UNIVERSITY OF CAPE COAST

DIABETES BURNOUT: THE INFLUENCE OF DISTRESS AND SPIRITUALITY

CALEB OTABIL

2021

Caleb Otabil

University of Cape Coast

UNIVERSITY OF CAPE COAST

DIABETES BURNOUT: THE INFLUENCE OF DISTRESS AND SPIRITUALITY

BY

CALEB OTABIL

Thesis submitted to the Department of Education and Psychology of the Faculty of Educational Foundations, College of Education Studies, University of Cape Coast, in partial fulfilment of the requirements for the award of Master of Philosophy degree in Clinical Health Psychology

DECEMBER 2021

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree at this university or elsewhere.

Candidate's Signature…… Date ……

Name: ……..

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature…… Date ……

Name: ……..

Co-Supervisor's Signature …… Date ……

Name: ……..……

ABSTRACT

Type-2 Diabetes Mellitus (T2DM) is a lifelong, chronic metabolic disorder that affects people physically, emotionally and psychologically. For many, the burden of self-management of diabetes can be overwhelming especially when trying to juggle that with a career, family and social life. This strain can precipitate many psychogenic conditions in T2DM patients of all ages and sex. The study utilized a descriptive cross-sectional study design and purposively sampled 105 adults with T2DM. The study adapted the English version of the Oldenburg Burnout Inventory to measure diabetes burnout, Diabetes Distress Scale to measure diabetes distress, and the Functional Assessment of Chronic Illness Therapy scale to measure the spirituality of the participants. Participants were recruited from the diabetic clinic of the University of Cape Coast Hospital in Ghana. Data were analyzed with the use of descriptive statistics (means, standard deviations, frequency counts and percentages), Pearson's moment correlation coefficient and mediation analysis using the Hayes process. The study found moderate levels of diabetes burnout and spirituality and low levels of diabetes distress. The study also found spirituality to significantly mediate the relationship between diabetes distress and diabetes burnout. It is recommended that caregivers and policy address the psychogenic areas of diabetes. It is also recommended that T2DM patients' spirituality be addressed in caregiving.

KEYWORDS

Type-2 Diabetes Mellitus

Diabetes management

Diabetes Burnout

Diabetes Distress

Spirituality

Fasting Blood Sugar

ACKNOWLEDGEMENTS

I am most grateful for the scholarly guidance from my supervisors, Mr Francis Kwarteng Ofosuhene and Dr Ivy Nkrumah. I thank Prof Ephraim Kobina Dadzie, Dr Labbeaus Asamani and Millicent Obodai for their generous contributions to making this work better. I am also appreciative of the unflinching support from my friends and family and the encouragement I have received from them especially my mum, Victoria Otabil, my dad, Emmanuel Arkaa Otabil, and my brother, Bismark Kwadwo Otabil and Jessica Afful Tuleassi.

DEDICATION

To my dad

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

DM	-	Diabetes Mellitus
CFA	-	Confirmatory Factor Analysis
FBS	-	Fasting Blood Sugar
IDF	-	International Diabetes Federation
T2DM	-	Type-2 Diabetes Mellitus
WHO	-	World Health Organization

CHAPTER ONE

INTRODUCTION

Background to the Study

Chronic health disorders have been described as biological or psychological health conditions that persist for a year and beyond, often requiring increasing management and care and leading to varying levels of debilitating impairment in day-to-day functioning (Centers for Disease Control and Prevention [CDC], n.d.). From a public health perspective, chronic health disorders are of great concern since they impact individual function, societal systems such as work and employment and the healthcare system. Given their impact on the individual as well as population level and their nuances, a lot of scientific curiosity and attention has been directed at studying and understanding them and a lot more is necessary (Raghupathi & Raghupathi, 2018).

According to Raina et al. (2020), one of the more direct ways of understanding the impact of chronic illnesses is by their functional impairments or how the illnesses affect the ability of individuals to function normally within society. According to the functional impairment caused by chronic health conditions, cardiometabolic health disorders are some of the most relevant and most debilitating chronic health disorders. Cardiometabolic health conditions represent diseases that affect the heart and blood circulation and metabolic functions of the body. These include hypertension, heart disease and diabetes. Out of these, diabetes appears to be the most significant (Raina et al., 2020; Raghupathi & Raghupathi, 2018).

According to the CDC, about 60% of adults in America have chronic disorders and the number of those who have at least two chronic health disorders stands at 40% of adults. In America, chronic disorders lead in terms of disability and mortality rates and are some of the costliest medical conditions (CDC, n.d.). Globally, chronic health conditions like diabetes and heart diseases account for about 3 in 5 deaths every year. Chronic non-communicable diseases like heart conditions and diabetes accounted for 41 out of the 55 million deaths globally in 2019. People in low to middle-income regions suffer most of the brunt because of factors like poor access to healthcare facilities and a generally poor standard of living. Because of this, nearly half (about 47%) of mortality as a result of non-communicable diseases in poor countries within the year 2019 happened prematurely, that is, before the age of 70 (World Health Organization [WHO], 2020).

Metabolic health disorders refer to various health conditions involving varying defects in the ability of the body to break down or synthesise substances. Diabetes is the most common metabolic disorder with both genetic and lifestyle causes and risk factors. Diabetes also has a wide array of impacts on individuals and countries (WHO, 2020). Many chronic metabolic disorders affect a person's lifestyle, mental state as well as ability to function in their daily life.

Diabetes is a heterogeneous metabolic disorder that includes a group of metabolic conditions with distinct aetiologies widely accepted as a global public health concern (Forouhi & Wareham, 2019). Diabetes types, in general, include Diabetes Mellitus (DM) and Diabetes Insipidus. The term "Diabetes" is mainly used to refer to Diabetes Mellitus, which is the most common type

of diabetes with the most significant public health concern. DM is a disorder of blood sugar regulation, whilst Diabetes Insipidus is simply the excretion of unconcentrated urine due to impaired regulatory mechanisms in the body (Robertson, 1995). There exist two general types of DM namely type-1 and type-2 diabetes. Other types include prediabetes and gestational diabetes. DM is a chronic disorder that affects the way the body processes blood sugar obtained from the food we eat, and it is characterised by high blood sugar levels. Type-1 DM usually starts in childhood, and young adulthood, where youngsters who do not have a family history of diabetes have absolute insulin dependency, meaning the body does not produce insulin – the hormone responsible for regulating sugar (WHO, 1999). Type-2 Diabetes Mellitus (T2DM) represents over 85% of diabetes mellitus cases with normal blood insulin levels (Forouhi & Wareham, 2019). In T2DM, individuals are usually resistant to the insulin they produce and may need insulin shots and blood sugar regulation in other ways like dieting or exercising. T2DM usually occurs in persons who are overweight and it is associated with a family history of diabetes and other sociodemographic factors (WHO, 1999).

In 2019, about 463 million adults aged 20 years and above in the world lived with diabetes. The figure represents 1 in every 11 adults globally (International Diabetes Federation [IDF], 2019). An additional 1.1 million persons aged below 20 years have type 1 diabetes. Globally, the prevalence of Diabetes Mellitus (DM) is projected to rise to 629 million by 2045 from 425 million people living with diabetes (PLWDs) in 2017 (Forouhi & Wareham, 2019). Regarding the sub-Saharan region of Africa and Ghana specifically, in a report conducted by the International Diabetes Federation (IDF, 2019), DM

has an increasing prevalence with significant mortality and morbidity rates. Notably, the number of people living with diabetes in Africa is more than 19 million people, with the figure projected to increase by 143% in the year 2045, the highest projected increase of any region globally, which resulted in a projected death rate of 366,200 deaths in 2019. Following a systematic, meta-analysis review of literature by Asamoah-Boaheng et al. (2019), the prevalence of diabetes mellitus in Ghana stood at 6.46% with physical inactivity and a family history of diabetes being significant risk factors.

For those without diabetes, it is easy to downplay the individual impact of diabetes care and management. The steps to follow to manage diabetes seem very easy and intuitive. Patients only need to take some drugs or insulin shots at the right time and dosage every day, monitor themselves regularly and constantly check their blood sugar to ensure it stays within acceptable limits. Then, they have to assimilate that with their busy personal and social lives. All of that is something that should be repeated for the rest of their lives (Polonsky, 1999). From that refreshing perspective, it is possible to imagine the burden of diabetes self-care and management even with the best healthcare services available.

T2DM is a chronic medical condition where patients need lifelong medical treatment and management. Living with T2DM will have a marked effect on a person's life. The burden of regular medication, checking fasting blood sugar levels, recurrent consultations and modifications of habits can lead to several negative affective states, including anxiety, depressive moods and sexual dysfunction (Anderson et al., 2001; Beverly et al., 2012; Fisher et al., 2008; Nash, 2014; Zalak et al., 2012). PLWD have been reported to be

about two times more likely to be depressed than people without diabetes (Barnard et al., 2006; Roy & Lloyd, 2012). Globally, an estimated 10% of the budget allocated for health is used for diabetes. This amounts to approximately $760 billion. Out of the number of diabetes sufferers, about three-quarters or 79% of patients live in low or middle-income countries, Ghana inclusive. Approximately 2 in 3 of those patients live in urban areas (IDF, 2019). The situation is worse among T2DM: patients are twice as likely to have depression than healthy people (Pouwer et al., 2003).

One of the significant problematic psychological issues, concerning T2DM care and management, is diabetes burnout. Diabetes burnout is a generally accepted concept in the management of T2DM (Abdoli, Jones, et al., 2019; Abdoli, Miller-Bains, Burr, et al., 2020; Fritschi & Quinn, 2010; Polonsky 1999). Diabetes burnout refers to a state of mental, emotional and physical exhaustion that arises from the burden of managing diabetes (Abdoli, Hessler, Vora et al., 2019; Polonsky 1999). Living with diabetes can be frustrating and difficult for young and adult male and female populations alike. Beverly et al. (2012) describes it as an emotional struggle. It is not simply eating correctly, exercising and adhering to medications but managing expectations of glycaemic control (blood sugar regulation). When people are experiencing burnout from dealing with their diabetes care and self-management, they are usually frustrated with having the condition and sometimes give up on care. This subsequently can lead to a state of submission to diabetes and apathy towards glycaemic regulation (Abdoli, Hessler, Vora et al., 2019; Hoover, 1983; Polonsky; 1999).

Aside from the psychogenic issues that impact diabetes care and management, another important area in chronic disease management and diabetes management is spiritual wellbeing. A person's spirituality is their ability to have meaning in life, connect with their true self and with a higher power and have a healthy sense of interactions with the transcendent or divine (Delgado 2005; Hiatt, 1986). This is critical in managing life's challenges as usually, our spiritual resources present us with robust coping mechanisms against life's adversity (B. Arifin et al., 2020). In chronic illnesses like diabetes, the ability of people to manage their condition is linked to how spiritual they are (B. Arifin et al., 2020). Spirituality has also been found to be significantly linked with the psychogenic areas of diabetes management (B. Arifin et al., 2020; Ischaq et al., 2021). Darvyri et. al. (2018) explored how spirituality impacts the management of T2DM and established the impact of the spirituality of people on their ability to manage the disease. The study also went ahead to suggest the possibility of people's spirituality being an important mediating factor in achieving optimum diabetes care.

Glycaemic control, as evidenced by regulated blood sugar levels, is a hallmark index of diabetes management. For someone to be considered a diabetes patient, their blood sugar levels have to be high. Subsequently, the levels of fasting blood sugar are related to many associated conditions of diabetes. This includes studies that have found fasting blood sugar levels to be associated with spirituality (Heidari et al., 2017; Newlin et al., 2008), diabetes distress (Fisher et al., 2008) and diabetes burnout (Nuari, et al., 2018) of PLWD.

Also, there is a significant gender and age difference in experiences of PLWD. In many cases, levels of psychogenic conditions like diabetes distress and burnout are significantly different, with females reporting higher levels than males (Anderson, 2001; Fisher et al., 2008; Pouwer et al., 2003).

Statement of the Problem

Research into the psychogenic areas of chronic diseases is not rare, including various research into the psychological struggles of diabetes management (Abdoli, Hessler, Smither, et al., 2020; Abdoli, Hessler, Vora, et al., 2019; Abdoli, Jones, et al., 2019; Abdoli, Miller-Bains, Burr, et al., 2020; Abdoli, Miller-Bains, Fanti, et al., 2021; Anderson et al., 2001; Beverly et al., 2012; Fritschi & Quinn, 2010; Polonsky, 1999). However, most of these studies usually have a western, biomedical view of the psychogenic struggles of diabetes. Again, most of the previous studies are qualitative (Abdoli, Hessler, Vora et al., 2019; Abdoli, Hessler, Smither, et al., 2020) and many of those that use a quantitative approach sometimes conflate the operationalization of diabetes distress and burnout (Fritschi & Quinn, 2010; Polonsky, 1999) or focus on type-1 diabetes (Abdoli, Hessler, Smither, et al., 2020; Abdoli, Hessler, Vora, et al., 2019; Abdoli, Jones, et al., 2019; Abdoli, Miller-Bains, Burr, et al., 2020; Abdoli, Miller-Bains, Fanti, et al., 2021).

For PLWD, managing changing blood sugar levels and balancing them with their lifestyle has been linked to problematic psychological conditions like distress, depression, burnout, exhaustion, and a state of disengagement from diabetes self-management (Abdoli, Hessler, Vora et al., 2019; Abdoli, Miller-Bains, Burr, et al., 2020).

Earlier studies have overly focused on diabetes distress, a more careful and widely studied psychological phenomenon of diabetes management, with some papers conflating burnout with psychological distress (Fritschi & Quinn, 2010; Polonsky, 1999). However, Abdoli, Hessler, Smither, et al. (2020) and Helgeson (2021) have shown that there was a difference between diabetes distress and burnout and provided a foundation for further investigation into the development of a separate instrument for measuring diabetes burnout. Abdoli and colleagues subsequently conducted some research on the phenomena, leading to them developing and validating a scale for the measurement of diabetes burnout in type-1 diabetics (Abdoli, Miller-Bains, Fanti, et al., 2021).

For T2DM however, few studies have been done to develop a separate scale or to understand the daily struggles in the demographically and pathologically distinct group of individuals. This is especially worrying since the risk of developing depression is higher in T2DM as compared to type-1 diabetics (Brown et al., 2005)

Furthermore, while the psychological conditions associated with diabetes and its accompanying management strategies are well established among people with diabetes in the Western world (Abdoli, Miller-Bains, Fanti, et al., 2021; Beverly et al., 2012), the vulnerability of PLWDs in Ghana to such psychogenic conditions has received scant scrutiny.

Evidence from a systematic review by Darvyri et al. (2018) supports the idea that there is a positive relationship between spirituality or religiosity and improved T2DM management. In Ghana and Africa as a whole, most people are religious with a high level of spirituality or spiritual wellbeing

(Hackett, 1998; Obeng, 1996; Omenyo & Atiemo, 2006). Research has shown that those without a high degree of spirituality often have poorer health outcomes and decreased quality of life (Lago-Rizzardi et al., 2014; Piderman et al., 2014). Therefore, it is possibly more important to understand the contribution of the spirituality of diabetics in Africa to their disease management.

There is a need for a systematic, multifaceted approach to identifying diabetes burnout and its associated states to manage diabetes burnout more efficiently and improve overall health conditions and the quality of life of PLWD. In doing so, it might be important to understand the demographic correlates of diabetes burnout, distress and spirituality. It would also be important to understand the association of fasting blood sugar on diabetes burnout, distress and spirituality. This is because fasting blood sugar is the hallmark indicator of diabetes and an important biological factor in diabetes management that is associated with the psychosocial and spiritual factors of diabetes (Abdoli, Miller-Bains, Burr, et al., 2020; Heidari et al. 2017; Newlin et al., 2008).

This study aims to investigate the influence of diabetes distress and spirituality on diabetes burnout and their relationship to fasting blood sugar among T2DM patients.

Purpose of the Study

The purpose of this study was to investigate diabetes burnout, diabetes distress, and spirituality and their correlation with the key biological indicator of fasting blood sugar among T2DM patients in Ghana.

Research Objectives

The study specifically sought to examine:

1. The levels of diabetes burnout in T2DM patients
2. The levels of diabetes distress among T2DM patients
3. The levels of spirituality among T2DM patients
4. The relationship between
   a. Diabetes distress and diabetes burnout
   b. Diabetes distress and spirituality
   c. Spirituality and diabetes burnout
5. The mediation effect of spirituality in the relationship between diabetes distress and diabetes burnout
6. The correlation between
   a. fasting blood sugar and diabetes burnout
   b. fasting blood sugar and diabetes distress,
   c. fasting blood sugar and spirituality and spirituality.

Research Questions

1. What is the level of diabetes burnout among T2DM patients?
2. What is the level of diabetes distress among T2DM patients?
3. What is the level of spirituality among T2DM patients?

Research Hypotheses

1. a. H_1: There is a relationship between diabetes distress and diabetes burnout in T2DM patients.

   b. H_1: There is a relationship between diabetes distress and spirituality in T2DM patients.

c. H_1: There is a relationship between Spirituality and diabetes burnout in T2DM patients.

2. H_1: Spirituality will mediate the relationship between diabetes distress and diabetes burnout in T2DM patients.

3. a. H_1: There is a relationship between Fasting Blood Sugar and diabetes burnout in T2DM patients

b. H_1: There is a relationship between Fasting Blood Sugar and diabetes distress in T2DM patients

c. H_1: There is a relationship between Fasting Blood Sugar and spirituality in T2DM patients

Significance of the Study

This study will provide clinical health psychologists, psychiatrists and other clinicians with insightful data on the nature of burnout, spirituality and distress and their association to fasting blood sugar among T2DM patients. The findings of this study will contribute toward a further quantitative understanding of diabetes burnout especially because the study adapts a scale to measure diabetes burnout quantitatively. The findings will contribute to developing possible interventions for psychological issues in T2DM management and care. The findings from this study will provide baseline data on diabetes burnout in Ghana for other researchers interested in this area of study. The findings would inform policy interventions on psychosocial and spirituality-based interactions among T2DM patients in Ghana. Academically, the findings of the study would answer the question of the role of the spirituality of diabetes concerning diabetes management.

Delimitation

The study focused on diabetic burnout, diabetic distress, spirituality and fasting blood sugar. The study assessed T2DM patients. The study is delimited to T2DM patients attending the University Hospital within the University of Cape Coast.

Limitations

The study utilised a convenient non-probabilistic sampling technique. The limitations of the method are a difficulty in acquiring a statistically representative sample. Again, the convenient sampling method might introduce bias. Again, the descriptive cross-sectional study design does not allow for causality studies. This means the generalizability of results is limited

Definition of Terms

Some terminologies utilized in this text have been defined as follows:

Diabetes burnout: It is the physical, cognitive and affective exhaustion due to the strain of diabetes care management on the patient and the subsequent disengagement from active participation in the handling of diabetes by the diabetic patient.

Diabetes distress: It is an affective state of guilt, stress and denial concerning diabetes care and management.

Spirituality: It refers to humanity's search and value for meaning or a higher power and the practices and rituals to remain connected with the sacred, self and others.

Fasting blood sugar: This is the level of blood sugar, particularly glucose levels measured by a glucose meter after a period of overnight fasting or 12

hour fasting period. The WHO prescribes a fasting blood sugar level of 7.0mmol/l or above to be the definitive value(s) of diabetes (WHO, 2011).

Organisation of Study

This study is made up of five chapters. Chapter one is the introduction to the study, which has the background to the study, statement of the problem, the research objectives, the research questions, the significance of the study, study delimitations, limitations, and organisation of the study.

The next chapter focuses on the literature review of the theoretical and conceptual framework, the empirical review, and the study's key concepts. Chapter three covers the study's methodology- involving the research design, study area, population, sampling procedure, data collection instruments, data collection procedures, data processing and analysis and a chapter summary.

Chapter four consists of the results and discussion, and Chapter five covers the conclusion, recommendation and suggestion for further research.

