THE RELATIONSHIP BETWEEN BURNOUT AND CHRONIC FATIGUE SYNDROME AMONG ACADEMICS AT A TERTIARY INSTITUTION

by

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ABSTRACT

It is widely accepted that the current occupational context is a stressful one, especially considering rapid changes in the economic and political environment. Individuals are exposed to higher levels of stress over a longer period of time, which can have serious negative implications. If the stress cannot be tolerated, an individual is at risk of developing an exhaustion-related illness such as Chronic Fatigue Syndrome or Burnout Syndrome. Both Chronic Fatigue and Burnout Syndrome are exhaustion-related phenomena which result from persistent stress. Where Chronic Fatigue Syndrome is characterised primarily as a physical illness, Burnout Syndrome is typically considered psychological. This study aimed to investigate the relationship between Chronic Fatigue Syndrome and Burnout Syndrome, as well as the influence of other variables which include job satisfaction, social support, age and gender. Additionally, the study sought to determine the potential prevalence of chronic fatigue and burnout among the sample which was drawn. Quantitative data collection strategies were used, whereby participants completed an online survey consisting of a battery of instruments. A final sample size of 69 participants was achieved. The results show that the population is potentially at risk for both chronic fatigue and burnout, having scored relatively high on the respective scales. In regard to the relationship between Chronic Fatigue Syndrome and Burnout Syndrome, the study was not able to conclusively demonstrate a significant relationship between the two syndromes. However, there is evidence to suggest various similarities across the syndromes, particularly in regard to the physical components of exhaustion and the number of physical symptoms experienced by individuals. Future research could further explore this finding to determine the extent of that relationship, and whether it could contribute to a re-conceptualisation of exhaustion-related illnesses.

KEY WORDS

Chronic Fatigue Syndrome, Burnout Syndrome, chronic fatigue, burnout, professional context, South Africa, structural equation modelling, university, stress, illness, exhaustion

CHAPTER 1: INTRODUCTION

"Stress is not something to be avoided. Indeed, it cannot be avoided, since just staying alive creates some demand for life-maintaining energy. Complete freedom from stress can be expected only after death." *(Hans Selye in Fink, 2010, p. v)*

1.1 INTRODUCTION

Stress is considered to be a part of every-day life which cannot be avoided. The quote above by Hans Selye, the man often referred to as the 'father of stress' for having both coined the term and defined it, illustrates this perfectly (Fink, 2010). Individuals react to stress in a variety of ways depending on the amount of stress and the individual's ability to cope with stress. Where the stress is too severe and persists over a long term, it can manifest in a number of psychological and physiological symptoms which can ultimately lead to the onset of Burnout Syndrome or Chronic Fatigue Syndrome (Leone, Wessely, Huibers, Knotterus, & Kane, 2011). Both of these syndromes appear to be caused by exhaustion due to prolonged stress, and share a number of overlapping features. However, they are still two distinct labels for different syndromes which are characterised by different symptoms, diagnosis and prognosis.

Based on the above, it is worth investigating the relationship between Burnout Syndrome and Chronic Fatigue Syndrome to determine how similar they are, and whether they are related to one another, particularly in the professional context which is often considered to be one of the primary sources of stress in modern life (Vaithilingam, 2005). Within the professional context, this study focuses on university lecturers at a local South African tertiary institution. The realm of academia has been found to be a particularly stressful environment, especially when bearing in mind the changing political and economic environment in South Africa over the past several years (Coetzee & Rothmann, 2007). As such, the group under investigation can be

considered a prime example to investigate both the prevalence of exhaustion-related syndromes, as well as the relationship between them.

1.2 Research Problem

Both Burnout and Chronic Fatigue Syndrome refer to exhaustion-related states of illness, although where burnout is characterised more by psychological causes and symptoms, chronic fatigue is considered a physical illness (Leone et al., 2011). Despite their similarities, Burnout Syndrome and Chronic Fatigue Syndrome have as of yet to be compared in terms of overload as a trigger, exhaustion, external causal factors, and the people who tend to experience these syndromes. These similarities, however, beg the question why the two concepts are studied as separate unrelated entities. This study investigated both syndromes within the same sample of individuals to determine whether or not there is a relationship and if so, the extent to that relationship.

As has been mentioned in section 1.1, the professional context is one of the major sources of stress in modern life as it places various physiological and psychological demands on the individual's body (Vaithilingam, 2005). Academia in particular has become an increasingly stressful profession due to, among other factors, government's efforts to increase access to education (Coetzee & Rothmann, 2007) and subsequently the increased demands on employees in the academic profession. The economic climate in South Africa further contributes to the increasing stress in the professional context; South Africa entered economic recession in 2009 ("South Africa joins global recession – SouthAfrica.info", n.d.) which had a major impact on employment and job opportunities as will be illustrated further on (see section 2.7). The World Economic Forum Global Risks 2014 report noted that South Africa has the third highest rate of youth unemployment in the world at more than 50% (World Economic Forum, 2014).

According to Bayram, Gursakal and Bilgel (2010), the serious implications – and disadvantages – of stress are an important issue for every institution and professional context; even more so in the academic professional context considering the drastic reductions in creativity and teaching ability. A lack of creativity and a decrease in teaching ability results in inadequate educational services, as well as reduced qualitative and quantitative research capacity. Bayram et al. (2010, p. 42) highlights the severity of the disadvantages of stress on academics; "What good is an academic environment without quality teaching and researching activities? The answer is not much."

When considering the above it becomes quite clear that severe stress can have serious consequences such as exhaustion and severe fatigue, particularly in an academic environment. There are two primary reasons why this study will prove advantageous for the scientific field, namely:

- As has been argued above, there is a conceptual overlap between Burnout Syndrome and Chronic Fatigue Syndrome. In addition, it appears that culture, perception, and labelling contribute to the outcome and prognosis of these syndromes, and as such influences the diagnosis of these syndromes. Therefore, it would be beneficial to study the relationship between these two syndromes for conceptual and potentially medical purposes.

- Furthermore, there appears to be a reciprocal relationship between these syndromes and the occupational context; a stressful occupational context, such as that in academia, increases the risk of susceptibility to these syndromes while these syndromes in turn increase the stress levels in the occupational context. As will be demonstrated later in the chapter (see section 2.7), the affected individual's job satisfaction decreases and conflict between colleagues and affected individuals increases. Therefore, it appears that these syndromes negatively influence the occupational context in terms of productivity and professionalism. Thus, it will be beneficial to study the relationship between Burnout and Chronic Fatigue Syndrome in order to potentially contribute positively to individual well-being, as well as the professional context and the relevant output thereof.

1.3 AIMS AND OBJECTIVES

The main aim of this study is to investigate the relationship between Burnout Syndrome and Chronic Fatigue Syndrome among academics in a tertiary institution in South Africa. Subsequently, the objectives of the study were the following:

- To determine whether Burnout Syndrome is present in the sample.
- To determine whether Chronic Fatigue Syndrome is present in the sample.
- To determine if there is a relationship between Burnout Syndrome and Chronic Fatigue Syndrome, and if so, the nature and strength of the relationship.
- To determine what demographic factors contribute to Burnout Syndrome and Chronic Fatigue Syndrome, particularly age and gender.
- To determine the extent of job satisfaction within the sample.
- To determine the nature and extent of the relationship between Burnout Syndrome and Chronic Fatigue Syndrome, and job satisfaction.
- To determine the extent of social support within the sample.
- To determine the nature and extent of the relationship between Burnout Syndrome and Chronic Fatigue Syndrome, and social support.

1.4 STRUCTURE OF THE DISSERTATION

Chapter 2 presents a discussion of the theoretical paradigms that underpin the study. These paradigms include Walter Bradford Cannon's description of the body's basic reaction to emergencies or stressful situations through a flight-or-fight response (Sarafino, 2006), Hans Selye's General Adaption Syndrome which addresses the side effects of long-term exposure to stress (Barlow & Durand, 2008), and Lazarus's concept of cognitive appraisal (Lazarus & Folkman, 1987) whereby

individuals assess the threat of a stressor, and the extent to which resources are available to address the demands of the stressor. Additionally, it includes a review of the literature pertaining to Chronic Fatigue Syndrome, Burnout Syndrome, the professional context in general as a stressor, and the academic environment in the South African context in particular.

Chapter 3 describes the research methodology used to conduct the study. The research design and sampling strategy are outlined, followed by the actual sample that was obtained. The various measurement instruments, data collection, and data analysis plan are discussed, after which challenges and ethical considerations are provided.

Chapter 4 presents the results of the data analysis. Descriptive statistics are used to present the prevalence of chronic fatigue, burnout, job satisfaction, and social support. Total scores have been calculated for each of the constructs, for use in structural equation model which has been used to explore the relevant relationships among the variables.

Chapter 5 is the final chapter, wherein a discussion and interpretation of the findings in the context of the literature review is provided. The chapter includes various recommendations for future research, as well as the limitations of the study.

1.5 CONCLUSION

This chapter has demonstrated that there is a need to conduct research on Burnout Syndrome and Chronic Fatigue Syndrome because of their conceptual similarities and the subsequent differences in the prognosis of each; a better understanding of the relationship between the two syndromes could not only

contribute to improved future individual well-being, but also the economic environment overall.

The chapter has showed that the research will be conducted in an academic environment as academia has been disposed to increasing levels of stress, and as such provides and adequate sample of individuals with which to investigate the relevant phenomena. Furthermore, the aims and objectives for the study were stated. The chapter also provided a general outline for the present study, which is further elaborated throughout the remaining chapters. The theoretical underpinnings of the study are now presented in Chapter 2, along with a review of relevant literature pertaining to burnout, fatigue, and the implications for the professional context.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter will present the theoretical premise which underpins the research, after which an exploration of existing literature pertaining to stress, fatigue, and burnout will be presented. The review will briefly describe the development of 'stress' which resulted in the more modern definition and understanding of it. Following this, it will explore the two major constructs under investigation – chronic fatigue and burnout – and demonstrate the similarities in regard to the conceptual development and definition of Burnout Syndrome and Chronic Fatigue Syndrome respectively. Lastly, the literature review will describe the increasing nature of stress in the professional context in general, and the academic context more specifically, as well as the implications of the syndromes for the professional context among academics.

2.2 THEORETICAL BACKGROUND

The theoretical premise underlying this research study is based on the theories of Richard Walter Bradford Cannon (Fink, 2010), Hans Selye (Barlow & Durand, 2008) and Lazarus (Lazarus & Folkman, 1987). Cannon's theory describes how individuals react in particular situations according to a fight-or-flight response which ultimately influences their actions in response to a stressor or potential threat. While this can be considered more of an initial and somewhat isolated response, Selye goes on to portray in more detail the particular phases the body goes through when the stress persists over time; the alarm reaction, resistance phase, and the exhaustion phase in which Chronic Fatigue and Burnout Syndrome are likely to occur. Lastly, Lazurus posed that prolonged stress has both a physiological as well as a psychological component. As a result, a process of cognitive appraisal takes place whereby individuals assess the nature of the stress, as well as the extent to

which there are resources to cope with it. An important distinction between Chronic Fatigue and Burnout Syndrome is the appraisal of causes and symptoms as either physiological or psychological.

Each of these theories will be described in more detail below. Additionally, this chapter will detail their relationship to Chronic Fatigue and Burnout Syndrome. These theories should not be considered in isolation of one another but rather how they intersect at various junctures to potentially explain the onset of Chronic Fatigue and/or Burnout Syndrome.

2.2.1 Fight-or-flight

Cannon, a renowned physiologist, described the body's basic reaction to emergencies or stressful situations as a fight-or-flight response in order to maintain homeostasis (Sarafino, 2006). The Merriam-Webster dictionary (homeostasis, n.d.) defines homeostasis as "a relatively stable state of equilibrium or tendency towards such a state between the different but interdependent elements or groups of elements of an organism, population, or group." As such, the body reacts in such a way as to maintain the current state of being. According to Cannon:

> "The living being is stable. It must be so in order not to be destroyed, dissolved or disintegrated by the colossal forces, often adverse, which surround it. In a sense it is stable because it is modifiable, the slight instability is the necessary condition for the true stability of the organism" (Chrousos, Loriaux & Gold, 2013, p. 6)

This physiological reaction prepares the body for either flight or fight in times of emergency or in the presence of a threat. The fight-or-flight reaction results from physiological changes in the body. When an individual perceives a threat, stress or danger activity, there is an activation of the autonomic nervous system (Kemeny, 2003). The autonomic nervous system consists of two components; the parasympathetic nervous system (which controls involuntary resting functions such

as increased digestion) and the sympathetic nervous system (which controls involuntary processes such as heart rate) (Kemeny, 2003). There is a neural response in the hypothalamus (part of the brain which, among other things, regulates the production or hormones). The hypothalamus activates the pituitary gland through the secretion of CRH (corticotrophin-releasing hormone) which then causes the secretion of the hormone ACTH (Adrenocorticotropic hormone). ACTH serves as a messenger which activates the adrenal cortex, resulting in the production of cortisol (Margioris & Tsatsanis, 2000). Cortisol increases blood pressure, and also blood sugar, but at the same time has a negative effect on the immune system by supressing it (Padgett & Glaser, 2003). At the same time, the adrenal gland is activated which results in the secretion of epinephrine or adrenaline. All of the above processes feed back into the various sites to allow the body to return to resting state (Kemeny, 2003). In summary, the process which the body goes through in a fight-or-fight situation provides additional energy, allowing an individual to either fight or flee. Figure 1 depicts the process which has been described above.

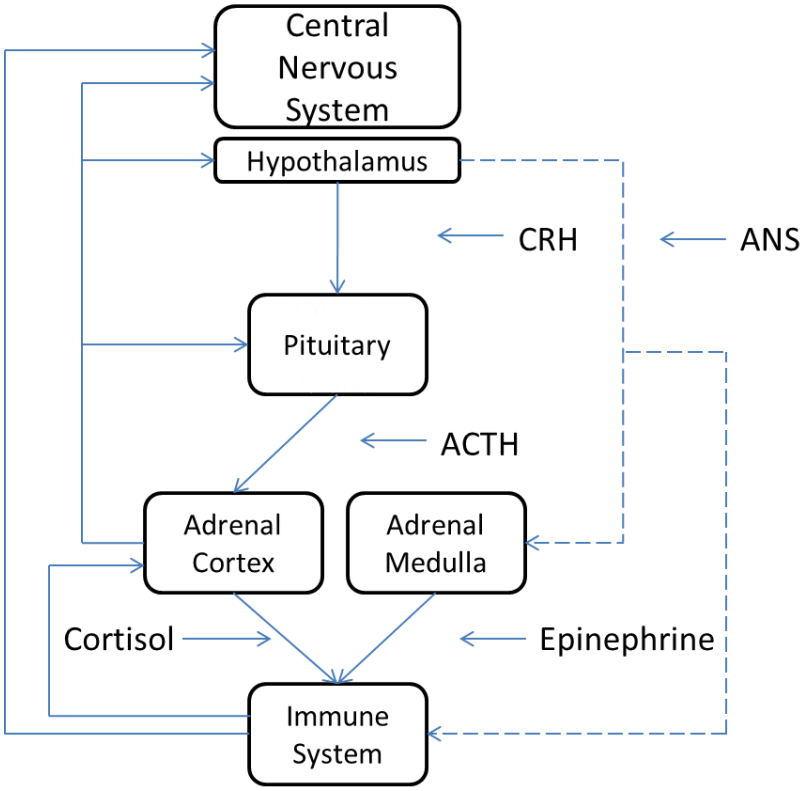

Figure 1: Fight-or-flight Response

Note: Adapted from Kemeny (2003). ANS = Autonomic Nervous System. CRH = Corticotrophin-releasing Hormone. ACTH = Adrenocorticotropic Hormone

The fight-or-flight reaction is described as an adaptive reaction; a reaction which allows an individual to act successfully in light of changing circumstances in the environment (Seyle, 1973). If the body is exposed to a stressful situation for a long period of time, however, it can result in damage to the body. The side effects of long-term exposure to stress are made clear in the general adaptation syndrome described by Hans Selye (Barlow & Durand, 2008).

2.2.2 General Adaptation Syndrome

According to Selye, the body goes through three different phases in reaction to persistent stress. Barlow & Durand (2008) describe the phases as follows:

Alarm reaction: This phase is analogous to the body's fight-or-flight response in times of emergency, in which the body mobilises the necessary resources for protection, such as increased blood pressure and heart rate (as per the process described in section 2.2.1). The body's arousal and resistance levels drop for a short period of time, after which it rapidly increases and maintains an above-normal level of arousal and resistance.

Resistance phase: If the stressor persists, the body enters the resistance phase where the body attempts to adapt to the stressor. The body's arousal and resistance to the stressor levels remain above-normal, whereby the individual experiences various physiological changes such as increased breathing and heart rate over a prolonged period of time. However, the body might not be able to defend against additional stressors as the resources are limited and are at risk of becoming depleted. Additionally, as mentioned in section 2.2.1, the immune system is weakened during this process. As a result, an individual is more susceptible to stress-related diseases (which can include both physical diseases such as heart disease as well as mental disorders such as mood disorders) if the stressor persists.

Exhaustion phase: During this phase the body is no longer able to maintain high levels of arousal and resistance due to a depletion of resources required to provide energy. The immune system is weakened during this phase and the body's resistance-ability is severely limited. If the stressor persists, the possibility for

disease and even death is very high. It is also during this phase that the body is most susceptible to exhaustion-related diseases such as Chronic Fatigue Syndrome and Burnout Syndrome.

Figure 2 demonstrates the three phases of general adaptation syndrome, following a perceived stress.

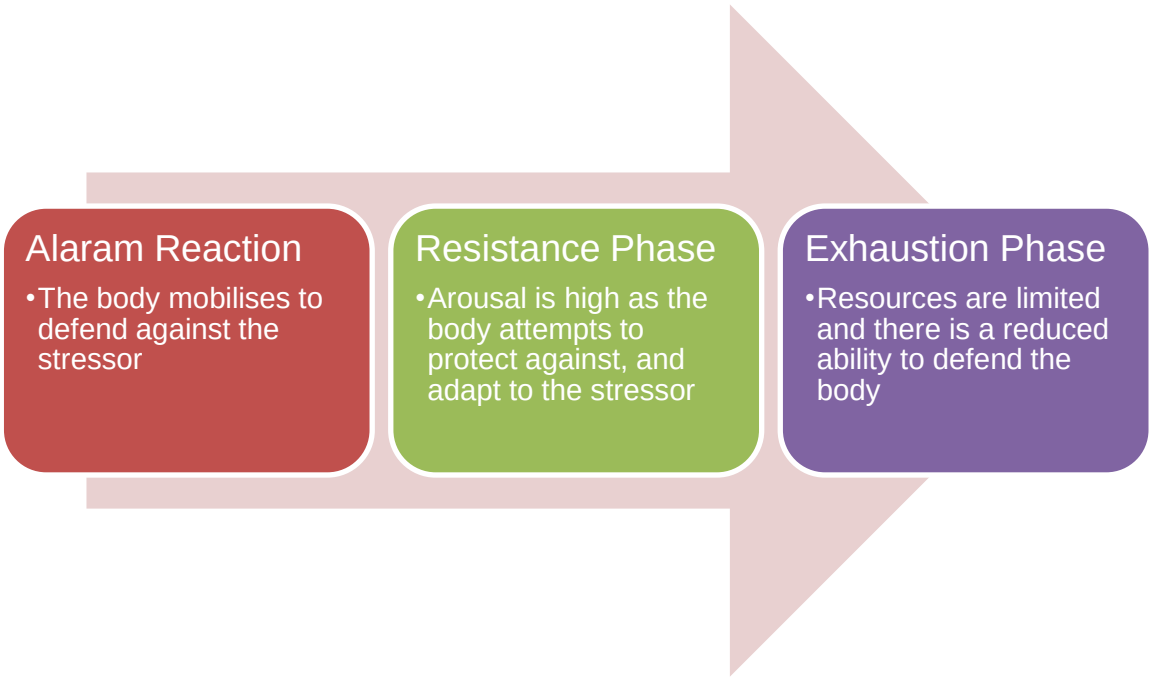

Figure 2: The Three Phases of General Adaptation Syndrome

Note: Adapted from Sarafino (2006, p. 67)

2.2.3 COGNITIVE APPRAISAL

Stress is not just a physiological reaction, but also involves cognitive appraisal (Lazarus & Folkman, 1987). Lazarus and his colleagues derived the concept of cognitive appraisal as follows; cognitive appraisal is a mental process by which an individual assesses two factors:

1) Whether the stressor threatens their physical or psychological well-being

2) What is the availability of resources with which to address the stressors demands (Ogden, 2012)

These two factors distinguish two types of appraisal, namely primary and secondary appraisal.

When a person decides that a stressor threatens their physical or psychological well-being (in other words a primary appraisal is made) it means that an attempt has been made to give meaning to certain stressors, such as pain or fever for example. According to Sarafino (2006), a primary appraisal can lead to one of the following three conclusions:

It is irrelevant: the individual may have previously experienced similar symptoms which did not result in illness, and thus declares the symptoms irrelevant;

It is good: the individual may use the symptoms in order to benefit in some way, such as to take sick leave;

It is stressful: the individual may feel that the symptoms could lead to a serious illness.

Ogden (2012) states that there is a fourth possible outcome; the stressor is potentially harmful and a challenge. In other words, the stressor is not something that should necessarily be avoided, but which can be overcome.

If the stressors are appraised as stressful or harmful, further appraisal is made regarding the degree of damage or loss already experienced, the potential future threat and loss associated with the stressor, and what challenges the stressor poses (Lazarus & Folkman, 1987).

Secondary appraisal has to do with the consideration of available resources in order to comply with the demands of the stressor (Sarafino, 2006). In other words,

an attempt is made to determine whether there are enough resources (physical and psychological) to handle the loss already incurred, as well as future potential damages. The individual also needs to determine the potential benefits and risks associated with difference ways and strategies of attending to the stressor (Ogden, 2012). The quantity of stress experienced helps determine the outcome of the judgement. There is also a negative relationship between the amount of stress experienced, and the amount of resources available. In other words, if it is perceived that few resources are available, it will be determined that much stress was experienced, and vice versa (Ogden, 2012).

