>25</td>
<td>35</td>
<td>30</td>
</tr>
<tr>
<td>Anxiety Scale</td>
<td>23</td>
<td>40</td>
<td>29</td>
</tr>
<tr>
<td>Stress Scale</td>
<td>23</td>
<td>36</td>
<td>28</td>
</tr>
</tbody>
</table>

**Figure 8. DASS Results for Participant 3**

Participant 3’s DASS results in Table 14 and Figure 8 indicate that at the start of the research she measured severe on the Depression, extremely severe on the Anxiety Scale and the moderate on the Stress Scale. At the conclusion of the 8 week course, the results for Participant 3 were more elevated on the depression, anxiety and the stress scale. At the three month follow up, Participant 3 showed lower levels of depression, anxiety and stress, though the Depression and Anxiety Scales still fell within the extremely severe level and the Stress Scale in the severe level according to the DASS Scale descriptors.
**FFMQ Results.**

Table 15. Participant 3 FFMQ Results Compared to Community Norms

<table>
<thead>
<tr>
<th>Facet</th>
<th>Group 2 Community#</th>
<th>Pre M</th>
<th>Pre SD</th>
<th>Post M</th>
<th>Post SD</th>
<th>Post 3 M</th>
<th>Post 3 SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observe</td>
<td>24.32 5.48</td>
<td>23</td>
<td>&lt;1</td>
<td>26</td>
<td>&lt;1</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>Describe</td>
<td>24.63 7.06</td>
<td>24</td>
<td>&lt;1</td>
<td>28</td>
<td>&lt;1</td>
<td>31</td>
<td>&lt;1</td>
</tr>
<tr>
<td>ActAware</td>
<td>24.57 6.57</td>
<td>24</td>
<td>&lt;1</td>
<td>19</td>
<td>&lt;1</td>
<td>20</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Nonjudge</td>
<td>23.85 7.33</td>
<td>25</td>
<td>&lt;1</td>
<td>17</td>
<td>&lt;1</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>Nonreact</td>
<td>19.53 4.88</td>
<td>15</td>
<td>&lt;1</td>
<td>24</td>
<td>&lt;1</td>
<td>13</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. # Community norms adapted from (Baer et al., 2008, p. 337)

Figure 9. FFMQ Results for Participant 3

Table 15 and Figure 9 indicate Participant 3’s scores on the FFMQ across 3 intervals, as well as compares the scores with the normative sample (Baer et al., 2008). Higher scores indicate increased mindfulness and for Participant 3 the Describing facet increases steadily across the three intervals. The Observe and Non-React Facets Increase at the end of the 8 week course, and decrease to a score lower than at the outset. The Non-Judgement facet declines steadily.
across the three test intervals, while the Act with Awareness Facet, declines at the end of the 8 week course, and increases slightly at the three month follow up.

**MAAS results.**

**Figure 10. MAAS results for Participant 3**

![Graph showing MAAS results for Participant 3]  

Participant 2’s MAAS results shown in Figure 10 indicate that there was a drop in mindfulness between the initial session and at the end of the 8 week course, and then an increase at the three month follow up session.

**Follow up questions.**

Participant 3 was asked how she experienced the 8 week mindfulness course and she responded by saying “I learned a lot. I learned to control my stress and recognise my anger sooner and walk away”. When asked what she thought of the course now that it was over, she responded saying that she would like to have had more follow up sessions. Participant 3 said she would recommend the course to her friends and family to help them with stress reduction.

When participant 3 was asked if she used any of the mindfulness skills learned on the course, she responded saying that she practices being more present to her experience. To the question of significant life events during or after the course, participant 3 responded saying the death of her brother prior to the conclusion of the 8 week course was a big stressor. She
also admitted to using tik on occasion during the course as well as getting a job 4 weeks after the conclusion of the course. When asked what else she would like to discuss, she mentioned that she did not want to go on ARV’s at this time, but was rather going to focus on eating healthily, and staying healthy.

**Discussion.**

Participant 3’s results are to be taken into context of the additional information that she provided, namely that she was abusing substances during the 8 week mindfulness course. She also experienced a significant life event – the passing of her brother – and this has contributed to her increased Depression, Anxiety and Stress at the end of the 8 week course, as well as a decline in her mindfulness traits as measured by the MAAS.

**Participant 4**

Participant 4 is a female aged between 30 and 39 years, with a Grade 10 education and employed at the outset of the research. She was not on ARV’s when first interviewed and for the duration of the 8 week mindfulness course, however she began ARV treatment 11 days prior to the 3 month follow up session.