CHAPTER TWO

LITERATURE REVIEW

Introduction

The chapter presents the theoretical framework of the study, its conceptual framework as well as the conceptual and empirical reviews. The theoretical framework offers the foundational basis of the study and gives an insight into what theories presented by literature lend credence to the study. With the biopsychosocial spiritual model of disease conceptualisation and treatment, three theories are discussed in this chapter and they touch on the theory of stress and the aspects of diabetes management. The various concepts used in this study are also discussed to offer perspective on their origin and how they fit into the conceptual framework of the study. To further offer insight into the concepts, a conceptual review follows and this is backed by empirical reviews which offer comparative literature to guide the study's analysis as well as critique the study's findings and place among the general body of literature on diabetes management.

Theoretical Framework

Hans Selye's Stress Theory (Selye, 1951)

Han Selyes' stress theory (Selye, 1951) presents three characteristic stages beginning with the alarm stage reaction which triggers in response to a stressor. The next stage is the stage where there is resistance to the stressor and it is aptly named the resistance stage. The last stage, known as the exhaustion stage, is where the body is depleted of resources used in resisting the stressor and succumbs to the stressor. Given the fact that every system has a limited number of resources, t can use to resist a stressor, succumbing to

stress is an eventuality if the stressor persists for a long enough time at a strong enough intensity.

In retrospect, Selye (1965) critiques his ideas as being a consequence of his misunderstanding of English or more exactly of the literature surrounding the body of physics from which he derived his medical terminology. It appears he would have much preferred it to be known as the strain theory, which would be a more accurate way of viewing the theory. It is however possible that this description was apt and that if a stressful event did trigger the first stages, it would be associated with an outcome, which would be more properly referred to as the strain (Hobfoll, 1989).

Even though the stress theory focuses more on the physical and hence biomedical aspects of disease presents a good enough foundation for the understanding of how a system succumbs to stress factors and therefore how to manage and deal with the stress. In that regard, it does seem that a person that has to constantly manage their diabetes may be prone to go through the three stages that have been outlined by the theory. The state of diabetes distress, as described as the patient's state of concern about diabetes management, support, emotional burden and access to care seems to characterize the alarm stage. The final stage of exhaustion seems to be exemplified in the characteristic exhaustion of burnout, where when all "resources" are depleted, and the energy to continue managing the condition is reduced with a characteristic lack of effort or "giving up".

This theory points to a possible linear relationship that would exist between diabetes distress, the more alarm stage reaction to the stress of diabetes management and diabetes burnout, and the exhaustion stage's

reaction to the stress of diabetes management. Hence in this study, a relationship between diabetes distress to diabetes burnout would be explored. The resistance stage would have to be exemplified by a stress resistance condition one which possibly serve as a mediating condition.

The Conservation of Resources theory ([COR], Hobfoll, 1989)

Hobfoll (1989) described his theory of conservation of resources, building on the models of stress that existed. He drew inspiration from the Canno-Selye tradition which led to the development of Hans Selye's Stress Theory (Selye, 1965). The conservation of resources model explains psychological stress to be a reaction to an environment where there is no net gain of resources, the threat of a loss to the resources or the actual loss of those resources. It doesn't matter if the loss is actual or perceived, it could still produce stress.

The theory states that people are struggling to preserve, safeguard and develop resources and the future or imminent loss of these valued commodities is what threatens them. These commodities are referred to as resources and they are the basic unit necessary for understanding stress and stressful phenomena. According to COR theory, there are four main kinds of resources. These are object resources, conditions, personal characteristics and energies. Object resources are mostly of a physical state and are valued due to the status that can be attached to them or their ability to be transactional or lead to some secondary benefits. These may include buildings, vehicles and clothes. Conditions are states of being that are valued by people because of some hierarchy of values established by society. These may include a state

that gives societal status such as marriage, employment, belief systems or academic achievement.

Hobfol (1989) posits that conditions as resources have stress mediating effects or are essential in "an understanding of people's stress resistance capacity". This follows the argument by Selye that a condition would be a candidate for the second, resistance stage of stress, possibly one that would mediate the relationship between the states of distress and burnout in the management of diabetes.

The third resources are personal characteristics which may also aid in stress resistance. These may include individuals' orientation in life and how they view stressful events. The last resource described by the theory is energy resources. These resources include effort and know-how.

Importantly, the COR distinguishes the net loss of resources from the gain of resources. Hobfoll (1989) points to the evidence that suggests that conditions characteristic of a gain of resources aid in stress resistance not facilitate stress. Thus, a distinction should be made between events that are generally desirable and would rather provide resistance than influence the progression to stress. This provides a good background for whatever variable would fit into a conceptualization of a resistance variable.

For PLWD, their resources include their wellbeing, finances, social engagements and importantly biological functioning, that is their blood sugar levels and state of health. When faced with the threat of losing those resources due to the strain of managing diabetes, the COR theory presents that they would face stress. The mechanisms of that stress would immediately lead to worries and alarm representing a state of distress and finally to burnout. Also,

certain resources may act as a resistance resource to mediate the movement from the alarm to the burnout stage.

The biopsychosocial spiritual theory

The biopsychosocial theory – a shift from the biomedical model of disease

The underlying foundation of the field of clinical health psychology and many other health psychology-related fields like public health psychology, cultural health psychology and critical health psychology is the biopsychosocial spiritual theory (Hatala, 2013).

A key foundational element of the study of health psychology is the interaction between psychological (affective, behavioural and cognitive factors), social (beliefs, attitudes and cultural values) and fundamentally biological factors in disease aetiology, treatment and management. The biopsychosocial model was first proposed by George Libman Engel, an American psychiatrist as he took on the "almighty" biomedical model of disease that had dominated medical thinking, research and practice for centuries (Engel, 1977).

The biomedical model had stood the test of time and rigorous scientific enquiry has displaced some of the most dominant theories of disease and illness in the world. It integrated scientific reductionism and mind-body dualism to prescribe a system of the understanding and treatment of ailment as being primarily linked to the physical realm. As such illness was the function of some physical trauma, biochemical process or some causative organism (Cohen et al., 2003; Sheridan & Radmacher, 1992). The model ignored the importance of psychological and social factors on disease progression or taught of them as being end products rather than probable causes or both.

Engel's critique represented a challenge that the model was not adequate for holistic care and hence should be improved to shift more focus on the patients and their needs.

Engel, therefore, was very vocal in drawing attention to the necessity for the patient's needs, and objective feelings in a largely paternalistic biomedical system where the doctor had the final word – a practice that Engel felt was no longer adequate for medicine or psychiatry (Engel, 1977; Hatala, 2013). Consequently, many psychologists and psychiatrists alike have adopted the use of the BPS model, both within the practice and in academia (Ghaemi, 2009; Masiak, 2013). In many case, especially with health psychology, the BPS model is considered foundational to training and further research (Adler, 2009; Tavakoli, 2009).

This has been seen in major concepts built around the BPS model and chronic pain (Gatchel, 2004; Gatchel et al., 2007); its application in chronic diseases (Siegel & Schrimshaw, 2002), addiction (Leventhal et al., 2008; Masiak, 2013) and diabetes (Zalak et al., 2012). They all argue that while a person's body and physical make-up is important, their mental, cognitive, behavioural and affective (psychological) and social milieu is of equal if not greater weight and importance.

The limitations of the BPS model expressed through decades of critiquing research include the fact that or its brazen critique of the biomedical model as incomplete and inadequate for holistic care, it lacked a critical aspect of the patient's life and experience, Spirituality and religiosity. A growing body of evidence supports the links between spirituality, well-being and pathology (Baetz et al., 2002; Contrada et al., 2004; Corrigan et al., 2003; De

la Porte, 2016; Lepherd, 2015; René et al., 2007; Sloan & Bagiella, 2002; Weaver et al., 2006). Many people across the world put their faith in power or powers higher than themselves and derive a sense of meaning through rituals, ceremonies and beliefs embedded in this way of life. Consequently, many conditions can be improved or deteriorated by these spiritual or religious factors and it seems the BPS model itself would require spirituality as a factor to make it more holistic for patient care.

The biopsychosocial spiritual model presents a clear way of understanding the holistic struggles of people living with diabetes. The diabetes distress and burnout that they have to deal with represent the psychosocial struggles of diabetes and are already linked to the COR theory and Han Selye's stress theories. Drawing from previous understanding, when people are faced with the eminent loss of their resources, they are likely to be stressed. This process is a confluence of biological, psychosocial and spiritual aspects of the patients. The development of burnout (exhaustion stage of the stress theory) from distress (the alarm stage) represents important psychosocial factors which include cognitive, emotional and social elements. The COR proposes the importance of a condition resource to serve as a resistance resource, preferably one that is valued by people and generally represents positive states people aspire to. Spirituality seems the right candidate for this drawing from the interactions of the biopsychosocial spiritual model. Thus, spirituality is a belief system or state of being that is valued by people with a capacity for providing important stress resistance. Hobfol (1989) argues that conditions have stress mediating effects hence in deciding the theoretical place of the spirituality of people living with diabetes

in the general model, it does seem that spirituality would be useful as stress mediating condition on the interaction between diabetes distress and diabetes burnout. Finally, primarily, the main biological focus of diabetes management is fasting blood sugar. Glycaemic regulation evidenced by fasting blood sugar levels is incidental to the development of all conditions therefore there have been links between fasting blood sugar and all aspects of diabetes management (Abdoli, Miller-Bains, Burr et al., 2020; Schillinger et al., 2002; Wysocki et al., 2007). It seems that the place of the biological aspect of diabetes management would be correlated with diabetes distress, diabetes burnout and spirituality.

Conceptual Review

The concept of diabetes distress

Polonsky (1999; 2002) describes the emotional aspects and sheds light on the plight of those who have to make a daily, non-stop job of actively managing their diabetes without fail or at risk of dire consequences. Including comorbid depression (Beverly et al., 2012; Fisher et al., 2008), diabetes patients suffer from diabetes distress which is an affective state involving several dimensions measuring one, unique, composite idea.

Diabetes distress is defined as an affective state of worry, fear, and foreboding that is connected with the management of diabetes. It is usually not conceptualised as a separate pathology or even as psychopathology in the first place but as an integrated state in diabetes which represents the emotional side of dealing with diabetes. This exposes its fundamentality to the condition and how even primary caregivers should be well equipped with knowledge about handling this condition.

Initially, diabetes distress has been conceptualised to include burnout (H. Arifin et al., 2019; Polonsky, 1999), however more recently, this conflation has been disentangled and both conditions have been presented as separate (Abdoli, Hessler, Smither, et al., 2020). Diabetes distress usually presents in distrust of caregivers, powerlessness, fear of complications and hopelessness (Polonsky, 1999). From a natural, reductionist viewpoint it would seem strange to conceptualize diabetes distress and spirituality. However, looking closely at the literature about the concepts, one can identify similarities and a rootedness in the relevant theories. For example, while distress represents a state of worry, and distrust in caregivers, the regimen and hopelessness, spirituality represents themes of hope, trust and belief in a transcendent authority and life. It is therefore clear that a distressed diabetic may begin to challenge the meaning of life and the potency of their belief system or faith. Indeed, important to the concept of diabetes distress is the concept of an emotional struggle which may interfere with the desire for congregate experiences or socialization and the feeling of isolation. The link to diabetes distress is seen as a continuing relationship (Abdoli, Hessler, Smither, et al., 2020) to a state of eventual exhaustion after the initial struggles of managing diabetes. Thus, after some time managing their diabetes, the emotional struggles of handling their condition may lead to exhaustion and a feeling of giving up.

This study would utilize the 17-item Diabetes Distress Screening Scale (DDS; Polonsky et al., 2005). The DDS is a 17-item 6-point Likert-type scale developed by Polonsky et al. (2005). It has demonstrated consistent, generalisable factor structure and good internal reliability and validity in

different settings and is reliable in several studies (Fisher et al., 2008). This study adopted the DDS as a scale to measure diabetes distress.

The concept of diabetes burnout

The concept of diabetes burnout came from that of burnout which refers to a condition of intense strain on a person's physical, mental and emotional state following the overuse or overexertion of energy and coping resources. Burnout syndrome, as popularised by Maslach and colleagues (Maslach & Jackson, 1981) almost concurrently with Freudenberger's work (Freudenberger, 1974), is presented by Maslach as a confluence of three distinct psychological dimensions, depersonalization, emotional exhaustion and reduced attainment (Maslach, 1998).

Diabetes burnout was first introduced by Hoover (Hoover, 1983) and espoused further by Polonsky (1999) and has since received varying levels of research interest. More recently, through the qualitative and quantitative work of Abdoli (Abdoli, Hessler, Smither, et al., 2020; Abdoli, Hessler, Vora et al., 2019; Abdoli, Jones, et al., 2019; Abdoli, Miller-Bains, Burr, et al., 2020; Abdoli, Miller-Bains, Fanti, et al., 2021), the concept of diabetes burnout has been presented as associated with prolonged diabetes distress. It generally has referred to as a state of exhaustion due to the strain of diabetes management and withdrawal from active management.

The typical stance taken by Maslach and colleagues has been somewhat of a conservative one, from the definition of burnout restricted to workers in helping professions and an insistence on that definition (Shirom, 2003) until a rather reluctant shift to include workers across other professions (Ahola et al., 2006; Honkonen et al., 2006). Furthermore, the clinical

definitions of burnout as a concept by the WHO from the International Classification of Diseases, 10th edition end up emphasizing the restriction of the concept to a workplace context, and specifically note that "Burn-out refers specifically to phenomena in the occupational context and should not be applied to describe experiences in other areas of life" (WHO; 2019). The definition of burnout in the ICD even stresses specifically the definition by Maslach and colleagues, even though it does not classify it as a medical condition. In that sense, it is a "non-classification", classification (Moss, 2019). This has not deterred a lot of people from extending the conceptual constructs of burnout to include more professions and ultimately other nosologically similar contexts. This includes academic burnout (Lin & Huang, 2014; Rahmati, 2015; Reis et al., 2015; Zhang & Cham, 2007), sport or athlete burnout (Dale & Weinberg, 1990; Goodger et al., 2007; Gustafsson et al., 2014; Lonsdale et al., 2009) and diabetes burnout (Abdoli; 2019a; 2020b; Polonsky, 1999)

Regardless of their general scathing review of the general concept of burnout and how it has been traditionally studied, Bianchi et. al. (2019) agree that "burnout is unlikely to be the specifically job-induced syndrome it has been posited to be". There is also a growing school of thought that the disagreement might be misplaced as the context of the workplace itself underpinning the definition of burnout could be reconceptualised to mean the process or the nature of doing work which would be a more inclusive term. In that sense, it is possible to imagine that a student who puts in a lot of work to study may suffer from the same tendencies as a worker who puts in a lot of work at an office to earn a paycheck (Nash, 2014). This would also aid in

including useful endeavours that are very tasking but not necessarily arbitrarily defined as occupations, for example, the work of being a parent or having to deal on a day-to-day basis with meeting certain deadlines or some other performance indicator such as in school (Schaufeli, 2021).

From that angle, it does seem that T2DM patients not only have to manage diabetes on an everyday basis but have to do it with less rest or resources than those in typical occupations would have. When this is coupled with the demanding nature of the performance outputs required (their glycaemic controls) and the risks of not meeting those deadlines (more pain, suffering and even death as opposed to being fired or being unemployed), it does seem that the process of managing diabetes would be sufficient enough to warrant the precipitation of serious levels of burnout (Abdoli, Hessler, Smither, et al., 2020; Abdoli, Hessler, Vora et al., 2019; Beverly et al., 2012; Polonsky, 1999).

The study would adopt the Oldenburg Burnout Inventory (OLBI) by Demerouti and Bakker (2008). In adapting the OLBI for use among diabetic populations, key empirical considerations were made. Firstly, the work of Demerouti and Bakker (2008) presents the OLBI as a scale with a superior psychometric construct. For example, unlike the Maslach Burnout Inventory which has items phrased in the same direction, the OLBI utilizes reverse-coded items to reduce artificial factor solutions or clustering (Demerouti et al., 2010). It also eliminates the professional efficiency sub scale because literature has pointed to the possibility that it is not a core element of burnout but rather a personality construct like self-efficacy (Bakker et al., 2004; Cordes & Dougherty, 1993; Schaufeli & Enzmann, 1998; Shirom, 1989). The

OLBI structure supports this conceptual stance by validating its scale and extending the definitions embedded in the constructs to allow for not only different professional contexts but the possibility to apply to any nosologically similar context. For example, the concept of exhaustion and disengagement can be applied to many endeavours which can stress a person as well as has the possibility of triggering an emotional disconnect or mental distancing from the endeavour. It is quite different to imagine the same being done to the professional efficacy dimension of Maslach's Burnout inventory without the need for extensive reconceptualisation or the statistical bottlenecks that await the sincere researcher

Diabetes burnout is therefore defined in this study as physical, cognitive and affective exhaustion due to the strain of diabetes care management on the patient and the subsequent withdrawal from active participation in the control of diabetes by the diabetic patient.

The concept of spirituality

The root of the word "spiritual" is from Latin and it means "breath", implying the presence or giving of life or a certain vital force. It is defined by Hungelmann et al. (1996) as the interconnectedness with self, nature and the transcendent. Spirituality and religiosity are more closely related concepts, in many cases used interchangeably (Del Rio, & White, 2012; Hall et al., 2008; Hill & Pargament, 2003; Zwingmann et al. 2011). Spirituality usually connoted a much more personal experience representing a search for meaning and purpose in life and religiosity more closely refers to a much more communal, organised experience with collective rituals, practices, norms and values with clearly defined hierarchies (Hiatt, 1986).

Delgado (2005) discusses four "characteristics of spirituality. The paper highlights the essential holistic contributions of a belief system, meaning or a search for meaning, self-transcendence and connection with others to make up a holistic spiritual framework of an individual. In the paper, the author explores the belief system of a person as the need to believe something(s) to be true. These things are usually not self-made and happen to be part of a larger system of values and norms that an individual ascribes to. These belief systems drive individuals' habits and serve as a guide for making decisions. Belief systems require faith and are usually the consequence of carefully thought-out norms and values much like the scientific framework that operates on theoretical assumptions. The purpose is embedded in spirituality as a search for meaning in life as a foundational pursuit of existence. This is found in the promotion of redemption, prayers, salvation or other rituals towards the need to achieve a higher, holier or cleaner state either with a higher self or with a transcendent force. Connection with others explores the need to interact and bond with others towards the achievement of harmony with other entities. This represents a process of utilising meditation, prayer and many other rituals to connect with God or a higher self. This is also linked to a higher enlightenment experience where a person becomes aware of the universe, even the tragic reality of life such as death and suffering and becomes more responsive or more in tune with the suffering of others. Self-transcendence connotes the idea that a person can extend themselves beyond the current limits to one of a higher state. This state is metaphysical, beyond normal perceptions and almost always a good one (Delgado, 2005). This can help individuals develop better, healthier outlooks toward life as they learn to

embrace all of existence, including its wrongs knowing that there is more to existence than what meets the eye.

An in-depth study into finding a definition of spirituality linked to chronic illness led to the development of the FACIT-sp-12 scale (Functional Assessment of Chronic Illness Therapy, Spiritual Well-Being) (Peterman et al., 2002). The scale measures spiritual wellbeing in chronic illness and has a Cronbach alpha range = 0.81 - 0.88. FACIT reduces the dimensions of spirituality to meaning, faith and peace.

The scale specifically was developed and validated in a wide, diverse population with varied religious traditions. The scale is correlated with the Duke University Religion Index [DUREL] by Koenig and Büssing (2010) and the Systems of Belief Inventory (Holland et al., 1998) spirituality scales. This has translated to the elimination of any specific mention of "God" or a deity and the general focus on spirituality as an individual pursuit. A study by Peterman et al. (2002) validating the scale found no bias between people of different religious groups. The absence of specific mention of religious symbols or rituals does not necessarily make it less suitable for application to a very religious African context because the faith sub scales are closely related to religion whereas the meaning measures more personal, independent spiritual endeavours.