2.2.4 Summary of Theoretical Background

The above theory is the starting point for the assumptions of this research study; that Burnout and Chronic Fatigue Syndrome develop during the exhaustion phase of general adaptation syndrome, considering that exhaustion is the main characteristic of both syndromes. Both syndromes are characterised by continued exposure to stress which result in either physical or psychological exhaustion. Burnout is typically considered to be the result of depleted psychological resources, whereas chronic fatigue results from a weakened immune system which renders the individual more susceptible to infections and viruses. Furthermore, through a process of appraisal an individual interprets the symptoms as either psychological or physical which can ultimately affect their experience and the diagnosis of the symptoms as either burnout or chronic fatigue.

2.3 STRESS

> *Everybody knows what stress is and nobody knows what it is. The word stress, like success, failure, or happiness means different things to different people and, except for a few specialized scientists, no one has really tried to define it although it has become part of our daily vocabulary. Is it effort, fatigue, pain, fear, the need for concentration, the humiliation of censure, loss of blood, or even an unexpected success that requires complete reformulation of one's life? The answer is yes and no. That is what makes the definition of stress so difficult. Every one of these conditions can produce stress and yet none of them can be singled out as being "it" since the word applies equally to all others as well.* (Seyle, 1973, p. 692)

Hans Selye is often referred to as the 'father of stress' because he both coined the term and defined it in as early as the 1930s when performing experiments with rats, borrowing the term from engineering (Barlow & Durand, 2008). While the quotation above is extracted from an article by Hans Seyle over 40 years ago, it still accurately depicts the many facets of modern day stress according to the concept's development up until this point;

- Stress can be both physiological and psychological,
- Stress can be experienced in many different ways as a result of many different causes, and
- Different people tend to experience it in different ways (Fink, 2010; Seyle, 1973).

Despite the enigmatic nature of the phenomenon that is stress, modern definitions have attempted to more accurately conceptualise it according to its varying characteristics. The definition of stress will be expanded on below.

Stress is the body's general reaction to any stressor (Fink, 2010). Stressors can be any factors that place a demand on the body such as low blood sugar, noise, strong emotions – e.g. anger and frustration – and overcrowding. The body reacts in a biological way, through the secretion of hormones, and psychologically, through a feeling of tension pertaining to the stressor (Sarafino, 2006; Vaithilingam, 2005). Physiologically the experience of stress results in a number of changes both internally and externally in response to the situation. As was mentioned earlier in the chapter (see section 2.2.1), the experience of stress has an activating effect on the sympathetic nervous system. This prepares the body internally by activating certain organs, such as the heart, and systems, such as heart rate and respiration (Kemeny, 2003). The sympathetic nervous system releases a neurotransmitter called norepinephrine at certain sites within the body, among which is the adrenal medulla. This, in turn, results in the release of epinephrine, also known as adrenaline, directly into the bloodstream which results in the more commonly known 'adrenaline rush' in which a person's body has been activated to physically respond in a stressful stimulation (Kemeny, 2003).

Stress can be both harmful and beneficial for the human body's immunity, depending on whether the person can cope with the stressors (Bergh & Theron, 2009). The ability to cope with stressors, in other words, refers to the person's stress tolerance, i.e. the person's ability to withstand stress without enduring serious physical and psychological harm (Ogden, 2012). People with a low tolerance for stress are much more susceptible to adverse diseases, such as recurrent colds, headaches, high blood pressure, stomach ulcers as well as reduced energy levels and intense fatigue (Bansal, Bradley, Bishop, Kiani-Alikhan & Ford, 2012). This can ultimately lead to the onset of Chronic Fatigue Syndrome, a physiological condition characterized by the experience of several symptoms over a prolonged period of time (Afari & Buchwald, 2003). Chronic fatigue is described in more detail later in this chapter (see section 2.5).

When considering stress from a psychological standpoint, stress can be both beneficial as well as harmful (Lazurus, 1966; Shapiro, Astin, Bishop & Cordova,

2005). In this sense, we typically distinguish between *eustress* and *distress*, where eustress is considered positive stress, and distress is considered negative stress (Colligan & Higgins, 2006). As presented in section 2.2.3, an individual undergoes a process of primary and secondary cognitive appraisal to assess the nature of the stress and decide upon an appropriate course of action in response (Sarafino, 2006). If the stress is appraised as either positive or challenging (such as during marriage, the birth of a new-born, or potentially completing a test or exam) the stress is beneficial and experienced in a good way (Colligan & Higgins, 2005). According to various studies, however, stress can also result in negative consequences such as depression, reduced job satisfaction, ineffective or delayed decision making, suicide, and burnout (DeLongis, Folkman & Lazurus, 1988; Hammen, Kim, Eberhart & Brennan, 2009; Shapiro et al., 2005). This type of negative stress is referred to as distress. Typically, these negative effects of stress occur when an individual is exposed to stress over a period of time, and the individual feels that he/she is unable to cope with the demands as they lack the necessary resources (Lazurus, 1966). Similarly, when job demands are too high a person undergoes a similar experience (Schaufeli & Enzmann, 1988). This can result in burnout, a psychological condition typically associated with occupational stress which results from unachievable personal demands (Maslach, Schaufeli, & Leiter, 2001). Burnout is described in more detail in section 2.4.

From the above it is clear that stress can be experienced as both physical and psychological. Depending on the nature of the stress, and how the individual appraises and experiences the stress, it can result in either Chronic Fatigue or Burnout syndrome. Both of these syndromes will be elaborated on below in terms of their conceptual development and modern definitions.

2.4 BURNOUT SYNDROME: CONCEPTUAL DEVELOPMENT AND DEFINITION

2.4.1 DEFINITION OF BURNOUT SYNDROME

Burnout is defined as a syndrome of emotional exhaustion, depersonalisation, and reduced personal competence (Leone et al., 2011). This syndrome occurs in individuals confronted with an exceptional amount of occupational stress, particularly in the human services field (Vaithilingam, 2005). Fink (2010) defines Burnout as a psychological syndrome associated with exhaustion, cynicism, and incompetence in the professional context. Burnout is regarded as the individual's experience of stress within a context of complex social relationships, such as in a career. According to Coetzee and Rothman (2007, p. 29) burnout can be defined as "a state of mind that affects people who work with other people and give much more than what they get in return from their colleagues, friends, supervisors and clients". This includes a lack of enthusiasm, a sense of helplessness and frustration. This definition can be further expanded where burnout is regarded as a persistent negative occupational mood among "normal" people, characterised by fatigue associated with distress, a sense of reduced effectiveness and motivation as well as the development of dysfunctional attitudes and behaviours in a work context (Schaufeli & Enzmann, 1998). Burnout, therefore, can be regarded as the end result of persistent, insufficient or unsuccessful efforts to handle stressors in the workplace (Schaufeli & Taris, 2005).

2.4.2 CONCEPTUAL DEVELOPMENT OF BURNOUT

The conceptual definition of Burnout Syndrome can be traced back to George Beard who, in 1869, classified the disease "neurasthenia" (Leone et al., 2011). Neurasthenia is attributed to social changes such as industrialisation, capitalism and an increase in working hours. Herbert Freudenberger, one of the first researchers to study burnout, made the following statement; "[burnout is] a demon, born of the society and times we live in and our on-going struggle to invest our lives with meaning" (Leone et al., 2011, p. 58). Stressful occupational situations, such as

overcrowding and monotonous work, are described as the cause of both burnout and neurasthenia (Wessely, 1991). Where burnout primarily results from psychological factors, however, neurasthenia, much like chronic fatigue, is considered a somatic condition. Despite the physical classification of neurasthenia, however, social changes are still considered to be a causal factor, such as changes in the working environment, social networks, or even changes in the larger external economic and political environment (Freudenberger & Richelson, 1980; Soderlund and Malterud, 2005).

Burnout only really emerged as a syndrome associated with severe fatigue in the 1980s (Leone et al., 2011). The concept of burnout originated from the psychological field. It was initially argued that primarily health care professionals are affected by burnout as this particular occupation is characterised by demanding interpersonal relationships that lead to chronic stress (Maslach & Goldberg, 1998). The result of this was the depletion of emotional and empathetic resources – emotional exhaustion – which left the person feeling drained and weak. Emotional exhaustion is one of the major characteristics of burnout (Fink, 2010). Emotional exhaustion, together with depersonalisation, or cynicism, and professional incompetence, form the core features of burnout (Leiter & Maslach, 2001). Leiter & Maslach (2001) describe these core features as follows:

Emotional exhaustion refers to the feelings pertaining to a depletion of emotional and physical resources to overcome stressful daily occurrences both in the personal and professional context.

Depersonalisation, or **cynicism**, refers to a negative, hostile and excessively isolated response to an occupation; the ideals originally posed by the occupation have since been lost. Cynicism is a self-defensive response to emotional exhaustion, as the person lacks any emotional resources to help others or provide them with emotional support. Cynicism serves as an emotional buffer that detaches the person from emotional involvement. The risk with emotionally detaching from other human beings is that the affected individual can dehumanise and depersonalise other people. Emotional exhaustion refers to the physical symptom of burnout, whereas cynicism refers to the interpersonal dimension.

Reduced personal effectiveness or **professional incompetence** indicates the reduction of a sense of expertise and the ability to work productively. A growing sense of inadequacy regarding one's ability to perform one's work sufficiently is experienced, and can lead to a self-imposed verdict of failure. Professional incompetence, therefore, signifies the self-evaluation dimension of burnout.

As is a clear trend throughout the discussion of burnout thus far, it is apparent that burnout has its roots firmly established in occupations within human services roles where most of the initial research and theorising pertaining to burnout was carried out (Maslach & Jackson, 1981). Based on its characteristics, the assumption was that people most likely to experience burnout would be employed in people-orientated roles such as health care professionals (Cordes & Dougherty, 1993). As a result thereof, most of the initial research focused specifically on this industry. Karger (1981) was one of the initial critics to question the restriction of burnout to the human services sector, and argued that it could be generalised to the greater sphere of existence.

Golembiewski (1986) suggested that research had begun expanding the issue of burnout to a wider audience beyond the human services sector, and there has been increasing consensus since that burnout applies not only to those individuals associated with more traditional 'burnout-inducing' roles, but other occupations as well. More current research has demonstrated how burnout can be observed across a much wider spectrum within the professional and occupational context than initially expected (Bakker, Demerouti, & Schaufeli, 2002). Interpersonal interactions are considered to be a key component of burnout, and as such any person dealing with other people in a potentially stressful context, and on a regular basis, is likely to be vulnerable to burnout (Cordes, Dougherty & Blum, 1997). Since initial definitions of burnout, it has been redefined to address a potentially wider audience at risk (Leone et al., 2011; Mommersteeg, Heijnen, Verbraak & van Doornen, 2006).

Demerouti and her colleagues have contributed to the formulation of a more modern all-encompassing definition of burnout based on extensive investigation (Demerouti, Bakker, Nachreiner & Ebbinghaus, 2002). They define burnout as "a syndrome of work-related negative experiences, including feelings of *exhaustion* and *disengagement* from work" (Demerouti et al., 2002, p. 428). According to this definition, the two primary components which contribute to burnout are exhaustion and disengagement, which Demerouti et al. (2002) describe as follow:

Exhaustion is the result of long-term physical, emotional and cognitive strain as a result of ongoing exposure to a stress-inducing work environment. This definition of exhaustion encapsulates a physical and cognitive component as well as the more traditional psychological components thus extending burnout to individuals working in a more physical, creative and/or intellectual profession, regardless of the extent to which they interact with other people.

Disengagement, on the other hand, refers to the process whereby an individual distances him/herself from the working environment and any object within that environment (such as work tasks or colleagues). Individuals experiencing disengagement often enter a stage of mechanical processing whereby they complete their work in a near-automatic way. They tend to lose interest in their work and experience a range of negative emotions in regard to their work, typically resulting in decreased job performance. Again, as is the case with exhaustion, one can easily deduce that this revised definition of the structure of burnout is more inclusive of a range of professional contexts, regardless of the extent to which the individual interacts with other people (Demerouti et al., 2002).

Burnout Syndrome is thus a syndrome caused by chronic stress, and primarily characterised by exhaustion, cynicism, and a sense of professional incompetence. Despite some clear references to physical components, particularly in regard to exhaustion, however, burnout is still primarily considered a psychological syndrome. This is mainly due to how the individual experiences the factors leading to burnout as well as the consequences thereof. A syndrome similar in nature that shares certain features with Burnout Syndrome, although more physically orientated, is Chronic Fatigue Syndrome.

2.5 CHRONIC FATIGUE SYNDROME: CONCEPTUAL DEVELOPMENT AND DEFINITION

2.5.1 DEFINITION OF CHRONIC FATIGUE SYNDROME

As was discussed above, neurasthenia is a serious debilitating mental and physical fatigue or exhaustion attributed to social changes such as industrialisation, capitalism, and an increase in working hours (Freudenberger & Richelson, 1980). These, however, are also characteristics of Chronic Fatigue Syndrome. Chronic Fatigue Syndrome and neurasthenia have another feature in common, namely, they are both caused by somatic conditions ("Chronic fatigue syndrome (CFS). General information," 2012; Leone et al,. 2011).

Chronic Fatigue Syndrome, like Burnout Syndrome, came to the fore in the 1980s (Leone et al., 2011; Manu, 2004). During this period, a syndrome involving persistent exhaustion and fatigue, with symptoms of general viral infections, strongly emerged in the medical field. Initially, Chronic Fatigue Syndrome was known as the Epstein-Barr virus, which causes chronic mononucleosis or glandular fever (Holmes et al., 1988). No relationship, however, has been found between the Epstein-Barr virus and the symptoms associated with Chronic Fatigue Syndrome (Leone et al., 2011).

A Case Study definition of Chronic Fatigue Syndrome was first established in 1988 (Holmes et al., 1988). According to this definition, there are two main criteria and fourteen secondary criteria for Chronic Fatigue Syndrome which Manu (2004) describes as follows:

- The first main criterion is the onset of persistent or recurrent, debilitating fatigue which cannot be alleviated with either sleep or rest. This condition must disrupt daily functioning for at least six months.
- The second main criterion is that other medical conditions associated with exhaustion are eliminated through medical and laboratory tests. People who

already suffered from a psychiatric disorder/s prior to the onset of exhaustion are not diagnosed with Chronic Fatigue Syndrome.

- The fourteen secondary criteria are divided into two groups, namely; (1) subjective complaints such as headaches, fever, sore throat and (2) objective findings such as low fever, pharyngitis, and tender lymph nodes.

In 1990 Australian researchers proposed a second definition for Chronic Fatigue Syndrome (Fukuda et al., 1994). In contrast to the definition provided above, this definition does not exclude the presence of physical symptoms. Rather, the presence of chronic, persistent and recurring fatigue that interferes with daily functioning results in the onset of Chronic Fatigue Syndrome. This fatigue must be accompanied by neuropsychiatric dysfunction and post-exertion exhaustion (Fukuda et al., 1994).

British researchers were not satisfied with the Australians' definition, and in 1991 they proposed their own definition of Chronic Fatigue Syndrome (Sharpe et al., 1991). The purpose of this particular definition was to develop a clinical guideline for future research. It was also proposed that individuals must be diagnosed with Chronic Fatigue Syndrome in cases where;

- The exhaustion has a defined onset,
- The exhaustion has serious debilitating and disabling effects on physical and cognitive functioning, and
- The syndrome is present for at least half of the time over a six month period.

Individuals diagnosed with, for example, schizophrenia, bipolar disorder, brain disorders, and other psychiatric disorders, as well as individuals with medical conditions that cause exhaustion, cannot be diagnosed with Chronic Fatigue Syndrome (Sharpe et al., 1991). Individuals suffering from depression and anxiety disorders were also included in this definition.

The International Chronic Fatigue Study Group of 1994 (Reeves et al., 2003) which was established by the CDC revised and defined in more detail the definition as is set out above. Laboratory tests are specifically undertaken to determine the presence of other disorders that can cause the same symptoms. The presence of any other disorders immediately eliminates a diagnosis of Chronic Fatigue Syndrome (Fuduka et al., 1994).

The constant revision of the definition of Chronic Fatigue Syndrome has resulted in instances of ambiguity within the definition (Wagner et al., 2005). The International Chronic Fatigue Study Group of 2003 more recently indicated that the case study definition for Chronic Fatigue Syndrome is vague, in the sense that it does not rely on valid and standardised instruments to measure exhaustion, functional impairment and the associated symptoms (Reeves et al., 2003). The problem with the diagnosis of Chronic Fatigue Syndrome lies in the fact that there is no verifiable or testable cause or pathology (Reeves et al., 2003).

As of present, the most commonly used definition and diagnosis of Chronic Fatigue Syndrome is that of the Centre for Disease Control and Prevention (CDC) (“Chronic fatigue syndrome (CFS). General information,” 2012). The CDC definition is based on an adapted version of the 1994 Chronic Fatigue Syndrome case definition which is as follows;

1. The individual has had severe chronic fatigue for 6 or more consecutive months and the fatigue is not due to on-going exertion or other medical conditions associated with fatigue (these other conditions need to be ruled out by a doctor after diagnostic tests have been conducted);
2. The fatigue significantly interferes with daily activities and work;
3. The individual concurrently has 4 or more of the following 8 symptoms:
    - post-exertion malaise lasting more than 24 hours;
    - unrefreshing sleep;

- significant impairment of short-term memory or concentration;
- muscle pain;
- pain in the joints without swelling or redness;
- headaches of a new type, pattern, or severity;
- tender lymph nodes in the neck or armpit; and
- a sore throat that is frequent or recurring.

Furthermore, the most commonly used instrument for measuring and diagnosing Chronic Fatigue Syndrome is the CDC Chronic Fatigue Syndrome Symptoms Inventory, which has also been used in this study. For this reason, the definition provided above has been used for this study.

2.6 Similarities and differences between Burnout Syndrome and Chronic Fatigue Syndrome

From the discussion above regarding the conceptualisation of Burnout and Chronic Fatigue Syndrome, it appears that the two differ in some characteristics. These differences are further accentuated by the presence of the following three aspects, namely origin, withdrawal and risk, each of which will be discussed below.

The origin of Burnout Syndrome lies in the psychological field, whereas that of Chronic Fatigue Syndrome is in the medical field. The two differ in terms of withdrawal symptoms in that; individuals suffering from Burnout Syndrome withdraw from stressful situations and adopt a cynical attitude towards their work (Coetzee & Rothman, 2007), whereas individuals with Chronic Fatigue Syndrome withdraw physically, and demonstrate reduced participation in work activity (Leone et al., 2011). In regard to risk, the risk associated with developing Burnout Syndrome

increases as a result of stressful interpersonal relationships – especially in the professional context (Schaufeli & Taris, 2005) – whereas with Chronic Fatigue Syndrome, it increases due to repeated exposure to infectious disease and viruses, especially in the work context (Taylor, Jason, & Jahn, 2003).

Despite these differences, however, Leone et al. (2011) found that Burnout and Chronic Fatigue Syndrome have three things in common;

- Both syndromes' main characteristic is that of serious exhaustion or fatigue, which needs to be addressed,
- People affected by these disorders typically share similar profiles; they are active, hardworking, and dedicated, and
- Both syndromes appear to be characterised by overload.

Burnout Syndrome and Chronic Fatigue Syndrome have yet to be compared in terms of overload as a trigger, exhaustion, external causal factors, and the people who tend to experience the two syndromes. These similarities, however, beg the question why the two concepts are studied as separate unrelated entities. Research conducted by Leone et al., (2011) suggests that the essential difference between the two syndromes is locked in perception, culture and accountability, as the affected party uses it as a means to make sense of the symptoms they are experiencing, and give meaning to them. The manner in which the symptoms are interpreted is the very element that determines whether the individual develops Burnout or Chronic Fatigue Syndrome, and whether they withdraw physically or psychologically as a result thereof (Afari & Buchwald, 2003; Angerer, 2003). Affected individuals who experience their symptoms as psychological develop Burnout Syndrome while those who experience somatic symptoms are diagnosed with Chronic Fatigue Syndrome (Huibers et al., 2003). According to Huibers et al. (2003), an individual's perception regarding the cause of Chronic Fatigue Syndrome is a predictor of the prognosis of the syndrome. The way in which the person experiences the symptoms of exhaustion – for example, as temporary resulting from occupational stress such is

the case with Burnout Syndrome or chronic persistent exhaustion as with Chronic Fatigue Syndrome - may affect the outcome and the prognosis of the syndrome. If the causal factors do indeed play a role in the outcome and prognosis of these syndromes, then a primary intervention, especially for Chronic Fatigue Syndrome, may be found in the labelling of exhaustion related symptoms. The outcome, prognosis, and treatment of these syndromes are quite clearly important considering that these syndromes have a negative impact on the professional context.

Thus far it has been argued that high levels of persistent stress within the occupational context can lead to exhaustion, and that this exhaustion can result in one of two syndromes, namely Burnout or Chronic Fatigue Syndrome.

2.7 THE PROFESSIONAL CONTEXT

The experience of long term stress and fatigue is often characteristic of one's professional working environment and is typically considered one of the major contribution factors (Maslach et al., 2001; Siegrist, 1996). As such, burnout and chronic fatigue should not be considered in isolation of the professional context. Additionally, this study focuses on lecturers in a tertiary academic institution, and as such, the nature (past and present) of this environment should be taken into account to better contextualise chronic fatigue and stress among academics, as well as to understand the implications for the professional context.

The professional context places various physiological and psychological demands on the individual's body and can therefore be regarded as a stressor. Work-related pressure in particular is a persistent cause of stress (Maslach et al., 2001; Vaithilingam, 2005). The employee is pressed to achieve various goals and to be consistently productive in the shortest possible time, with as much effort as possible. Additionally, factors such as prejudice, discrimination and job dissatisfaction further lead to frustration, tension and stress. The professional context

is a major source of stress and the demands and pressure placed on South African employees are, at present, much more than what they have been previously (Coetzee & Rothmann, 2007).