**Blood results.**

**Table 16. Blood results for Participant 4 at three intervals**

<table>
<thead>
<tr>
<th></th>
<th>Observed Values</th>
<th>Differences</th>
<th>% Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Post 3</td>
</tr>
<tr>
<td>Blood T Cell</td>
<td>1641</td>
<td>1627</td>
<td>1761</td>
</tr>
<tr>
<td>CD4</td>
<td>371</td>
<td>352</td>
<td>404</td>
</tr>
</tbody>
</table>

Participant 4’s blood results in Table 16 indicate that her CD4 count decreased over the period of the 8 week course, and increased at the three month follow up.
**DASS results.**

Table 17. DASS results for Participant 4 over three intervals

<table>
<thead>
<tr>
<th>Observed Values</th>
<th>Pre</th>
<th>Post</th>
<th>Post 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression Scale</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Anxiety Scale</td>
<td>17</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>Stress Scale</td>
<td>23</td>
<td>17</td>
<td>18</td>
</tr>
</tbody>
</table>

Figure 11. DASS Results for Participant 4

Participant 4’s DASS results shown in Table 17 and Figure 11 indicate that at the start of the research she measured mild on the Depression Scale, severe on the Anxiety Scale and moderate on the Stress Scale. At the conclusion of the 8 week course, the results for Participant 4 indicated no change on the depression scale, a slight elevation from the previous result on the anxiety scale and decrease on the stress scale. At the three month follow up, Participant 4’s Depression score continued to remain unchanged, falling in the mild range, while scores for the Anxiety shifted to the extremely severe level, while the Stress scale remained at the mild level according to the DASS Scale descriptors.
**FFMQ results.**

Table 18. Participant 4 FFMQ Results Compared to Community Norms

<table>
<thead>
<tr>
<th>Facet</th>
<th>Group 2</th>
<th>Community#</th>
<th>Pre</th>
<th>Post</th>
<th>Post 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>SD</td>
<td>Score</td>
<td>SD</td>
<td>Score</td>
<td>SD</td>
</tr>
<tr>
<td>Observe</td>
<td>24.32</td>
<td>5.48</td>
<td>20</td>
<td>&lt;1</td>
<td>36</td>
</tr>
<tr>
<td>Describe</td>
<td>24.63</td>
<td>7.06</td>
<td>20</td>
<td>&lt;1</td>
<td>26</td>
</tr>
<tr>
<td>ActAware</td>
<td>24.57</td>
<td>6.57</td>
<td>20</td>
<td>&lt;1</td>
<td>21</td>
</tr>
<tr>
<td>Nonjudge</td>
<td>23.85</td>
<td>7.33</td>
<td>25</td>
<td>&lt;1</td>
<td>26</td>
</tr>
<tr>
<td>Nonreact</td>
<td>19.53</td>
<td>4.88</td>
<td>23</td>
<td>&lt;1</td>
<td>19</td>
</tr>
</tbody>
</table>

Note. # Community norms adapted from (Baer et al., 2008, p337)

Figure 12. FFMQ Results for Participant 4

Table 18 and Figure 12 indicate Participant 4’s scores on the FFMQ across 3 intervals, as well as compares the scores with the normative sample (Baer et al., 2008). Higher scores indicate increased mindfulness and for Participant 4 the Describe, Non-Judgement and Act with Awareness Facets increase steadily across the three intervals, while the Non-React Facet
decreases steadily across the three intervals. The Observe Facet increases significantly at the 8 week follow up, then decreases slightly at the three month follow up.

**MAAS results.**

**Figure 13. MAAS results for Participant 4**

Participant 4’s MAAS results shown in Figure 13 indicate a decrease in mindfulness traits between the first session and at the end of the 8 week course, and an increase at the three month follow up session.

**Follow up questions.**

When asked how she experienced the mindfulness course, Participant 4 responded by saying that “it was helpful, because it was about managing life”. She added that it was an opportunity to have time for herself. To the question, what do you think of the course now that you have finished it, participant 4 responded saying that ”It was helpful, I am starting to be more mindful of every-day activities, like eating”.

Participant 4 said she would recommend the course to her friends and family. When asked if she uses any of the mindfulness skills in her daily life, she responded: “Yes, mindful eating. I do the exercises, to help with pain in my stomach from ARV’s”. When asked if there was any significant changes in her life during the course, or until the 3 month follow up
session, participant 4 said that there was mostly stress at work, and beginning ARV treatment 2 weeks earlier. Participant 4 was asked if there was anything else that she wished to discuss, and she added that she was pleased that her appetite had returned 3 months ago, and her relationship to life has changed, because she is now taking more responsibility for her health.

Discussion.

Participant 4’s results need to be taken in the context of her not being on ARV treatment at the start of the research period, but beginning with ARV treatment 11 days prior to the 3 month follow up session – this could account for the slight increase in her CD4 count at the three month follow up. Additionally participant 4’s MAAS results show a similar picture to the CD4 count, as both start off at one level, then decrease at the end of the 8 week course, and increase to above that of the initial finding. This could indicate that there is a connection with her change in mindfulness resulting in a corresponding change in CD4 count. Participant 4’s reported work stress is a possible contributing factor to her overall fairly low CD4 count.