People's spirituality is an important component of their well-being. In people with chronic illnesses like diabetes, a high level of spirituality would usually mean a better way of coping with the psychogenic conditions that accompany the disease. Also, the better people are at finding some meaning in suffering, the better they are at pulling through the suffering. Therefore, many

studies have found high levels of spirituality to be correlated with lower psychogenic issues, especially those involving stress and emotional struggles (Contrada et al., 2004; Aldwin et al., 2014; Paloutzian & Park, 2014; Park, 2007). It is therefore apparent from the literature that if the levels of spirituality are higher, then the levels of diabetes burnout and distress should be lower. Also, a potential mediator, spirituality is linked to diabetes distress and burnout as a part of the biopsychosocial spiritual mode and as a resistance factor. Alternatively, it would seem the emotional struggles of diabetes could affect a person's belief and faith in a higher power. Some studies have shown that prolonged chronic illness tends to make people lose faith in a higher power and question their faith and conversely lead to worse health outcomes (Lago-Rizzardi et al., 2014; Piderman et al., 2014)

The concept of fasting blood sugar

Glucose is blood sugar that is utilised by the body to produce energy and function properly. The adult brain, for example, depends almost entirely on glucose and oxygen to gain energy to function. It is estimated that the average adult brain weighing approximately 1400g uses an average of 91g of glucose in a day, which is equivalent to about 23 cubes of sugar (Clarke, 1999).

When humans and other mammals take in carbohydrates, these are broken down into simple "sugars", eventually into glucose, the unit used for most of the body's activities. Insulin is a hormone produced by the human pancreas used responsibly for aiding glucose to be taken up into individual body cells for their metabolic activities. In individuals with T2DM, insulin production is impaired (is either not produced or the body does not react or

"resists" insulin production). This forces the pancreas to make more insulin to try and get more glucose. The pancreas is unable to keep up and this leads to the development of increased blood sugar levels (hyperglycaemia) and eventually diabetes (Goyal & Jialal, 2018).

Measuring individuals' blood sugar gives a good indication of how well their glucose has been able to move into their cells with the aid of insulin or otherwise. Levels of glucose immediately after eating differ from what would be achieved after a period of fast. In diabetes, it is useful to measure fasting blood glucose to get a clearer picture and for diagnosis. Definitively, diabetics are tied to their fasting blood sugar. That follows that in diabetics, the fasting blood sugar levels would be associated with their psychogenic issues (Abdoli, Miller-Bains, Burr, et al., 2020; B. Arifin et al., 2020) and spirituality (Heidari et al., 2017; Newlin et al., 2008).

The World Health Organization (2011) prescribes Fasting Blood Sugar levels of 7.0 mm/L or higher to describe a diabetic patient. This is equal to 126mg/dL. Lower levels are either normal or hypoglycaemic (that is having low blood sugar levels).

Empirical Review

The empirical review will be done based on the specific objectives of this study.

The nature of diabetes burnout and diabetes distress among T2DM patients

In a research paper focusing on the contribution of patient burnout to noncompliance, Hoover (1983) was among the first to suggest that patients, like their caregivers, may suffer from burnout. The article discusses how

diabetes patients' burnout may be misdiagnosed as noncompliance. Hoover (1983) likens the phenomenon of patient burnout to professional burnout and offers useful tips on how to react to patients with diabetes burnout. By describing cases of diabetics as well as utilising hospital analogies, the study shed more light on how diabetes care usually ignored burned outpatients and mislabelled them as non-compliant. A person with professional burnout would be required to follow a certain routine which includes cutting down on the stress, taking a vacation from work, lessening the care and concern and avoiding people who cause stress. However, it was quick to point out that while the phenomena may exist outside the work context, the tips for addressing professional stress did not necessarily apply to diabetes burnout. Diabetes patients who were burnout were not necessarily able to take the advice given to compliant sufferers of professional burnout without being tagged as being noncompliant. Hoover also draws an analogy between how diabetes patients are expected to be a perfectionist in managing glycaemic levels and remaining complaints. And perfectionists are usually the perfect candidates for burnout. The paper ends with a few tips on how healthcare providers can help burn patients. They include educating patients rather than programming them, listening to the patients, respecting their perspectives, supporting their independence, communicating in plain simple terms and helping them to maintain glycaemic control.

Using a qualitative descriptive study, Abdoli, Hessler, Vora et al. (2019) sought to investigate the experience of diabetes burnout among individuals with Type 1 diabetes and they found out that individuals with type 1 diabetes were more likely to experience diabetes burnout "resulting in

suboptimal diabetes care and quality of life." The study interviewed 18 individuals and analysed the data using content analysis. A period of 4 months was used to interview participants and the results were grouped into themes. Participants stated that the idea of diabetes burnout started with a strong feeling of mental, emotional and physical exhaustion from dealing with the illness. The detachment of illness identity, diabetes self-care and support systems were reported by the participants that they want to live a normal life and that the fact that they have lived with the illness for a longer period does not bother them as it used to and thus, the desire to feel normal. Participants stated that the contributing factors to diabetes burnout were a result of the burdens of diabetes self-care, the failure to manage blood glucose control, lack of psychosocial support from friends and family and the appeal to be a perfectionist in the management of diabetes. Participants discussed that self-awareness of burnout, embracing diabetes, connecting with social support systems as well as relating with those in similar conditions with you and lastly, having a positive mindset about diabetes and its management are the strategies for preventing and overcoming diabetes burnout.

In a similar article, Abdoli, Jones, et al. (2019) sought to explore and appreciate the experiences of diabetes burnout amongst PLWD. The study selected 22 blogs from the internet as samples and 21 type-1 DM and one T2DM blog were used. The findings were categorised into 5 themes and these themes depicted how people with diabetes burn out diabetes and how several factors are contributing the diabetes burnout. The first theme was that burnout is a "detachment" from diabetes. Bloggers were frightened and placed more emphasis on what to do to sustain their lives, how to survive and how to keep

their blood glucose low to the extent that they become emotional and when these expectations are not met, they tend to lose focus and feel disappointed. Bloggers described the concepts of feeling burned out and being burned out. These two concepts are different as the former depicts a feeling that overwhelms the patient and leads to a draining of energy and a loss of determination to continue with daily management of their diabetes. On the other hand, being burned out may connote "the person has completely given up on managing their disease" and "is purposefully taking just enough insulin to survive." Diabetes burnout "was identified through the blog narratives as a growing, long-lasting detachment from diabetes care continuing between days, weeks, months, and sometimes years." Due to this, bloggers reported that because of the stress related to diabetes and its management, they get detached and just grow passive in the treatment of diabetes. The second theme is the demanding life of diabetes. Bloggers argued that diabetes is a full-time job that requires much attention and responsibility. Issues from checking your diet, taking medications, eating a balanced diet and managing one's glucose levels are demanding and require much effort. If one decided to take a break, it is even more demanding as more efforts will be needed to put in place to catch up from where you left off. Pressures from society and healthcare sectors, the desire to impress family members and friends and the desire to control blood sugar levels in diabetes management care contribute to the struggles of diabetic patients to attain the perfect numbers of diabetes management, hence, diabetes burnout. Burnout also goes hand in hand with other life activities. Activities like transitioning from adulthood, pregnancy, stress from work, divorce, family issues, and other health-related activities catalyze burnout.

Bloggers argued that managing burnout is a difficult process and a difficult situation to come out of. Also, bloggers argued that there is some level of difficulty to admit to burnout and reluctance to ask for help from others. Because diabetic patients want to attain a perfect number or score in diabetes management, they find it difficult to admit burnout and tend to pretend to their families or friends. In effect, they find it difficult to ask for help from others. However, some bloggers admit that they can get support from their peers or groups and that they realise that disclosing burnout helps in diabetes management than not disclosing it.

Fritschi and Quinn (2010) discuss fatigue in patients with diabetes. They argue that fatigue is a generic feature amongst persons with diabetes since diabetes can prevent them from performing their daily activities and "diabetes self-management tasks." They argue that although fatigue can be associated with other health issues, it is more prevalent in diabetes and that fatigue can be described as a psychological or emotional function, overweight, lack of physical exercise and the pressure that comes with diabetes management – in terms of checking one's diet, the intake of medications and numerous hospital appointments. The researchers used search terms such as diabetes, fatigue, tiredness and symptoms to search for literature that addressed diabetes-related fatigue. The purpose of the research was to review existing literature about diabetes-related fatigue that would help provide a framework to serve as a basis for a more focused study on fatigue. They concluded that there is the need to have a standardised definition, measurement and diagnostic criteria of fatigue in diabetes and their model provides a more focused approach to looking at the nuances of fatigue in

diabetes. Their model exploits "the multidimensional phenomena (physiological, psychological, and lifestyle) associated with fatigue in diabetes."

Nuari (2020) investigated the factors associated with diabetes burnout among T2DM patients. He employed a correlational, cross-sectional design to purposively sample 89 participants who had T2DM. Most of the respondents were aged 56-60. They were also mostly female and had diabetes for a long while. The study also found a correlation between some factors such as gender, educational background, and level of income with diabetes burnout among the participants. From the results of the study, most of the patients had high levels of diabetes burnout. The study found 34 of the totals of 89 participants to have high or severe levels of burnout whilst 32% had moderate burnout. This combined made a total of over 70% with moderate to severe levels of burnout. Again, the study found women to have more severe levels of burnout that is 21 women representing 60% of women had severe burnout as compared to 13 men representing about 27% of men. The study recommended that caregivers should give education about the existence of burnout and emphasize the importance of taking medication for those who had pre-existing burnout.

AlOtaibi et al. (2021) assessed the incidence of diabetes-related distress among T2DM patients. The study utilised an observational descriptive approach to sample 399 patients from a Hospital in Saudi Arabia. The results of the study found a high prevalence of moderate to severe diabetes-related distress. It also found long-standing diabetes and low fasting blood sugar levels as risk factors for diabetes-related distress.

Zanchetta et al. (2016) sought to examine the correlation between sociodemographic variables and diabetes distress among T2DM patients. The study employed a cross-sectional design that surveyed 130 participants from a diabetes care centre in Brazil. The data from the study was gathered using a Brazilian version of the Diabetes distress scale. From the findings of the study, about 31 per cent of the participants had diabetes distress and diabetes distress was significantly related to some sociodemographic variables. The highest scores in the distress scale were found in the emotional burden sub scale. The study concluded that sociodemographic variables weakly predicted distress.

Kretchy et al. (2020) investigated diabetes distress and adherence to medication among PLWDs. The study recruited a total of 188 patients from a hospital specializing in diabetes in Accra. The results of the study indicate that a high level of patients (44.7%) had diabetes distress. The study also found that the odds of medication adherence among PLWD who had high levels of diabetes distress was 66.5% lower than those who did not have high levels of diabetes distress.

According to Amankwah-Poku et al. (2021), the process of dealing with diabetes can precipitate diabetes distress and impact negatively on their quality of life of T2DM patients. The study recruited 62 patients from diabetes centres in Accra and assessed them on diabetes distress, wellbeing and quality of life. The results of the study showed that the participants had high level of distress and the distress was associated with lower quality of life and less wellbeing.

In a cross-sectional study of T2DM patients in Cape coast, Ephraim et al. (2021) recruited 157 T2DM patients who were 20 years or older and

assessed them on diabetes distress using the DDS and Covid-19 worries. The study found that most of the patients had complications of diabetes and a little over 42.7% had symptoms of Covid. The participants also reported moderate to high levels of the particular fears associated with Covid-19 including that of isolation.

The relationship between diabetes distress and diabetes burnout

In a qualitative descriptive study, Abdoli, Hessler, Smither, et al. (2020) sought to prove or disprove the hypothesis that diabetes burnout dimensions are not the same as diabetes distress and depression. The study collected data from 31 diabetics using individual semi-structured interviews by phone. The data gathered from that was analysed using content analysis techniques. The results of the study showed the sub-dimensions of burnout, exhaustion and detachment were frequently experienced in diabetes and that the diabetics routinely felt a lack of control over their conditions. Also, the support system available to the individuals was found to be associated with diabetes burnout. The respondents deemed diabetes burnout to be different from diabetes distress but saw both to be closely related terms. Other relationships were reported between diabetes burnout and symptoms of depression. Some reported a correlation between diabetes distress, diabetes burnout and symptoms of depression whilst other respondents felt that diabetes distress was a causative factor for burnout and depression. The study concluded that diabetes burnout might offer a new direction in the understanding of the realities of subpar diabetes management and the existence of suboptimal diabetes care.

Beverly et al. (2012) examined the emotional struggle of patients with T2DM from the perspective of the patient. The study recruited 34 patients aged 30 to 70 years who had been living with T2DM for more than 2 years and did not have any cognitive and visual issues or serious psychopathology. The study utilised a semi-structured questionnaire guide that lasts between half an hour and an hour after saturation has happened. The audio that was gotten from the interview was then transcribed. Afterwards, the data gathered was analysed using content analysis. Out of the total analysed, 14 patients reported that their caregivers had insight into their struggles with diabetes. They demonstrated understanding of the impacts of the emotional struggle of diabetes on key diabetes outcomes and appreciated their physicians asking about their emotional struggle with diabetes. 20 of the total number of participants however reported that their caregivers did not inquire about their emotional struggle and suggested infrequent and short doctor's appointments to be the cause. The study highlighted the importance of physicians' appreciation and acknowledgement of the emotional struggles of patients to their psychological state. Following the lack of proper emotional support for diabetics the researchers recommended that emotional assessment be included as part of routine diabetes care and management.

In an 18-month, non-interventional longitudinal study, Fisher et al. (2008) conducted research on anxiety disorders, affective disorders and depression among individuals with type 2 diabetes. The study sought to find out the prevalence of these disorders among type 2 diabetics and how they correlated with each other and diabetes distress over a while. Fisher et al. (2008) recruited 506 patients who had T2DM and assessed them over a 9-

month interval totalling 18 months for panic disorder, major depressive disorder, dysthymia, generalised anxiety disorder, diabetes distress and depressive affect. They also gathered sociodemographic data as well as glycated haemoglobin data. The results of the study showed that anxiety and affective disorders were high among T2DM patients in comparison with community adults. The rates were 123% for generalised anxiety disorder, 85% for panic disorder and 60% for major depressive disorder. In the second assessment, the interesting finding was that the prevalence of depressive affect and diabetes distress was between 60 and 737% higher than for anxiety and affective disorders. The associated factors of the disorders included gender, age and comorbidity and blood sugar levels measured by glycated haemoglobin percentage were related positively to diabetes distress and depressive effect but not to anxiety and affective disorders over a period. The study concluded that there was a high persistence of diabetes distress and depressive affect with comorbid conditions creating a need for more screening for diabetes distress and mental disorders among T2DM suffers.

Polonsky et al. (2005) conducted a study to develop a scale to measure diabetes distress. Utilising four different patient sample populations, the study developed an initial 28-item scale that was later reduced to 17 items following exploratory factor analysis. 200 patients were recruited from a primary health clinic, 167 patients at a diabetes management program, 179 patients at a speciality diabetes clinic's waiting room and 158 at an ongoing diabetes management program. The scale was reliable, with high internal validity and a sufficient linkage with the Centre for Epidemiological Studies Depression Scale. The study concluded that the diabetes distress scale had good internal

validity and reliability across its different study sites and it could serve as a useful scale for the measurement of diabetes distress in clinical settings and research pursuits.

Influence of spirituality on diabetes burnout and diabetes distress among T2DM patients.

Gupta et al. (2014) investigated the interaction between spirituality and self-management of diabetes among individuals with T2DM. The study utilised qualitative focus groups to elicit responses from diabetes from a primary care practice (Family Care Centre of the Rhode Island Memorial Hospital) in an urban area (Central falls and Pawtucket) in Rhode Island. The study utilised the HOPE assessment for spiritual assessment as part of a semi-structured interview guide. A total of 18 patients with T2DM participated in the study with 61% being females. The guide included questions on the impact of diabetes on day-to-day activities, the sources of hope and strength, the role of spirituality in providing that source of hope and strength and how it motivates them in diabetes self-management. The analysis of the data gathered produced some themes including self-management motivators of fear and family, relationships with other s, nature and self, the impact of diabetes in day-to-day living and spirituality as the foundation of strength and hope. The study found a high level of spirituality among the participants. The patients were comfortable talking about the spiritual and spirituality had a significant impact on many patients even though generally, the impact of spirituality on patients varied widely. The study concluded that patients in underserved, urban places are comfortable talking about the associations between their

spirituality and diabetes self-management. The role of spirituality, whilst important, varied according to individuals

In a metadata analysis published in the Journal of Holistic Nursing, Polzer and Miles (2005) examined the literature on diabetes self-management and the relationship with spirituality among the African American community. The study utilised four major online databases including PubMed, PsycInfo, Sociological Abstracts and Cumulative Index to Nursing and Allied Health Literature. The search on the databases looked for publications about diabetes in African Americans with a focus on their spirituality and self-management. It was limited to clinical and research publications done in English spanning the years 1980 through to 2004. The exclusion criteria included articles on participants younger than 18 years, those published before 1990 and articles that had a clinical focus on the researchers. In total 55 articles turned out in the search for examination and 5 books were also analysed. The synthesis of the literature was done based on the five-research stage synthesis by Cooper (1998). The review found the possibility that spirituality may be a source of support in coping with diabetes, improving health outcomes and helping people cope with diabetes.

In a qualitative study (B. Arifin et al., 2020), data were collected from 43 participants from a primary care facility in East Java, Indonesia who had T2DM, to assess distress and coping strategies amongst the patients. The study utilised in-depth interviews and focus group discussions as part of the data collection procedures. Importantly, the interview guide was based on an Indonesian adaption of the Diabetes Distress Scale presented in the Bahasa language. Out of the study, two major themes emerged centred around internal

diabetes distress and coping mechanisms and external diabetes distress. The internal factors included fatigue including those related to T2DM and those unrelated to T2DM, disease burden, and being uninformed. The internal coping included positivity, acceptance and ultimately spirituality. The study found out that spirituality and acceptance are most related to diabetes distress and management as coping mechanisms and hence the most common mechanisms for reducing diabetes distress. That is, high levels of diabetes distress were found to be associated with low levels of spirituality and vice versa. The study found a significant difference in diabetes distress between men and women and a potential association between diabetes distress and the provision of health care services.

Darvyri et al. (2018) assessed the role spirituality plays in the management of T2DM. The study utilised database searches in PubMed for related papers. The search produced 26, mainly qualitative, papers from PubMed. The papers were analysed using the Strobe statement used for analysing cross-sectional studies and Newcastle-Ottawa Scale used for analysing cohort studies. The systematic review found that rates of depression were lower in women with low economic status and high rates of spirituality and suggested the impact of spirituality in impacting diabetes management. It also found that many studies concluded the role of diabetes in glycaemic control and the relationship between spirituality and better blood glucose levels. The study also importantly found spirituality to be an important factor in achieving optimal self-management which would help them reduce stress and ultimately burnout. The study suggested the inclusion of spirituality in

future studies as it would help in disease self-management and help caregivers to tailor healthcare to the individual needs of diabetics.

Jafari et al. (2014) investigated the levels of spirituality and their relations to quality of life among adult Iranians with T2DM. Using a cross-sectional study design, the study conveniently surveyed 203 Iranian patients with T2DM. Spirituality was measured using FACIT – Sp. The study also utilized the 2-item Patient Health Questionnaire (PHQ-2) for depression of the patients and the FACT-G for general Quality of Life. Other variables measured were fasting blood sugar and glycated haemoglobin levels. The mean ages of all the 223 participants were 55.42 (SD = 10.67) and the participants ranged in age from 18 to 87 years. Most of the participants were married (95.1%) and female (69.5%). Most of the participants had a high spirituality with a mean FACIT sp-12 score of 030.59 out of a total of 48 (SD = 6.14). The faith sub scale had the highest mean sub scale as compared to the other sub scales with a mean of 10.78 (SD = 2.89).