Up until recently, academic work was regarded as a profession with little stress (Doyle & Hind, 1998). This, however, is no longer the case. Since 1994, the political climate in South Africa has changed drastically, with a shift from Apartheid and inequality towards democracy (Cross, Mungadi, & Rouhani, 2002). The government's attempts to reshape South Africa into a democratic society included restructuring the education system, the aim of which was to provide all citizens with equitable access to quality education. According to Coetzee and Rothman (2007), this restructuring resulted in many new challenges for both the management of tertiary institutions, as well as employees stationed at the institutions; for instance, a new organisational culture was introduced and peer support groups were created to deal with sensitive issues such as equality, diversity and resistance.

Beyond the political conditions that contribute to stress within the professional context, the economic climate also plays a role. In 2009, South Africa entered an economic recession ("South Africa joins global recession – SouthAfrica.info", n.d.), which had a major impact on employment and job opportunities; over a million jobs were lost between the last quarter of 2008 and the first quarter of 2010 (AboutSA – Finance", n.d.). According to a survey by Bloomburg, South Africa has one of the highest unemployment rates, when compared with 61 other countries ("SA unemployment rates among highest; Fin24: Economy", n.d.). It is thus apparent that the current economic climate in South Africa is both unstable and unpredictable, which can lead to increased tension and stress regarding job security.

This unpredictability is further accentuated by employers' need to increase and decrease their workforce based on the demand for service – which requires more flexibility – resulting in a loss of control over work hours and inevitably job security (Martin, 1997).

These changes in the occupational context have an impact on tertiary institutions that constantly have to adapt in order to survive (Gilbert, 2000). According to Coetzee and Rothmann (2007), global changes in the landscape of tertiary institutions could be attributed to the expansion of traditional elite systems to organisations responsible for serving mass student-numbers, increased adult education, the introduction of internet-based education and training, as well as emerging trends in teaching and learning methods.

The academic professional context is clearly a stressful one, when considered from a political and economic perspective. Not only are many academic staff expected to carry out teaching, research and administrative responsibilities (and as student enrolment increases, so does the burden placed on staff by each of these roles) but are also expected to cater to the needs of a number of different stakeholders, including students at the university (Houston, Meyer & Paewai, 2006). Other factors within the professional environment contribute to the amount of stress experienced within the academic setting, such as working relationships, conflict with colleagues, and work overload (Vaithilingam, 2005).

Additionally, the experience on long-term, persistent stress and fatigue can have a number of implications for the individual, as well as the professional industry (Reynolds, Vernon, Bouchery & Reeves, 2004). According to Huibers et al. (2003), persistent severe fatigue, as in the cases of Burnout and Chronic Fatigue Syndrome, leads to long term sick leave and the inability to perform one's work requirements. It is necessary to have functional, creative academics who can, in a productive way, contribute to the education system; individuals with Burnout or Chronic Fatigue Syndrome, ultimately, cannot function productively within their respective professional context.

Individuals experiencing Burnout tend to withdraw themselves from their work, show high absenteeism and inevitably leave their current occupations (Estryn-Behar et al., 2007). This is directly related to lower productivity and effectiveness within the

professional context which could fortify a sense of perceived professional incompetence, one of the dimensions of Burnout. Admittedly, according to Fink (2010), people with burnout experience low job satisfaction which is associated with reduced energy and vigour, and dedication to their profession. Furthermore, individuals with burnout influence their colleagues in a negative way, as it leads to personal conflict (because the person dehumanises others as a result of a depletion of emotional resources), and it disturbs work projects (Burke & Greenglass, 2001; Maslach et al., 2001). Thus, Burnout behaves as if it was contagious, and it becomes a stable, consistent part of the working context.

Chronic Fatigue Syndrome has an equally severe effect on the occupational context. It is laborious, cumbersome and a burden for individuals with Chronic Fatigue Syndrome to wake up to go to work in the morning (Park, Kim, Chung, & Hisanga, 2001). According to Ware (1998), it may even be dangerous to drive a car to work, as there is a strong possibility that the individual driving can fall asleep behind the wheel. Even simple tasks are difficult and cumbersome for individuals suffering from Chronic Fatigue Syndrome, due to the strain placed on general cognitive processing (Lange et al., 2005). These individuals' cognitive ability is reduced to the extent that simple tasks such as writing down messages, or listening to a colleague become almost impossible. The result is ultimately miscommunication which further results in conflict and also a feeling of professional incompetence (Van Dijk & Swaen, 2003). This leads to sense of low job satisfaction, as in the case of burnout.

When it is taken into consideration that the education system has been restructured to such an extent as to improve the quality and allow equal access to all, the implications for Burnout and Chronic Fatigue Syndrome in the academic occupational context become that much clearer, even more so when considering the drastic reductions in creativity and teaching ability. A lack of creativity and a decrease in teaching ability results in inadequate educational services, as well as reduced qualitative and quantitative research capacity. Bayram et al. (2010, p. 42) highlights the severity of the disadvantages of stress on academics; "What good is

an academic environment without quality teaching and researching activities? The answer is not much."

2.8 CONCLUSION

This chapter has provided a description as well as a background to the development and more modern conceptualisation of Chronic Fatigue and Burnout Syndrome, in order to aid the reading in interpreting the data, and to better place the findings within the context of existing literature. Additionally, it has demonstrated the impact which the professional context has on the experience of stress and fatigue, particularly so in regard to academia, and the implications thereof. This alludes to the importance of investigating chronic fatigue and burnout within this particular environment, considering the expected output of academia in regard to securing a stable, positive and productive future for the country. The following chapter will describe the methodology that was used to carry out this study.

CHAPTER 3: METHODOLOGY

3.1 INTRODUCTION

As this study aims to investigate the relationship between Burnout Syndrome and Chronic Fatigue Syndrome among academics in a pre-determined tertiary institution, a correlational survey research design incorporating structural equation modelling has been used, and data has been collected using an online survey consisting of demographic items and various instruments. This chapter will outline the research strategy and design, followed by the sampling techniques and a discussion of the actual sample that was obtained during data collection. Each of the instruments that were used will be described, as well as the scoring mechanism for each instrument and the overall data analysis plan. Lastly, the chapter will conclude with ethical considerations as well as challenges experienced during the research process.

3.2 RESEARCH DESIGN

A correlational survey research design was utilised; in particular, an online survey was distributed to targeted individuals in a pre-determined South African academic institution. Babbie (2013, p. 270) states that “Surveys may be used for descriptive, explanatory, and exploratory purposes. They are chiefly used in studies that have individual people as the units of analysis.” As per the nature of this study, an exploratory approach was taken whereby individuals in a specific population were studied to determine the prevalence of chronic fatigue and burnout, after which various relationships between the variables were further explored.

3.3 SAMPLING

The study used non-probability sampling in order to select participants for inclusion in the study. Non-probability sampling does not make use of random sampling techniques, and as such is often more open to the possibility of bias, potentially making the sample less representative and generalizable (Babbie, 2013). This should be considered when interpreting the findings of this study and generalising them to other populations. Non-probability sampling was used primarily due to time and cost constraints.

More specifically, non-probability convenience sampling was used. Convenience sampling is a sampling method whereby participants are selected based on their ease of participation and proximity to the research (Gravetter & Forzano, 2006). Individuals were selected based on their availability to participate in the study from a single tertiary academic institution.

3.3.1 SAMPLING FRAME

The sampling frame consisted of lecturers from a South African tertiary academic institution, which includes staff members employed across a variety of positions ranging from junior lecturer to professor. The reasoning for selecting lecturers and not staff members in general was the inherent differences between the various occupational positions which result in different reactions to and experiences of stress in the professional context, as has been highlighted in the literature review.

3.3.2 Sample Description

The sample that was obtained during data collection consists of 69 respondents, of which 57 indicated that they do lecture at the institution, thus rendering them suitable to participate in the research. Respondents varied on a number of demographic characteristics which are described below.

3.3.2.1 Age

As per Figure 3, the majority of participants are between the ages of 30 and 50 (56.52%), whereas the remainder is roughly evenly distributed on either side. The youngest participant was 23 years of age, and the oldest 72. The mean age for all participants is 40.36 years (SD = 11.08).

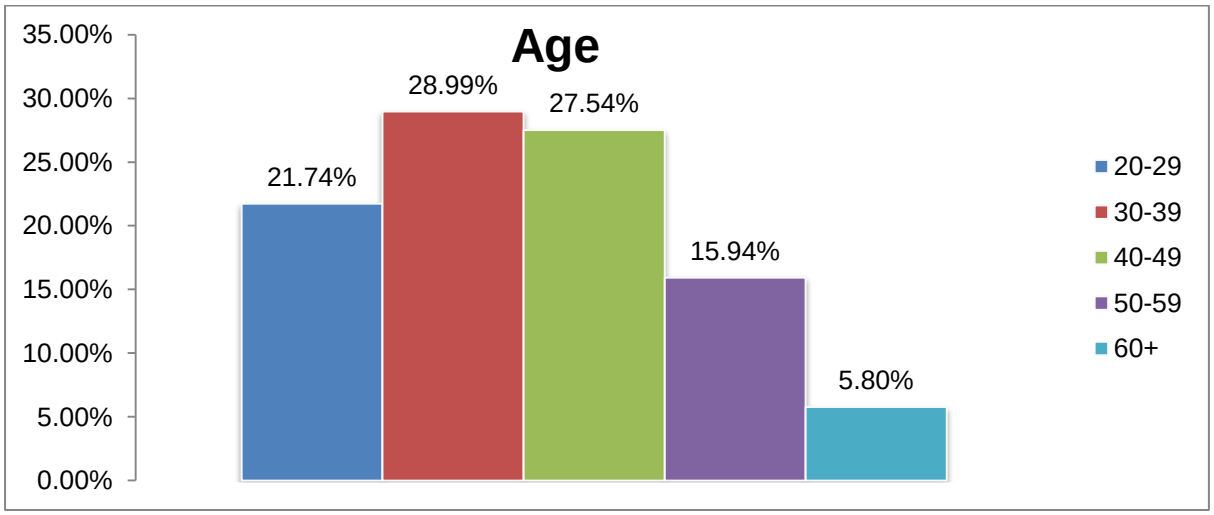

Figure 3: Sample Age

3.3.2.2 GENDER

The vast majority of respondents (75.36%) where female, whereas only 24.64% were male. Figure 4 shows the distribution of gender.

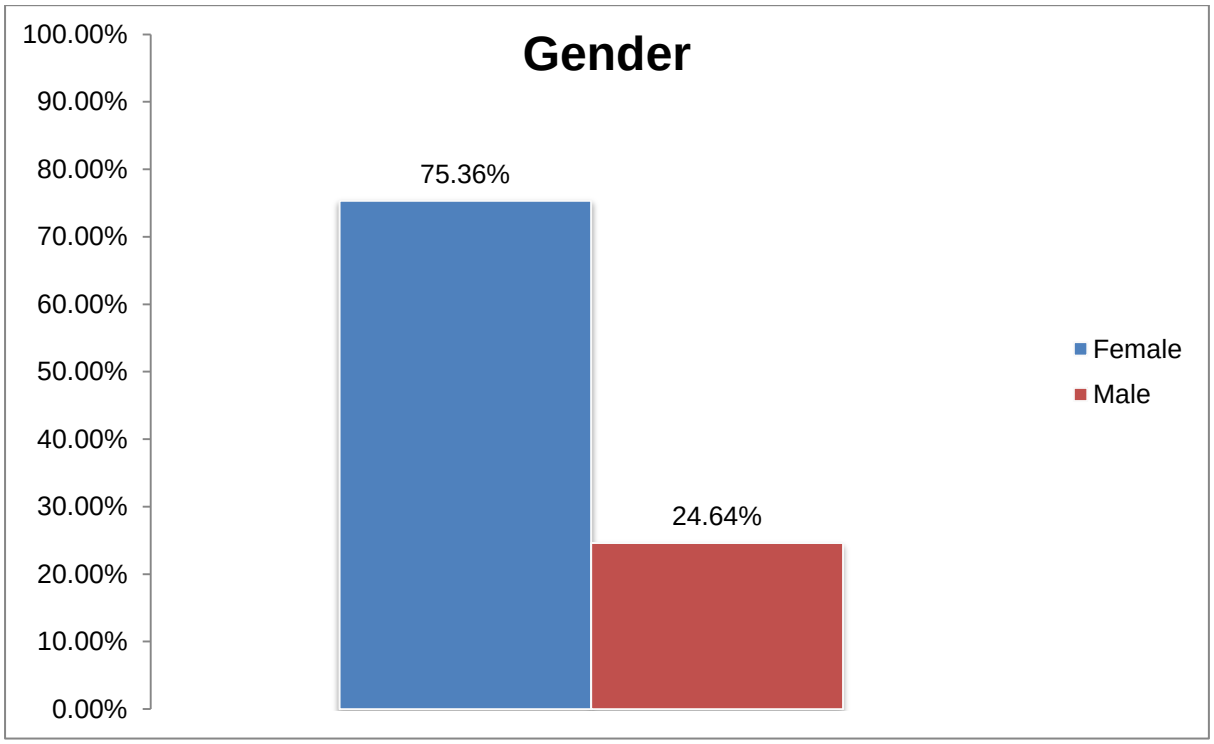

Figure 4: Sample Gender

3.3.2.3 RACE

The majority of participants who responded to the online survey are White (75.36%), followed by African (14.49%) and Indian (8.70%). The remaining participants are Coloured. Figure 5 shows the race distribution of participants that were included in the sample.

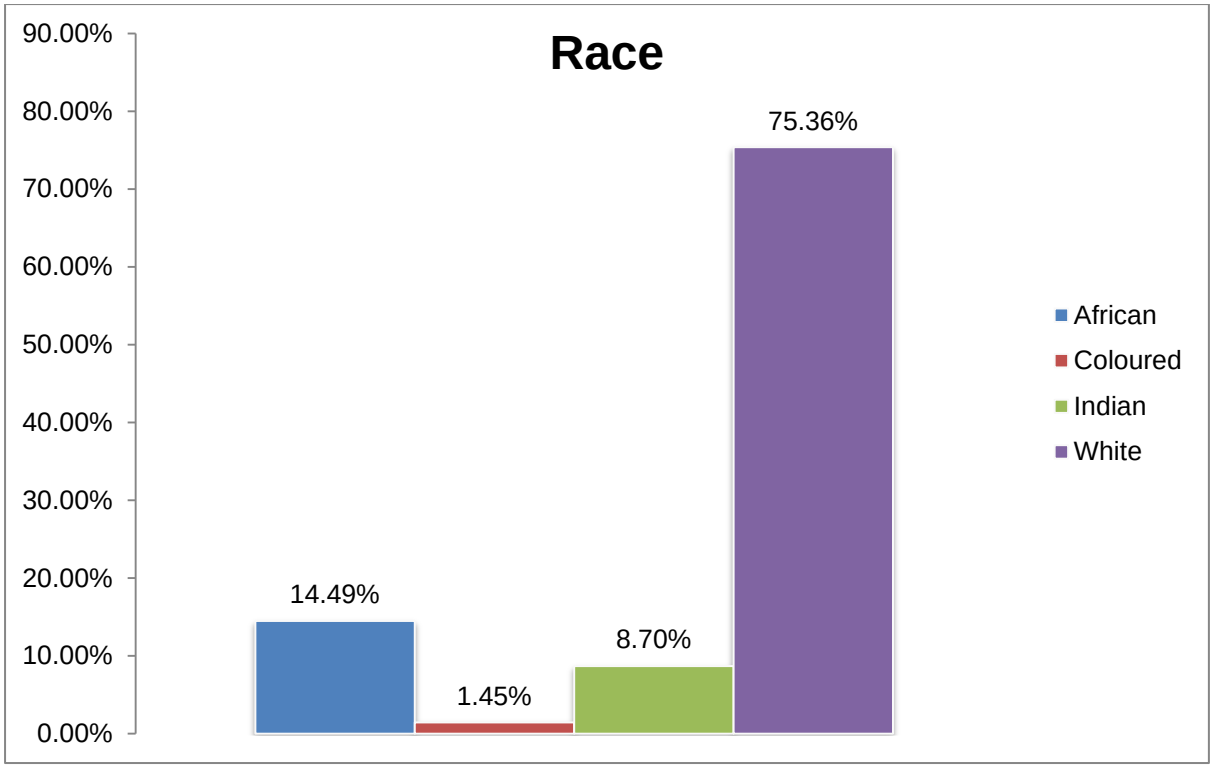

Figure 5: Sample Race

3.3.2.4 YEARS IN CURRENT EMPLOYMENT

Individuals present a fairly wide distribution across the number of years in current employment, ranging widely between 0 years and as many as 38 years. The average number of years in current employment is 8.74 years (SD = 9.1). Figure 6 shows the distribution of years in current employment.

Figure 6: Sample Years in Current Employment

3.3.2.5 CURRENT POSITION

The majority of respondents (73.91%) indicated that they currently occupy a lecturing position at the tertiary institution, most of which are either senior lecturers (26.09%) or lecturers (20.29%). As many as 26.09% of all participants stated that they occupy “other” positions, most of which were in a research capacity. Of the 26.09%, however, slightly fewer than 10% still reported that they have lecturing responsibilities at the academic institution. Figure 7 shows the distribution of current positions that were held by respondents at the time of the survey.

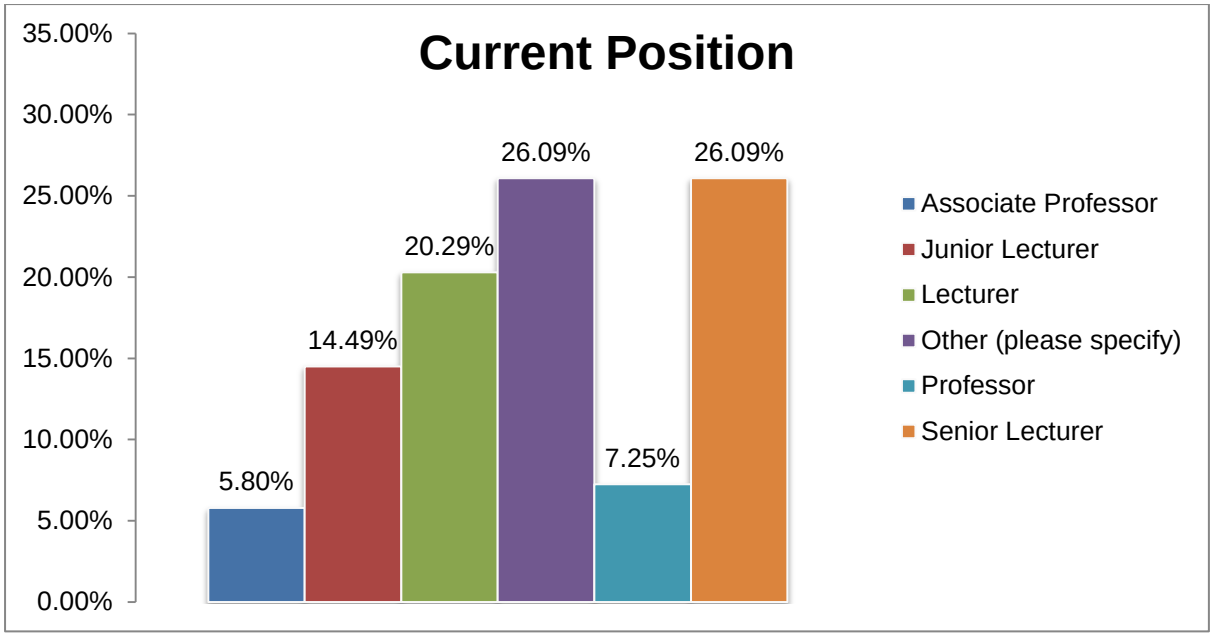

Figure 7: Sample Current Position

3.4 MEASUREMENT INSTRUMENTS

In order to investigate the relationship between Burnout and Chronic Fatigue Syndrome, variables were measured using the Oldenburg Burnout Inventory (OLBI), the Social Support Scale, the Overall Job Satisfaction Scale, and the Centre for Disease Control's Chronic Fatigue Syndrome Symptom Inventory (CDC CFS Symptom Inventory). The questionnaires were also supplemented with items for biographical and demographic information. Each of these instruments will be discussed in more detail below. The actual questionnaire can be found attached in the Appendix 1.

3.4.1 OLDENBURG BURNOUT INVENTORY (OLBI)

Burnout was measured using the Oldenburg Burnout Inventory (OLBI). The OLBI measures two key aspects of burnout, namely exhaustion and disengagement (Demerouti & Bakker, 2008). Exhaustion is defined as intense physical, emotional and cognitive exertion; exhaustion is the long term result of occupational demands.

Disengagement refers to the person's removal from their work in whole, in terms of both object and context (Demerouti & Bakker, 2008).

The exhaustion section (items 2, 4, 5, 8, 10, 12, 14 and 16) and disengagement section (items 1, 3, 6, 7, 9, 11, 13 and 15) each consist of eight items. The OLBI therefore consists of a total of 16 items. Items are answered on a four-point Likert scale where 1=completely disagree and 4=completely agree. The OBLI shows good reliability and validity (Abdool Karrim Ismail, 2010; Demerouti & Bakker, 2008). Convergent-validity with the MBI-GS – the Maslach Burnout Inventory General Survey; at one point, the most commonly used instrument for measuring burnout – has been confirmed in the United States and Greece, with the estimated correlation higher than r = .70 in both studies. The test-retest reliability of the study, according to Demerouti and Bakker (2008) has been confirmed for time lags of four months. Furthermore, the exhaustion subscale has been shown to be stable with an auto-correlation of .51. The reliability for both exhaustion and disengagement is .85.

In order to establish whether the OLBI yielded reliable results for this study, Cronbach's Alpha was calculated. The results are indicated in Table 1 below.

Table 1: OLBI Reliability

Cronbach's Alpha	Sample Size (n)	N of Items
0.834	69	16

As can be seen, the reliability coefficient is relatively high, which indicates good internal consistency. As such, the instrument was suitable for use in this study.

Permission was obtained from the developer to use the instrument in the present study.