Participant 5

Participant 5 is a female aged between 30 and 39 years, with a university education and in full time employment at the outset of the research. She was not on ARV’s when first interviewed and this did not change during the research period.

Blood results.

Table 19. Blood results for Participant 5 at three intervals

<table>
<thead>
<tr>
<th></th>
<th>Observed Values</th>
<th>Differences</th>
<th>% Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Post 3</td>
</tr>
<tr>
<td>Blood</td>
<td>BR_ToT</td>
<td>1428</td>
<td>1364</td>
</tr>
<tr>
<td></td>
<td>BR_CD4</td>
<td>655</td>
<td>560</td>
</tr>
</tbody>
</table>

Participant 5’s blood results, shown in Table 19, indicate a steady decline in the CD4 count at the three intervals in which it was tested.
**DASS results.**

Table 20. DASS results for Participant 5 over three intervals

<table>
<thead>
<tr>
<th></th>
<th>Observed Values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
</tr>
<tr>
<td>Depression</td>
<td>11</td>
</tr>
<tr>
<td>Anxiety</td>
<td>6</td>
</tr>
<tr>
<td>Stress</td>
<td>19</td>
</tr>
</tbody>
</table>

Figure 14. DASS Results for Participant 5

Participant 5’s DASS results in Table 20 and Figure 14, indicate that at the start of the research she measured mild on the Depression Scale, normal on the Anxiety Scale and moderate on the Stress Scale. At the conclusion of the 8 week course, the results for Participant 5 indicated normal depression, normal anxiety and moderate on the stress scale. At the three month follow up, Participant 5’s results indicated moderate on the Depression scale, normal levels of anxiety and a reduced stress score, now falling within the mild range according to the DASS Scale descriptors.
Table 21 and Figure 15 indicate Participant 5’s scores on the FFMQ across 3 intervals, as well as compares the scores with the normative sample (Baer et al., 2008). Higher scores indicate increased mindfulness and for Participant 5 all five scales increase at the conclusion of the 8 week course, and at the three month follow up all scales decline.
MAAS results.

Figure 16. MAAS Results for Participant 5

Participant 5’s MAAS results, shown in Figure 16, indicate an increase in mindfulness traits from the start of the course, and then a decrease in mindfulness traits at the three month follow up session.

Follow up questions.

When participant 5 was asked about her experience on the Mindfulness course, she responded saying

“I did more during the sessions than I did homework. The course was very worthwhile, especially in the beginning as there was a big impact from not being mindful. The frequency of the meetings kept it fresh in mind and easier to do the mindfulness practices i.e. while washing dishes and driving. I am more mindful of my feelings. Doing the homework was difficult as life was busy”.

To the question, what do you think of the course now that you have finished it, participant 5 responded saying, “I would want to do more practice on the meeting days, I would liked to have gone deeper into the practice. 8 weeks was too short, I had not integrated it enough when the course ended”. Participant 5 said she would certainly recommend it to
friends and colleagues, as life was stressful at times and they would benefit by getting a handle on things and to be more aware of relationships.

When asked about which mindfulness skills, if any, she continued to use, participant 5 responded that she used the mindful breathing exercise about once per week. When participant 5 was asked about anything significant happening in her life during or after the 8 week course, she responded saying, “there were a lot of arguments with my ex-husband, financial worries, a foot injury that affected my independence and mobility as well as work stress”. Participant 5 was asked if there was anything else she would like to discuss and she responded saying that she did not do any mindfulness practices between the conclusion of the 8 week course and the 3 month follow up.

Discussion.

When taking into consideration Participant 5’s comment about doing more mindfulness practice during the weekly sessions than at home, this could explain why there was an increase in her mindfulness traits as measured by the MAAS and FFMQ and then a slight decline at the three month follow up, as very little or no mindfulness practice was done during this period. Participant 5 also reported increased work, family and financial stress after the conclusion of the 8 week course and prior to the three month follow up, and this could contribute to her declining CD4 count and increase in Depression on the DASS scale.

Discussion

As can be seen from the collective and individual results of the participants, there are a multitude of factors that influence the individuals’ immune system – as represented here by the CD4 count. Increased stress at home and at work, possibly contribute to a decrease in the CD4 count (Participants 3,4 & 5). Increased mindfulness traits, as measured with the MAAS and FFMQ, possibly lead to the increase in the CD4 count (participants 1 & 2), and with participant 4 the increase in CD4 count could also be as a result of beginning ARV treatment.
One theme that emerged from discussions with participants is the ongoing stressors that they experience eg. unemployment, lack of financial resources, illness and death of loved ones, work pressures, family pressures etc. It appeared that they generally had multiple stressors to contend with. As mentioned in Chapter 3, stress has a negative impact on immune functioning and as a result this could influence research results.

Although some participants stated that they engaged in mindfulness practices following the 8 week course, it is not possible to verify this or measure the amount of mindfulness practice that they did. This too could have an impact on the research results.