Ischaq et al. (2021) examined the predictors of diabetes distress within old persons living with T2DM. The study utilised a cross-sectional design, recruiting participants from a tertiary hospital in Java, Indonesia. In total, 198 persons with T2DM were recruited and participated in the study. The results of the study showed that spirituality was significantly linked with diabetes distress. Other factors found to be linked were self-efficacy, blood glucose and nonsuppurative behaviour from family.

Association of fasting blood sugar with spirituality, diabetes distress and diabetes burnout

Abdoli, Miller-Bains, Burr, et al. (2020) conducted a cross-sectional study made up of measures of diabetes burnout isolated from earlier qualitative articles and analysed their relationship with diabetes distress, depression and outcomes. The study employed an online cross-sectional survey to recruit 111 diabetics who were made to answer questions related to proposed outcomes of diabetes burnout, missed appointments and last glycated haemoglobin as indicators of diabetes outcomes and some clinical and sociodemographic variables. The researchers utilised exploratory factor analysis to identify and analyse the items that were hypothesised as part of the diabetes burnout measure. The items were retained even though some of the factors did not load on the anticipated factors after the analysis and were used in further analysis of the other data. The results of the analysis of the data showed strong internal consistency of the scale for burnout with Cronbach alpha values exceeding 0.8. The study also found diabetes burnout to be correlated significantly with diabetes distress and depression. Also, diabetes burnout, depression and distress were found to correlate significantly with multiple diabetes outcomes, even though after controlling for diabetes distress and depression, diabetes burnout was no longer found to be significantly related to the outcomes. The study concluded that a foundational basis has been established for the further development and establishment of a scale for measuring diabetes burnout. It further recommended further studies to differentiate diabetes burnout from diabetes distress and to strengthen the foundational scale just established.

Newlin et al. (2008) evaluated the association between spirituality and blood sugar levels among black, T2DM women**.** The study utilised a descriptive, cross-sectional convenient study design which saw 109 black T2DM patients recruited for the study. The data gathered included sociodemographic data including age, level of income and level of education. Other data gathered were clinical data, which included BMI and diabetic medication use, psychosocial data on social and emotional distress/ support, spirituality/ religiosity and blood sugar levels. Using a previously established theoretical model, linear regression analysis was done to investigate the relationship between the factors. The study concluded that spirituality was significantly associated with glycaemic control even with age, income, education, diabetes medication usage and BMI held constant. The study however did not find evidence of the mediation effect of social support and emotional distress on the relationship between spirituality and glycaemic control.

Heidari et al. (2017) investigated religious and spiritual self-care among T2DM patients in Iran. The study utilized a descriptive, cross-sectional study to survey 154 T2DM patients conveniently. The results of the study indicated that there was no significant difference in religious activity between those with and those without good glycaemic control. The study also found that there was no correlation between spiritual well-being and fasting blood glucose level. However, it also found that being generally religious was associated significantly with fasting blood glucose. The study concluded that spiritual wellbeing scores did not differ significantly according to glycaemic control.

Conceptual Framework

The conceptual framework informs how the variables are related in the present study. In this study, there were four variables of which spirituality acts as a mediating variable, diabetes distress and fasting blood sugar acts as independent variable and diabetes burnout as the dependent variable. In this study, the research sought to explore the mediating role spirituality plays in the relationship between diabetes distress and burnout and how fasting blood sugar also relates with diabetes distress, burnout and spirituality. Figure 1 below shows the conceptual framework of the study.

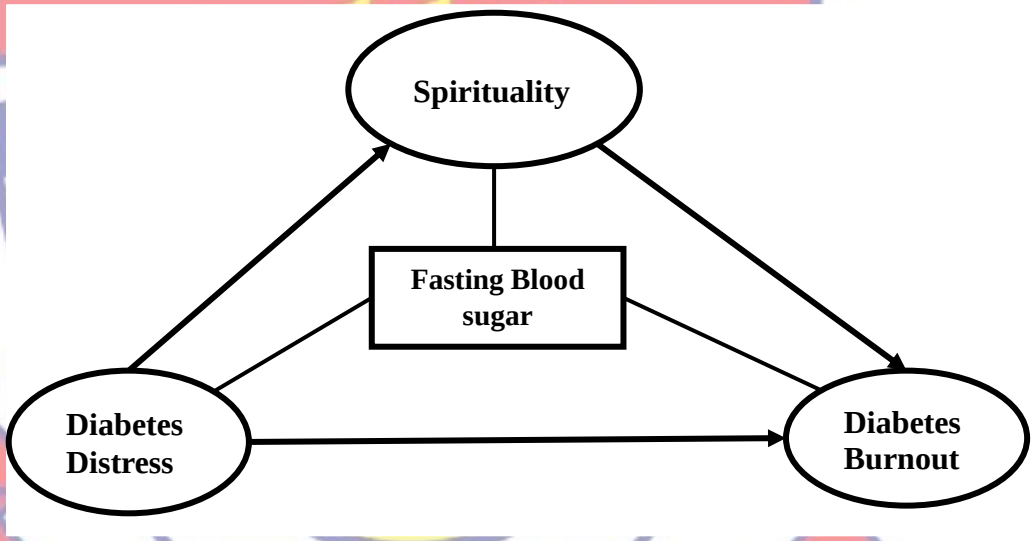

Figure 1: Conceptual framework

Source: Author's own construct

Summary of Literature Review

This chapter captured four theories, the multidimensional theory of burnout, Han Selye's stress theory, conservation of resources theory and the biopsychosocial spiritual theory. The chapter discussed each theory in detail and outlined a framework to support the theories. The research was then reviewed on the theories to uncover the interconnections between each concept. Previous studies on the nature of diabetes burnout and diabetes

distress, the relationship between diabetes distress and burnout and the influence of spirituality on diabetes burnout and diabetes distress were presented. Also, studies on the association of fasting blood sugar with spirituality, diabetes distress and diabetes burnout were reviewed. The studies showed that there was a high level of diabetes distress and diabetes burnout among T2DM patients. It also showed a significant association between diabetes distress, spirituality and diabetes burnout with one study hinting at the possibility of spirituality playing a mediating role. Lastly, in most studies, fasting blood sugar was significantly related to diabetes distress, burnout and spirituality from the review. A chunk of the research was conducted in North America and Europe with many still being conducted in Asia. That left little knowledge on the correlates and impacts of psychogenic areas of diabetes management and the spirituality of T2DM patients within Africa and Ghana. Also, studies investigated diabetes distress, burnout and spirituality seldom together and usually qualitatively. The quantitative results that were seen were usually in type-1 diabetes patients. Also, studies did not report the mediating effect of spirituality on the relationship between diabetes burnout and diabetes distress. The implications of the results of the study for policy makers would be that they can get baseline data for understanding the psychogenic areas of diabetes care and management to help in further studies and possible interventions. The study would also help health care providers, especially clinical staff to better understand and treat T2DM patients.

CHAPTER THREE

RESEARCH METHODS

Introduction

The study examined the phenomena and interactions of diabetes burnout, diabetes distress, and spirituality and how they correlate with fasting blood sugar among T2DM patients in Ghana. The third chapter will focus on the applicable research designs, the study area and population, sampling techniques, research instruments, data collection processes, data analysis and study summary.

Research Paradigm

The research paradigm or philosophy is a wide system that describes a study's structure and defines the beliefs, perceptions and amalgamation of various theories that are used in scientific research. It forms the foundation of the research and it informs the choice of strategy, statement of the problems and the processes of data collection, handling and analysis. The different types of research paradigms include interpretive, constructive, positivist and pragmatist. The interpretative research paradigm has an ontology (body of knowledge about the nature of reality) that believes that reality is subjective and that there is an absolute truth. Its epistemology (body of knowledge about the nature of knowledge itself) is centred on subjective knowledge and a multitude of ways to interpretative reality leading to the conclusion that there is no absolute way of knowing something. The resultant methodology includes inductive reasoning where meaning is derived from multiple interpretations of researcher-respondent relationships in a natural environment leading to methods like ethnography and grounded theory. The positivist research

paradigm focuses on much of the opposite with an ontology based on a static and immovable reality based on a particular order of objective facts and truth. The epistemology is centred around generalisations of objective truth that produce knowledge free of value. The research methods that result are usually ones based on deduction where scientific processes are used to describe and generalise patterns in nature as well as examine causality and interactions (Bunniss & Kelly, 2010). In this research, the positivist research paradigm is used. Under it, the hypothetico-deductive research model is used. It describes the conduction of research by constructing a falsifiable hypothesis and then testing it to prove or disprove the hypothesis.

Research Approach

Conducting research requires the application of a research approach. The study uses the quantitative research methodology. In quantitative research approaches, there are statistical or mathematical, objective measuring of numerical data, and the analysis of the said data. The quantitative research methodology usually leads to the analysing of the data using computational methods aimed at finding patterns, and associations and making predictions and causal relationships (Conroy et. al., 2008).

The study would utilise variables in the form of numerical data. These would gather the numerous possible values of the data. The non-numerical data to also be gathered would include sex. There would be coded to resemble numerical data and used in the analysis. For example, females would be assigned the code of "1" whilst males are assigned the code of "2". The quantitative data for this study would be obtained by the use of a questionnaire instrument that will elicit responses from participants.

Research Design

The research strategies are the systematic plans that guide the conducting of research. This study utilises the descriptive survey and more exactly the descriptive cross-sectional research design. The study utilized both descriptive and cross-sectional analysis. According to Cohen et al. (2011), descriptive research is mostly quantitative research that focuses on presenting characteristics of the subject of research rather than answering the why of research. It is used to measure trends, and conduct comparisons while understanding existing states. Again, in descriptive research, the variable remains uncontrolled and serves as a basis for further research. Subsequently, most descriptive research is cross-sectional. Cross-sectional research designs seek to take information from a specific period to describe existing states or conditions. Cross-sectional studies also seek to find, compare and determine the interrelations between the existing states. The study made use of the cross-sectional research design because it allows for the results of the study to be generalized to individuals and groups with similar characteristics. Cross-sectional studies are therefore very representative and hence they can yield statistically viable results, with greater validity and reliability (Creswell, 2013). Surveys can effectively gather the data from the sampled group that resemble the actual characteristics of the general population. Cross-sectional study designs are highly objective with the capacity to allow the analysis of multivariate data effectively. The cross-sectional research design has some disadvantages. Study participants may lie, or suffer from social desirability where they would underreport or be untruthful about a particular piece of data because of societal norms or beliefs (Grimes & Schulz, 2002).

Furthermore, because many people answer the questions and the data set is large, there is less control over the responses given as compared to more direct data gathering design with fewer participants. This means participants may not respond correctly and the gathered data may not accurately reflect their actual behaviour (Punch, 2013). Regardless of all of the disadvantages, the cross-sectional study still has a lot of good strengths hence was adopted for this study.

The study examined the phenomena and interactions of diabetes burnout, diabetes distress, and spirituality and their correlates among T2DM patients in Ghana. The descriptive survey design would help to explain and understand the phenomena under study.

Study Area

The main area of study is the Cape Coast Metropolis. It is the Central regional administrative capital and also the capital of the Cape Coast Metropolitan District all of which lie in the central portion of the southern part of Ghana. By the North, the Cape Coast Metropolitan assembly is bounded by the districts of Twifo-Atti Morkwa and Heman-Lower Denkyira. To the east, it is bordered by the Abura Asebu Kwamankese (AAK) district. The Komenda Edina Eguafo Abirem Municipal (KEEA) district bounds the Cape Coast Metropolitan district to the west and the glorious Gulf of Guinea borders it to the south. The population of the Cape Coast is 169,894 according to the 2010 population census conducted in Ghana (Ghana Statistical Services, 2012). The main ethnic group of the city is the Akan Fante people and they speak Fante. Regardless of this, a majority of people in the city can fluently read, write and understand English. This has been historically attributed to the first contact

with the English settlers and the establishment of several educational institutions. Many educational institutions are located within Cape Coast. This includes St. Augustine's College, Mfantsipim Senior High School, Adisadel College, Holy Child, Wesley Girls School and the University of Cape Coast. The University Hospital of the Directorate of University Health Services was chosen because it was the first point of call and a regular visiting centre for persons with chronic health diseases serving over 70,000 students and indigenes of the surrounding communities.

Population

According to Creswell (2013), the research population refers to a large group of individual units, persons, things or objects that is at the heart of a scientific process. There is usually a pattern or a particular feature that is common among all the particular objects, persons or things under a research population that defines them. Out of the research population, the accessible and target populations emerge. The target population refers to all the individuals, objects or things that have the characteristic or feature of interest. Ideally, a study targets the target population. However, due to research constraints, the researcher would have to settle for the population that is available known as the accessible population (Cohen et al., 2011). In this study, the target population is all adults with Type 2 diabetes in the Cape Coast Metropolis while the accessible population is all adults with Type 2 diabetes receiving treatment at the University Hospital of the University of Cape Coast. They are mostly adults who live in and around the University community who have been diagnosed with T2DM. The necessity of getting their blood sugar checked and receiving care before eating (that is after an

overnight fast) means that the majority of students, workers and indigenes who live in the most cosmopolitan part of Cape Coast seek their health at the University Hospital (Personal Communication with the Administrator, 15th July 2021).

Sampling Procedure

It is not always possible to target and access the whole population considered for a study. In that case, it is important to select a representative group that can still have the characteristics of the general population. This subset is taken from the accessible population and can be studied and used to make inferences and generalizations about the general population. The sampling procedure is the name given to the process of taking a representative subset from the general population (Creswell & Creswell, 2018). There is a myriad of sampling procedures and Creswell and Creswell (2018) group them under two broad types. They include the probability and non-probability methods. Probability sampling allows every individual unit of the population a chance of being selected as part of the sample and their probability to be selected is accurately determined (Kothari, 2004; Saunders & Thornhill, 2007). Non-probability sampling refers to methods in which not all units of the population have a chance to be selected or a case where their probability of being selected is not accurately determined.

The non-probability sampling technique was used- precisely, the purposive and convenience sampling procedure. Purposive sampling was used to sample adult diabetic patients for the study. It is used when the researcher is interested in a particular trait of interest, in this case, adults with T2DM. Convenience sampling was used for this study since it allows the researcher to

easily contact the accessible population. Convenience sampling, also called availability sampling is used to draw a sample from a group of people that are easy to contact (Saunders et al., 2012). Hence, this sampling method was used to select participants (the patients) during their clinic days at the University Hospital of the University of Cape Coast.

To arrive at a suitable sample size, Vaughan's formula was used. The formula is PQ/ (E/ 1.96)2 where [N is the sample size, P is the maximum expected prevalence rate of diabetes, Q is 100–P, E is the margin of sample error tolerated in percentage – 5% being the maximum accepted value (Vaughan et al., 1989). Using a prevalence rate of 6.46% of DM in Ghana (Asamoah-Boaheng et al., 2019), a sample size of 93 was obtained by calculation. However, the participants were oversampled and a total of 120 questionnaires were given out with a return of 105.

Table 1: Socio demographic data of participants

	Mean	Std. Deviation	Minimum	Maximum
Waist-to-Height ratio	0.27	0.11	0.17	0.83
Missed Diabetes appointments	1.36	1.23	0	4
Age total	61.6	12.27	30	95
Age groups	**Frequency**	**Percentage**		
Young Adults	4	3.8		
Middle-aged	41	39.0		
Adult	60	57.1		
Old Adults				
Gender	**Frequency**	**Percentage**		
Male	41	39.0%		
Female	64	61.0%		
Occupation	**Frequency**	**Percentage**		
Unemployed	2	1.9%		
Blue collar	54	51.4%		
White-collar	13	12.4%		
Retired	36	34.3%		

Source: Field data

Inclusion Criteria

Diabetics with T2DM aged 18 years and above were recruited for the study. This is because the scales used were designed to be used by adults and persons aged 18 years and above are considered adults under the relevant laws of Ghana and many international jurisdictions as well as for psychometric data gathering.

Exclusion Criteria

Diabetics with Type-1 diabetes mellitus and pregnant women were excluded. This is because pregnant women with high fasting blood sugar could suffer from gestational diabetes which might present confounding variables. Individuals who had not had diabetes for more than a year were also excluded due to the necessity of the prolonged self-management of diabetes to the development of psychogenic conditions related to diabetes.

Ethical Consideration

Ethical clearance was obtained from the Institutional Review Board of the College of Education Studies, UCC. Following that, an introductory letter was taken from the Department of Education and Psychology, UCC.

Participants in the research were assured of their right to confidentiality and privacy, declined to participate or withdraw at any point of the research and anonymity. They were assured that their data would be anonymised and stored carefully to prevent unauthorised access. A minimum necessary amount of demographic information was collected to avoid the identification of the persons involved. The respondents were assured that the hard copies of the research would be disposed of after three years and soft copies stored safely in Google Drive. The respondents were assured that they

could choose to withdraw at any time in the research and it was not compulsory to finish answering the questions if they did not feel comfortable enough. All parts of the study were explained to them to ensure they knew what exactly they were participating in. Participants were also given the possible benefits of the research and their contribution to the study. Afterwards, participants were made to sign an informed consent form before partaking in the research. The researcher was with the participants to clarify any parts of the study they found difficult, and the participants were not pressured to proceed with the research.

Data Collection Instruments

A standardised questionnaire was used to gather the data. Questionnaires are useful self-report instruments for the gathering of quantitative data. Marshall (2005) discusses the importance of a questionnaire instrument for the collection of quantitative data. The paper points out the kind of background work that needs to be done before designing a questionnaire. There is a need for an extensive search in literature for validated questionnaires. In the case of an unsuitable one, the adaptation of a questionnaire must be done carefully and the delivery of the questionnaire planned. Afterwards, the questionnaire is to be piloted and revised before the start of the study (Marshall, 2005).

The instrument is made up of four sections. Section A centres on the demographic data of respondents as well as their body mass measurements and Fasting Blood Glucose. Section B elicits information on diabetes burnout using a modified version of the 16-item Oldenburg Burnout Inventory (OLBI; Halbesleben & Demerouti, 2005). Lastly, Section D collects data on diabetes

distress using the 17-item Diabetes Distress Screening Scale (DDS; Polonsky et al., 2005).

Oldenburg Burnout Inventory (OLBI; Halbesleben & Demerouti, 2005)

The OLBI is a 4-point Likert-type scale with 16 items used in the measurement of burnout. Halbesleben and Demerouti (2005) showed that the OLBI has high internal consistency, with scores ranging from .74 - .87. Cronbach alpha scores were all over 70, proving its reliability. The findings also suggested a strong test-retest reliability of the OLBI of three months to eight years for the exhaustion scale (range .49 -.70) and three months to five years for the depersonalisation scale (range .35 - .49). Factorial validity analysis showed the two-factor model to be the only model that reaches appropriate statistic levels that would be considered a good fit for the data. The convergent and discriminant validity of the OLBI was supported vis-a-vis the Maslach Burnout Inventory – General Survey (Maslach et al., 1996) and established the presence of enough divergence to support independent additions of the OLBI to burnout measurement. The inventory is adapted for this study to be used in the context of the management of diabetes. Face validity was achieved by a rewording of the items from an occupational context to the context of diabetes management, using terms common among diabetics. It was then subjected to confirmatory analysis to test the factor structure of the items.

Confirmatory factor analysis of the adapted version of the 16-item Oldenburg Burnout Inventory

This section contains the results of the validation of the Oldenburg Burnout Inventory. Data were collected from 100 diabetic patients at the Cape

Coast Metropolitan Hospital. Confirmatory factor analysis (CFA) was performed using Smart-PLS. The details of the results are presented in table 2.