3.4.2 Centre for Disease Control's Chronic Fatigue Syndrome Symptom Inventory (CDC CFS Symptom Inventory)

Chronic Fatigue Syndrome was measured using the Centre for Disease Control's Chronic Fatigue Syndrome Symptom Inventory (CDC CFS Symptom Inventory). The CDC CFS Symptom Inventory measures the presence, frequency and intensity of 19 fatigue-related symptoms, including eight symptoms that define Chronic Fatigue Syndrome (classified as core symptoms). It also includes diarrhoea, fever, chills, sleep-related problems, nausea, stomach or abdominal pain, sinus or nasal problems, breathing deficiencies, light sensitivity, and depression (Wagner et al., 2005). The observed frequency of each symptom is rated on a four-point Likert scale; 1 = a little of the time, 2 = some of the time, 3 = most of the time, 4 = all of the time. The severity and intensity of the symptoms is measured on a three-point LIkert scale; 1 = mild, 2 = moderate, 3 = severe. According to Wagner et al. (2005), the CDC CFS Symptom Inventory shows good reliability and validity. In a study by Wagner et al. (2005) to determine the psychometric properties of the CDC CFS Symptom Inventory, Cronbach's alpha coefficients were .89 for general fatigue, .82 for physical fatigue, .90 for reduced activity, .77 for reduced motivation, and .92 for mental fatigue. The total score for the inventory was .88, and .87 for the short-form. Strong convergent validity was shown for the MFI, Chalder Fatigue Scale, and SF-36 subscales. In terms of construct validity, all Bonferroni post-hoc comparisons between never fatigued controls and those classified as CFS or IFS showed significant mean differences related to symptom inventory scores (Bonferroni post-hoc test; $p < .05$).

In order to establish whether the CDC CFS Symptom Inventory yielded reliable results for this study, Cronbach's Alpha was calculated for those items used to determine the prevalence of chronic fatigue, and for calculating overall scores. The results are indicated in Table 2 below.

Table 2: CDC CFS Symptom Inventory Reliability

Cronbach's Alpha	Sample Size (n)	N of Items
0.940	69	57

As can be seen, the reliability coefficient is relatively high, which indicates good internal consistency. As such, the instrument was suitable for use in this study.

3.4.3 Overall Job Satisfaction Scale

The Overall Job Satisfaction Scale was originally developed by Cammann, Fichman, Jenkins and Klesh (1983) and consists of only three items to determine an individual's occupational satisfaction. Participants respond using a 7-point Likert Scale, where 1 = strongly disagree and 7 = strongly agree. The three items are as follows;

1) All in all, I am satisfied with my job
2) In general, I don't like my job
3) I general, I like working here

Fields (2002) investigated the Overall Job Satisfaction Scale to determine if the instrument was reliable and valid. Fields (2002) reported coefficient alpha values ranging from 0.67 to 0.95. Furthermore, the instrument was found to positively correlate with various similar constructs such as positive affectivity, job involvement, distribution of risk exposure in the workplace, and organisational commitment, whilst correlating negatively with employees' off-job focus, perceived danger, perceived risk, task distractions and intent to leave (Siegall & McDonald, 1995). The Overall Job Satisfaction Scale is thus considered to be an appropriate instrument to determine job satisfaction amongst the sample. The simplicity of the instrument

allowed it to be seamlessly incorporated into the online questionnaire, thus adding minimal time to participation in the study.

In order to establish whether the Overall Job Satisfaction Scale yielded reliable results for this study, Cronbach's Alpha was calculated. The results are indicated in Table 3.

Table 3: Overall Job Satisfaction Scale Reliability

Cronbach's Alpha	Sample Size (n)	N of Items
0.820	69	3

As can be seen, the reliability coefficient is relatively high, which indicates good internal consistency. As such, the instrument was suitable for use in this study.

3.4.4 Social Support Scale

In order to measure how much social support participants were receiving at the time of the study, the Social Support Scale was used. Like the Job Satisfaction Scale, the Social Support Scale consists of very few items – only four – and so it was easily embedded in the online questionnaire, without lengthening the questionnaire to the extent that it jeopardised willingness to participate in the study.

The Social Support Scale was developed by Caplan, Cobb, French, Van Harrison and Pinneau (1980), and the items target the support an individual receives at the workplace (such as from co-workers and supervisors) and in the personal environment (such as from one's spouse and friends). Participants respond using a 5-point Likert Scale, where 0 = don't have any such person, and 4 = very much.

Studies that have used the Social Support Scale have reported coefficient alpha values for the supervisor subscale ranging between 0.86 and 0.91 (Lee & Ashforth, 1993; Repeti & Cosmas, 1991) and 0.79 for co-worker support (Repeti & Cosmas, 1991). Finally, Lim (1996) found that the supervisor and co-worker support (work-based support) measured in the instrument correlated negatively with job security, job dissatisfaction and noncompliant job behaviours.

Based on the above, the Social Support Scale is considered to show sufficient reliability and validity, thus justifying its use in the study to measure social support amongst participants.

In order to establish whether the Social Support Scale yielded reliable results for this study, Cronbach's Alpha was calculated. The results are indicated in Table 4.

Table 4: Social Support Scale Reliability

Cronbach's Alpha	Sample Size (n)	N of Items
0.831	69	12

As can be seen in Table 4, the reliability coefficient is relatively high, which indicates good internal consistency. As such, the instrument was suitable for use in this study.

3.5 Data Collection Procedures

Initially, permission was obtained from various oversight committees within the university to conduct the study with staff members in general, and lecturers in specific. The intention was to use existing resources and structures to distribute the survey to all staff members in the institution. However, this was not possible, and as

such department secretaries were contacted and asked to distribute the online survey among staff members in the various departments.

The distribution of the survey took place via an email which explained the purpose of the study, and which contained a link to the actual survey. Potential participants agreed to participate by clicking on the link in the email, which would automatically direct them to the survey.

The online survey remained open (participants were able to complete the survey) over a select period of time (a month long period) to ensure that there was not significant time between responses, which could ultimately influence signs of chronic fatigue and burnout based on external factors.

3.6 Data Analysis

Data was analysed using a combination of descriptive and inferential statistics. The Statistical Package for Social Sciences (SPSS) Version 23© and IBM® SPSS® Amos™ 23 were used to carry out the analyses. Frequencies and distribution were generated to interpret the demographic information pertaining to the sample, and determine the prevalence of Chronic Fatigue and Burnout Syndrome among the sample. Structural Equation Modelling (SEM) was used to investigate the relationship between the two syndromes, as well as the contribution of other variables, including social support, job satisfaction, age, gender, and the number of physical symptoms reported by participants. Section 3.6.1 below provides more information about SEM.

3.6.1 Structural Equation Modelling

> *Structural equation modelling (SEM) is a tool for analysing multivariate data that has been long known… to be especially appropriate for theory testing… Structural equation models go beyond ordinary regression models to incorporate multiple independent and dependent variables as well as hypothetical latent constructs that clusters of observed variables might represent. They also provide a way to test the specified set of relationships among observed and latent variables as a whole, and allow theory testing even when experiments are not possible. As a result, these methods have become ubiquitous in all social and behavioural sciences* (Savalei & Bentler, 2003, p. 1).

Structural Equation Modelling (SEM) is a statistical technique primarily used for testing hypotheses regarding the relationship between multiple dependent and independent variables (Byrne, 2010). SEM determines the pathways that exist between variables which are represented by structural or regression equations, and then depicts the structural equations in a pictorial model (Ullman, 2001). In other words, SEM is used to investigate multiple relationships simultaneously and represent the outcome of the investigation visually in terms of predictor variables and dependent variables.

SEM is often considered a good alternative to ordinary regressions in situations where there are multiple dependent and independent variables, and where there are unobserved, latent variables (Savalei & Bentler, 2010). Additionally, SEM can be used to test a hypothesis or theory when it is not possible to conduct an experiment (Savalei & Bentler, 2010). Byrne (2010) states that this confirmatory approach taken by SEM (rather than an exploratory or descriptive approach typically taken by other statistical procedures) is one of its greatest strengths as it allows for greater inferential decision making.

Lastly, SEM allows one to test the models which are generated in regard to how well they fit with the data. This is referred to as goodness-of-fit, and is measured using a variety of different indices, some of which are discussed in section 4.7.5.1 (Bowen & Guo, 2012). The measures of goodness-of-fit allow one to test and improve on the models which are generated, thus improving the flexibility and effectiveness of SEM.

The most popular measure of goodness-of-fit is chi-square (χ^2), whereby lower χ^2 values which are found to be insignificant indicate better fit (Hollembeak & Amorose, 2005; Hooper, Coughlan & Mullen, 2008). The χ^2, however, by itself is not considered to be a sufficient, or at times an accurate, measure of the goodness of fit. According to Hooper et al., (2008) other measures should also be considered when carrying out SEM, such as parsimony fit indeces and the root mean square error of approximation (RMSEA). Parsimony fit indices take into account the number of estimated parameters of the model, thus providing a more realistic assessment of the model (Byrne, 2010). Parsimony fit indices approaching 1.0 indicate goodness-of-fit, although typically lower scores are obtained, and thus values ranging from 0.5 and above are considered acceptable (Hollembeak & Amorose, 2005). The Parsimony Normed Fit Index (PNFI) and Parsimony Ratio (PRATIO) are reported as parsimony fit indices for this study.

The RMSEA is considered one of the most informative indices for goodness-of-fit as it takes into account the error of approximation in the population (Byrne, 2010). According to Byrne (2010), RMSEA values lower than 0.05 indicate good fit, and between 0.06 and 0.1 indicate mediocre fit.

Baseline comparisons offer other indices which are used to demonstrate goodness-of-fit by comparing the actual model with the null model. Two such measures are the Normed Fit Index (NFI) and the Comparative Fit Index (CFI). The NFI can underestimate the goodness-of-fit with smaller samples, and as such, the

CFI is typically considered the better index with smaller samples (Byrne, 2010). The CFI has been reported, whereby values greater than 0.9 are desired for goodness-of-fit.

The Relative Fit Index (RFI) and Incremental Index of Fit (IFI) are similar to the NFI and CFI, although they tend to take degrees of freedom into account (Byrne, 2010). The IFI, much like the CFI, is typically a better indicator of goodness-of-fit with smaller samples, whereby values greater than 0.9 point towards a good fit. As such, the IFI has been reported rather than the RFI for this study.

3.7 Ethical Considerations

Any research study needs to take into account the gambit of ethical considerations which ultimately ensure the protection of any participants involved in said study. As per the American Psychological Association's Ethical Principles of Psychologists and Code of Conduct (as effective of June 2010), the following ethical considerations were made before, during, and after the present study.

Standard 1, section 1.06 states that psychologists need to cooperate and comply with the relevant ethics bodies prior to, and during the research process. Additionally, Standard 8, section 8.01 states that beyond cooperation with the relevant ethical bodies, institutional approval is required during which time the psychologist must provide accurate and detailed information regarding the research. Prior to conducting the research, details pertaining to the study were provided to the relevant faculty within the academic institution, along with the ethical body, and the oversight committee for conducting research with staff at the aforementioned institution. Approval was obtained from all of the above mentioned bodies.

Standard 3, section 3.10, along with Standard 8, section 8.02 both state that the psychologist requires informed consent from all potential participants, each of whom must be provided with necessary information regarding the study. In adherence with the above requirements, all potential participants were provided ample information regarding the purpose and nature of the study, and told of the potential risks (the survey requested personal and potentially sensitive information which could evoke an emotional reaction). Participants were informed that all of the information they provided would remain strictly confidential, and that they were not obliged to participate and could in fact withdraw from the study at any stage by simply closing the browser window. Participants who agreed with the above acknowledged agreement by clicking on the URL which opened the survey. Once open, the survey again reiterated the above. Additionally, the researcher provided his contact details so that any participant could contact him if they wished to do so.

Standard 4, sections 4.01 and 4.02, emphasise the importance of maintaining confidentiality. The data which was obtained will only be shared with the necessary individuals at the institution in which the study was hosted. Additionally, participants were not requested to provide their names, or sufficient information to identify them. As such, the study ensures both confidentiality and anonymity of all respondents. The data will be safely stored for a minimum period of ten years as complies with the policy of the institution in which the study was carried out.

Lastly, the study has made various recommendations regarding future research. Participants were informed prior to completing the survey that one of the purposes of the study was to contribute to future research, and as such, are aware of this.

3.8 CONCLUSION

This chapter provide detailed information pertaining to the methodology that was utilised in conducting the present study. A survey research design was used,

whereby the survey was distributed electronically using a web-based survey platform. Non-probability sampling was employed and the overall sample consisted of 69 respondents of which the majority were white female lecturers at the university in which the study was carried out.

A number of tested measurement instruments were used to collect data, all of which the psychometric properties are detailed in the relevant sections in this chapter. Where necessary, permission was obtained to use the instrument.

Lastly, precautions were taken to ensure adherence to the relevant ethical guidelines as described in the APA Ethical Principles of Psychologists and Code of Conduct, which includes obtaining permission from all relevant bodies, informed consent, confidentiality and anonymity. The next chapter provides the reader with the results from the study.

CHAPTER 4: RESULTS

4.1 INTRODUCTION

This chapter presents the results of the analysis that was carried out on the data collected during the study. As per the purpose of the study, the prevalence of both Burnout and Chronic Fatigue Syndrome will be shown. Following the initial discussion of prevalence, the relationship between the two syndromes, as well as the contribution of other variables towards each, will be demonstrated through Structural Equation Modelling (SEM). The other variables included in the analysis are age, gender, the number of physical symptoms recorded by participants, job satisfaction and social support.

4.2 INSTRUMENT SCORING

The OLBI consists of 16 items which measure two dimensions; exhaustion and disengagement. In order to score participants' responses to the OLBI, eight of the 16 items are reverse scored, and an average score is calculated for each of the two dimensions, as well as an overall score. A higher score is indicative of higher levels of burnout.

The CDC CFS Symptom Inventory captures a range of data pertaining to each of the symptoms associated with chronic fatigue, and includes additional 'non-core' symptoms which are not considered integral according to commonly used definitions. In order to calculate scores for the inventory, the same method used by Wagner et al. (2005) when calculating the psychometric properties of the inventory was replicated; the frequency score is multiplied with the intensity score. To convert intensity into a numerical score (from 0 – 4), equidistant scores were assigned to the response options whereby 0 = symptom not reported, 1 = mild, 2.5 = moderate, and

4 = severe. This results in a total possible score of 16 for each item (4x4). The items are then summed according to core and non-core symptoms, as well as overall, to determine the degree of chronic fatigue in the sample, whereby higher scores indicate higher levels of chronic fatigue.

The Overall Job-satisfaction Scale requires that one of the three items is reverse scored, after which an average can be calculated for each respondent. Lastly, the Social Support Scale contains only four items, but collects data for three different sources of social support (immediate supervisor, other people at work, immediate friends and family) within each of those items, thus generating 12 pieces of data. To generate scores, an average score can be calculated across the data set, whereby higher scores are indicative of higher levels of social support.

4.3 Prevalence of Burnout Syndrome

In order to investigate the prevalence of Burnout Syndrome, basic descriptive statistics were utilised and frequency distributions were generated. This has allowed the researcher to determine both the prevalence of burnout, as well as the extent to which it occurred in the group.

For all of the analysis, only those participants who indicated that they have lecturing responsibilities were included in the analysis, as the study specifically focuses on lecturers in a tertiary academic institution.

As was discussed in Chapter 3 (see section 3.4.1), the OLBI was used to measure burnout. The OLBI measures two components of burnout; exhaustion and disengagement. Scores for each of these subscales are provided below, after which the total scores for burnout are presented.

4.3.1 EXHAUSTION

The exhaustion subscale of the OLBI consists of eight items, which are scored along a 4-point Likert scale where 1 = Strongly agree, 2 = Agree, 3 = Disagree, and 4 = Strongly disagree. The scores for each of the items are provided in Table 5 below. Those items followed by (R) were reverse coded.

Table 5: OLBI Exhaustion Responses

Item	Data type	Response options					
		1	2	3	4	Total	Missing
There are days when I feel tired before I arrive at work (R)	Count	2	3	16	26	47	10
	%	4,26%	6,38%	34,04%	55,32%	100,00%	
After work, I tend to need more time than in the past in order to relax and feel better (R)	Count	2	5	17	23	47	10
	%	4,26%	10,64%	36,17%	48,94%	100,00%	
I can tolerate the pressure of my work very well	Count	5	22	15	5	47	10
	%	10,64%	46,81%	31,91%	10,64%	100,00%	
During my work, I often feel emotionally drained (R)	Count	1	8	26	12	47	10
	%	2,13%	17,02%	55,32%	25,53%	100,00%	
After working, I have enough energy for my leisure activities	Count	3	9	19	16	47	10
	%	6,38%	19,15%	40,43%	34,04%	100,00%	
After my work, I usually feel worn out and weary (R)	Count	1	11	22	13	47	10
	%	2,13%	23,40%	46,81%	27,66%	100,00%	
Usually, I can manage the amount of my work well	Count	8	28	9	2	47	3
	%	17,02%	59,57%	19,15%	4,26%	100,00%	
When I work, I usually feel energized	Count	5	19	20	3	47	3
	%	10,64%	40,43%	42,55%	6,38%	100,00%	

Due to the reverse coding, higher scores signify a greater degree of exhaustion, whereas lower scores are more positive and indicate a lesser degree of exhaustion. As can be seen in the table above, a large percentage of participants obtained relatively high scores in regard to exhaustion; in almost all of the categories the majority of participants indicated either a 3 or above. Almost 90% of the participants indicated that there are days when they feel tired before arriving at work. Around 85% stated that after work they require more time than what they did in the past in order to relax and feel better. The majority of respondents feel that they are able to handle the pressure of their work (57.45%) as well as the amount of work (76.60%). Roughly half of the participants in the sample reported that they feel energised when working, whereas the other half does not.

Figure 8 demonstrates the mean for each of the items, whereby scores above the midpoint of the rating scale (2.5) lean towards burnout.

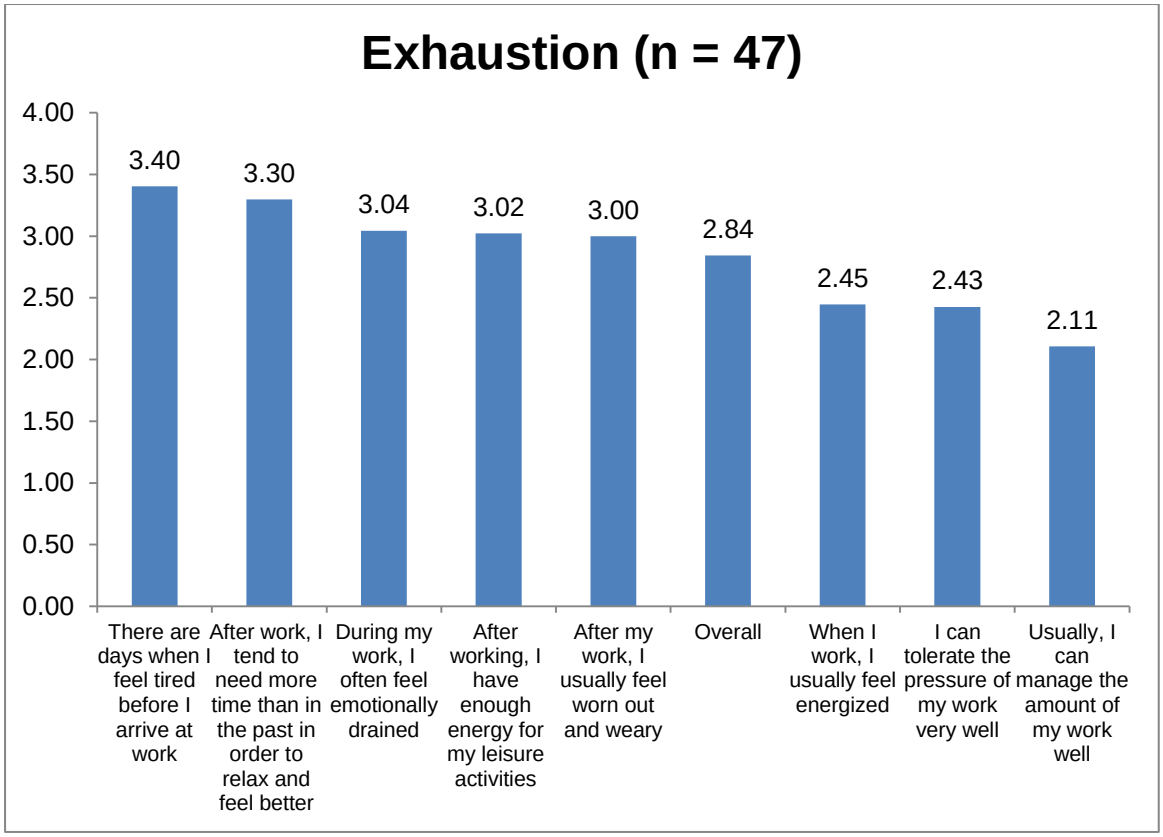

Figure 8: OLBI Exhaustion Responses

Based on Figure 8, it is clear that the average scores across the items indicate high risks for burnout in regard to the exhaustion subscale in the OLBI. Table 6 below descriptive information for OLBI Exhaustion scores.

Table 6: OLBI Exhaustion Scores

Description	Exhaustion
Sample size	47
Mean	2,84
Std deviation	0,55
Max	3,75
Min	1,125

The mean score on the exhaustion subscale of the group was 2.84, which can be considered indicative of a group at risk of exhaustion, one of the components of burnout.

4.3.2 DISENGAGEMENT

The disengagement subscale of the OLBI consists of eight items, which are scored along a 4-point Likert scale from where 1 = Strongly agree, 2 = Agree, 3 = Disagree, and 4 = Strongly disagree. The scores for each of the items are provided in Table 7 below. Those items followed by (R) were reverse coded.