All participants subjectively experienced the course to be beneficial, and this is encouraging for future research in this area.

Conclusion

In this chapter the findings of the research were presented. Initially a brief overview of the biographical data was provided before looking at each participant individually. This was followed by a brief discussion of the overall results of the research.
Chapter 6

Conclusion, Limitations and Recommendations

Chapter Overview

In this, the final chapter, conclusions will be derived at from results that were discussed in the previous chapter. We will initially look at a summary of the findings as per the research aims. Thereafter we will discuss the limitations of this study. The chapter will be concluded by making possible recommendations for future research.

Conclusions per Research Aims

The focus of this research was to assess the effects of mindfulness training on people with an HIV positive diagnosis in the South African context. The specific aims of this study, through pre- and post-course findings, were to:

1. To explore and describe the immune functioning in a sample of HIV positive adults before and after the 8 week MBSR intervention and at 3 months.
2. To explore and describe the levels of mindfulness of a sample of HIV positive adults before and after the 8 weeks MBSR intervention and at 3 months.
3. To explore and describe the levels of in depression, anxiety and stress in a sample of HIV positive adults before and after the 8 week MBSR intervention and at 3 months.
4. To explore and describe the experience of a sample of HIV positive adults after the 8 week MBSR course and at 3 months.

Description of changes in immune functioning.

Immune functioning was measured through the CD4 blood results that were obtained from the participants. A higher CD4 count indicates higher immune functioning, while a lower CD4 count indicates poor immune functioning. The CD4 count, as well as viral load
count, have been found to be good indicators in immune functioning in people with and HIV positive diagnosis (Albrecht et al., 2007).

Of the participants that completed the study (n=5), there did not seem to be a dominant trend with regards to the direction of their CD4 count results. Two out of the five participants that completed the study, had CD4 counts that progressively increased over the research period, indicating an improvement in immune functioning. One of the participants’ CD4 count progressively declined over the research period, indicating a decline in immune functioning. The other two participants showed fluctuating results, where their CD4 count declined at the second or third data gathering period.

As the research sample was small (n=5), and the results of the participants were divergent it is not possible to report on immune functioning collectively. From an individual perspective, we notice that individuals experienced high levels of stress, and it is likely that this has had a significant role to play in their immune functioning. The two participants who had significant increases in immune functioning during the research period, indicated that they had both found jobs prior to the three month follow up, thus reducing the stress of not earning an income. This, in conjunction with their continued mindfulness practice, possibly contributed to their improved immune functioning. The third participant who found employment prior to the three month follow up, admitted that she had been using drugs during the research period, and this could be the reason why her immune functioning fluctuated during the research period. Participant 5’s CD4 count progressively declined over the research period, and she reported increasing levels of stress during this time, as well as not doing the practices while at home, indicating that her ability to manage her stress had not been as positively effected by the 8 week course as anticipated. And lastly, Participant 4’s CD4 results showed an increase after the 8 week course and then declined at the three month
follow up, indicated that she had had increased work stress during that period and this increase in stress could have played a role in her decline in immune functioning.

**Description of Changes in Levels of Mindfulness**

In order to assess levels of mindfulness, two measures were used in this research, namely the FFMQ and the MAAS. Both measures have been used previously in research in South Africa, the FFMQ by Draper-Clarke (2012) and Kok (2010), and the MAAS by Ismail (2010). It is important to bear in mind that mindfulness research is in its infancy in South Africa, and more research will need to be done in order to assess whether the South African results correlate to international results.

**Figure 17. Comparison of Individuals’ MAAS Results**

Bearing in mind the small sample size (n=5), it is not possible to draw statistical conclusions from the final results. Having said that however, it is interesting to note that 4 of the participants’ MAAS results in Figure 17 showed an increase at the 3 month follow up, although only 2 of these showed a consistent increase across the research period. This indicates that four of the five participants’ mindfulness had increased by the three month follow up. The 5th participant’s MAAS results showed an increase at the end of the 8 week course and a decline at the three month follow up, and this is in line with her report that she
did not continue with her mindfulness practice once the course was over. Participant 5’s MAAS results show similar results in all 5 facets of her FFMQ results, where there is an increase in mindfulness traits at the end of the 8 week course, and a decline at the three month follow up.

The FFMQ results for the 4 remaining participants are varied, with Participant 1’s FFMQ also showing an increase in most mindfulness traits – as indicated by the MAAS results – except for one facet, the observe facet. For Participants 2, 3 and 4, there do not appear to be any observable patterns that relate to the MAAS results, as their FFMQ results increase and decrease randomly.

This could be a result of inaccurate reporting or it could be accounting for fluctuations in mindfulness traits over the research period.