Table 2: Factor loadings, AVE and reliability for Oldenburg Burnout Inventory

Construct	Items	Loadings	rho-A	CR	AVE
Disengagement			.911	.923	.601
	B1	.741			
	B3	.803			
	B6	.873			
	B7	.775			
	B9	.780			
	B11	.846			
	B13	.761			
	B15	.665			
Exhaustion			.924	.937	.649
	B2	.727			
	B4	.779			
	B5	.748			
	B8	.850			
	B10	.869			
	B12	.875			
	B14	.838			
	B16	.727			

Source: Field data, 2021.

As indicated in table 2, item B15 had factor loadings below .70. It was retained for theoretical reasons. All the items were deemed valid for data

collection. The AVEs for all the dimensions were above .50, hence convergent validity was achieved. The results of the discriminant validity are presented in table 3.

Table 3: Discriminant validity for Oldenburg Burnout Inventory

Construct	1	2
Disengagement		
Exhaustion	1.019	

Source: Field data, 2021.

According to Ringle et al. (2015), to achieve discriminant validity, the HTMT values must be below .90. For the discriminant validity, the HTMT values for the dimensions were above .90, hence discriminant validity was not achieved. The study however used a total score for the analysis rather than the individual scale scores hence, this did not affect the main analysis. Further, the internal reliability was estimated using the rho_A and most of the coefficients were above .90. Figure 1 presents the confirmatory factor analysis of the Oldenburg Burnout Inventory.

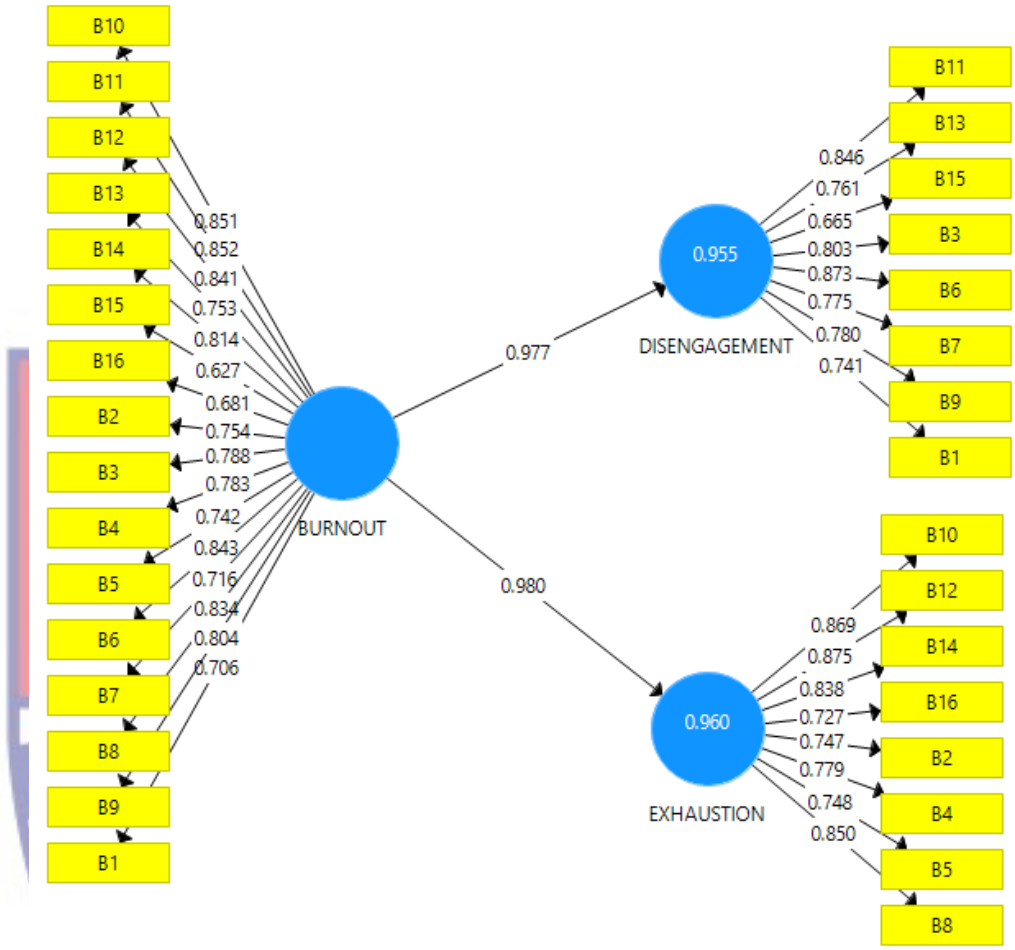

Figure 2: Confirmatory factor analysis for Oldenburg Burnout Inventory.

Adapted version of the 16-item Oldenburg Burnout Inventory (OLBI; Halbesleben & Demerouti, 2005) – OLBI-DB

The adapted OLBI is a 16-item, 4-point Likert type scale that was developed from the scale by (Halbesleben & Demerouti, 2005). The adapted scale has demonstrated consistency and good reliability with sufficient AVEs and loadings. It is a multidimensional scale adapted to measure diabetes burnout. The items on the scale are scored from 1 (strongly agree) to strongly disagree (4). The scale contains 8 items worded negatively (items 2, 3, 4, 6, 8, 9, 11 and 12) and 8 items worded positively (1, 5, 7, 10, 13, 14, 15 and 16). To find a total score, the negatively coded items need to be reverse coded.

Afterwards, all the items are added together to get a total burnout score and divided by 16 to get the mean score. The range for the scores is 1-4. The Cronbach alpha values for the adapted version of the OLBI-DB stood at .708.

The 17-item Diabetes Distress Screening Scale (DDS; Polonsky et al., 2005).

The DDS is a 17-item 6-point Likert-type scale developed by Polonsky et al. (2005). It has demonstrated consistent, generalisable factor structure and good internal reliability and validity in different settings and is reliable in several studies (Fisher et al., 2008). The scale is a multidimensional scale consisting of four major constructs namely emotional burden (items 1,3,8,11 and 14), Physician-related distress (items 2,4,9 and 15), and Regimen-related distress (items 5,6,10,12 and 16) and Interpersonal distress (items 7, 13 and 17). The scale is scored from 1 (not a problem) to 6 (a very serious problem). The total score for the scale is gotten by summing all 17 items and dividing by 17. A mean score of 3 or higher is considered moderate stress and is clinically significant. The sub scores are calculated by summing the appropriate number of items under the particular subscale and dividing by the number of the item. The average of 3 is applicable for determining clinically significant levels of specific distress domains. The Cronbach alpha for the study using the adopted DDS stood at .871.

12-item, 5-point, Likert type FACIT-sp-12 (version 4) scale (Peterman et al., 2002)

12-item, 5-point, Likert type FACIT-sp-12 (version 4) scale (Peterman et al., 2002) for spirituality was adopted for this study. The scales are scored from 0 (not at all) to 4 (very much). The scale is made up of three subscales

namely Meaning (items 2, 3, 5 and 8), Peace (Items 1,4, 6 and 7) and Faith (Items 9, 10,11 and 12). Item 8 of the Meaning subscale and 4 of the peace subscales are worded negatively and have to be reverse coded before summation. The totals for the individual subscales are obtained by adding all the items multiplying by 4 and then dividing by the number of items answered. The total score of the spirituality scale is obtained by adding the total scores for the individual subscales. The reliability statistic, Cronbach alpha for the scale for the study was .821.

Pilot-test Results

All three instruments of the study were pretested on 100 participants who had T2DM at the Cape Coast Metropolitan Hospital to determine the reliability of the instrument. The demography of people attending the hospital is similar to those attending the University Health Services Hospital at the University of Cape Coast in Cape Coast.

Nunnally (1994) states that a Cronbach alpha of .70 or higher was enough to ascertain a strong internal consistency of an instrument. The initial testing of the instruments showed the Cronbach alpha for each of the instruments was greater than .70. The Cronbach alpha value for the adapted version of the English version of the 16-item Oldenburg Burnout Inventory was .736. The Cronbach alpha value for the 12-item, 5-point, Likert type FACIT-sp-12 (version 4) scale was .793 and the Cronbach alpha value for the 17-item Diabetes Distress Screening Scale was found to be .797.

Data Collection Procedure

An introductory letter and ethical clearance were obtained from the Department of Education and Psychology and the Institutional Review Board

of the College of Education Studies, University of Cape Coast, respectively. Ethical approval was sought from the University Hospital and the Cape Coast Metropolitan Hospital. The approvals can be found in Appendix A. The researcher collected research with the help of two, well-trained research assistants. They were individuals who has considerable knowledge of research and were given extra training for the study for one week. The researcher obtained permission from the head of the diabetes clinic for the data collection during clinical hours. When the study was approved by the Hospital, data collection began on the days of the diabetes clinic which was Tuesday of every week. Every day, data collection took place within the hours of 7 am to 10 am. The participants had then come to the hospital for their routine check-ups and were conveniently selected. Every day, the nurse on duty would help to explain why the researcher was at the premises. Upon agreeing with the nurse, the researcher then proceeded to interact with the patients as they wait to see the doctor. Participants are then asked if they have already participated and if so, they were excluded to prevent participants from filling the data twice. The study was explained to participants. The participants were told that the data gathered would not include any identifiable data (Anonymity), all their responses were kept private and some distance from other patients was ensured (privacy). They were also told that their data would be handled by only authorized persons (confidentiality). Participants were also assured that they could decide not to participate in the study and that they could withdraw at any time if they felt like (right to withdraw) and that even though they were strongly encouraged to fill all items they could leave items blank. Finally, after all these explanations and answering of questions, participants were made to

consent by signing before the research instrument was filled. With the help of the assistants, data was collected in two months.

Data Processing and Analysis

After collecting data, the next stage would be to organize the data and use statistical methods to analyse and subsequently interpret the data. The Statistical Package for Social Science (SPSS version 22), was used to organize the data collected from the study.

Descriptive design was used. Questionnaires gathered were numbered before coding. The researcher checked for errors such as missing data either from the participant or researcher. Responses on the sociodemographic/ clinical variables were recorded. Items 2, 3, 4, 6, 8, 9, 12 and 16 on the English version of the 16-item Oldenburg Burnout Inventory (OLBI; Halbesleben & Demerouti, 2005) was reverse coded. The same was done for the adapted version. Composite scores for items 1, 3, 6, 7, 9, 11, 13 and 15 were calculated for the disengagement subscale, and items 2, 5, 8, 10, 12, 14 and 16 were computed for the exhaustion subscale. The total composite score for burnout was calculated by adding scores for all items and dividing by the number of items.

Confirmatory factor analysis was done for the adapted versions of the English version of the 16-item Oldenburg Burnout Inventory (OLBI; Halbesleben & Demerouti, 2005). Composite scores for total Diabetes Distress were obtained by summing all 17 items on the 17-item Diabetes Distress Screening Scale (DDS; Polonsky et al., 2005) and finding the average score.

Data from research questions 1 and 2 were analysed using descriptive statistics such as means, standard deviations, frequencies and percentages.

Hypotheses 1, 2, 3, 5, 6 and 7 were tested using Pearson product-moment correlation. Hypotheses 4 was tested using Hayes process analysis.

Chapter Summary

The chapter looked at the research methods used for the research. Specifically, the research design, research population, sample, sample procedure, data collection instruments, procedure and analysis were examined in this chapter. The research used a sample size of 105 adult T2DM patients. They were conveniently and purposively sampled. The questionnaire instrument used for data collection consists of psychological tests and a sociodemographic section. The researcher gathered the data with the help of an assistant. Data obtained was organized, coded and analysed to obtain descriptive statistics like the means, standard deviations, frequencies and percentages. More analysis was done including inferential statistical approaches of Pearson's product-moment correlation coefficient and mediation analysis using the Hayes process approach.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

The study examined the phenomena and interactions of diabetes burnout, diabetes distress, and spirituality and their correlation with fasting blood sugar among T2DM patients in Ghana. The previous chapter presented the research methods used in the study. This chapter discusses the outcome of the analysis of the research.

The initial sample size calculated using Vaughan's formula (Vaughan et al., 1989) was 93 participants. Since it is better to slightly oversample than under-sample, the researcher administered 120 questionnaires and 105 questionnaires were completed and returned. This represented an 87.5% return rate. The results are presented according to the research questions and hypotheses.

Main Results

To determine the levels of diabetes burnout, distress and spirituality, the study made use of ranges. Levels of diabetes burnout scores were grouped into three classes of low, moderate or high (M=2.09, SD=0.27; ≤1.81 = low, 1.82 to 2.35 = moderate, ≥ 2.36 = high). Levels of spirituality were grouped into three classes of low, moderate or high (M=40.34, SD=6.48; ≤33.85 = low, 33.86 to 46.82 = moderate, ≥ 46.83 = high). The diabetes distress scale used a scoring criterion of <2.0 being low distress, 2.0 - 2.9 being moderate distress and > 3.0 being high distress. The range levels were established using previous studies (Delgadillo et al, 2018; Fisher et al., 2012).

The ranges were divided into low, moderate and high levels and are summarized in table 4.

Table 4: Range for diabetes burnout, distress and spirituality

Variable	Low	Moderately	High
Diabetes burnout	≤1.81	1.82 to 2.35	≥ 2.36
Diabetes distress	<2.0	2.0 - 2.9	> 3.0
Spirituality	<2.81	2.82-3.8	>3.9

Source: (Delgadillo et al, 2018; Fisher et al., 2012).

Research Question 1

What is the level of diabetes burnout among T2DM patients?

The study sought to explore the nature of diabetes burnout among T2DM patients. The diabetes burnout of T2DM patients was scored utilising an adapted version of the 16-item, 4-point Likert type OLBI-D scales.

Table 5: The level of Diabetes Burnout

Level	Frequency	Percentage
Low	19	18.1
Moderate	66	62.9
High	20	19.0

Source: Field data, 2021.

Table 6: The Means and standard deviation distribution of Diabetes Burnout

Construct	Mean	Std. Deviation
Disengagement	2.32	0.27
Exhaustion	2.07	0.38
Total Diabetes Burnout	2.09	0.27

Source: Field data, 2021.

From table 5, the frequency for low burnout levels was 19 representing a percentage of 18.1%. It was the lowest frequency observed. Most respondents (66 persons representing 62.9%) reported moderate levels of diabetes burnout whilst a good number (20 persons representing 19%) reported high levels of diabetes burnout. The means and standard deviations for the total diabetes burnout score and the subscales are presented in table 6. The results for total diabetes burnout showed M = 2.09 (SD = 0.27), for the exhaustion subscale, M = 2.07 (SD = 0.38) and for the disengagement subscale M = 2.32 (SD = 0.27).

Research Question 2

What is the level of diabetes distress among T2DM patients?

This section of the study sought to evaluate the levels of diabetes distress among T2DM patients. Patients responded to the 6-point, 17-item Likert-type DD scale.

Table 7: The Levels of Diabetes Distress among T2DM patients

Level	Frequency	Percentage
Low	95	90.5
Moderate	9	8.6
High	1	1.0
Total	105	100.0

Source: Field data, 2021.

Table 8: The means with standard deviation distribution of Diabetes Distress

Construct	Mean	Std. Deviation
Emotional Burden	1.41	0.48
Physician-related Distress	1.68	0.63
Regimen-related Distress	1.43	0.58
Interpersonal Distress	1.27	0.63
Total	1.45	0.49

Source: Field data, 2021.

From table 8, The responses for the diabetes distress scale resulted in a mean of 1.45 with a standard deviation of 0.49. From table 7, the overall mean frequency fell within the low category of reference diabetes distress levels. From table 7, The frequency for low diabetes distress levels was 95 representing a percentage of 90.5%. It was the highest frequency observed. A total of 9 respondents reported moderate levels of diabetes distress representing 8.9% of the total figure whilst a scanty 1 person reported a high level of diabetes distress.

Research Question 3

What is the level of spirituality among T2DM patients?

This research question sought to examine the levels of spirituality among T2DM patients. The patient's level of spirituality was assessed using the 12-item, 5-point, Likert type FACIT-sp-12 (version 4) scale. The scoring of each item ranged from 1 through to 5 with a total scale range of 12 through to 48. The total score was derived by summing the individual items and dividing them by the number of items.

Table 9: The Levels of Spirituality among T2DM patients

Level	Frequency	Percentage
Low	12	11.4
Moderate	84	80.0
High	9	8.6
Total	105	100.0

Source data: Field data, 2021.

Table 10: The means with standard deviation distribution of Spirituality

Construct	Mean	Std. Deviation
Meaning	14.09	2.43
Peace	13.60	3.03
Faith	12.66	2.40
Total	40.34	6.48

Source: Field data, 2021.

From Table 9, 12 persons representing a percentage of 11.4% scored reporting low levels of spirituality, a total of 84 reporting with moderate levels of depression representing the majority of 80.0% and 9 persons representing

8.6% reporting with high spirituality levels. From table 10, the responses for the spirituality scale resulted in a mean of 40.34 with a standard deviation of 6.48. The table also shows results from the meaning subscale M = 14.09 (SD = 2.43), peace subscale, M = 13.60 (SD =3.03), faith subscale, M = 12.66 (SD =2.40).

Research Hypotheses testing

Table 11: Correlation table of Diabetes Distress, Diabetes Burnout, Spirituality and Fasting Blood Sugar

	FBS	TDB	TDD	Tspir
FBS	1			
TDB	.335**	1		
TDD	.137	.344**	1	
TSpir	-.216*	-.352**	-.562**	1

**. Correlation is significant at the 0.01 level.
*. Correlation is significant at the 0.05 level.
FBS: Fasting Blood sugar; TDB: Total Diabetes Burnout; TDD: Total Diabetes Distress; Tspir: Total Spirituality
Source: Field Data, 2021.

Hypothesis 1a

There is a relationship between diabetes distress and diabetes burnout in T2DM patients.

The results from table 17 showed a moderate, significant positive correlation between diabetes distress and diabetes burnout in T2DM patients (r = .344, p<.01). That means as diabetes distress levels increased, diabetes burnout levels also increased and vice versa. Since there was a significant correlation, the hypothesis is supported.

Hypothesis 1b

There is a relationship between diabetes distress and spirituality in T2DM patients.

The results from table 17 showed a moderate, negative, significant correlation between diabetes distress and spirituality in T2DM patients (r = -.562, p <.01). This means that as levels of spirituality increased, levels of diabetes distress decreased and vice versa. Since there was a significant correlation, the hypothesis is supported.

Hypothesis 1c

There is a relationship between Spirituality and diabetes burnout in T2DM patients.

The results from table 17 showed a moderate, significant, negative correlation between spirituality and diabetes burnout in T2DM patients (r = -.352, p <.01). This means that as levels of spirituality increased, levels of burnout decreased and vice versa. Since there was a significant correlation, the hypothesis is supported.

Hypothesis 2

Spirituality would mediate the relationship between diabetes distress and diabetes burnout in T2DM patients.

This hypothesis examines the mediating role of spirituality in the relationship between diabetes distress and burnout. The analysis satisfied assumptions such as independence, linearity, normality and continuous measurement. To confirm a mediating variable and its significance in the model, the analysis tested the significance of the relationship between the initial independent variable and dependent variable (X → Y), the significance

of the relationship between the initial independent variable and the mediator (X → M), the significance of the relationship between the mediator and the DV in the presence of the IV (M|X → Y) and the non-significance (or the meaningful reduction in effect) of the relationship between the initial independent variable and the dependent variable in the presence of the mediator (X|M → Y). The result of the mediation analysis is presented in the table below.

Table 12: Mediating role of spirituality in the relationship between diabetes distress and diabetes burnout

	Coeff	BootSE	t-value	P	LLCI	ULCI
X→ Y	.188	.077	23.480	.000	.088	.288
X→ M	-.617	.090	-6.891	.000	-.795	-.440
M/X→ Y	-.115	.055	-2.104	.038	-.224	-.007
X|M → Y	.117	.060	1.943	.055	-.002	.236
Total effect of X on Y	.188	.051	3.716	.000	.088	.288
Direct effect of X on Y	.117	.060	1.943	.055	-.002	.236
Indirect effect of X on Y	.071	.040			.002	.162

X: Diabetes Distress, Y: Diabetes Burnout, M: Spirituality

Source: Field data

The results from table 18 show that distress was a significant predictor of diabetes burnout with b = .188, p < .01. Again, diabetes distress was a significant predictor of the mediator (spirituality) *b* = -.617, *p* < .001. Again, the relationship between spirituality and burnout in the presence of distress

showed a significant prediction, *b* = -.115, p <.01. The relationship between distress and burnout in the presence of spirituality showed a non-significant predictor, *b* =-.117, p = .055. These results are an indication that there is a mediation effect. Therefore, the hypothesis is supported.