Table 7: OLBI Disengagement Responses

Item	Data type	Response options					
		1	2	3	4	Total	Missing
I always find new and interesting aspects in my work	Count	10	26	10	1	47	10
	%	21,28%	55,32%	21,28%	2,13%	100,00%	
It happens more and more often that I talk about my work in a negative way (R)	Count	2	11	20	14	47	10
	%	4,26%	23,40%	42,55%	29,79%	100,00%	
Lately, I tend to think less at work and do my job almost mechanically (R)	Count	6	16	24	1	47	10
	%	12,77%	34,04%	51,06%	2,13%	100,00%	
I find my work to be a positive challenge	Count	7	21	18	1	47	10
	%	14,89%	44,68%	38,30%	2,13%	100,00%	
Over time, one can become disconnected from this type of work (R)	Count	1	17	26	3	47	10
	%	2,13%	36,17%	55,32%	6,38%	100,00%	
Sometimes I feel sickened by my work tasks (R)	Count	6	20	15	6	47	10
	%	12,77%	42,55%	31,91%	12,77%	100,00%	
This is the only type of work that I can imagine myself doing	Count	10	14	16	7	47	10
	%	21,28%	29,79%	34,04%	14,89%	100,00%	
I feel more and more engaged in my work	Count	5	18	19	5	47	10
	%	10,64%	38,30%	40,43%	10,64%	100,00%	

As can be seen from Table 7, there is a slightly more even distribution across the items for disengagement when compared with exhaustion (see Table 5). There are, however, several items whereby the group demonstrates greater risk for burnout in regard to the disengagement sub-component. 72.34% of the group find that more often they tend to speak about their work in a negative way. 61.7% reported that over time an individual can become disconnected from the type of work they are

doing. On the other hand, quite positively, roughly three quarters of the group (76.60%) indicated that they always find new and interesting aspects in their work.

Figure 9 shows the mean for each of the items, whereby scores above the centre of the rating scale (2.5) lean towards burnout.

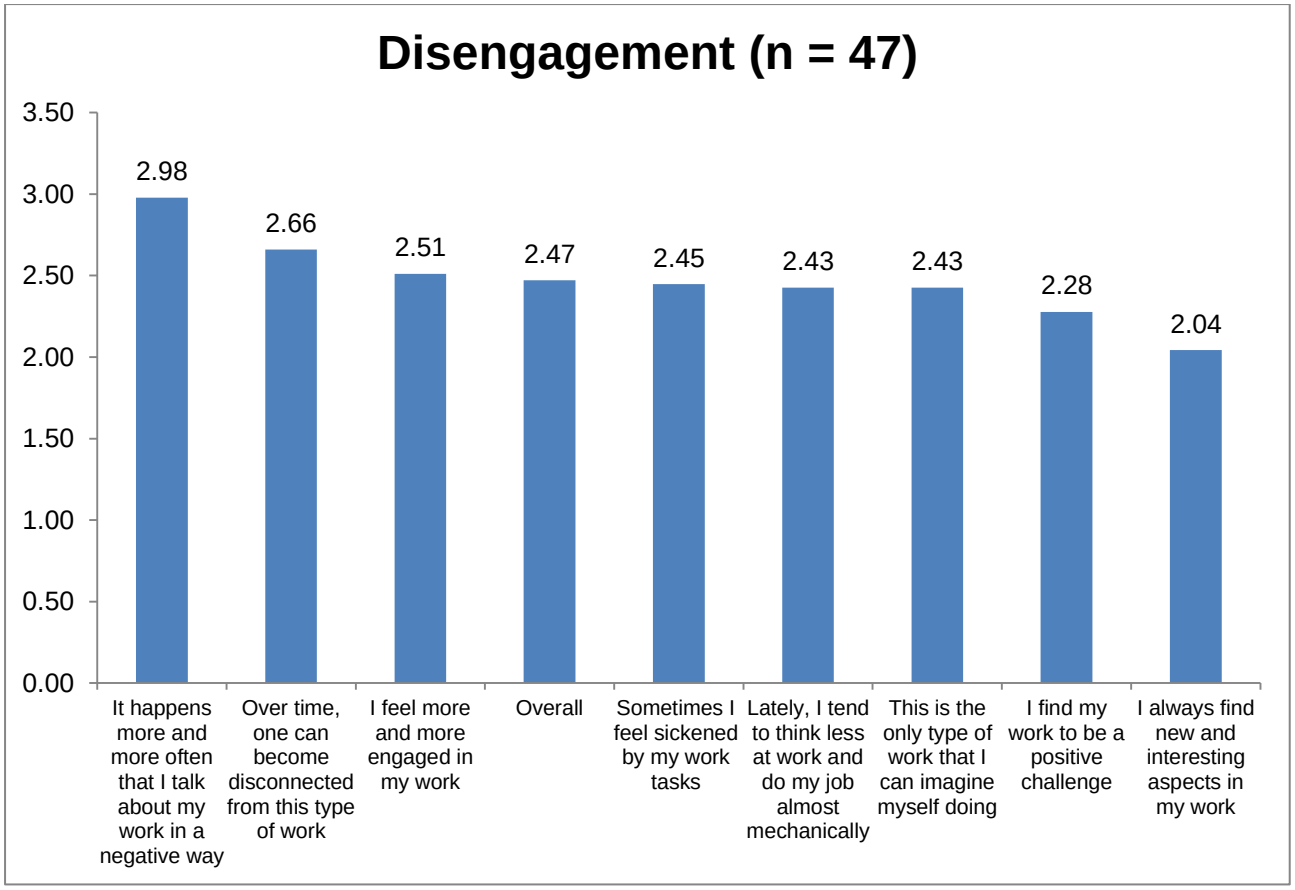

Figure 9: OLBI Disengagement Scores

While there are several items that lean towards high risk for disengagement, we find that overall, and across the majority of items, the group falls below the midpoint of the rating scale (2.5) which indicates a lesser degree of risk. Table 8 provides descriptive information pertaining to the scores given for the disengagement sub-component of the OLBI.

Table 8: OLBI Disengagement Scores

Description	Exhaustion
Sample size	47
Mean	2,47
Std deviation	0,47
Max	3,38
Min	1,38

Overall, the group scored slightly under the midpoint of the rating scale for disengagement (2.47 out of a possible 4). This suggests that the group as a whole was not at immediate risk for disengagement at the time of the survey, although there are still individuals within the group who were at risk. The section below analyses the prevalence of burnout in more detail, and Figure 11 demonstrates the percentage of individuals in the study who could be classified as at risk.

4.3.3 Burnout Overall

The overall scores for burnout are calculated by combining the individual scores for exhaustion and disengagement. Table 9 shows the mean scores for both of the subscales, as well as the burnout score overall.

Table 9: OLBI Overall Scores

Description	Exhaustion
Sample size	47
Mean Exhaustion	2,84
Mean Disengagement	2,47
Mean Burnout	2,66
Std deviation (Burnout)	0,44
Max (Burnout)	3,31
Min (Burnout)	1,44

As can be seen from Table 9, the mean score for burnout across the sample of participants is 2.66. This score is above the midpoint score of the rating scale (2.5) which suggests that the group, on average, is at risk for burnout. Figure 10 shows the contribution towards the overall score from the two subscales; exhaustion and disengagement.

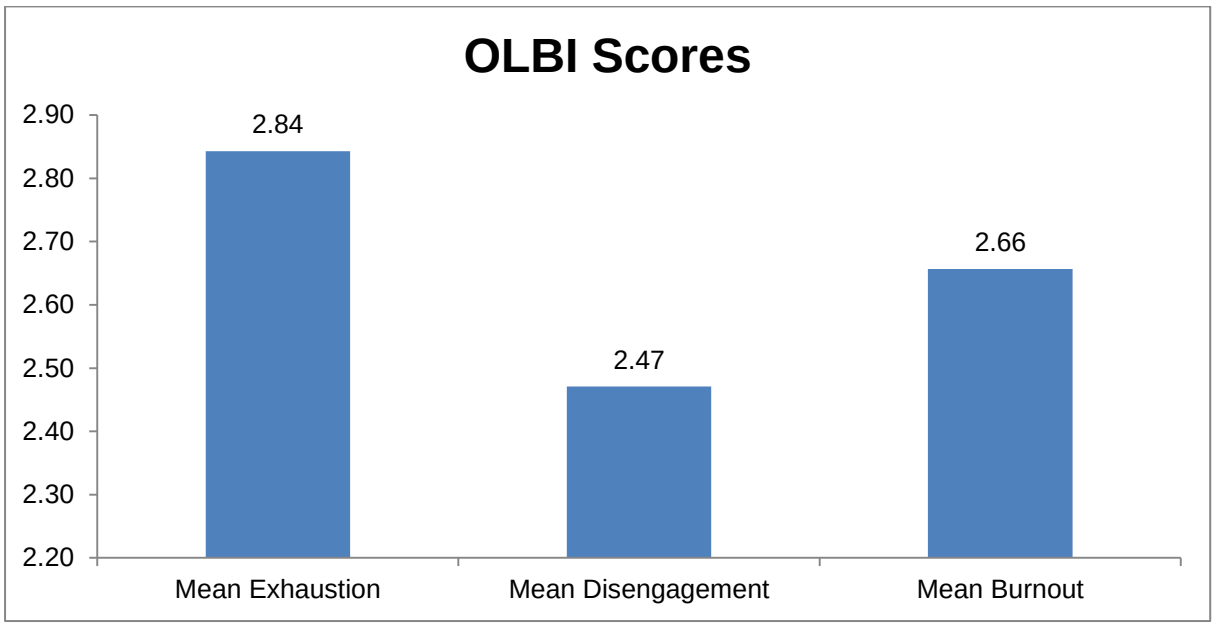

Figure 10: OLBI Overall Scores

While the overall score is above the midpoint (2.5) it is clear from Figure 10 that there is a relatively large difference between the two subscales. Exhaustion contributes far more towards the overall score than disengagement. This would suggest that exhaustion, rather than disengagement, appears to be the concerning issue among the sample.

In order to determine the prevalence of burnout among the group, it is useful to re-categorise overall scores according to four groupings which are as follows: 1 – 2 = very low risk, 2 – 2.5 = low risk, 2.5 – 3 = some risk, and 3 – 4 = high risk. This would allow one to better gauge the prevalence of burnout in the sample. Figure 11 shows the percentage of participants scoring in each of the above categories.

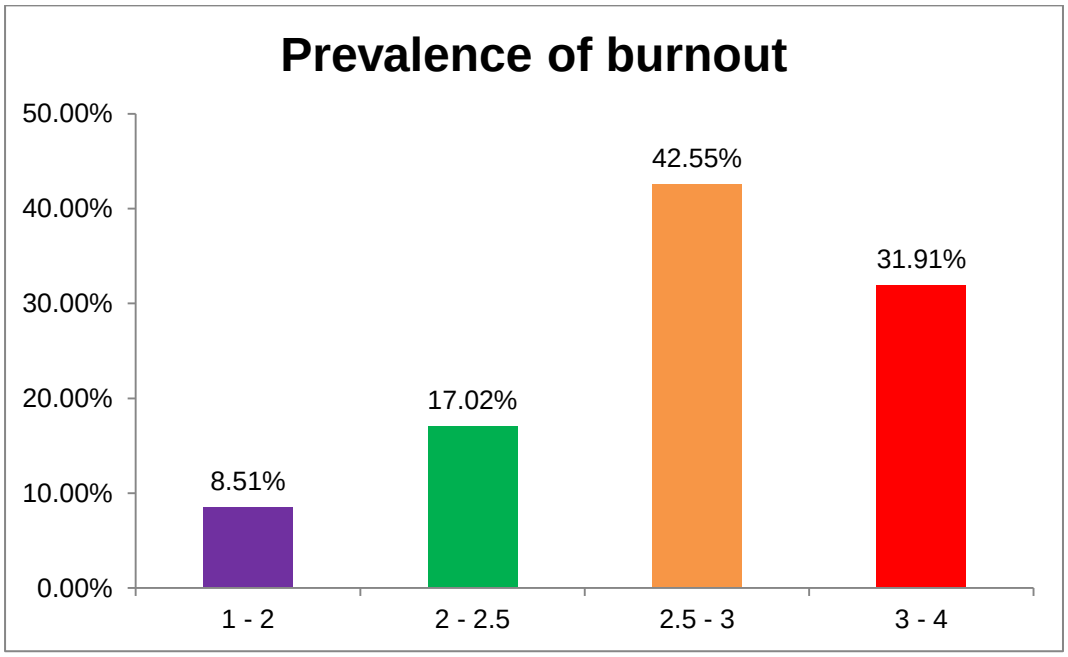

Figure 11: OLBI Score Categories

As can be seen from Figure 11, as many as 42.55% of the group are at some risk, and a further 31.91% are at high risk of burnout. Overall, as much as 74.47% of the group is at risk of burnout.

4.4 PREVALENCE OF CHRONIC FATIGUE SYNDROME

Basic descriptive statistics and frequency distributions were generated to investigate the prevalence of Chronic Fatigue Syndrome among the participants. This has allowed the researcher to determine both the prevalence of chronic fatigue, as well as the extent to which it occurred in the group.

As was discussed in Chapter 3 (see section 3.3.2), chronic fatigue was measured using the CDC CFS Symptom Inventory which includes the eight core symptoms of chronic fatigue (measured across nine items as cognitive processes have been separated into two categories) as well as an additional ten non-core symptoms. The findings for both core and non-core symptoms will be presented below, after which overall findings will be presented.

4.4.1 CORE SYMPTOMS

Respondents were asked to indicate whether several core symptoms of chronic fatigue had been a problem over the month prior to completing the survey. The results are presented in Table 10.

Table 10: CDC CFS Symptom Inventory Core Symptom Responses

Item		Response options			
		No	Yes	Total	Missing
Sore throat	Count	22	30	52	5
	%	42,31%	57,69%	100,00%	
Lymph nodes, swollen glands	Count	33	18	51	6
	%	64,71%	35,29%	100,00%	
Fatigue	Count	4	46	50	7
	%	8,00%	92,00%	100,00%	
Muscle aches and pains	Count	11	39	50	7
	%	22,00%	78,00%	100,00%	
Joint pain	Count	32	18	50	7
	%	64,00%	36,00%	100,00%	
Unrefreshing sleep	Count	6	44	50	7
	%	12,00%	88,00%	100,00%	
Headaches	Count	18	32	50	7
	%	36,00%	64,00%	100,00%	
Memory	Count	32	18	50	3
	%	64,00%	36,00%	100,00%	
Thinking and concentration	Count	28	22	50	3
	%	56,00%	44,00%	100,00%	

As can be seen from Table 10, several symptoms were experienced by the majority of the group, including sore throat (57.69%), fatigue (92.00%), muscle aches and pains (78.00%), unrefreshing sleep (88.00%) and headaches (64.00%). Figure 12 demonstrates the prevalence of each of the symptoms.

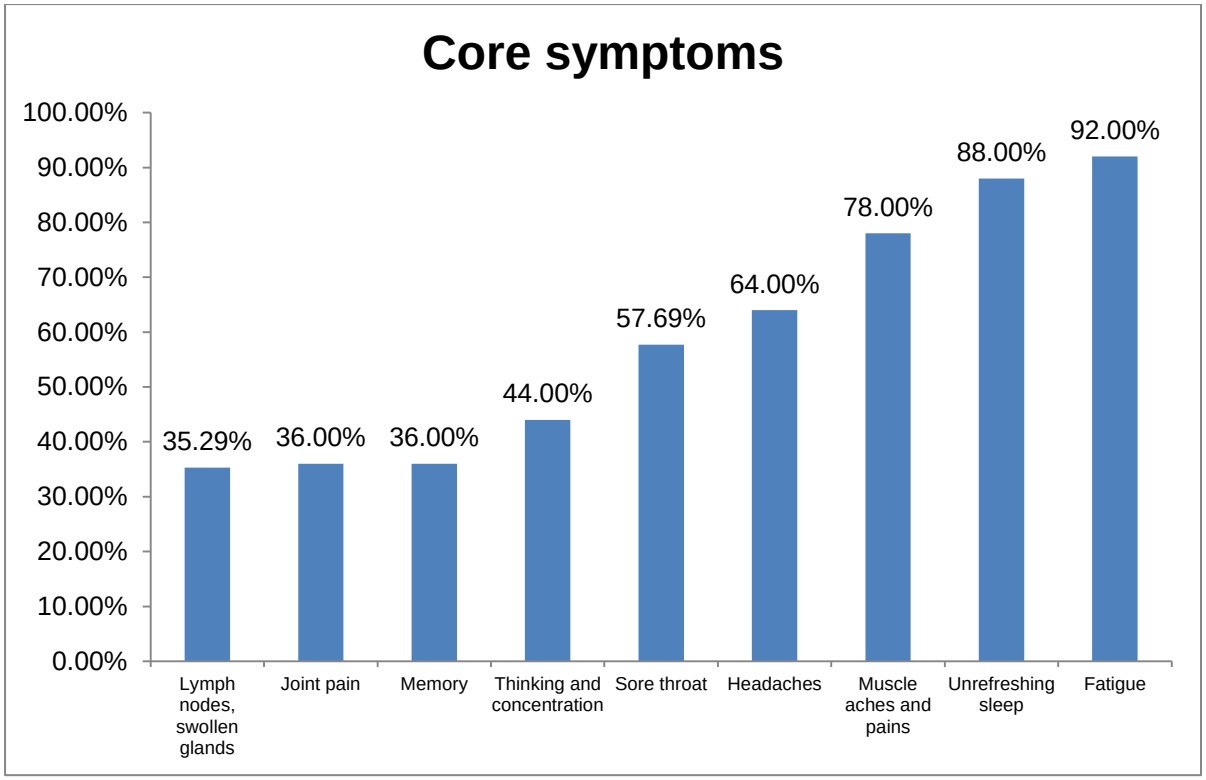

Figure 12: CDC CFS Symptom Inventory Core Symptom Responses

An important criteria used when assessing chronic fatigue is the number of symptoms experienced concurrently. The figure above clearly shows that many of the core symptoms measured in the CDC CFS Symptom Inventory were present in the group. Table 11 shows the mean of the core symptoms experienced by the participants.

Table 11: CDC CFS Symptom Inventory Core Symptom Scores

Description	Core Symptoms
Sample size	50
Mean	5,30
Std deviation	2,27
Max	9,00
Min	0

The mean number of core symptoms reported by the participants was 5.3. Mean scores, however, are sensitive to outliers. As such, it is beneficial to provide a frequency distribution for the number of symptoms reported by the participants. Table 12 shows the number and percentage of participants according to the number of symptoms reported.

Table 12: Number of Core Symptoms

Number of symptoms	Frequency	Percent	Cumulative percent
0	2	4,0%	4,0%
1	2	4,0%	8,0%
2	2	4,0%	12,0%
3	5	10,0%	22,0%
4	4	8,0%	30,0%
5	10	20,0%	50,0%
6	7	14,0%	64,0%
7	10	20,0%	84,0%
8	6	12,0%	96,0%
9	2	4,0%	100,0%
Total	50	100,0%	100,0%

According to the CDC's criteria for diagnosing Chronic Fatigue Syndrome, it is required that an individual has, or is currently experiencing at least four of the core-symptoms concurrently. As per Table 12, as much as 78% of the group reported that they had experienced at least four of the core-symptoms in the month prior to taking the survey. Additionally, 38% reported as many as seven or more symptoms.

4.4.2 NON-CORE SYMPTOMS

Respondents were asked to indicate whether several non-core symptoms of chronic fatigue had been a problem over the month prior to completing the survey. The results are presented in Table 13.

Table 13: CDC CFS Symptom Inventory Non-core Symptoms Responses

Item		Response options			
		No	Yes	Total	Missing
Diarrhoea	Count	27	24	51	6
	%	52,94%	47,06%	100,00%	
Fever	Count	40	10	50	7
	%	80,00%	20,00%	100,00%	
Chills	Count	39	11	50	7
	%	78,00%	22,00%	100,00%	
Sleeping	Count	12	38	50	7
	%	24,00%	76,00%	100,00%	
Nausea	Count	37	13	50	7
	%	74,00%	26,00%	100,00%	
Stomach pain	Count	34	16	50	7
	%	68,00%	32,00%	100,00%	
Sinus and nasal	Count	20	30	50	7
	%	40,00%	60,00%	100,00%	
Shortness of breath	Count	38	12	50	7
	%	76,00%	24,00%	100,00%	
Sensitive to light	Count	30	20	50	7
	%	60,00%	40,00%	100,00%	
Depression	Count	20	30	50	7
	%	40,00%	60,00%	100,00%	

From Table 13 we can see that fewer non-core symptoms were reported by the majority of the group; only sleeping problems (76.00%), sinus and nasal problems (60.00%), and depression (60.00%) had been experienced by most of the participants. In regard to many of the non-core symptoms, they are not typically considered directly associated with chronic fatigue and as such they would not necessarily be expected to feature as prominently as the core features of chronic fatigue. Depression, however, is clearly less of a physical, biological symptom than the others. Research suggests that individuals experiencing chronic fatigue and burnout also often experience certain mood disorders such as depression (Fischer, Kumar & Hatcher, 2007). Considering the previous section on the core symptoms, it is not surprising that the majority of the group reported having felt depressed in the month prior to having taken the survey.

Figure 13 shows the prevalence of each of the non-core symptoms which were measured.