**Descriptions of Changes in Depression, Anxiety and Stress Levels**

Research has shown that mindfulness has a positive effect on depression levels, anxiety levels as well as stress levels, and that is why the DASS was chosen as a research measure instead of the Beck Depression Inventory (BDI). Although the DASS is not normed for the South African population, it has been correlated with the BDI (0.74) and the Beck Anxiety Index (0.81) (Lovibond & Lovibond, 1995).

As mentioned previously, the small sample size makes it impossible to generalise the research results, and as a consequence, we shall discuss the participants’ results individually.

As discussed in Chapter 5, Participant 1’s anxiety levels were extremely severe at the start of the 8 week course, and by the end of research period her anxiety fell within the mild range, whereas her depression and stress both increased at the end of the 8 week course and by the end of the research period were in the normal range.

Participant 2’s results progressively increased over the research period, and although her mindfulness similarly increased over the research period, this could indicate that her
increased mindfulness made her more aware of her depression, anxiety and stress. A positive here is that although results showed high depression, anxiety and stress, her immune functioning increased over the same period, as indicated by her CD4 count. This could imply that although she has an increased increase awareness of her depression, anxiety or stress, she is able to manage it better.

Participant 3’s depression and anxiety remained in the severe and extremely severe end of the scale for the duration of the course, while her anxiety levels started off in the moderate range and thereafter fluctuated between extremely severe and severe. All three facets were at their highest levels at the end of the 8 week course. This was around the time where the participant’s brother had passed away, so this would understandably be a time where all those facets would be elevated.

Participant 4’s depression remained consistent over the research period with no variation. Her stress appeared to decrease by the end of the 8 week course, and increased only slightly by the three month follow up. Her anxiety however, appeared to progressively increase over the research period. What is interesting to note with regards to this participant is that when her reported stress declined, so did her immune functioning, as indicated by her CD4 count. This kind of result is contradictory to the results found in the bulk of mindfulness research where reduced stress is found alongside an increase in immune functioning (Davidson et al., 2003). At this point we need to consider that the self report responses may have been inaccurate, or there may have been other confounding variables that have not been considered.

Participant 5’s increases in self-reported stress and depression, could be the reason for her declined immune functioning, despite the mindfulness intervention. This participant reported high levels of work stress as well as not being able to maintain her mindfulness practice outside of the sessions of the mindfulness course. An interesting observation with
this participant is that when her self-reported stress levels increase or decrease, so do her mindfulness levels ie. increase in stress corresponds with an increase in mindfulness (as indicated with the MAAS and FFMQ), similarly a decrease in stress corresponds with a decrease in mindfulness.

**Descriptions of Participants’ Experience**

The information gathered from the open ended questions in the 3 month follow up questionnaire, provided valuable information in to the participants’ experience of the 8 week mindfulness course. The biographical information gave a clear view of the population dynamics of the research sample. All participants found the course to be beneficial to them and said that they would recommend it to family and friends so that they too could learn to manage stress more effectively.

**Value of the Research**

South Africa has a large HIV positive population (UNAIDS, 2013), at just over 10% of the total population being HIV positive. When we consider the comorbid psychological disorders that are found with people who are HIV positive, namely anxiety, depression, mood disorders as well as Psychosis (Olagunju et al., 2013), we need to consider psychological interventions for this population group. Research on mindfulness has shown that Mindfulness based interventions (MBI) have the potential to assist people with psychological disorders such as anxiety and depression (Williams & Kuyken, 2012).

Mindfulness research in South Africa is in its infancy, and the researcher is unaware of there being any other studies in South Africa on the effects of Mindfulness on people with an HIV positive diagnosis. There are a few studies that have been done internationally and they found that Mindfulness has a positive effect on immune functioning (Cresswell et al., 2009; Jam et al., 2010) as well as affect (Gayner et al., 2012). With this in mind, the researcher conducted this study on a HIV positive population in the Eastern Cape of South Africa. The
intention was to assess whether mindfulness, a concept not yet popularised in South Africa’s general population, proves to be beneficial, as was found in other international studies. The current study contributes to the body of information available about the contribution that mindfulness can play in management of immune functioning in HIV positive individuals.

**Limitations**

There were a number of limitations in this study, and these relate primarily to the sampling method as well as the measures that were used. Both of which shall be briefly discussed.

This was an exploratory descriptive study with a non-probability purposive sampling method. As a result the sample size was small. The limitations here are two-fold in that the sample group, being hand picked to participate in this study, is not representative of the larger population group and consequently the findings of this study cannot be generalised as being reflective of the population at large. The second limitation regarding the small sample size is the inability to make use of potentially valuable statistics such as Descriptive statistics and Dependent T test as well as the Bonferroni Test.