A measure for the indirect effect of X on Y revealed a significant indirect effect of distress and burnout, b = .071, CI (.002, .162). The results indicate that the effect distress has on burnout is explained by the presence of spirituality.

Hypothesis 3a

There is a relationship between Fasting Blood Sugar and diabetes burnout in T2DM patients

The results from table 17 showed a moderate, significant, positive correlation between fasting blood sugar and diabetes burnout in T2DM patients (r = .335, p <.01). This means that as levels of fasting blood sugar increased in the same direction as the levels of diabetes burnout. Since there was a significant correlation, the hypothesis is supported.

Hypothesis 3b

There is a relationship between Fasting Blood Sugar and diabetes distress in T2DM patients

The results from table 17 showed a nonsignificant, positive correlation between fasting blood sugar and diabetes distress in T2DM patients (r = .137, p = .163). This means that levels of fasting blood sugar increased in the same direction as levels of diabetes distress increased but in a statistically nonsignificant way. Since there was no significant correlation, the hypothesis is not supported.

Hypothesis 3c

There is a relationship between Fasting Blood Sugar and spirituality in T2DM patients

The results from table 17 showed a weak, significant, negative correlation between fasting blood sugar and spirituality in T2DM patients (r = -.216, p = .027). This means that levels of fasting blood sugar increased weakly in the opposite direction as levels of spirituality increased in a statistically significant way. Since there was a significant correlation, the hypothesis is supported.

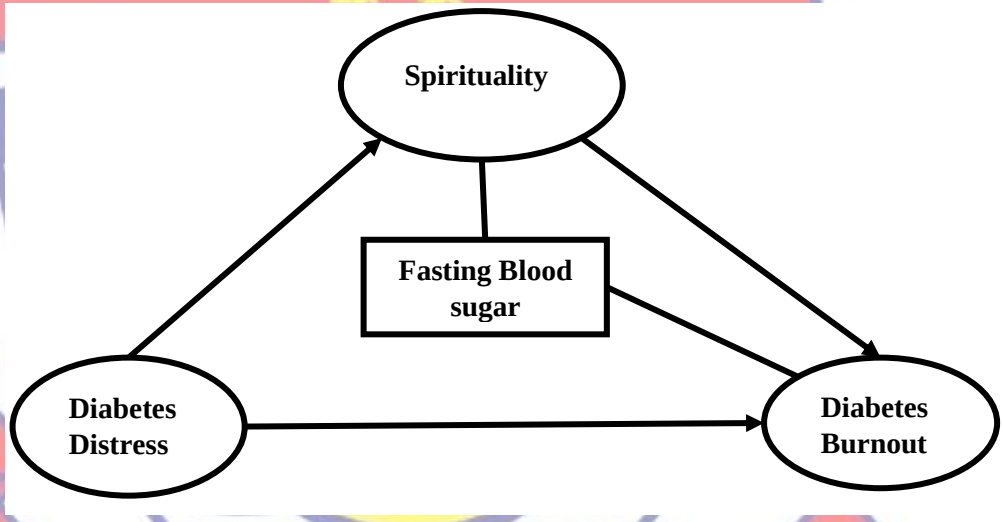

Figure 3: Framework developed from findings of the research

Discussion of Findings

This part will focus on the important findings of the study about the research questions, research hypotheses and the theoretical framework of the study.

Research Questions

1. What is the level of diabetes burnout among T2DM patients?
2. What is the level of diabetes distress among T2DM patients?

3. What is the level of spirituality among T2DM patients?

Research Hypotheses

1. a. H_1: There is a relationship between diabetes distress and diabetes burnout in T2DM patients.

   b. H_1: There is a relationship between diabetes distress and spirituality in T2DM patients.

   c. H_1: There is a relationship between Spirituality and diabetes burnout in T2DM patients.

2. H_1: Spirituality will mediate the relationship between diabetes distress and diabetes burnout in T2DM patients.

3. a. H_1: There is a relationship between Fasting Blood Sugar and diabetes burnout in T2DM patients.

   b. H_1: There is a relationship between Fasting Blood Sugar and diabetes distress in T2DM patients.

   c. H_1: There is a relationship between Fasting Blood Sugar and spirituality in T2DM patients

Level of diabetes burnout

The first research question was formulated to understand the levels of diabetes burnout among T2DM patients. The study found that most of the respondents had moderate levels of burnout. This finding agrees with the findings of Nuari (2020) who investigated the factors associated with diabetes burnout among T2DM patients. From the results of the study, most of the patients had high levels of diabetes burnout. The study found 34 of the totals of 89 participants to have high or severe levels of burnout whilst 32% had moderate burnout. This combined made a total of over 70% with moderate to

severe levels of burnout. The findings also agree with the findings of other studies (Abdoli, Jones, et al., 2019; Fritschi & Quinn; 2010).

The present study has consistent results with other findings because, it does seem that the burden of managing diabetes care can overwhelm individuals in Ghana just as it does to individuals in Asia, Indonesia to be precise. The conditions including healthcare facilities and healthcare providers of those managing resources are poor in Ghana and faced with a potential loss of their valuable resources including their state of health and psychosocial wellbeing, jobs, finances etc., burnout is a possible result. Just like in the western world and perhaps even more than there, it is likely that individuals do not have enough education about the psychogenic conditions that impact diabetes sufferers. Health resources or personal resources therefore may not be directed towards preventing burnout associated with self-management of the disorder and therefore it might lead to the condition being pervasive. The findings, therefore, seem to fit into the expectation of diabetes burnout among a Ghanaian population.

Levels of diabetes distress

The second research question was analysed to examine the levels of diabetes distress among T2DM patients. The study found that most diabetes had low or moderate levels of diabetes distress. This result somewhat differed from the study done by AlOtaibi et al. (2021) who assessed the incidence of diabetes-related distress among T2DM patients. the study utilised an observational descriptive approach to sample 399 patients from a Hospital in Saudi Arabia. The results of the study found a high prevalence of moderate to severe diabetes-related distress.

Another study by Fisher et al. (2008) recruited 506 patients who had T2DM and assessed them over a 9-month interval of 18 months for panic disorder, major depressive disorder, dysthymia, generalized anxiety disorder, diabetes distress and depressive affect. The interesting finding was that the prevalence of diabetes distress was between 60 and 737% higher than for anxiety and affective disorders. In yet another study (B. Arifin et al., 2020), a high level of diabetes distress. The results of this study are therefore partially consistent with that study. The study seems more consistent however with the findings of Zanchetta et al. (2016) who found a 31% rate of diabetes distress among a total of 130 participants.

The differing levels of diabetes distress among the various studies seem to be due in part to the nature of the studies involved. Fisher et al. (2008) employed a prospective study with repeated measurements of diabetes distress over 18 months. The demography had a high level of comorbid mood disorders and other psychogenic conditions which can contribute to more distress. Many studies reviewed from Ghana reported high levels of diabetes distress (Kretchy et al., 2020; Amankwah-Poku et al., 2021). However, another study, similarly conducted in Cape Coast by Ephraim et al. (2021) reported low levels of diabetes distress among participants, agreeing with the results of the study. It is possible that the specific demography of participants from Cape Coast contributes to this observation. Theoretically, it may seem that after a period of persistent diabetes distress leading to the exhaustion experienced as burnout, patients may report distress less since they have begun to disengage from diabetes management. This can potentially be explored with a prospective study.

Level of spirituality among T2DM patients

From this study, most participants reported moderate levels of spirituality or high levels with a few reporting low levels of spirituality.

These results agree with most of what other studies have found. Jafari et al. (2014) investigated the levels of spirituality and their relations to quality of life among adult Iranians with T2DM. The study found that most of the participants had high levels of spirituality with a high mean total spirituality score.

The results are also consistent with the findings of the study by Gupta et al. (2014) who found a high level of spirituality among the participants. Spirituality had a significant impact on many patients even though generally, the impact of spirituality on patients varied widely.

The findings are consistent with that expected from a Ghanaian or African study due to most Africans being very spiritual. Ghanaians believe in a higher power, and congregate experiences as well as in increasingly meaningful existence. Therefore, it does seem that the study's findings are in line with what is to be expected of Ghanaian demography.

The relationship between diabetes distress and burnout in T2DM patients.

The results of the study showed a moderate, significant positive correlation between diabetes distress and diabetes burnout in T2DM patients. Which means diabetes distress levels increased in the same direction as diabetes burnout levels increased. The findings of this study agree with the findings of Abdoli, Miller-Bains, Burr, et al. (2020), who found diabetes burnout to be correlated significantly with diabetes distress.

Being closely linked to psychogenic conditions of diabetes management, it follows that there should be an association between the two. In a low-resource health setting like that of Ghana, psychogenic conditions of diabetes care seem inevitable. The expectation in the Ghanaian population is that their distress and burnout would be closely related because of a lack of resources. Therefore, the findings of the study seem to be in line with the anticipated results.

The relationship between diabetes distress and spirituality in T2DM patients

The results of the study showed a moderate, negative, significant correlation between diabetes distress and spirituality in T2DM. This means that as levels of spirituality increased, levels of diabetes distress decreased and vice versa. These findings are consistent with a study by B. Arifin et al. (2020) who found out that spirituality and acceptance are most related to diabetes distress and management as coping mechanisms and hence the most common mechanisms for reducing diabetes distress. That is, high levels of diabetes distress were found to be associated with low levels of spirituality and vice versa. It also agreed with findings from Ischaq et al. (2021) who concluded that spirituality was significantly linked with diabetes distress.

Being a source of coping, the spiritual wellbeing or spirituality of a group of people is expected to help them in managing psychogenic states like distress. In Ghanaians, it is expected that negative states would be improved with increased spirituality, possibly due to the ability of rituals like prayer, mediation and finding meaning and peace. The results of the study, therefore, seem to agree with the anticipated results.

The relationship between Spirituality and diabetes burnout in T2DM patients.

The results of the study showed a moderate, significant, negative correlation between spirituality and diabetes burnout in T2DM patients. This means that as levels of spirituality increased, levels of burnout decreased and vice versa. The results agree with findings from Darvyri et al. (2018) who found spirituality to have a positive impact on diabetes management.

The findings of the study seem to agree with each other because of the impact of the theoretical link between spirituality and burnout. Burnout is a state of exhaustion and detachment whilst spirituality seeks to attach one to themselves or a higher power and also create more positive states of affect. It does seem, therefore, that in a Ghanaian population with increased spirituality, the possibility that their spirituality would increase as the burnout increased is a viable expectation to have.

The mediating role of spirituality on the relationship between distress and burnout

The results from table 18 show that distress was a significant predictor of diabetes burnout. Again, diabetes distress was a significant predictor of the mediator (spirituality). Again, the relationship between spirituality and burnout in the presence of distress showed a significant prediction. The relationship between distress and burnout in the presence of spirituality showed a non-significant predictor. These results are an indication that there is a mediation effect. A measure for the indirect effect of X on Y revealed a significant indirect effect of distress and burnout. The results indicate that the effect distress has on burnout is explained by spirituality. Abdoli, Hessler,

Smither, et al. (2020) reported the possibility of diabetes distress being a causative factor for diabetes burnout. The findings of the study on the predictive value of diabetes distress on diabetes burnout seem to at least in part confirm that possibility. Darvyri et al (2018) also suggested the role of spirituality as a potential mediating factor in achieving optimum diabetes management.

The results of the study seem to agree with existing studies as well as come out with some new findings. A very important finding is the fact that diabetes distress was found to be a significant predictor of diabetes burnout. As positively correlated and theoretically linked conditions, a causal relationship is a good possibility to expect. From the conservation of resources theory, a net loss of resources could lead to diabetes distress which could represent the initial struggles of diabetes care and subsequently lead the patients on the path to diabetes burnout. Again, the presence of spirituality as a resistance resource and a mediator of the relationship has been the hypothesized alarm stage (distress) and exhaustion stage (burnout) of the stress reaction. It contributes to the literature about the possible causes and correlates of diabetes burnout towards the end of understanding the condition holistically.

Importantly, there is a causal relationship between diabetes distress and spirituality. This suggests that distress could deplete a person's spiritual resources. Again, the existence of a significant mediation relationship of spirituality in the relationship between diabetes distress and burnout points to the usefulness of increased spirituality in the causal link between diabetes distress and burnout. It does seem that if interventions are targeted at the

spirituality of T2DM patients, it would help in preventing worse psychogenic states.

The relationship between fasting blood sugar and diabetes burnout in T2DM patients

The study found a moderate, significant, positive correlation between fasting blood sugar and diabetes burnout in T2DM patients. This means that levels of fasting blood sugar and levels of diabetes burnout increased in the same direction. The results agree with some studies (Abdoli, Miller-Bains, Burr, et al., 2020; Nuari, et al., 2018) which found a significant correlation between fasting blood sugar and diabetes burnout.

A person's fasting blood sugar level is one of the most important indicators of day-to-day glycaemic control. The study found higher fasting blood sugar levels to be associated with higher levels of burnout. This is an expected phenomenon from the theoretical basis of the study. If patients do not see results or their blood sugar increases, it might help precipitate a feeling of exhaustion or lead to them giving up on their care, since they see it as not working.

The relationship between fasting blood sugar and diabetes distress in T2DM patients

The study found a nonsignificant, positive correlation between fasting blood sugar and diabetes distress in T2DM patients. This means that levels of fasting blood sugar increased in the same direction as levels of diabetes distress but in a statistically nonsignificant way. The findings are inconsistent with those of Ischaq et al. (2021) who found among other factors, fasting blood sugar to be significantly linked to diabetes distress among adult, T2DM

patients. The findings of this study are inconsistent with findings from a study by Fisher et al. (2008).

Logically, one would expect a significant association between glycaemic control and diabetes distress. The finding of the study was a weak, nonsignificant association. The study recorded mostly low levels of distress as opposed to the relatively higher levels of diabetes distress found in the literature. This might explain the absence of a significant association.

The relationship between fasting blood sugar and spirituality in T2DM patients

The findings of the study showed a weak, significant, negative correlation between fasting blood sugar and spirituality in T2DM patients. This means that levels of fasting blood sugar increased weakly as levels of spirituality in the same direction and in a statistically significant way. These findings agree with Newlin et al. (2008) who found spirituality to be significantly associated with blood sugar levels among black, T2DM women**.** glycaemic control. The study suggested that spirituality be included in diabetes care improved health outcomes among T2DM women. The study also agreed in part with Heidari et al. (2017) who found fasting blood sugar to be significantly related to being generally religious but did not find a correlation between fasting blood sugar and spiritual wellbeing.

Heidari et al. (2017) investigated religious and spiritual self-care among T2DM patients in Iran. The study utilized a descriptive, cross-sectional study to survey 154 T2DM patients conveniently. The result of the study was mixed. The results of the study indicated that there was no significant difference between those with good glycaemic control and those without in

terms of their religious activities. The study also found that there was no correlation between spiritual well-being and fasting blood glucose level. However, it also found that being generally religious was associated significantly with fasting blood glucose. The study concluded that spiritual wellbeing scores did not differ significantly among those who had good and those who had bad glycaemic control.

The findings of a negative correlation between spirituality and fasting blood sugar are to be expected given the theoretical links between spiritual wellbeing and overall better quality of life. This is however a weak correlation possibly because of the indirect links between spirituality and physicality. It does seem that spirituality is more closely linked with psychological states and less so with physicality. Ghanaians are typically spiritual people and the study agrees with the expectations that their increased spirituality would be linked with better healthcare outcomes.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The chapter summarises the findings of the study from the analysis of the research questions and hypotheses tests. This is aimed at concluding the influence of spirituality and diabetes distress on diabetes burnout and their correlations with fasting blood glucose. The study provides some recommendations from the findings and includes recommendations for future research

Overview of the Study

The study analysed the impact of spirituality and diabetes distress on diabetes burnout and their correlations with fasting blood sugar among T2DM patients in Cape Coast within the Central region of Ghana. The study utilised the descriptive survey design and conveniently sampled 105 participants with a T2DM prevalence rate of 6.46%. The researcher utilised a questionnaire instrument made up of an adapted scale to measure diabetes burnout, and exiting diabetes distress and spirituality scales. The study utilised Pearson's correlation analysis as well as mediation analysis using Hayes processes and descriptive statistics of means, percentages, frequencies and standard deviations.

Summary of Key Findings

The following findings of the research were made after a thorough analysis.

Level of diabetes burnout

The study found out that most patients with T2DM had moderate levels of diabetes burnout. This means that the burden of diabetes management can precipitate clinically significant levels of diabetes burnout among the vast majority of T2DM

Level of diabetes distress

The study found that most diabetics had low levels of diabetes distress. This finding is mixed especially when considered with their levels of diabetes burnout but may represent an overreliance on a paternalistic medical structure where it is not socially desirable to demand better medical care or even social support for diabetes self-management.

Level of spirituality

The study found that most T2DM patients had moderate levels of spirituality. This presented the high prevalence of spirituality among T2DM patients, which could be protective.

The mediating role of spirituality on the relationship between distress and burnout

The study found significant links between diabetes distress, burnout and spirituality. The study revealed a significant mediating role of spirituality in the relationship between burnout and distress. This underscored the importance of spirituality in reducing the link between diabetes distress with diabetes burnout.

Relationship between fasting blood sugar with diabetes distress, diabetes burnout and with spirituality

The study found a significant relationship between fasting blood with diabetes burnout and spirituality but a non-significant relationship with diabetes distress.

Conclusion

The researcher conducted the study based on an identification of the psychogenic problems of diabetes management among T2DM patients. The study relied on Han Selye's stress theory, the conservation of resources theory and the biopsychosocial spiritual model. Together with a conceptual review, the researcher was able to develop a conceptual framework that guided the study.

The study found that diabetes distress and diabetes burnout are associated psychogenic conditions of diabetes management whose interaction is mediated by the spirituality of the diabetes patients. Again, the fasting blood sugar levels of diabetics are associated with their diabetes burnout and spirituality but not by their distress. Therefore, to effectively help diabetes patients, it is important to consider their holistic biological, psychosocial and spiritual makeup.

Recommendations

1. The researcher recommends that a policy on mandatory screening of existing diabetes patients for diabetes burnout and diabetes distress be made by the Ministry of Health to include a significant focus on the psychogenic conditions suffered by T2DM patients and a follow-up visit with a health psychologist be included as part of diabetes care.

2. Since moderate levels of diabetes burnout have been found to exist even with low levels of diabetes distress, it is recommended that when providing psychological care to T2DM patients, health professionals in Ghana pay attention to both diabetes distress and diabetes burnout as psychogenic conditions to be treated and not only diabetes distress.
3. The researcher recommends that healthcare professionals pay attention to patients' spirituality as a means of comprehensive T2DM management.
4. Public health official should institute education to the public for early screening and the adoption of protective lifestyles.
5. It is recommended that a policy on holistic care for primary care providers and interdisciplinary healthcare teams be adopted by the Ministry of Health to foster proper understanding of and application of holistic interventions for diabetes care
6. From the field, the diabetes clinic tended to open only once which is inadequate for holistic biopsychosocial care. It is recommended that diabetes clinics dedicate more time to considering holistic treatment

Suggestions for Future Research

The study examined the impact of diabetes distress and spirituality on diabetes burnout and how they correlated with fasting blood sugar among T2DM patients in the Central region of Ghana. The study used a quantitative research design. It is suggested that further study be done on:

1. Further validation of the adapted scale to measure diabetes burnout, especially its cross-cultural adaptation

2. Expansion of the conceptual framework to better understand the holistic interaction of the various factors of diabetes management.
3. A prospective study to better understand causality
4. Inculcating other kinds of diabetes.