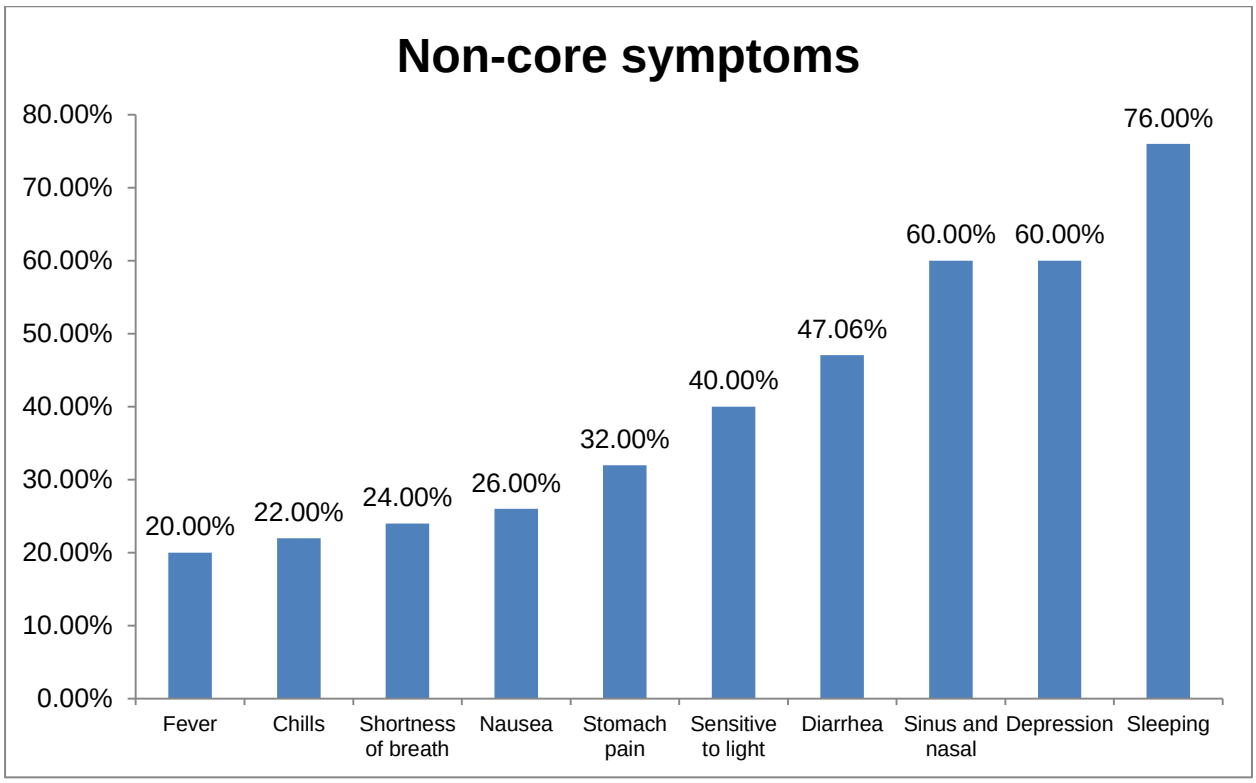

Figure 13: CDC CFS Symptom Inventory Non-core Symptom Responses

As was done with the core symptoms, a more accurate representation of the potential prevalence of chronic fatigue could be made by observing the number of symptoms experienced by individuals. Table 14 demonstrates the average number of non-core symptoms of chronic fatigue reported by participants in the sample.

Table 14: CDC CFS Symptom Inventory Non-core Symptoms Scores

Description	Non-core Symptoms
Sample size	50
Mean	4,08
Std deviation	2,41
Max	9,00
Min	0

Table 14 shows that the mean number of non-core symptoms within the sample is 4.08. Table 15 further breaks down the number of non-core symptoms experienced by the participants.

Table 15: Number of Non-core Symptoms

Number of symptoms	Frequency	Percent	Cumulative percent
0	4	8,0%	8,0%
1	6	12,0%	20,0%
2	5	10,0%	30,0%
3	2	4,0%	34,0%
4	9	18,0%	52,0%
5	10	20,0%	72,0%
6	9	18,0%	90,0%
7	0	0,0%	90,0%
8	3	6,0%	96,0%
9	2	4,0%	100,0%
Total	50	100,0%	100,0%

While the criteria for diagnosing Chronic Fatigue Syndrome, as per the CDC, does not specifically refer to additional symptoms, it is interesting to note that over half the group (56.00%) reported between four and six non-core symptoms of chronic fatigue during the month prior to having completed the survey. An additional 10.00% indicated that they had experienced between eight and nine of the symptoms concurrently.

4.4.3 Chronic Fatigue Overall

When looking only at the eight core symptoms of chronic fatigue, measured across nine items in the CDC CFS Symptom Inventory, we find that as many as 78% of the group met the criteria for having experienced four symptoms concurrently. When we consider both the core and non-core symptoms, we find that a larger percentage of the group is at risk for Chronic Fatigue Syndrome. Table 16 below

shows the mean number of symptoms experienced for both core and non-core symptoms across the group.

Table 16: Chronic Fatigue Scores Overall

Description	Symptoms
Sample size	50
Mean core symptoms	5,30
Mean non-core symptoms	4,08
Mean total symptoms	9,38
Std deviation (total)	4,407275988
Max (total)	18
Min (total)	0

On average, participants experienced as many as 9.38 symptoms in the month prior to completing the survey. Table 17 and figure 14 below break this down further according to the number of symptoms.

Table 17: Number of Core and Non-core Symptoms

Number of symptoms	Frequency	Percent	Cumulative percent
0	1	2,0%	2,0%
1	1	2,0%	4,0%
2	3	6,0%	10,0%
3	2	4,0%	14,0%
4	2	4,0%	18,0%
5	0	0,0%	18,0%
6	2	4,0%	22,0%
7	6	12,0%	34,0%
8	3	6,0%	40,0%
9	3	6,0%	46,0%
10	6	12,0%	58,0%
11	2	4,0%	62,0%
12	6	12,0%	74,0%
13	4	8,0%	82,0%
14	5	10,0%	92,0%
15	0	0,0%	92,0%
16	2	4,0%	96,0%
17	1	2,0%	98,0%
18	1	2,0%	100,0%
Total	50	100,0%	100,0%

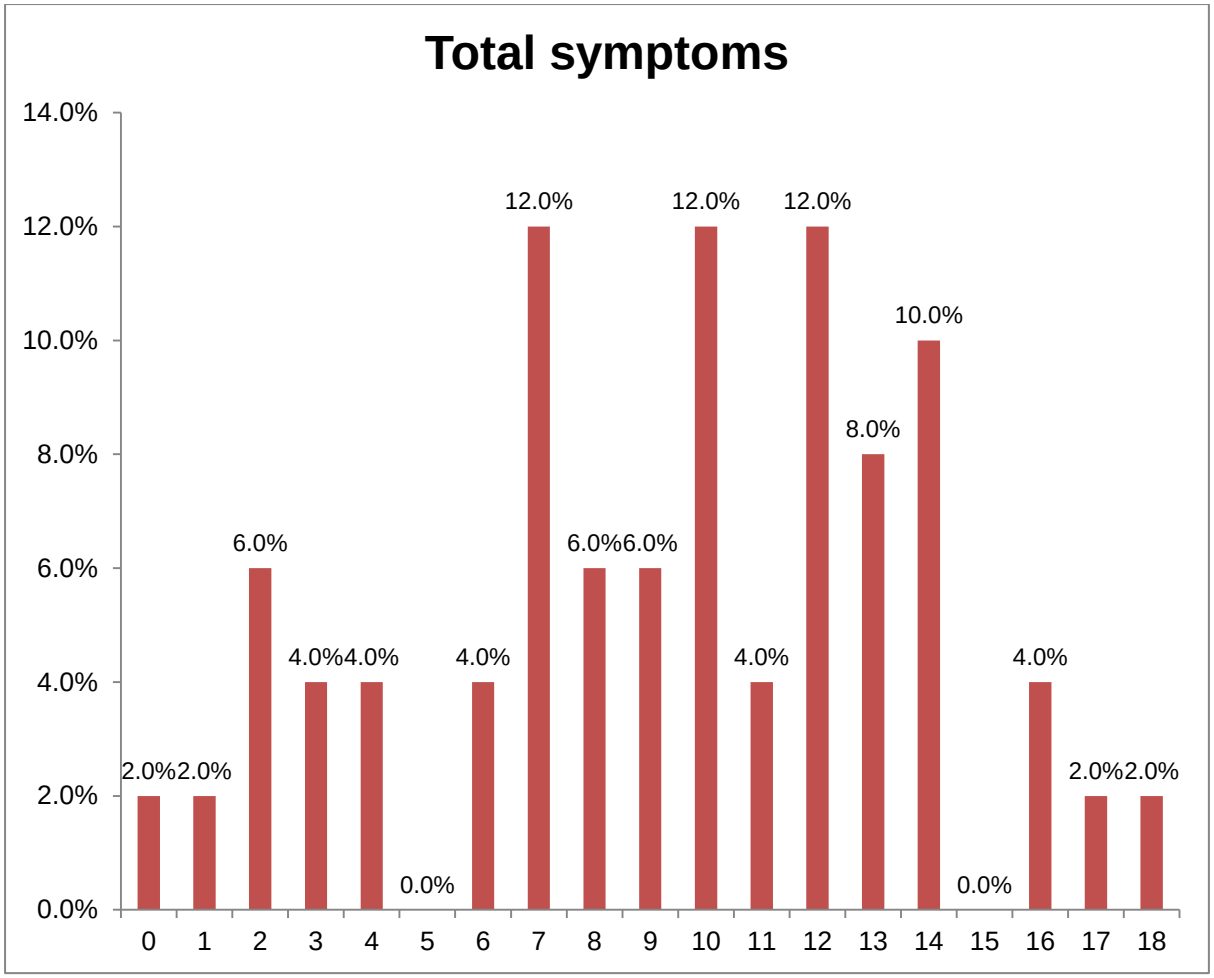

Figure 14; Number of Core and Non-core Symptoms

If the criteria for diagnosing Chronic Fatigue Syndrome was expanded to include additional symptoms, we would find that as many as 86.00% of the group are at risk, having experienced four or more symptoms concurrently. It should be noted, however, that as was stated in section 2.5, the diagnosis of Chronic Fatigue Syndrome according to the CDC criteria does not only include the presence of various symptoms, but other factors as well; one would need to determine how detrimental these symptoms have been to daily functioning, and also rule out other potential causes through various medical and laboratory tests. This study did not investigate these other criteria due to time and resource constraints, and as such, the findings can only indicate what percentage of the sample is potentially at-risk. However, the findings are somewhat concerning and warrant further investigation.

4.5 SOCIAL SUPPORT

Social support was measured across four items on a scale of 0 - 4, and for each item participants were asked to record the level of social support received from their *immediate supervisor*, *other people at work*, and *spouses, friends and relatives*. The four items are as follows:

- How much does each of these people go out of their way to do things to make your work life easier for you?
- How easy is it to talk with each of the following people?
- How much can each of these people be relied on when things get tough at work?
- How much is each of the following people willing to listen to your personal problems?

The score for each item, calculated as mean scores across the three sources of support, are presented in Figure 15.

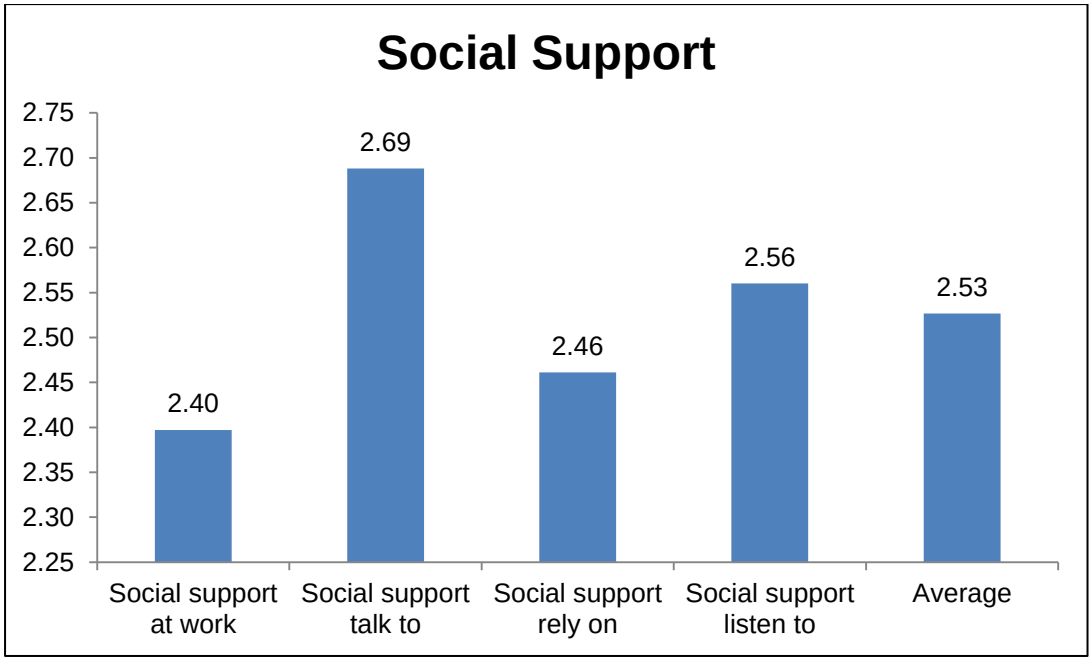

Figure 15: Social Support Scale Scores

Figure 15 shows that the mean scores across all the items is between 2 and 3, which indicates moderate levels of social support when considering the scale counts out of a total of four. There seems to be less social support in regard to the work environment than in other areas, whereas having someone to talk to scored the highest (an average of 2.69). The mean score across the items is 2.53 (SD = of 0.65).

4.6 JOB SATISFACTION

Job satisfaction was measured across three items on a scale of 1 – 7, whereby higher scores are indicative of greater job satisfaction after reverse coding of the second item. Table 18 shows the responses across the sample for those with lecturing responsibilities.

Table 18: Job Satisfaction Scale Scores

Item		Response options								
		1	2	3	4	5	6	7	Total	Missing
All in all, I am satisfied with my job	Count	2	7	6	4	10	13	5	47	10
	%	4,26%	14,89%	12,77%	8,51%	21,28%	27,66%	10,64%	100%	
In general, I don't like my job	Count	0	5	5	4	7	18	8	47	10
	%	0,00%	10,64%	10,64%	8,51%	14,89%	38,30%	17,02%	100%	
In general, I like working here	Count	0	7	8	1	5	18	8	47	10
	%	0,00%	14,89%	17,02%	2,13%	10,64%	38,30%	17,02%	100%	

Overall, the majority of respondents scored four or higher across all three items, indicating moderate to high job satisfaction. Figure 16 shows the mean scores for each of the items, as well as the overall mean for job satisfaction.

Figure 16: Job Satisfaction Scale Scores

As can be seen from Figure 16, the mean scores across all items are above four, which suggests moderate to high levels of job satisfaction. The item, *In general, I don't like my job,* is reverse coded such that higher scores are indicative of greater levels of job satisfaction. As such, the item scored the highest with a mean of 5.11, which suggests that participants enjoy their job. The overall mean across the three items is 4.85 (SD = 1.51).

4.7 THE RELATIONSHIP BETWEEN CHRONIC FATIGUE AND BURNOUT

In order to investigate the relationship between Burnout Syndrome and Chronic Fatigue Syndrome, and also to determine if other variables, including social support, job satisfaction, age, gender, and physical symptoms contributed towards each of these, scores were calculated based on the data obtained from the OLBI, the CDC CFS Symptom Inventory, the demographic section of the questionnaire, the Social Satisfaction Survey, and the Overall Job Satisfaction Survey. The process by which scores were calculated, and the actual scores, will be presented below, after which the relationship between Burnout Syndrome and Chronic Fatigue Syndrome, along with the contribution of other variables (age, gender, number of symptoms recorded, physical symptoms, job satisfaction and social support) will be presented.

4.7.1 BURNOUT

The OLBI was used to measure burnout. The inventory consists of two subscales; exhaustion and disengagement. Together, the scores are combined to provide an overall score for burnout. Certain items in the OLBI had been reverse coded, after which mean scores were calculated for each of the subscales, as well as for the instrument overall. The scores are presented in Table 19.

Table 19: OLBI Burnout Calculated Scores

Description	Exhaustion
Sample size	47
Mean Exhaustion	2,84
Mean Disengagement	2,47
Mean Burnout	2,66
Std deviation (burnout)	0,44
Max (burnout)	3,31
Min (burnout)	1,44

As per Table 19, the mean scores for exhaustion, disengagement, and burnout overall are 2.84 (SD= 0.55), 2.47 (SD=0.47), and 2.66 (SD= 0.44) respectively.

4.7.2 Chronic Fatigue

To measure chronic fatigue, the CDC CFS Symptoms Inventory was used, which measures eight core symptoms (measured across nine items) and 10 non-core symptoms. For each symptom, the inventory measures the presence of the symptom, as well as the frequency, intensity, and reported impact. To calculate scores for chronic fatigue, the same method used by Wagner et al. (2005) when calculating the psychometric properties of the inventory was replicated; the frequency score is multiplied with the intensity score. To convert intensity into a numerical score (from 0 – 4), equidistant scores were assigned to the response options whereby 0 = symptom not reported, 1 = mild, 2.5 = moderate, and 4 = severe. This results in a total possible score of 16 for each item (4x4). The items are then summed according to core and non-core symptoms, as well as overall, to determine the degree of chronic fatigue in the sample, whereby higher scores indicate higher levels of chronic fatigue. Table 20 provides the mean scores for core-symptoms, non-core symptoms, and chronic fatigue overall.

Table 20: CDC CFS Symptom Inventory Calculated Scores

Description	Symptoms
Sample size	50
Mean core symptoms	33,44
Mean non-core symptoms	20,19
Mean total symptoms	53,63
Std deviation (total symptoms)	37,09651092
Max (total symptoms)	139
Min (total symptoms)	0

As per Table 20, the mean scores for core symptoms, non-core symptoms, and chronic fatigue overall are 33.44 (SD= 22.9), 20.19 (SD= 15.2), and 53.63 (SD= 37.1) respectively.

4.7.3 Social Support

The Social Support Scale was used to measure social support within the sample. The Social Support Scale contains only four items, but collects data for three different sources of social support (immediate supervisor, other people at work, immediate friends and family) within each of those items, thus generating 12 pieces of data. To generate scores, a mean score can be calculated across the data set, whereby higher scores are indicative of higher levels of social support. Table 21 shows the mean score for social support.

Table 21: Social Support Scale Calculated Scores

Description	Social Support
Sample size	47
Mean	2,53
Std deviation	0,65
Max	3,75
Min	1,08

The mean score for social support was 2.53, out of a maximum of 4. This represents relatively standard to good levels of social support among the sample.

4.7.4 JOB SATISFACTION

To measure job satisfaction, the Overall Job-Satisfaction Scale was used, which consists of three items. The Overall Job-satisfaction Scale requires that one of the three items is reverse scored, after which an average can be calculated for each person. Table 22 shows the mean scores for job satisfaction within the sample.

Table 22: Job Satisfaction Scale Calculated Scores

Description	Social Support
Sample size	47
Mean	4,85
Std deviation	1,51
Max	7,00
Min	1,67

As per Table 22, the mean score for job satisfaction was 4.85 out of a possible 7.

4.7.5 SEM ANALYSIS: CHRONIC FATIGUE, BURNOUT, SOCIAL SUPPORT, JOB SATISFACTION AND DEMOGRAPHIC VARIABLES

In order to investigate the relationship between Chronic Fatigue Syndrome and Burnout Syndrome, along with the contribution of other variables which include social support, job satisfaction, physical symptoms, age and gender, Structural Equation Modelling (SEM) was used to determine the pathways between the relevant variables. The following variables were used to carry out the SEM:

Dependent variables	Independent variables
Burnout – Exhaustion	Job Satisfaction
Burnout – Disengagement	Social Support – General at work
Burnout – Total (Latent)	Social Support – Talk to
Chronic Fatigue – Core Symptoms	Social Support – Rely upon
Chronic Fatigue – Non-core Symptoms	Social Support – Listen to
Chronic Fatigue – Total (Latent)	Social Support – Total (Latent)
	Number of Symptoms
	Age
	Gender

The initial model which was generated is as follows:

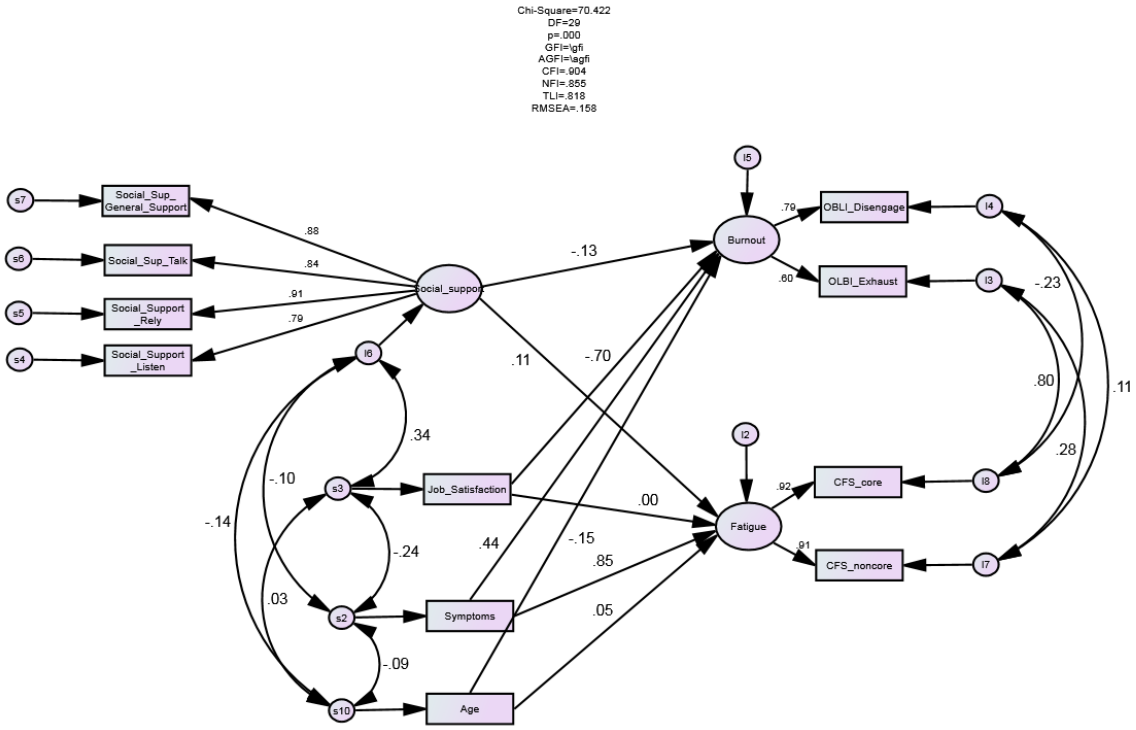

Figure 17: Initial Model

The model depicted in Figure 17 includes the following primary data for the purpose of discussion:

- Square boxes indicate observed variables
- Circles indicated latent or unobserved variables which are constructed from the observed variables[1]
- Straight arrows indicate the direct effect of a predictor variable on a dependent variable
- The values above the straight arrows are regression coefficients (γ) which indicate the amount of contribution or prediction, ranging between -1 and +1
- Curved arrows indicate correlations between variables
- The values above the curved arrows are correlation coefficients (r)
- The smaller circles which are attached to the larger variables indicate variance

4.7.5.1 GOODNESS OF FIT

Goodness-of-fit indices are presented in Table 23. Each of the index values will be discussed below the table.