Although this was a longitudinal study done over a period of six months, and the results are more beneficial than if done at a single point, it does open the research to various confounding variables that could take place during the course of the study and consequently influence the research results. Stress is one such confounding variable. Stress has a significant impact on immune functioning, and each individual will find different situations stressful. As such, life events provide many confounding variables that contribute to the fluctuation of the individual’s immune functioning, as well as perceived stress, depression and anxiety levels. Thus, starting a new relationship, finding a job after a period of unemployment, a close family member dying, all of these experiences that were experienced by some of the research participants during the research period and are very stressful. The
experiences possibly contributed to the participant’s immune fluctuations, thus making it more difficult to draw conclusions as to whether mindfulness specifically is influencing immune functioning. A larger research sample group might prove beneficial in evaluating this.

Some of the limitations relate to the research measures used in this study. Research has indicated that viral load as well as CD4 count are good indicators of immune functioning (Albrecht et al., 2007). The researcher had intended to get results for both, but due to the financial cost of obtaining the viral load reading for each participant, at three intervals, this was not possible.

The measures used to assess mindfulness as well as depression, anxiety and stress were all self report measures, and rely on the participants to have insight into themselves as well as for them to be honest. Another issue with regards to these measures is that very little research has been done with them in South Africa, thus it is unclear whether they are suitable for the South African population at large. Further limitations regarding the research measures, were that they were only available in English, and for all of the research participants, English was their second language. This also meant that the sample was biased towards people that could speak a certain level of English.

**Recommendations**

The first recommendation is to provide feedback to the Eastern Cape Department of Health, the provider of health services to the local communities, so that they may incorporate the findings into the service which they offer to the service users.

Previous research has shown the benefit that mindfulness has on individuals’ immune functioning, whereas this research arrived at variable results. As a result it would be recommended that the current study be replicated on a larger scale, with a larger sample size as well as a bigger financial budget that will cover viral load blood tests for the participants.
Both the MAAS and FFMQ are valuable research tools, however little research has been conducted using them with the South African population. It is therefore recommended that further research be done in South Africa to establish relevant norms for these measures.

**Conclusion**

The prevalence of HIV in South Africa was highlighted in chapter 3, and with just over 10% of the population being HIV positive. The medical and psychological implications of this are huge. The participants in this study are mainly from low socio-economic environments and consequently are under constant stress. This study was an attempt at making a difference to those living with HIV, in order for them to learn to manage their stress and consequently positively affect their immune functioning.

Each of the research objectives was discussed and conclusions were drawn, which was followed by a brief view of the value of the study.
List of References


http://www.mindfulnessandacceptance.vcu.edu/documents/Five_Facet.pdf


Appendix A

BIOGRAPHICAL QUESTIONNAIRE
BIOGRAPHICAL INFORMATION

This survey is anonymous, so please do not write your name on it. The information required in this form is for statistical purposes.

Please select (mark with X) the most appropriate answer from the following:

1. **Gender**

   - Female
   - Male

2. **Home Language**

   - English
   - Afrikaans
   - Xhosa
   - Other (specify)

3. **Age range in years**

   - 20 – 29
   - 30 – 39
   - 40 – 49
   - 50 +

4. **Level of Education completed**:

   - Primary school
   - Grade 10 (Std 8)
   - Grade 12 (Matric)
   - Diploma
   - Undergraduate degree
   - Postgraduate degree

5. **Employed**

   - Yes
   - No

6. **Monthly household income**:

   - R0 – R1 500
   - R1 501 – R3 000
   - R3 001 – R5 000
   - R5 001 – R7 500
   - R7 501 – R10 000
   - R10 000 and above

7. **Medical Aid**

   - Yes
   - No

8. **What medication are you currently taking?**

   - ...............................................................
   - ...............................................................
   - ...............................................................
   - ...............................................................
   - ...............................................................
   - ...............................................................
   - ...............................................................


9. Have you had any previous mental disorders? (ie. Depression, psychosis, schizophrenia)

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<th>Yes</th>
<th>No</th>
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If yes, please provide details: ........................................................................................................
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10. Do you currently use illegal drugs or alcohol?

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<tr>
<th>Yes</th>
<th>No</th>
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11. How many drinks do you have per week?

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<tr>
<th>None</th>
<th>1 - 10</th>
<th>11 - 20</th>
<th>More than 20</th>
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</table>

12. Have you in the past been addicted to alcohol?

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<th>Yes</th>
<th>No</th>
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If yes, how long ago was that........................................................................................................
Appendix B

POST-TEST AND 3 MONTH FOLLOW UP QUESTIONNAIRE
POST-TEST AND 3 MONTH FOLLOW UP QUESTIONNAIRE

1. What have been the benefits for you from doing the MBSR course?
   ...................................................................................................................................
   ...................................................................................................................................
   ...................................................................................................................................

2. What has been difficult about doing the MBSR course?
   ...................................................................................................................................
   ...................................................................................................................................
   ...................................................................................................................................

3. Were there any changes to your medication during/since the MBSR course?
   Yes   No
   Please specify ................................................................................................................
   ...................................................................................................................................
   ...................................................................................................................................
   ...................................................................................................................................