REFERENCES

Abdoli, S., Hessler, D., Smither, B., Miller-Bains, K., Burr, E. M., & Stuckey, H. L. (2020). New insights into diabetes burnout and its distinction from diabetes distress and depressive symptoms: A qualitative study. *Diabetes Research and Clinical Practice*, *169*, 108446.

Abdoli, S., Hessler, D., Vora, A., Smither, B., & Stuckey, H. (2019). CE: Original Research: Experiences of Diabetes Burnout: A Qualitative Study Among People with Type 1 Diabetes. *AJN The American Journal of Nursing*, *119*(12), 22-31.

Abdoli, S., Jones, D. H., Vora, A., & Stuckey, H. (2019). Improving diabetes care: should we reconceptualize diabetes burnout? *The Diabetes Educator*, *45*(2), 214-224.

Abdoli, S., Miller-Bains, K., Burr, E. M., Smither, B., Vora, A., & Hessler, D. (2020). Burnout, distress, and depressive symptoms in adults with type 1 diabetes. *Journal of Diabetes and its Complications*, 107608.

Abdoli, S., Miller-Bains, K., Fanti, P., Silveira, M. S., & Hessler, D. (2021). Development and validation of a scale to measure diabetes burnout. *Journal of Clinical & Translational Endocrinology*, *23*, 100251.

Adler, R. H. (2009). Engel's biopsychosocial model is still relevant today. *Journal of Psychosomatic Research*, *67*(6), 607-611.

Ahola, K., Honkonen, T., Isometsä, E., Kalimo, R., Nykyri, E., Koskinen, S., Aromaa, A., & Lönnqvist, J. (2006). Burnout in the general population. *Social Psychiatry and Psychiatric Epidemiology*, *41*(1), 11-17

Aldwin, C. M., Park, C. L., Jeong, Y. J., & Nath, R. (2014). Differing pathways between religiousness, spirituality, and health: A self-regulation perspective. *Psychology of Religion and Spirituality*, *6*(1), 9-21.

AlOtaibi, A. A., Almesned, M., Alahaideb, T. M., Almasari, S. M., & Alsuwayt, S. S. (2021). Assessment of diabetes-related distress among type 2 diabetic patients, Riyadh, Saudi Arabia. *Journal of Family Medicine and Primary Care*, *10*(9), 3481-3489

Amankwah-Poku, M., Akpalu, J., Sefa-Dedeh, A., & Amoah, A. G. (2021). Psychosocial barriers to well-being and quality of life among type 2 diabetes patients in Ghana. *Lifestyle Medicine*, *2*(2), e33.

Anderson, R. J., Freedland, K. E., Clouse, R. E., & Lustman, P. J. (2001). The prevalence of comorbid depression in adults with diabetes: a meta-analysis. *Diabetes Care*, *24*(6), 1069-1078.

Arifin, B., Probandari, A., Purba, A. K. R., Perwitasari, D. A., Schuiling-Veninga, C. C., Atthobari, J., Krabbe, P.F & Postma, M. J. (2020). 'Diabetes is a gift from god' a qualitative study coping with diabetes distress by Indonesian outpatients. *Quality of Life Research*, *29*(1), 109-125.

Arifin, H., Kusnanto, K., Wahyuni, E. D., & Pradipta, R. O. (2019). Diabetes Resilience Training on Self-Care, Glycemic Control, and Diabetes Burnout of Adult Type 2 Diabetes Mellitus. *Indonesian Nursing Journal of Education and Clinic (INJEC)*, *4*(2), 90-98.

Asamoah-Boaheng, M., Sarfo-Kantanka, O., Tuffour, A. B., Eghan, B., & Mbanya, J. C. (2019). Prevalence and risk factors for diabetes mellitus

among adults in Ghana: a systematic review and meta-analysis. *International Health*, *11*(2), 83-92.

Baetz, M., Larson, D. B., Marcoux, G., Jokic, R., & Bowen, R. (2002). Religious psychiatry: the Canadian experience. *The Journal of Nervous and Mental Disease*, *190*(8), 557-559.

Bakker, A. B., Demerouti, E., & Verbeke, W. (2004). Using the job demands-resources model to predict burnout and performance. *Human Resource Management: Published in Cooperation with the School of Business Administration, The University of Michigan and in alliance with the Society of Human Resources Management*, *43*(1), 83-104.

Barnard, K. D., Skinner, T. C., & Peveler, R. (2006). The prevalence of co-morbid depression in adults with Type 1 diabetes: systematic literature review. *Diabetic Medicine*, *23*(4), 445-448.

Beverly, E. A., Brooks, K. M., Ritholz, M. D., Abrahamson, M. J., & Weinger, K. (2012). Assessment of emotional struggles in type 2 diabetes: Patient perspectives. *Diabetes Care*, *35*(8), e62-e62.

Bianchi, R., Schonfeld, I. S., & Laurent, E. (2019). Burnout: Moving beyond the status quo. *International Journal of Stress Management*, *26*(1), 36-45.

Brown, L. C., Majumdar, S. R., Newman, S. C., & Johnson, J. A. (2005). History of depression increases risk of type 2 diabetes in younger adults. *Diabetes care*, *28*(5), 1063-1067.

Bunniss, S., & Kelly, D. R. (2010). Research paradigms in medical education research. *Medical Education*, *44*(4), 358-366.

Centers for Disease Control and Prevention [CDC]. (n.d.). *About Chronic Diseases*. Retrieved September 19, 2021, from https://www.cdc.gov/chronicdisease/about/index.htm

Clarke, D. D. (1999). Circulation and energy metabolism of the brain. *Basic Neurochemistry: Molecular, Cellular, and Medical Aspects*.

Cohen, L. M., & Morrison, K. (2011). Research Methods in Education (6th Ed.). New York: Routledge.

Cohen, L. M., McChargue, D. E., & Collins, F. L. (Eds.). (2003). *The health psychology handbook: Practical issues for the behavioral medicine specialist*. Sage.

Contrada, R. J., Goyal, T. M., Cather, C., Rafalson, L., Idler, E. L., & Krause, T. J. (2004). Psychosocial Factors in Outcomes of Heart Surgery: The Impact of Religious Involvement and Depressive Symptoms. *Health Psychology*, 23(3), 227–238. https://doi.org/10.1037/0278-6133.23.3.227

Cooper, H. M. (1998). *Synthesizing research: A guide for literature reviews* (Vol. 2). Sage.

Cordes, C. L., & Dougherty, T. W. (1993). A review and an integration of research on job burnout. *Academy of Management Review*, *18*(4), 621-656.

Corrigan, P., McCorkle, B., Schell, B., & Kidder, K. (2003). Religion and spirituality in the lives of people with serious mental illness. *Community Mental Health Journal*, *39*(6), 487-499.

Creswell, J. W. & Creswell, J. D. (2018). Research design: Qualitative, quantitative and mixed approaches (5th Ed.). London: Sage Publications.

Creswell, J. W. (2013). Research design: Qualitative, quantitative, and mixed methods approach (4th Ed.). California: Sage Publications.

Dale, J., & Weinberg, R. (1990). Burnout in sport: A review and critique. *Journal of Applied Sport Psychology*, *2*(1), 67-83.

Darvyri, P., Christodoulakis, S., Galanakis, M., Avgoustidis, A. G., Thanopoulou, A., & Chrousos, G. P. (2018). On the role of spirituality and religiosity in type 2 diabetes mellitus management—A systematic review. *Psychology*, *9*(4), 728-744.

De la Porte, A. (2016). Spirituality and healthcare: Towards holistic people-centred healthcare in South Africa. *HTS Teologiese Studies/ Theological Studies*, *72*(4), 1-9.

Del Rio, C. M., & White, L. J. (2012). Separating spirituality from religiosity: A hylomorphic attitudinal perspective. *Psychology of Religion and Spirituality*, *4*(2), 123-142.

Delgadillo, J., Saxon, D., & Barkham, M. (2018). Associations between therapists' occupational burnout and their patients' depression and anxiety treatment outcomes. *Depression and Anxiety*, *35*(9), 844-850.

Delgado, C. (2005). A discussion of the concept of spirituality. *Nursing Science Quarterly*, *18*(2), 157-162.

Demerouti, E., & Bakker, A. B. (2008). The Oldenburg Burnout Inventory: A good alternative to measure burnout and engagement. *Handbook of Stress and Burnout in Health Care*, 65-78.

Demerouti, E., Mostert, K., & Bakker, A. B. (2010). Burnout and work engagement: a thorough investigation of the independency of both constructs. *Journal of Occupational Health Psychology*, *15*(3), 209-222

Ephraim, R. K. D., Duah, E., Nkansah, C., Amoah, S., Fosu, E., Afrifa, J., Botchway F., Okyere P, Essien-Baidoo S., Mensah K, Serwaa D., Sakyi, S. A., Adoba, P., Fondjo. L. A., Ninnoni., J. P., & Aderoju, Y. B. G. (2021). Psychological impact of COVID-19 on diabetes mellitus patients in Cape Coast, Ghana: a cross-sectional study. *The Pan African Medical Journal*, *40*.

Engel, G. L. (1977). The need for a new medical model: a challenge for biomedicine. *Science*, *196*(4286), 129-136.

Fisher, L., Hessler, D. M., Polonsky, W. H., & Mullan, J. (2012). When is diabetes distress clinically meaningful?: establishing cut points for the Diabetes Distress Scale. *Diabetes Care*, *35*(2), 259-264.

Fisher, L., Skaff, M. M., Mullan, J. T., Arean, P., Glasgow, R., & Masharani, U. (2008). A longitudinal study of affective and anxiety disorders, depressive affect and diabetes distress in adults with type 2 diabetes. *Diabetic Medicine*, *25*(9), 1096-1101.

Forouhi, N. G., & Wareham, N. J. (2019). Epidemiology of diabetes. *Medicine*, *47*(1), 22-27.

Freudenberger, H. J. (1974). Staff burn-out. *Journal of Social Issues*, *30*(1), 159-165.

Fritschi, C., & Quinn, L. (2010). Fatigue in patients with diabetes: a review. *Journal of Psychosomatic Research*, *69*(1), 33-41.

Gatchel, R. J. (2004). Comorbidity of Chronic Pain and Mental Health Disorders: The Biopsychosocial Perspective. *American Psychologist, 59*(8), 795–805. https://doi.org/10.1037/0003-066X.59.8.795

Gatchel, R. J., Peng, Y. B., Peters, M. L., Fuchs, P. N., & Turk, D. C. (2007). The biopsychosocial approach to chronic pain: scientific advances and future directions. *Psychological Bulletin, 133*(4), 581-624.

Ghaemi, S. N. (2009). The rise and fall of the biopsychosocial model. *The British Journal of Psychiatry, 195*(1), 3-4.

Ghana Statistical Service (2012). 2010 Population and Housing Census: Summary report of final results. Accra: Sakoa Press Limited.

Goodger, K., Gorely, T., Lavallee, D., & Harwood, C. (2007). Burnout in sport: A systematic review. *The Sport Psychologist, 21*(2), 127-151.

Goyal, R., & Jialal, I. (2018). Diabetes mellitus type 2.

Grimes, D. A., & Schulz, K. F. (2002). Descriptive studies: what they can and cannot do. *The Lancet*, 359 (9301), 145-149.

Gupta, P. S., & Anandarajah, G. (2014). The role of spirituality in diabetes self-management in an urban, underserved population: a qualitative exploratory study. *Rhode Island Medical Journal, 97*(3), 31-35.

Gustafsson, H., Hancock, D. J., & Côté, J. (2014). Describing citation structures in sport burnout literature: A citation network analysis. *Psychology of Sport and Exercise, 15*(6), 620-626.

Hackett, R. I. (1998). Charismatic/Pentecostal appropriation of media technologies in Nigeria and Ghana. *Journal of Religion in Africa*, 258-277.

Halbesleben, J. R., & Demerouti, E. (2005). The construct validity of an alternative measure of burnout: Investigating the English translation of the Oldenburg Burnout Inventory. *Work & Stress*, *19*(3), 208-220

Hall, D. E., Meador, K. G., & Koenig, H. G. (2008). Measuring religiousness in health research: Review and critique. *Journal of Religion and Health*, *47*(2), 134-163.

Hatala, A. R. (2013). Towards a biopsychosocial–spiritual approach in health psychology: Exploring theoretical orientations and future directions. *Journal of Spirituality in Mental Health*, *15*(4), 256-276.

Heidari, S., Rezaei, M., Sajadi, M., Ajorpaz, N. M., & Koenig, H. G. (2017). Religious practices and self-care in Iranian patients with type 2 diabetes. *Journal of Religion and Health, 56*(2), 683-696

Helgeson, V. S. (2021). Diabetes burnout among emerging adults with type 1 diabetes: a mixed methods investigation. *Journal of Behavioral Medicine*, *44*(3), 368-378.

Hiatt, J. F. (1986). Spirituality, medicine, and healing. *Southern Medical Journal*, *79*(6), 736-743.

Hill, P. C., & Pargament, K. I. (2003). Advances in the conceptualization and measurement of religion and spirituality: Implications for physical and mental health research. *American Psychologist*, *58*(1), 64–74. https://doi.org/10.1037/0003-066X.58.1.64.

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, *44*(3), 513–524. https://doi.org/10.1037/0003-066X.44.3.513.

Holland, J. C., Kash, K. M., Passik, S., Gronert, M. K., Sison, A., Lederberg, M., Russak, S.M., Baider, L. & Fox, B. (1998). A brief spiritual beliefs inventory for use in quality-of-life research in life-threatening illnesses. *Psycho-Oncology: Journal of the Psychological, Social and Behavioral Dimensions of Cancer*, *7*(6), 460-469.

Honkonen, T., Ahola, K., Pertovaara, M., Isometsä, E., Kalimo, R., Nykyri, E., ... & Lönnqvist, J. (2006). The association between burnout and physical illness in the general population—results from the Finnish Health 2000 Study. *Journal of Psychosomatic Research*, *61*(1), 59-66.

Hoover, J. W. (1983). Patient burnout, and other reasons for noncompliance. *The Diabetes Educator*, *9*(3), 41-43.

Hungelmann, J., Kenkel-Rossi, E., Klassen, L., & Stollenwerk, R. (1996). Focus on Spiritual Well-Being: Harmonious Interconnectedness of Mind-Body-Spirit-Use of the JAREL Spiritual Well-Being Scale: Assessment of spiritual well-being is essential to the health of individuals. *Geriatric Nursing*, *17*(6), 262-266.

International Diabetes Federation. (2019) *IDF Diabetes Atlas, 9th edn*. Brussels,

Belgium. Available at: https://www.diabetesatlas.org

Ischaq Nabil Asshiddiqi, M., Yodchai, K., & Taniwattananon, P. (2021). Predictors of diabetes distress among older persons with type 2 diabetes mellitus in Indonesia. *Journal of Research in Nursing*, *26*(4), 307-317.

Jafari, N., Farajzadegan, Z., Loghmani, A., Majlesi, M., & Jafari, N. (2014). Spiritual well-being and quality of life of Iranian adults with type 2

diabetes. *Evidence-Based Complementary and alternative medicine; 2014*.

Koenig, H. G., & Büssing, A. (2010). The Duke University Religion Index (DUREL): a five-item measure for use in epidemological studies. *Religions*, *1*(1), 78-85.

Kothari, C. R. (2004). Research methodology: Methods and techniques. New Age International: New York.

Kretchy, I. A., Koduah, A., Ohene-Agyei, T., Boima, V., & Appiah, B. (2020). The association between diabetes-related distress and medication adherence in adult patients with type 2 diabetes mellitus: a cross-sectional study. *Journal of diabetes research*, 2020.

Lago-Rizzardi, C. D., de Siqueira, J. T. T., & de Siqueira, S. R. D. (2014). Spirituality of chronic orofacial pain patients: Case–control study. *Journal of Religion and Health*, *53*(4), 1236-1248.

Lepherd, L. (2015). Spirituality: Everyone has it, but what is it? *International Journal of Nursing Practice*, *21*(5), 566-574.

Leventhal, H., Weinman, J., Leventhal, E. A., & Phillips, L. A. (2008). Health psychology: The search for pathways between behavior and health. *Annu. Rev. Psychol.*, *59*, 477-505.

Lin, S. H., & Huang, Y. C. (2014). Life stress and academic burnout. *Active Learning in Higher Education*, *15*(1), 77-90.

Lonsdale, C., Hodge, K., & Rose, E. (2009). Athlete burnout in elite sport: A self-determination perspective. *Journal of Sports Sciences*, *27*(8), 785-795.

Marshall, G. (2005). The purpose, design and administration of a questionnaire for data collection. *Radiography*, *11*(2), 131-136.

Masiak, J. (2013). Biopsychosocial model of addictions and other approaches. *Polish Journal of Public Health*, *123*(4), 321-324.

Maslach, C. (1998). A multidimensional theory of burnout. *Theories of Organizational Stress*, *68*, 85.

Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Organizational Behavior*, *2*(2), 99-113.

Maslach, C., Jackson, S. E., Leiter, M. P., Schaufeli, W., & Schwab, R. (1996). Maslach Burnout Inventory–General Survey. *MBI Manual*, 19-26.

Moss, J. (2019). Burnout is about your workplace, not your people. *Harvard Business Review*, *11*, 1-6

Nash, J. (2014). Understanding the psychological impact of diabetes and the role of clinical psychology. *Journal of Diabetes Nursing*, *18*(4), 137-142.

Newlin, K., Melkus, G. D., Tappen, R., Chyun, D., & Koenig, H. G. (2008). Relationships of religion and spirituality to glycemic control in Black women with type 2 diabetes. *Nursing Research*, *57*(5), 331-339.

Nuari, N. A. (2020). Factor associated with diabetes burnout syndrome among type 2 diabetes mellitus. *Jurnal Ners dan Kebidanan (Journal of Ners and Midwifery)*, *7*(3), 362-367.

Obeng, J. P. (1996). *Asante Catholicism: Religious and cultural reproduction among the Akan of Ghana* (Vol. 15). Brill.

Omenyo, C. N., & Atiemo, A. O. (2006). Claiming religious space: The case of neo-prophetism in Ghana.

Paloutzian, R. F., & Park, C. L. (Eds.). (2014). *Handbook of the psychology of religion and spirituality*. Guilford Publications.

Park, C. L. (2007). Religiousness/spirituality and health: A meaning systems perspective. *Journal of Behavioral Medicine*, *30*(4), 319-328.

Peterman, A. H., Fitchett, G., Brady, M. J., Hernandez, L., & Cella, D. (2002). Measuring spiritual well-being in people with cancer: the functional assessment of chronic illness therapy—Spiritual Well-being Scale (FACIT-Sp). *Annals of Behavioral Medicine*, *24*(1), 49-58.

Piderman, K. M., Johnson, M. E., Frost, M. H., Atherton, P. J., Satele, D. V., Clark, M. M., Lapid, M.I., Sloan, J.A. & Rummans, T. A. (2014). Spiritual quality of life in advanced cancer patients receiving radiation therapy. *Psycho-Oncology*, *23*(2), 216-221.

Polonsky, W. (1999). *Diabetes burnout: What to do when you can't take it anymore*. American Diabetes Association.

Polonsky, W. H. (2002). Emotional and quality-of-life aspects of diabetes management. *Current Diabetes Reports*, *2*(2), 153-159.

Polonsky, W. H., Fisher, L., Earles, J., Dudl, R. J., Lees, J., Mullan, J., & Jackson, R. A. (2005). Assessing psychosocial distress in diabetes: development of the diabetes distress scale. *Diabetes Care*, *28*(3), 626-631.

Polzer, R., & Miles, M. S. (2005). Spirituality and self-management of diabetes in African Americans. *Journal of Holistic Nursing*, *23*(2), 230-250.