Table 23: Goodness of Fit Indices

Model	χ^2	DF	P	RMSEA	PNFI	PRATIO	CFI	IFI
Initial	70.42	29	.00	.16	.45	.53	.90	.91
Gender	163.410	70	.00	.15	.45	.64	.79	.81
Simplified	114.69	31	.00	.22	.52	.69	.80	.81

[1] Burnout, Fatigue, and Job Satisfaction were analysed using their sub-categories (observed variables) and collapsed into their total scores (latent variables) in order to demonstrate the relationship between the sub-categories and total scores.

Larger Chi-square (χ^2) values which are insignificant are typically desired to demonstrate goodness of fit (Hooper et al., 2008). The results from the χ^2 above indicate a significant probability for all models. The gender and simplified models demonstrated higher χ^2 values and degrees of freedom; typically, lower χ^2 values and higher degrees of freedom are desired (Hollembeak & Amorose, 2005).

Typically, an RMSEA of less than 0.1 is preferred for goodness of fit. Table 23 shows that RMSEA is lowest for the gender model, followed by the initial model, although none of the values are below the desired 0.1.

PNFI and PRATIO values of 0.5 or greater can be considered to lean towards goodness of fit, with higher values indicating better fit. The simplified model demonstrates the best fit in regard to the PNFI with a value of 0.52. All of the models achieved a PRATIO of greater than 0.5, where the simplified model obtained the highest score of 0.69.

CFI values greater than 0.9 are desired for goodness-of-fit. Table 23 shows that the initial model achieved a CFI of 0.91 which indicates a good fit, whereas the other two models both obtained lower CFI values below 0.9.

Similar to CFI, IFI values greater than 0.9 are desired for goodness-of-fit. The initial model has an IFI value 0.91 which indicates a good fit, whereas the other two models have lower values below 0.9.

The measures for goodness-of-fit are not totally conclusive, although the initial model did achieve adequate scores for three of the indices, which suggest that the model is appropriate for the data. The gender-based model and simplified model (which collapses fatigue and burnout into a single variable) do not demonstrate better goodness-of-fit, as such, are shown and discussed for the purposes of further

exploring the relationship between Chronic Fatigue Syndrome and Burnout Syndrome rather than establishing a more refined model to describe pathways and causal relationships.

4.7.5.2 MODELS

The standardised and unstandardized (raw) regression weights which were generated by the model are shown in Table 24. The unstandardized regression weights are used to determine the significance of the relationships between the dependent and independent variables. The standardised regression weights demonstrate the extent to which the dependent variables contribute to the independent variables.

Table 24: Initial Model Regression Weights

Variables			Raw estimate	Standardised estimate	S.E.	C.R.	P
Burnout	←	Job Satisfaction	-.15	-.70	.03	-4.83	***
Fatigue	←	Job Satisfaction	.00	.00	.77	.00	1.00
Burnout	←	Symptoms	.03	.44	.01	3.79	***
Fatigue	←	Symptoms	2.76	.85	.30	9.09	***
Burnout	←	Social Support	-.06	-.13	.05	-1.24	.22
Fatigue	←	Social Support	2.27	.11	1.72	1.32	.19
Burnout	←	Age	.00	-.15	.00	-1.51	.13
Fatigue	←	Age	.06	.05	.09	.64	.52
Social Support Listen to	←	Social Support	.82	.79	.11	7.55	***
Social Support Rely Upon	←	Social Support	1.00	.91	.10	9.67	***
Social Support Talk to	←	Social Support	.95	.84	.11	8.33	***
Social Support General	←	Social Support	1.00	.88			
OLBI Disengagement	←	Burnout	1.09	.79	.21	5.10	***
OLBI Exhaustion	←	Burnout	1.00	.60			
CFS Core	←	Fatigue	1.42	.92	.13	11.03	***
CFS Non-core	←	Fatigue	1.00	.91			

*** indicates significance at $p < .001$

The model shows that social support predicts both burnout as well as fatigue, although the contribution is relatively small; γ = -0.13 and 0.11 respectively. This would suggest that as one increases the other decreases, and vice versa. Neither of these relationships, however, was found to be significant at $p \leq .05$ (p = 0.22 for social support and burnout, p = 0.19 for social support and fatigue).

Job satisfaction predicts both burnout and fatigue, where the contribution towards burnout is much higher than that of fatigue; γ = -0.70 and 0.00[2] respectively. This suggests that as job satisfaction increases, burnout decreases, and vice-versa. While the model does demonstrate a relationship between fatigue and job satisfaction, it is incredibly small and nearly non-existent. The relationship between job satisfaction and burnout was found to be significant at $p \leq .001$. However, the relationship between job satisfaction and fatigue was not found to be significant (p = 1.00).

The number of core and non-core symptoms which participants reported was included in the model as an additional variable, primarily as an alternative measure of the relationship between physical symptoms associated with chronic fatigue and burnout. The number of symptoms experienced was found to predict both burnout and fatigue, with relatively high γ values of 0.44 and 0.85 respectively. As such, increases in the number of symptoms and individual experiences result in increases in both burnout and fatigue. Both of these relationships were found to be significant at $p \leq .001$.

The model shows that age is a relatively small contributor to burnout and fatigue, with γ values of -0.15 and 0.05 respectively. This also suggests that there is an inverse relationship between age and burnout. On the other hand, it indicates a direct relationship between age and fatigue. However, neither of these relationships was found to be significant.

The model which was generated also displays the covariance (r) between all variables which were used to create the model. Table 25 shows the initial model covariances which are used to determine whether the relationships between the variables are significant, as well as the extent to which variables contribute to one another.

[2] The model indicates that job satisfaction predicts fatigue (directional arrow between the two variables), although the γ value of 0.00 indicates a very low level of prediction.

Table 25: Initial Model Covariances and Correlations

Covariance			Raw Estimate	Standardised Estimate	S.E.	C.R.	P
Job Satisfaction	↔	Social Support	.33	.34	.14	2.29	.02
Symptoms	↔	Social Support	-.27	-.10	.38	-.72	.47
Symptoms	↔	Job Satisfaction	-1.49	-.24	.84	-1.78	.07
Job Satisfaction	↔	Age	.52	.03	2.15	.24	.81
Social Support	↔	Age	-.99	-.14	1.01	-.98	.32
Symptoms	↔	Age	-4.08	-.09	6.02	-.68	.50
OLBI Disengagement	↔	CFS Core Symptoms	-.52	-.23	.49	-1.07	.29
OLBI Disengagement	↔	CFS Non-core Symptoms	.18	.11	.35	.51	.61
OLBI Exhaustion	↔	CFS Core Symptoms	2.82	.80	.84	3.37	***
OLBI Exhaustion	↔	CFS Non-core Symptoms	.73	.28	.54	1.34	.18
Burnout	↔	Fatigue	.25	.69	.24	1.07	.28

*** indicates significance at p < .001

There is a relatively low level of covariance between social support and the number of symptoms, and the relationship is inversed. Similarly, the relationship between job satisfaction and the number of symptoms recorded is inversed, with a higher covariance than the previous relationship. The covariance between social support and job satisfaction is the greatest of the three, where increases in one are related to increases in the other. Of these three relationships, only the one between social support and job satisfaction was found to be significant at $p \leq .05$ ($p = 0.02$). The relationship between job satisfaction and the number of symptoms leans towards significance at $p \leq .10$ ($p = 0.07$).

Despite the relatively high covariance between burnout and fatigue (0.69), the analysis did not find the relationship to be significant ($p = 0.28$). The implications of this, as well as potential factors contributing to the finding, are elaborated on in the following chapter.

Looking at the relationships between the different sub-components of burnout (exhaustion and disengagement) and fatigue (core and non-core symptoms) provides an additional interpretation of the relationship between the two syndromes. There appears to be a high *r* for exhaustion and core symptoms (0.8) which was found to significant $p \leq 0.01$. Disengagement and core symptoms, however, appear to have an inverse relationship which was not found to be significant.

In order to investigate the relationship between gender, fatigue and burnout, separate models were generated for men and women. These models are presented below:

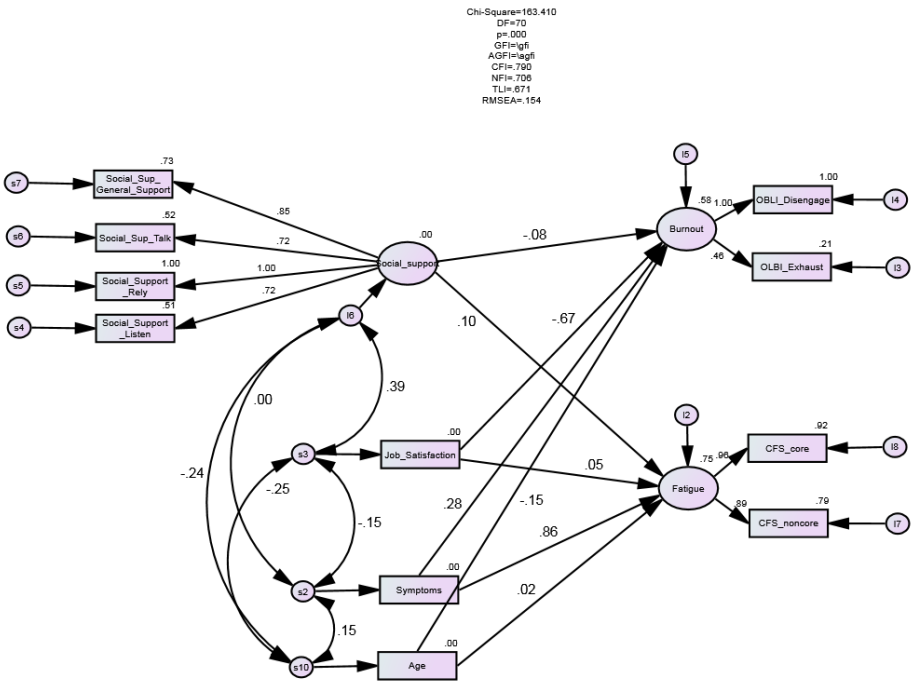

Figure 18: Gender Model; Females

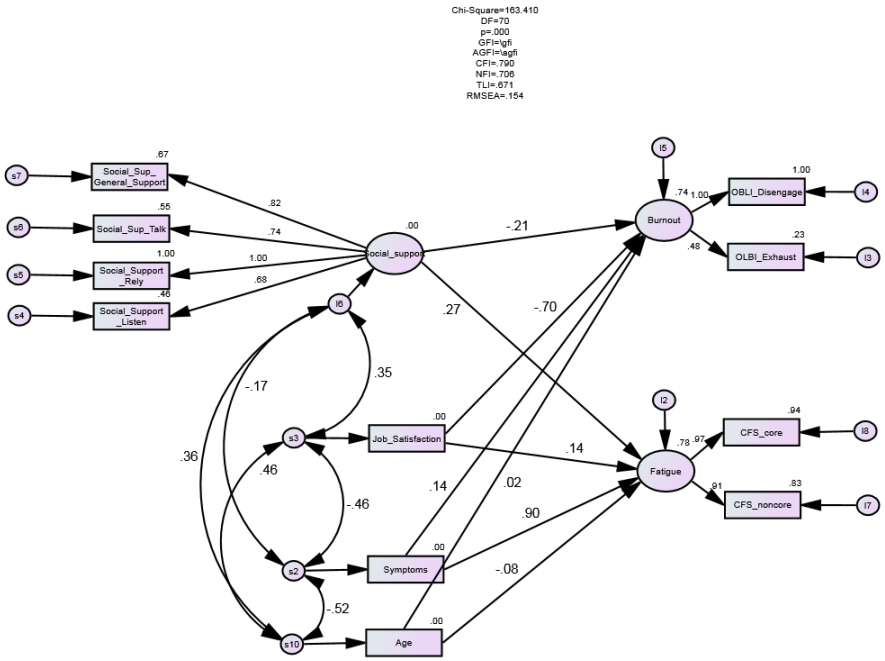

Figure 19: Gender Model; Males

To best compare the differences in contribution across gender, the standardised regression coefficients (γ) for both men and women, along with *p*-values for significance, are presented alongside in Table 26.

Table 26: Gender Models Standardised Regressions and P Values

Variables	Women		Men	
	P	Estimate	P	Estimate
Burnout ← Job_Satisfaction	.00	-.67	.06	-.70
Fatigue ← Job_Satisfaction	.62	.05	.11	.14
Burnout ← Symptoms	.03	.28	.59	.14
Fatigue ← Symptoms	***	.86	***	.90
Burnout ← Social_support	.29	-.08	.19	-.21
Fatigue ← Social_support	.19	.10	.35	.27
Burnout ← Age	.15	-.15	.67	.02
Fatigue ← Age	.63	.02	.96	-.08

*** indicates significance at p < 0.001

As can be seen from Table 26, the significance of the pathways between variables is roughly the same for both men and women. There are clear differences in the amount of contribution between certain variables however, which are described below.

Job satisfaction appears to be a stronger predictor of both burnout and fatigue in men (γ = -0.70, γ = 0.14 respectively) than in women (γ = -0.67, and γ = 0.05 respectively). The number of symptoms recorded by participants contributes more to burnout in women (γ = 0.28) than what it does in men (γ = 0.14), whereas for fatigue the contribution is slightly higher for men (γ = 0.90) than for women (γ = 0.86). Social support seems to better predict burnout and fatigue in men (γ = -0.21, and γ =0.27 respectively) when compared with women (γ = -0.08, γ = 0.10 respectively). Lastly, age appears to better predict burnout in women (γ = -0.15) than what it does in men (γ = 0.2) whereas it is a better predictor of fatigue in men (γ = -0.8) than in woman (γ = 0.2).

Two relationships were found to be significant in women, but not significant in men; job satisfaction and burnout (significant at $p \leq 0.01$, $p = 0.00$) and number of symptoms and burnout (significant at $p \leq 0.05$, $p = 0.03$).

A simplified model has been generated which collapses the two syndromes into a single variable labelled Fat_stress. The model includes both men and women, as the gender-based models which were discussed above did not indicated a better goodness-of-fit. The model is presented below.

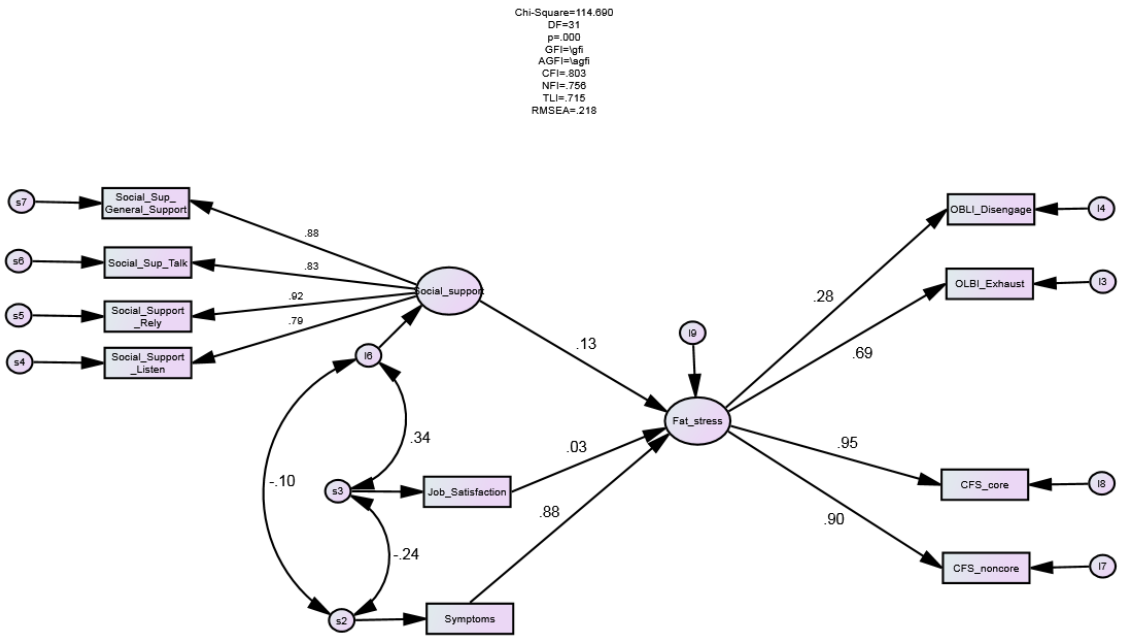

Figure 20: Simplified Model

The simplified model's standardised and unstandardised regression weights below show the significance of the relationships between predictor and dependent variables, as well as the degree to which the predictor variables contribute to the dependent variables.

Table 27: Simplified Model Regression Weights

Variables			Raw Estimate	Standardised Estimate	S.E.	C.R.	P
Fat_Stress	←	Social Support	.02	.13	.02	1.29	.20
Fat_Stress	←	Job Satisfaction	.00	.03	.01	.35	.72
Fat_Stress	←	Symptoms	.03	.88	.01	2.10	.04
Social Support Listen To	←	Social Support	.81	.79	.11	7.48	***
Social Support Rely Upon	←	Social Support	1.01	.92	.10	9.75	***
Social Support Talk To	←	Social Support	.94	.83	.11	8.25	***
Social Support General Support	←	Social Support	1.00	.88	1.00		
OLBI Disengagement	←	Fat_Stress	1.00	.28	1.00		
OLBI Exhuasiton	←	Fat_Stress	2.92	.69	1.43	2.03	.04
CFS Core Symptoms	←	Fat_Stress	170.85	.95	80.82	2.11	.03
CFS Non-core Symptoms	←	Fat_Stress	108.03	.90	51.32	2.10	.04

*** indicates significance at p < .001

Looking at the three predictor variables (social support, job satisfaction, and number of symptoms) one can see a clear distinction. Social support and job satisfaction contribute relatively little to the combined construct of burnout and fatigue (γ = 0.13 and γ = 0.03 respectively). Alternatively, the number of symptoms contributes far more (γ = 0.88) and the relationship was found to be significant at $p \leq .05$ (p = 0.04).

Additionally, one can see the degree of contribution of the sub-components of burnout and fatigue to the combined latent variable. Again, it is clear that the

physical components contribute far more to the combined construct than the psychological components. Of the burnout sub-components, disengagement and exhaustion, exhaustion contributes relatively high ($\gamma = 0.69$) to the combined variable of fatigue and burnout. Disengagement, on the other hand, contributes far less ($\gamma = 0.28$). The relationship between exhaustion and the combined variable of burnout and fatigue was found to be significant at $p \leq .05$ ($p = 0.04$) as were the relationships between the combined variable and core symptoms ($p = 0.03$) and non-core symptoms ($p = 0.04$)

4.8 CONCLUSION

This chapter has presented the findings from the survey that was completed by participants. This includes the prevalence of fatigue and burnout among participants, the level of job satisfaction and social support which was recorded, as well as the various relationships which exist between these variables along with demographic variables age and gender. Additionally, models were generated which demonstrate more complex relationships across all the variables investigated in the current study.

Overall, the mean score for participants in regard to burnout was 2.66 (out of a total of four). Of the two sub-components of burnout, exhaustion and disengagement, exhaustion was found to contribute far more to the overall score (mean of 2.84) than disengagement (mean of 2.47). When analysing the number of individuals who scored above 2.5 on the scale, as many as 42.55% were found to be at moderate risk (scores between 2.5 and 3) for burnout. A further 31.91% were found to be at high risk for burnout (scores between 3 and 4).

In regard to chronic fatigue, the most commonly reported symptoms were fatigue and unrefreshing sleep (92% and 88% respectively). Participants reported an average of 5.3 core symptoms and 4.1 non-core symptoms. According to the CDC

diagnosis for Chronic Fatigue Syndrome, four or more symptoms are required for diagnosis. 78% of the participants met this criterion for core-symptoms. If the definition is expanded to include non-core symptoms, as many as 86% of the participants meet the criterion for diagnosis of Chronic Fatigue Syndrome.

The participants indicated moderate to high levels of social support and job satisfaction. The mean score for social support was 2.53 out of a possible 4. For job satisfaction the mean score was 4.85 out of a possible 7.

Three models were generated by using SEM to explore the relationships between burnout, chronic fatigue, social support, job satisfaction, age, gender, and the number of physical symptoms reported by the participants. The initial model included all variables as they were measured in the survey, the second model separated males and females, and the third model collapsed burnout and fatigue into a single variable. Of the three models, the initial model showed best goodness-of-fit. As such, the other models were used to further explore the relationships, but not to propose better models in which to conceptualise the relationships between the variables. The relationship between job satisfaction and burnout was found to be significant at $p \leq 0.01$, as were the relationships between number of symptoms and fatigue, and number of symptoms and burnout. The relationship between burnout and fatigue was found to be non-significant, although when comparing the relationships between the sub-components of burnout and fatigue and the single collapsed variable (Fat_Stress), the relationship between exhaustion and the newly constructed variable was found to be significant, along with the contribution of core and non-core symptoms.

The next chapter will discuss and interpret these findings as well as the potential implications thereof. Recommendations, as well as the implications of the findings will be presented, after which this dissertation will draw to a conclusion.

CHAPTER 5: DISCUSSION OF FINDINGS, LIMITATIONS OF STUDY, RECOMMENDATIONS FOR FUTURE RESEARCH AND CONCLUSION

5.1 INTRODUCTION

This chapter presents the discussion and interpretation of the findings which were given in the previous chapter; in particular, the discussion focuses on the prevalence of both burnout and chronic fatigue among the sample, as well as the relationship between the two constructs and which other variables contribute to them. Following the discussion of the findings, recommendations for going forward (both for future research, as well as in response to the findings) along with the limitations of the study will be provided. Lastly, the chapter will conclude with a succinct summarisation of this dissertation.