4. Did you feel comfortable talking about this course to other people?
   Yes   No

5. Did you feel supported by friends and family to participate in the course?
   Yes   No

6. Have you found the MBSR course helpful?
   Yes   No

7. Will you continue to use the mindfulness exercises in your everyday life?
   Yes   No

8. Since the beginning of the Mindfulness training, have you used an illegal substance?
   Yes   No

9. How many drinks do you have per week?
   None   1 - 10   11 - 20   More than 20

10. How did you experience the Mindfulness course?
   ...........................................................................................................................................
    ...........................................................................................................................................
    ...........................................................................................................................................
11. What do you think of the course now that you have finished it?

........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

12. Do you feel you would recommend it to your friends? How do you think they may benefit?

........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

13. Have you used any of the mindfulness skills in your life? Which ones and when?

........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

14. Did any part of your life change significantly during the course or within the 3 months after the course?

........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

15. Any other thoughts you wish to discuss?

........................................................................................................................................
........................................................................................................................................
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Appendix C

Clearance from the District Manager of Nelson Mandela Bay Health District
Ms. T. McIntyre

Dear Ms. McIntyre

REQUEST FOR PERMISSION TO DO RESEARCH ON AN EXPLORATION OF THE EFFECTS OF MINDFULNESS ON PEOPLE WITH AND HIV POSITIVE DIAGNOSIS, AT PRIMARY HEALTH CARE FACILITIES IN THE NELSON MANDELA METROPOLITAN

In response to your application for permission to conduct the above research at health care facilities, permission is hereby granted with the following proviso:

- Health service delivery should not be disrupted under any circumstances.
- Timeous appointments must be made with the relevant persons prior to commencement of interviews/visits.

The Nelson Mandela Bay Health District, as the research site, will expect a copy of the final research report when the study is completed. If the duration of the research period is required to be extended, the District Office (Acting District Manager, [name]) will be informed accordingly.

This Office would like to wish you well in your research study.

Yours faithfully,

DISTRICT MANAGER
United in achieving quality health care for all
24 hour call centre: 0800 0323 64
Website: www.ecdoh.gov.za
Appendix D

Letter to Participants
Dear Research Participant,

RESEARCH PARTICIPATION

I would like to invite you to take part in a research study which aims to gain greater insight into the benefits of the 8 week Mindfulness Based Stress Reduction (MBSR) program on people with an HIV positive diagnosis. The mindfulness approach is used to reduce stress and help people to manage their depression, anxiety and chronic pain – all of which are sometimes found in people with an HIV positive diagnosis. It is hoped that the research findings will provide valuable information that will assist in the development of psychotherapeutic interventions for an HIV+ population group.

Privacy and confidentiality are important so we will not ask for names or any identification. However, as this is a group intervention, it requires that you are comfortable being in such a group environment or you will not be able to participate.

As a participant you will be required to

1. Complete a Biographical Questionnaire prior to the 8 week course
2. Complete a Depression Anxiety Stress Scale (DASS), before the course, at the end of the course and at a 3 month follow up
3. Complete a Mindfulness Attention Awareness Scale (MAAS), before the course, at the end of the course and at a 3 month follow up
4. Complete a Five Facet Mindfulness Questionnaire (FFMQ), before the course, at the end of the course and at a 3 month follow up
5. Complete a qualitative questionnaire at the end of the course and at the three month follow up
6. Provide CD4 count and Viral Load to the researcher before the course, at the end of the course and at a 3 month follow up.

Completing these questionnaires will take approximately half an hour and each mindfulness session will last 2 hours. The researcher will be present at all times to assist with these questionnaires. We will meet in/at a venue and time to be arranged. You will not need any special equipment and notes and snacks will be provided at each session.

Participation in this program is voluntary and you have the right to withdraw at any time without penalty. If you do withdraw from the study, we would like you to return for the final discussion in order to ensure that any questions or concerns you may have, are appropriately dealt with by the researcher. If you are concerned about any aspect of the study at any time you should contact the researcher on these numbers: [Redacted]
This study has been approved by the Research Ethics Committee (Human) of the Nelson Mandela Metropolitan University. Queries with regard to your rights as a research participant can be directed to the Research Ethics Committee (Human), Department of Research Capacity Development, PO Box 77000, Nelson Mandela Metropolitan University, Port Elizabeth 6031.

Although your identity will at all times remain confidential, the results of the research study may be presented at scientific conferences or in specialist publications.