Pouwer, F., Beekman, A. T., Nijpels, G., Dekker, J. M., Snoek, F. J., Kostense, P. J., Heine, R.J. & Deeg, D. J. H. (2003). Rates and risks for co-morbid depression in patients with Type 2 diabetes mellitus: results from a community-based study. *Diabetologia*, *46*(7), 892-898.

Punch, K. F. (2013). Introduction to social research: Quantitative and qualitative approaches. Washington D.C: Sage Publications.

Raghupathi, W., & Raghupathi, V. (2018). An empirical study of chronic diseases in the United States: a visual analytics approach to public health. *International Journal of Environmental Research and Public Health*, *15*(3), 431. https://doi.org/10.3390/ijerph15030431.

Rahmati, Z. (2015). The study of academic burnout in students with high and low level of self-efficacy. *Procedia-Social and Behavioral Sciences*, *171*, 49-55.

Raina, P., Gilsing, A., Mayhew, A. J., Sohel, N., van den Heuvel, E., & Griffith, L. E. (2020). Individual and population level impact of chronic conditions on functional disability in older adults. *PloS one*, *15*(2), e0229160.

Reis, D., Xanthopoulou, D., & Tsaousis, I. (2015). Measuring job and academic burnout with the Oldenburg Burnout Inventory (OLBI): Factorial invariance across samples and countries. *Burnout Research*, *2*(1), 8-18.

René, V. L., Lucas J, T., Henk, J., & Doeke, P. (2007). Aspects of spirituality concerning illness. *Scandinavian Journal of Caring Sciences*, *21*(4), 482-489.

Ringle, C., Da Silva, D., & Bido, D. (2015). Structural equation modeling with the SmartPLS. *Brazilian Journal of Marketing*, *13*(2), 34-38.

Robertson, G. L. (1995). Diabetes insipidus. *Endocrinology and Metabolism Clinics of North America*, *24*(3), 549-572.

Roy, T., & Lloyd, C. E. (2012). Epidemiology of depression and diabetes: a systematic review. *Journal of Affective Disorders*, *142*, S8-S21.

Saunders, M., Lewis, P. & Thornhil, A. (2007). Research Methods for Business Students. (4th Ed). New York: Pearson Education Limited.

Saunders, M., Lewis, P., & Thornhill, A. (2012). Research Methods for Business Students (6th Ed). New York: Pearson Education Limited.

Schaufeli, W. (2021). The burnout enigma solved?. *Scandinavian Journal of Work, Environment & Health*, *47*(3), 169-170.

Schaufeli, W., & Enzmann, D. (1998). *The burnout companion to study and practice: A critical analysis*. CRC press.

Schillinger, D., Grumbach, K., Piette, J., Wang, F., Osmond, D., Daher, C., Palacios, J., Sullivan, G.D., & Bindman, A. B. (2002). Association of health literacy with diabetes outcomes. *Jama*, *288*(4), 475-482.

Selye, H. (1951). The general-adaptation-syndrome. *Annual Review of Medicine*, *2*(1), 327-342.

Selye, H. (1965). The stress syndrome. *The American Journal of Nursing*, 97-99.

Sheridan, C. L., & Radmacher, S. A. (1992). *Health psychology: Challenging the biomedical model*. John Wiley & Sons.

Shirom, A. (1989). Burnout in work organizations.

Shirom, A. (2003). *Job-related burnout: A review*. In J. C. Quick & L. E. Tetrick (Eds.), *Handbook of Occupational Health Psychology* (p. 245–264). American Psychological Association. https://doi.org /10.10 37/10 474-012

Siegel, K., & Schrimshaw, E. W. (2002). The perceived benefits of religious and spiritual coping among older adults living with HIV/AIDS. *Journal for the Scientific Study of Religion*, *41*(1), 91-102.

Sloan, R. P., & Bagiella, E. (2002). Claims about religious involvement and health outcomes. *Annals of Behavioral Medicine*, *24*(1), 14-21.

Tavakoli, H. R. (2009). A closer evaluation of current methods in psychiatric assessments: a challenge for the biopsychosocial model. *Psychiatry (Edgmont)*, *6*(2), 25-30.

Weaver, A. J., Pargament, K. I., Flannelly, K. J., & Oppenheimer, J. E. (2006). Trends in the scientific study of religion, spirituality, and health: 1965–2000. *Journal of Religion and Health*, *45*(2), 208-214.

World Health Organization. (1999). *Definition, diagnosis and classification of diabetes mellitus and its complications: report of a WHO consultation. Part 1, Diagnosis and classification of diabetes mellitus* (No. WHO/NCD/NCS/99.2). World Health Organization.

World Health Organization. (2011). *Use of glycated haemoglobin (HbA1c) in diagnosis of diabetes mellitus: abbreviated report of a WHO consultation* (No. WHO/NMH/CHP/CPM/11.1). World Health Organization.

World Health Organization. (2019). Burn-out an "occupational phenomenon": International Classification of Diseases. *World Health Organization Available From: https://wwwwhoint/mental_health/evidence/burn-out/en*.

World Health Organization. (2020). Noncommunicable diseases: Progress monitor 2020.

Wysocki, T., Harris, M. A., Buckloh, L. M., Mertlich, D., Lochrie, A. S., Mauras, N., & White, N. H. (2007). Randomized trial of behavioral family systems therapy for diabetes: maintenance of effects on diabetes outcomes in adolescents. *Diabetes Care*, *30*(3), 555-560.

Zalak, K., Kazemi Haki, B., & Matlabi, H. (2012). Obstacles to Self-Care from The Viewpoint of Type II Diabetic Patients and Guidelines to Remove Them. *Jorjani Biomedicine Journal*, (1), 30-37.

Zanchetta, F. C., Trevisan, D. D., Apolinario, P. P., Silva, J. B. D., & Lima, M. H. D. M. (2016). Clinical and sociodemographic variables associated with diabetes-related distress in patients with type 2 diabetes mellitus. *Einstein (Sao Paulo)*, *14*, 346-351.

Zhang, Y., Gan, Y., & Cham, H. (2007). Perfectionism, academic burnout and engagement among Chinese college students: A structural equation modeling analysis. *Personality and Individual Differences*, *43*(6), 1529-1540.

Zwingmann, C., Klein, C., & Büssing, A. (2011). Measuring religiosity/ spirituality: Theoretical differentiations and categorization of instruments. *Religions*, *2*(3), 345-357.

APPENDICES

APPENDIX A

INTRODUCTORY LETTER

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
FACULTY OF EDUCATIONAL FOUNDATIONS
DEPARTMENT OF EDUCATION AND PSYCHOLOGY

Telephone 0332091697
Email dep@ucc.edu.gh

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref:

Your Ref:

6th January, 2021

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

THESIS WORK
LETTER OF INTRODUCTION
MR. CALEB OTABIL

We introduce to you Mr. Otabil, a student from the University of Cape Coast, Department of Education and Psychology. He is pursuing Master of Philosophy degree in Clinical Health Psychology and he is currently at the thesis stage.

Mr. Otabil is researching on the topic:

"DIABETES OUTCOMES: INFLUENCE OF DIABETES BURNOUT, DISTRESS AND SPIRITUALITY."

He has opted to collect or gather data at your institution/establishment for his thesis work. We would be most grateful if you could provide him the opportunity and assistance for the study.

Any information provided would be treated strictly as confidential.
We sincerely appreciate your co-operation and assistance in this direction.

Thank you.

Yours faithfully,

Ama A. Ocran (Ms.)
Principal Administrative Assistant
For: **HEAD**

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
ETHICAL REVIEW BOARD

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref: CES-ERB/ucc.edu/05/21-11

Date: 5th January, 2021.

Your Ref: .....

Dear Sir/Madam,

ETHICAL REQUIREMENTS CLEARANCE FOR RESEARCH STUDY

Chairman, CES-ERB
Prof. J. A. Omotosho
jomotosho@ucc.edu.gh
0243784739

Vice-Chairman, CES-ERB
Prof. K. Edjah
kedjah@ucc.edu.gh
0244742357

Secretary, CES-ERB
Prof. Linda Dzama Forde
lforde@ucc.edu.gh
0244786680

The bearer, Caleb Otabil, Reg. No. EHC/PD/19/0013. is an M.Phil. / Ph.D. student in the Department of Education and Psychology in the College of Education Studies, University of Cape Coast, Cape Coast, Ghana. He / She wishes to undertake a research study on the topic:

Diabetes outcomes: Influence of diabetes burnout, distress and spirituality

The Ethical Review Board (ERB) of the College of Education Studies (CES) has assessed his/her proposal and confirm that the proposal satisfies the College's ethical requirements for the conduct of the study.

In view of the above, the researcher has been cleared and given approval to commence his/her study. The ERB would be grateful if you would give him/her the necessary assistance to facilitate the conduct of the said research.

Thank you.
Yours faithfully,

Prof. Linda Dzama Forde
(Secretary, CES-ERB)

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
FACULTY OF EDUCATIONAL FOUNDATIONS
DEPARTMENT OF EDUCATION AND PSYCHOLOGY

Telephone: 0332091697
Email:dep@ucc.edu.gh

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref:

Your Ref:

UNIVERSITY HOSPITAL
RECEIVED
29 JAN 2021
UNIVERSITY OF CAPE COAST

[illegible] January, 2021

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

THESIS WORK
LETTER OF INTRODUCTION
MR. CALEB OTABIL

We introduce to you Mr. Otabil, a student from the University of Cape Coast, Department of Education and Psychology. He is pursuing Master of Philosophy degree in Clinical Health Psychology and he is currently at the thesis stage.

Mr. Otabil is researching on the topic:

"DIABETES OUTCOMES: INFLUENCE OF DIABETES BURNOUT, DISTRESS AND SPIRITUALITY."

He has opted to collect or gather data at your institution/establishment for his thesis work. We would be most grateful if you could provide him the opportunity and assistance for the study.

Any information provided would be treated strictly as confidential.

We sincerely appreciate your co-operation and assistance in this direction.

Thank you.

Yours faithfully,

(1) D.D/Mr. M. [illegible] Admin. Approval granted. MS [illegible] 09/02/2021

(2) Dr. [illegible] MS for [illegible]. 01/02/2021

Ama A. Ocran (Ms.)
Principal Administrative Assistant
For: **HEAD**

0543903065 – Mr. Caleb Ofasil
0201692386

(3) Director
He is welcome to conduct his study. He will have our support. 3/02/2

APPENDIX B

INFORMED CONSENT FORM

UNIVERSITY OF CAPE COAST

INFORMED CONSENT FORM

TITLE: Diabetes Outcomes: Influence of Diabetes Burnout, Distress and Spirituality.

Principal Investigator: CALEB OTABIL

Address: Department of Education and Psychology, Faculty of Educational Foundations, University of Cape Coast.

General Information about Research

Diabetes is a disease that results in inability of the body to effectively process or use blood sugar. For many, the burden of self-management of diabetes can be overwhelming especially when trying to juggle that with a career, family and social life. This could lead to some psychological problems eg. Extreme stress (diabetes burnout) and psychological distress. People's ability to believe in God, a higher power and find purpose (their spirituality) within themselves has been proven by researchers to make a big difference in managing their diabetes. This study seeks to find out the influence that those psychological problems and the persons' spirituality has on some results of diabetes management like the levels of their blood sugar and whether they regularly visit a doctor.

The knowledge from this study should provide clinical health psychologists, psychiatrists and other clinicians access to insightful data on how to understand and manage the psychological problems that people with diabetes may get and to manage them properly.

Procedures

To find answers to some of these questions, we invite you to take part in this research project. If you accept, you will be required to:

1. Fill out a questionnaire which will be provided and collected by Caleb Otabil.
2. Allow measurement of your weight, height and Waist and Hip circumference.
3. Consent to a blood collection procedure which will Involve
   - A finger-prick procedure on your finger, preferably your left middle finger.
   - A needle being inserted into your most prominent vein on your arm.

     The procedures to be used in handling the blood are as follows:

     - Finger-prick sample for estimating fasting blood glucose using the blood glucose monitor. Strips will be discarded immediately after use.
     - Venous sample will be used to determine blood group, hemoglobin variant and glycated hemoglobin. Samples will be stored for the period of the research which is four months, after which it will be discarded in sterile bags

You are being invited to take part in this research because you fall into the category of people most at risk of developing diabetes burnout and data collected from your will be vital in the determination of the influence of diabetes spirituality, diabetes burnout and distress on critical diabetes outcomes such as glycemic control and missed appointments.

If you do not wish to answer any of the questions included in the questionnaire, you may skip them and move on to the next question. After filling the questionnaire form, it will be taken and processed and if you choose to, you may then decide to proceed to the next stage of sampling. The information recorded is considered confidential, and no one else except, Caleb Otabil will have direct access to your information. Your personal participation in the research will be approximately 25 minutes in total from filling of the questionnaire to sample collection.

Possible Risks and Discomforts

The blood collection procedure will be done quickly to avoid making you uncomfortable, as there is a possibility of a sharp pain.

Possible Benefits

By participating in this research, you will get to know you're your blood sugar level, whether you are obese, whether you have diabetes distress or diabetes burnout or not and your level of spirituality. All this information can be assessed by calling the attached number for details.

The results of this research will be important in understanding the influence of spirituality, diabetes distress and burnout among T2DM patients in Cape Coast. This will be vital In developing and promoting quality healthcare practices aimed at not only treating but helping to prevent diabetes leading to a healthier happier citizenry and millions of cedis saved in treatment costs.

Alternatives to Participation

Not Applicable.

Confidentiality

We will protect information about you to the best of our ability. You will not be named in any reports. The samples taken will be given unique codes and your name will not be attached to them. Data generated will be encrypted and kept in confidentiality. After the research, physical data will be destroyed and only soft data kept securely.

Compensation

There will be no form of compensation and no additional costs for the participants to bear.

Staying in the Research

Not Applicable

Voluntary Participation and Right to Leave the Research

Participation in this research is purely voluntary and you reserve the right to withdraw consent now or at any point during this research.

Termination of Participation by the Researcher

Your participation might be terminated if you do not fall within the criteria we require for the research. This includes if you are pregnant, are below the age of 20 years or do not have diabetes

Contacts for Additional Information

For any information pertaining to this research or any injury inflicted by this research contact:

The Principal Investigator

Caleb Otabil

Mobile: 0543903065

Email: caleb.otabil@stu.ucc.edu.gh

Your rights as a Participant

This research has been reviewed and approved by the Institutional Review Board of University of Cape Coast (UCCIRB). If you have any questions about your rights as a research participant you can contact the Administrator at the IRB Office between the hours of 8:00 am and 4:30 p.m. through the phones lines 0332133172 and 0244207814 or email address: irb@ucc.edu.gh.

VOLUNTEER AGREEMENT

The above document describing the benefits, risks and procedures for the research titled DIABETES OUTCOMES: INFLUENCE OF DIABETES BURNOUT, DISTRESS AND SPIRITUALITY has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

Date Name and signature or mark of volunteer

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

Date Name and signature of witness

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

Date Name Signature of Person Who Obtained Consent

APPENDIX C

QUESTIONNAIRE

APPENDIX A. QUESTIONNAIRE SAMPLE No

DIABETES OUTCOMES: INFLUENCE OF DIABETES BURNOUT, DISTRESS AND SPIRITUALITY

SECTION A – SOCIODEMOGRAPHIC/ CLINICAL INFORMATION

Age: ..... Gender: Male Female ☐ ☐

Occupation: .....

Waist- Hip Ratio (WHR): .....

Body Mass Index (BMI):.....

Number of Missed diabetes related medical appointments in the past three months.....

Total number of diabetes related medical appointments in the past three months.....

%Missed diabetes related appointments in the past three months.....

Last HbA1c level.....

SECTION B – DIABETES BURNOUT

Instructions: Below you find a series of statements with which you may agree or disagree. Using the scale, please indicate the degree of your agreement by selecting the number that corresponds with each statement.

	strongly agree (1)	Agree (2)	Disagree (3)	strongly disagree (4)
I always find new and interesting aspects of my diabetes management				
There are days when I feel tired before I arrive at the hospital				
It happens more and more often that I talk about my diabetes management in a negative way				
After a hospital visit, I tend to need more time than in the past to relax and feel better				
I can tolerate the pressure of my diabetes management very well				
Lately, I tend to think less at the hospital and have my doctor's appointment almost mechanically				
I find my diabetes management to be a positive challenge				
During my hospital visits, I often feel emotionally drained				
Over time, one can become disconnected from managing diabetes				
After a hospital visit, I have enough energy for my leisure activities				
Sometimes I feel sickened by my diabetes management				
After my hospital visits, I usually feel worn out and weary				
This is the only type of disease that I can imagine myself managing				
Usually, I can manage my diabetes well				
I feel more and more engaged in my diabetes management				
When I manage my diabetes, I usually feel energized				

SECTION D: DIABETES DISTRESS

DIRECTIONS: Living with diabetes can sometimes be tough. There may be many problems and hassles concerning diabetes and they can vary greatly in severity. Problems may range from minor hassles to major life difficulties. Listed below are 17 potential problem areas that people with diabetes may experience. Consider the degree to which each of the 17 items may have distressed or bothered you DURING THE PAST MONTH and circle the appropriate number. Please note that we are asking you to indicate the degree to which each item may be bothering you in your life, NOT whether the item is merely true for you. If you feel that a particular item is not a bother or a problem for you, you would circle "1". If it is very bothersome to you, you might circle "6".

	Not a Problem (1)	A Slight Problem (2)	A Moderate Problem (3)	Somewhat Serious Problem (4)	A Serious Problem (5)	A Very Serious Problem (6)
1. Feeling that my doctor doesn't know enough about diabetes and diabetes care						
2. Feeling that diabetes is taking up too much of my mental and physical energy every day.						
3. Not feeling confident in my day-to-day ability to manage diabetes.						
4. Feeling angry, scared and/or depressed when I think about living with diabetes.						
5. Feeling that my doctor doesn't give me clear enough directions on how to manage my diabetes.						
6. Feeling that I am not testing my blood sugars frequently enough.						
7. Feeling that I will end up with serious long-term complications, no matter what I do.						
8. Feeling that I am often failing with my diabetes routine.						
9. Feeling that friends or family are not supportive enough of self-care efforts (e.g. planning activities that conflict with my schedule, encouraging me to eat the "wrong" foods)						
10. Feeling that diabetes controls my life.						
11. Feeling that my doctor doesn't take my concerns seriously enough.						
12. Feeling that I am not sticking closely enough to a good meal plan.						
13. Feeling that friends or family don't appreciate how difficult living with diabetes can be.						

Feeling overwhelmed by the demands of living with diabetes.						
15. Feeling that I don't have a doctor who I can see regularly enough about my diabetes.						
16. Not feeling motivated to keep up my diabetes self-management.						
17. Feeling that friends or family don't give me the emotional support that I would like.						

SECTION D: SPIRITUALITY

Below is a list of statements that other people with your illness have said are important. **Please circle or mark one number per line to indicate your response as it applies to the past 7 days.**

		Not at all	A little bit	Some-what	Quite a bit	Very much
Sp1	I feel peaceful	0	1	2	3	4
Sp2	I have a reason for living	0	1	2	3	4
Sp3	My life has been productive	0	1	2	3	4
Sp4	I have trouble feeling peace of mind	0	1	2	3	4
Sp5	I feel a sense of purpose in my life	0	1	2	3	4
Sp6	I am able to reach down deep into myself for comfort	0	1	2	3	4
Sp7	I feel a sense of harmony within myself	0	1	2	3	4
Sp8	My life lacks meaning and purpose	0	1	2	3	4
Sp9	I find comfort in my faith or spiritual beliefs	0	1	2	3	4
Sp10	I find strength in my faith or spiritual beliefs	0	1	2	3	4
Sp11	My illness has strengthened my faith or spiritual beliefs	0	1	2	3	4
Sp12	I know that whatever happens with my illness, things will be okay.....	0	1	2	3	4