5.2 PREVALENCE OF BURNOUT

The Oldenburg Burnout Inventory (OBLI) was used to measure burnout among the participants, which included staff members at a tertiary academic institution in South Africa with lecturing responsibilities. The OLBI consists of 16 items which collectively address two subscales of burnout; exhaustion and disengagement. Both of these are then taken into consideration when determining an overall score for burnout.

In almost all of the items which measured exhaustion, the majority of participants recorded responses which indicate a medium to high risk for burnout. Two items in particular stood out; 90% of the participants indicated that there are days when they feel tired before arriving at work, and 85% stated that after work they require more time than what they did in the past to relax and feel better. The average

score across the group for the exhaustion items was 2.84 out of a possible 4 (where higher scores indicate greater risk for burnout).

Disengagement showed slightly lower scores across the group and appears to be less of a concern than exhaustion. There were two items which warrant slightly more attention than others; 72.34% of the participants reported that they often tend to speak about their work in a negative way, and 61.7% indicated that over time an individual can become disconnected from the type of work they are doing. Overall, the average score for disengagement was 2.47 out of a possible 4.

When the overall score for burnout was calculated by using the two subscales, the score is 2.66. Exhaustion made a higher contribution than disengagement. Scores below 2.5 typically indicate a positive response whereas those above the midpoint indicate a negative response. As such, the scores were organised according to four categories to better determine the percentage of individuals in the sample at risk. As much as 74.47% of the sample appear to be at risk (overall scores between 2.5 and 4), while 31.91% are at high risk (overall scores between 3 and 4).

Based on these findings one could assume that there is a potentially high number of individuals who are at medium to high risk of experiencing burnout. This has serious implications both personally and professionally, especially when considering the ever-changing nature and increasing requirements of the academic working environment (Gilbert, 2000). Burnout can lead to a lack of creativity and decrease in teaching ability, and reduced research capacity (Bayram et al., 2010), which then extends to the quality of students and graduates which are produced at the relevant institution (Hakanen, Bakker, & Schaufeli, 2006).

When attempting to better understand the above, it appears as if the main components of the burnout which participants are experiencing relate to themselves

more personally (physically, emotionally and cognitively) rather than interpersonally. Exhaustion refers to the strain that an individual feels as a result of ongoing exposure to a stress-inducing work environment (Demerouti, Mostert, & Bakker, 2002). Even within the disengagement items, the two which featured most prominently appear to be more personal (they talk about their work negatively, and one can become disconnected from the type of work that they perform). There seems to be less emphasis on their interactions with others (superiors, colleagues, students, etc.) and more emphasis on their own work, and that which is required from them within their own personal and professional capacity. Previous studies have found that exhaustion is more strongly related to occupational performance than what disengagement is (Bakker, Demerouti, De Boer, & Schaufeli, 2003; Bakker, Demerouti, & Verbeke, 2004; Wright & Bonnet, 1997). Higher scores on the exhaustion sub-scale are indicative of decreased performance in the work-place. When attempting to more practically situate the constructs of exhaustion and disengagement in the workplace, Bakker, Demerouti, and Verbeke (2004) found that exhaustion is more closely tied to job-demands whereas disengagement is associated with job-resources. As such, the findings from this study suggest that participants are more likely to exhibit decreased job performance as a result of high demands which cannot be met.

5.3 Prevalence of Chronic Fatigue

Chronic fatigue was measured using the CDC Chronic Fatigue Syndrome Symptom Inventory (CDC CFS Symptom Inventory). The instrument measures eight core symptoms (measured across nine items) and 10 non-core symptoms, and includes questions around the presence of symptoms, frequency with which they have been experienced and the intensity thereof. The results from the instrument can be used to determine the number of symptoms experienced, and scores can be calculated for each symptom in order to conduct further analysis. For the purpose of determining prevalence, the number of symptoms which were reported was the primary consideration as per the CDC criteria for diagnosing Chronic Fatigue Syndrome.

The most commonly reported symptom was fatigue (92%), followed by unrefreshing sleep (88%), muscle aches and pains (78%), sleeping problems (76%) and headaches (64%). Fatigue as a general symptom is very common, and often considered the most common symptom of Chronic Fatigue Syndrome (Ranjith, 2005). Previous studies, however, have found a prevalence ranging between 20% - 25% (Fuduka et al., 1994; Jason et al., 2002; Kroenke, Wood, Mangelsdorff, Meier, & Powell, 1988). As such, there is a vastly higher prevalence of fatigue in this study than in previous ones. This could suggest a genuinely higher incidence of fatigue among academics, but could also be a result of the sample size, or the time of year when data was collected (data was collected near exam time, which could explain higher levels of fatigue than normal). Aside from fatigue, sleep-related issues and muscle pain are considered the other most common symptoms of Chronic Fatigue Syndrome (Guilleminault et al., 2006). A study carried by Jason et al. (2002) in the United States of America (US) found that *lack of energy*, *physical exertion*, *cognitive problems*, and *fatigue and rest* were the four primary factors which define fatigue-related symptomology associated with Chronic Fatigue Syndrome. This reflects the findings of this study.

The average number of core symptoms reported across the sample was 5.3. In order to account for outliers, the data was organised according to the number of symptoms reported (from 1 to 9, based on the number of items). The majority of the group (70%) reported having experienced five symptoms or more, of which 20% indicated five symptoms, and an additional 20% indicated seven symptoms. On average, participants indicated that they had experienced 4.08 non-core symptoms. As with the core symptoms, the data was organised according to the number of symptoms reported (from 1 to 10, based on the number of symptoms). We find a wider distribution than with the core symptoms, whereby the majority reported between four and six non-core symptoms (56%).

The CDC criteria for diagnosing Chronic Fatigue Syndrome state that an individual must experience four or more of the core symptoms concurrently. When only considering the core symptoms, 78% of the individuals within the sample meet

this criterion. When extending the symptoms to those considered non-core the size of the group at risk increases to 86%. While there is some degree of inconsistency in the literature regarding the prevalence of Chronic Fatigue Syndrome, the findings from this study suggest that a much higher percentage of individuals are at risk than normal. In 1994, Fukuda et al., suggested that as much as 24% of the general population in the US could suffer from Chronic Fatigue Syndrome, although this figure is based primarily on reports of persistent ongoing fatigue. Later studies have found a much lower prevalence between 0.2% and 0.5% (Guilleminault et al., 2006; Jason et al., 1999; Reyes et al., 2003). A more recent review of existing literature pertaining to the prevalence of Chronic Fatigue Syndrome by Dinos et al. (2009), which also included a review of World Health Organisation data from 14 countries, found that as many as 1.7% - 2.5% of adults could experience disabling fatigue which could be categorised as Chronic Fatigue Syndrome. One explanation for this large difference in prevalence could be that the CDC CFS Symptom Inventory alone is not sufficient to diagnose Chronic Fatigue Syndrome, as all other potential medical conditions need to be ruled out in order to accurately determine the cause of the symptoms. As such, when referring only to core symptoms, the findings suggest that 78% of the participants are at risk for having Chronic Fatigue Syndrome, but do not necessarily suffer from it. This does, however, allude to a serious potential issue among academic staff. One of the defining symptoms of Chronic Fatigue Syndrome is the experience of ongoing fatigue. This can result in decreased professional performance, as well potential personal harm when considering the risk for falling asleep while driving to and from work (Bayram et al., 2010; Ware, 1998).

5.4 Job Satisfaction and Social Support

Job satisfaction was measured using the Overall Job Satisfaction Scale. The scale consists of three items, each of which is rated from 1 – 7. Participants scored an average of 4.85, which indicates moderate to high levels of job satisfaction. Social support was measured using the Social Support scale across four items. Each item is rated from 0 – 4. Participants scored an average of 2.53 which indicates moderate levels of social support.

A recent study conducted by Abdool Karrim Ismail (2010), which also investigated job satisfaction and social support in an organisational environment in South Africa, found higher levels of both. Using the same instruments, the researcher obtained mean scores of 5.53 and 3.24 for job satisfaction and social support respectively. This could suggest that the current sample is atypical, and potentially not representative of the larger population. Alternatively, it could suggest that employees in the academic environment experience lower levels of social support and job satisfaction than employees in other organisational environments. Previous studies have found significant inverse relationships between burnout and fatigue, and social support and job satisfaction (Abdool Karim Ismail, 2010; Gustafsson, Eriksson, Strandberg, & Norber, 2010; Meeusen, Van Dam, Brown-Mahoney, Van Zundert, & Knape, 2010; Platsidou & Ioannis, 2008) which could explain the high prevalence of burnout and fatigue within this study. The following section (section 5.5) will describe the relationships found between burnout and fatigue, and social support and job satisfaction in more detail, as pertains to this study.

5.5 Burnout, Chronic Fatigue, Job Satisfaction, Social Support and Demographic Variables

SEM was used to generate various models which compare burnout and chronic fatigue, as well as the contribution of social support, job satisfaction, age, gender and physical symptoms. An initial model was developed containing all of the variables under investigation, after which separate models were generated for men and women to compare differences across gender. Lastly, a simplified model was created containing what were determined to be the most influential and meaningful variables based on the previous models.

The initial model showed that social support, job satisfaction, the number of symptoms recorded by participants, and age all contribute to burnout and fatigue, although not all of these were significant. Job satisfaction was found to be a strong

predictor of burnout (γ = -0.70), but not fatigue. The relationship between job satisfaction and burnout was found to be significant at $p \leq .001$, which suggests that increased levels of job satisfaction are related to decreased levels of burnout. The relationship between job satisfaction and burnout is not a surprising one considering the strong conceptual links between burnout and job satisfaction (Leone et al., 2011). This also supports the findings from previous studies which have shown a significant inverse relationship between burnout and job satisfaction, (Abdool Karim Ismail, 2010; Meeusen et al., 2010; Platsidou & Ioannis, 2008), although the majority of available literature seems to focus primarily on the nursing sector. As such, further investigation across other sectors, including academia, could prove beneficial. Although not in tertiary education, a recent study conducted by Hoigaard, Giske, & Sundsli (2012) in Norway investigated the relationship between job satisfaction and burnout among teachers and again found a strong relationship between the two, whereby increased job satisfaction typically leads to less burnout among teachers.

Social support was found to be a generally weak predictor of burnout and fatigue (γ = -0.13 and 0.11 respectively) and neither of the relationships were found to be significant. This is unusual considering that increased social support has long been considered one of the primary situational buffers for persistent stress (Haines, Hurlbert, & Zimmer, 1991). A number of studies have investigated burnout and social support and found a significant inverse relationship (Gustafsson et al., 2010; Naugle, 2010; Tsai & Chan, 2010). A fairly recent study in South Africa, however, found that although significant, social support was a relatively weaker predictor of burnout when compared with job satisfaction (Abdool Karim Ismail, 2010). As such, the non-significant relationship found in this study could likely be explained by the small sample size, and while the model which was generated does demonstrate that social support contributes to burnout and fatigue, the amount of contribution is relatively small.

The number of symptoms reported by participants was included in the model as an additional variable to compare fatigue, typically considered to be a more

physical syndrome, with burnout, traditionally considered more psychological (Leone et al., 2011). Interestingly, the number of symptoms recorded by participants proved to be a relatively strong significant predictor of burnout (γ = 0.44). This finding could suggest a strong relationship between fatigue and burnout, as physical symptoms appear to be a strong predictor of the psychological manifestations associated with burnout. While there is little to no research which has investigated this particular relationship, this finding does, to an extent, verify the assertions of Leone et al. (2011) that there is some overlap between Chronic Fatigue Syndrome and Burnout Syndrome, particularly in regard to the physical and psychological experience of exhaustion as a result of persistent, ongoing stress.

Both Chronic Fatigue Syndrome and Burnout Syndrome are considered to be significantly related to age, whereby different age groups are at greater risk. A study by Jason et al. (1999) in the US found that older individuals are at greater risk for Chronic Fatigue Syndrome, particularly between the ages of 40 – 49. Gallagher, Thomas, Hamilton, & White (2004) reviewed data from a 10 year period and similarly found that Chronic Fatigue Syndrome is more prevalent in older age groups. The CDC ("Chronic fatigue syndrome (CFS). Who's at risk?", 2013) states that "the illness occurs most often in people in their 40s and 50s" and "CFS is less common in children than in adults." On the other hand, younger age groups have been found to be at greater risk for burnout. According to Maslach et al. (2001, p. 409):

> "Of all the demographic variables that have been studied, age is the one that has been most consistently related to burnout. Among younger employees the level of burnout is reported to be higher than it is among those over 30 or 40 years old."

Brewer & Shapard (2004) conducted a meta-analysis of research regarding the relationship between age and burnout and similarly found a negative significant correlation whereby younger employees were more likely to experience burnout. Despite the above links between age, burnout, and chronic fatigue, the present study found that age was a weak, non-significant predictor of both burnout (γ = -0.15) and

fatigue (γ = 0.05). While there are studies which have found no significant relationship between age, burnout and fatigue (Brewer & Shapard, 2004), including a recent South African study by Harry and Coetzee (2011) which investigated burnout in a higher education institution call centre, it is equally likely that the small sample resulted in an insignificant relationship between burnout, fatigue and age.

The second model which was generated differentiated according to gender in order to investigate differences between men and women in regard to burnout and fatigue, and the contribution of social support, job satisfaction, age, and physical symptoms. The number of symptoms was found to be a large, significant contributor of fatigue in both men (γ = 0.86) and women (γ = 0.90) at $p \leq .001$. Job satisfaction and symptoms were found to be significant predictors of burnout in women (γ = -0.67, $p \leq .001$ and γ = 0.28, $p \leq .05$ respectively) but not in men. Despite differences in the regression coefficient for other variables, no other relationships were found to be significant in one gender and not the other. These findings suggest that both job satisfaction and physical symptoms are significant predictors of burnout in women, and physical symptoms are a significant predictor of fatigue in women, whereas in men physical symptoms is a predictor of burnout and none of the other variables were found to be significant predictors at $p \leq .05$. Job satisfaction does, however, lean towards significance at $p \leq 0.1$ (p = 0.06).

Previous studies have found differences in both Burnout Syndrome and Chronic Fatigue Syndrome in regard to gender (although the results are less conclusive for burnout). In terms of Chronic Fatigue Syndrome, most studies report a higher prevalence in women than in men. Differences could be a result of biological differences such as that of the endocrine system, and the production of different hormones (Ranjith, 2005). The CDC states that Chronic Fatigue Syndrome occurs four times more frequently in women that what it does in men, although do not explicitly state why this is the case (“Chronic fatigue syndrome (CFS). Who’s at risk?”, 2013). In regard to burnout, some research suggests that women are more susceptible to Burnout Syndrome (Antoniou, Polychroni, & Vlachakis, 2006), while

others state that gender is not a mediating variable (Prieto, Soria, Martinez, & Schaufeli, 2008). In reviewing the body of research that relates to gender differences in burnout, Maslach et al. (2001) state that the findings overall are inconclusive in regard to which gender is more likely to experience burnout, and that the only potential consistency is that men score higher on cynicism or disengagement, whereas women tend to score higher on exhaustion. This, however, could also be a consequence of gender role stereotypes and differences within the occupational context (Maslach et al., 2001). The present study made similar findings whereby there were minimal differences between males and females in regard to burnout. The only difference across genders was in regard to job satisfaction which was significant in women at $p < .001$ and in men at $p < .10$.

Lastly, one of the primary objectives of this study was to determine if there is a relationship between Burnout Syndrome and Chronic Fatigue Syndrome. The initial model which was generated showed a relatively strong although non-significant relationship between the two syndromes ($\gamma = 0.69$). This could, however, be due to the small sample size. Additionally, the number of symptoms recorded by participants was found to be a strong and significant predictor of burnout; something which would not typically be expected of a more psychologically defined syndrome. This would suggest a stronger link between burnout and the physical symptoms associated with chronic fatigue than the direct relationship between the scores which were generated for the two syndromes. As such, this study cannot conclude that there is a significant relationship between Burnout Syndrome and Chronic Fatigue Syndrome, but it clearly demonstrates a strong link between the two which warrants further investigation. This point is greater emphasised in the simplified model, which shows a strong relationship between the physical components of burnout and fatigue. Particularly, we find that exhaustion is a significant contributor to the combined construct of fatigue and burnout, along with core and non-core symptoms measured in the CDC CFS Symptom Inventory.

While there is relatively minimal literature comparing Burnout Syndrome and Chronic Fatigue Syndrome, a narrative review by Leone et al. (2011) states that one

of the primary areas of overlap seems to be in the physical symptoms an individual experiences. This reflects the findings of this study whereby there was a significant relationship between physical symptoms (typically associated with Chronic Fatigue Syndrome) and Burnout Syndrome. While the study cannot conclude that there is a significant relationship between the greater constructs of Chronic Fatigue Syndrome and Burnout Syndrome, it can strongly suggest that there is a significant relationship within the sub-components, particularly in regard to exhaustion.

5.6 Recommendations for Future Research

Based on the findings from the study, several recommendations should be considered going forward, both in reactions to the prevalence of chronic fatigue and burnout, as well as for future research.

The literature suggests that academia can be a stressful working environment, particularly in South Africa as a result of additional external factors such as the declining economy and tense political environment in regard to the expectations of academic institutions (Coetzee & Rothman, 2007; Gilbert, 2000). The findings from this study demonstrate that, of the sample which was obtained, a potentially high percentage is at risk for Chronic Fatigue Syndrome and Burnout Syndrome. Further resources should be invested in a deeper, more personal investigation of the prevalence of these two syndromes among academics. Depending on the findings, potential interventions should be considered to reduce the strain on academics in order to enhance their lives personally, as well as their professional performance. This could, in turn, improve the output of the institutions and in doing so better contribute to the country's future.

The study used a relatively small sample which was obtained through non-probability convenience sampling. Additional research with a larger sample, drawn through probability sampling procedures, could contribute to knowledge regarding

both the prevalence of chronic fatigue and burnout, as well the relationship between these two concepts. Additionally, future research could also include multiple universities across the country to provide a more representative sample of the South African context. The online survey which was used demonstrated a relatively simple and efficient means of reaching a potentially large number of respondents. The survey could be simplified, and the short version of the CDC CFS Symptom Inventory could be used to improve the likelihood of survey completion by respondents. Additionally, obtaining support from government structures such as the Department of Higher Education and/or the Department of Health would improve access to the institutions and thus potentially improve the reach of the study.

Chronic Fatigue Syndrome is a predominantly physical illness and further investigations could benefit from additional medical testing to better understanding the underlying potential causes and how they relate to burnout (particularly the exhaustion subcomponent). In regard to burnout, much emphasis has been placed on the working environment and the subsequent impact on the experience of burnout (Demerouti et al., 2010). Further studies should consider collecting contextual information about the individual's organisational environment to better understand the separate components of burnout, and to determine how they relate to chronic fatigue and the accompanying physical symptoms.

Lastly, both chronic fatigue and burnout could potentially be time-sensitive, such that they are more prominent at certain times of the year than others (for example, it would be expected that academic staff would experience higher levels of stress during the beginning of the year when students enrol with the institution, and during exam periods. The prevalence of Chronic Fatigue Syndrome and Burnout Syndrome, as well as the relationship between the two, would benefit from a longitudinal study which takes into account the effect of time on the two constructs.

5.7 LIMITATIONS OF THE STUDY

There are a number of limitations which should be considered when interpreting the results of the study. Firstly, a relatively small sample was obtained using non-probability sampling techniques. The initial expectation was to invite all staff members at the relevant institution to participate in the study. However, due to various challenges, the researcher was unable to use existing university resources to contact individuals and needed to use other means which may have affected the response rate. As such, the external validity has been compromised and the results should not be generalised without serious consideration of this (Babbie, 2013).

Secondly, the instruments which were used to measure burnout and chronic fatigue are not, in themselves, sufficient to diagnose the respective syndromes, but rather provide data which can be used to deduce potential risk. Diagnosis of both Chronic Fatigue Syndrome and Burnout Syndrome require consultation with a professional to better understand the impact on one's life. Additionally, Chronic Fatigue can only be diagnosed in the absence of other medical conditions. To do so would require a comprehensive medical examination. Due to time and resource constraints, the current study was only able to collect a limited amount of information and thus deduce risk but not official diagnosis.

Thirdly, the study was cross sectional and only collected data from a single point in time. However, both burnout and chronic fatigue can be influenced by external factors which are time sensitive. For example, lecturers are likely to experience more stress near exam times, or if there is a student strike taking place at the university. Physical symptoms may occur more frequently during certain times of the year when there is an outbreak of the flu. A longitudinal study could address some of these external factors.

Lastly, only a single university was used as a reference point during the present study. While additional details pertaining to the university cannot be divulged, the results should be considered within this limitation; the findings only

refer to a single university in South Africa, and not the South African tertiary academic context as a whole.

5.8 CONCLUSION

This chapter included a discussion of the findings which were presented in Bhapter 5. Broadly speaking, there appears to be a high percentage of individuals who are at medium to high risk for both Burnout Syndrome and Chronic Fatigue Syndrome. Participants reported having experienced a number of symptoms and ailments prior to having completed the survey, and also indicated various types and degrees of physical, emotional and cognitive burnout in regard to the personal and professional context. The data which was gathered did not show a direct, significant relationship between Chronic Fatigue Syndrome and Burnout Syndrome, but did allude to the possibility of a strong link, particularly through the significant relationship between physical symptoms and burnout, which warrants further research with a larger sample of participants.

Lastly, the findings from this study can be used to inform and direct future research in the field of stress, chronic fatigue, and burnout, helping to better understand these constructs and hopefully better address them, primarily in the academic context. South Africa is at a stage where the educational system is receiving increased emphasis in regard to its performance as well as its importance in securing a better future for the country. Without the necessary support, however, this may not be achieved. Furthermore, the experience of stress and fatigue is universal and extends across many different environments and contexts. The only way to adequately address this issue is to better understand it, and the only way to better understand it is to generate more knowledge through research.

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APPENDIX A: RESEARCH QUESTIONNAIRE