Yours faithfully

Ms Tracy McNally
RESEARCHER

Prof. Diane Elkonin
SUPERVISOR

Ms A. Sandison
CO-SUPERVISOR

Prof. Diane Elkonin
HEAD OF DEPARTMENT (PSYCHOLOGY)
Appendix E

Consent Form
**Title of the research project**: AN EXPLORATION OF THE EFFECTS OF MINDFULNESS ON PEOPLE WITH AN HIV POSITIVE DIAGNOSIS

**Reference number**

**Principal investigator**: TRACY MCINTYRE

**Address**: FACULTY OF HEALTH SCIENCES, DEPARTMENT OF PSYCHOLOGY, P O BOX 77000, NMMU,

**Postal Code**: 6031

**Contact telephone number**: (private numbers not advisable) 041 – 504 2330

---

### A. DECLARATION BY OR ON BEHALF OF PARTICIPANT

*I, the participant and the undersigned* (full names)

**ID number**

---

**A.1 HEREBY CONFIRM AS FOLLOWS**:

*I, the participant, was invited to participate in the above-mentioned research project that is being undertaken by Tracy McIntyre From Faculty of Health Sciences, Department of Psychology of the Nelson Mandela Metropolitan University.*

---

### THE FOLLOWING ASPECTS HAVE BEEN EXPLAINED TO ME, THE PARTICIPANT:

| **2.1 Aim:** | The investigators are studying the effects of Mindfulness on people with an HIV positive diagnosis. The information will be used for the purposes of writing dissertation and journal article, to meet the requirements of a Masters degree in Clinical Psychology. |
| **2.2 Procedures:** | I understand that the research requires my participation in an 8 week mindfulness course, as well as a 3 month follow up session. I understand that I will be required to complete various questionnaires as well as provide the researcher with blood results at regular intervals. |
| **2.3 Risks:** | I understand that the risks involved in participating in this study include participating in a group setting where others in the group will be aware of my HIV positive status. |
| **2.4 Possible benefits:** | As a result of my participation in this study I hope to learn to better manage my health and well being through the mindfulness training exercises. |
| **2.5 Confidentiality:** | My identity will not be revealed in any discussion, description or scientific publications by the investigators. |
2.6 Access to findings: A copy of the research will be placed in the Nelson Mandela Metropolitan University Library.

<table>
<thead>
<tr>
<th>2.6 Voluntary participation / refusal / discontinuation:</th>
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<tbody>
<tr>
<td>My participation is voluntary</td>
</tr>
<tr>
<td>My decision whether or not to participate will in no way affect my present or future care / employment / lifestyle</td>
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3. THE INFORMATION ABOVE WAS EXPLAINED TO ME/THE PARTICIPANT BY: Tracy McIntyre

<table>
<thead>
<tr>
<th>in</th>
<th>Afrikaans</th>
<th>English</th>
<th>Xhosa</th>
<th>Other</th>
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and I am in command of this language, or it was satisfactorily translated to me by (name of translator)

I was given the opportunity to ask questions and all these questions were answered satisfactorily.

4. No pressure was exerted on me to consent to participation and I understand that I may withdraw at any stage without penalisation.

5. Participation in this study will not result in any additional cost to myself.

A.2 I HEREBY VOLUNTARILY CONSENT TO PARTICIPATE IN THE ABOVE-MENTIONED PROJECT:

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Signature or right thumb print of participant

Full name of witness:

B. STATEMENT BY OR ON BEHALF OF INVESTIGATOR(S)

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<th>(name of interviewer)</th>
<th>declare that:</th>
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<tbody>
<tr>
<td>1.</td>
<td>I have explained the information given in this document to (name of patient/participant) and / or his / her representative (name of representative)</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>He / she was encouraged and given ample time to ask me any questions:</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>This conversation was conducted in</td>
<td>Afrikaans</td>
</tr>
<tr>
<td></td>
<td>(language)</td>
<td>by</td>
</tr>
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<td>4.</td>
<td>I have detached Section D and handed it to the participant</td>
<td>YES</td>
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<th>Signed/confirmed at</th>
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Signature of interviewer

Signature of witness:
### C. DECLARATION BY TRANSLATOR (WHEN APPLICABLE)

<table>
<thead>
<tr>
<th>I, (full names)</th>
<th></th>
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<tbody>
<tr>
<td>ID number</td>
<td></td>
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<tr>
<td>Qualifications and/or</td>
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<tr>
<td>Current employment</td>
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</table>

**confirm that I:**

1. Translated the contents of this document from English into (language)
2. Also translated questions posed by (name of participant) as well as the answers given by the investigator/representative;
3. Conveyed a factually correct version of what was related to me.

Signed/confirmed at on 20

I hereby declare that all information acquired by me for the purposes of this study will be kept confidential.

Signature of translator

Signature of witness:

Full name of witness:

### D. IMPORTANT MESSAGE TO PATIENT/REPRESENTATIVE OF PARTICIPANT

Dear participant/representative of the participant

Thank you for your/the participant’s participation in this study. Should, at any time during the study:

- an emergency arise as a result of the research, or
- you require any further information with regard to the study, or
- the following occur

(Indicate any circumstances which should be reported to the investigator)

<table>
<thead>
<tr>
<th>Kindly contact</th>
<th>Tracy McIntyre, UCLIN (Nelson Mandela Metropolitan University Psychology Clinic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>at telephone number</td>
<td><strong>Please redact</strong></td>
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