UNIVERSITY OF CAPE COAST

ASSOCIATION BETWEEN PSYCHOSOCIAL FACTORS AND

GLYCEMIC LEVEL OF DIABETIC PATIENTS

BY

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in Clinical Health Psychology

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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 in 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: ………………………

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ABSTRACT

The study sought to determine the relationship between psychosocial factors such as anxiety, depression, stress and social support, age, and glucose level of persons living with diabetes at the St. Michael's Hospital, Pramso in the Bosomtwe District of the Ashanti Region of Ghana. The descriptive survey research design (cross-sectional survey) was adopted for the study. Through the use of convenience and purposive sampling procedures, 110 respondents were selected to participate in the study. The questionnaire was used to gather the requisite data for the study. The data were analyzed through the computation of frequencies, percentages, means and standard deviations, Pearson product moments correlation coefficient, independent t-test as well as one-way ANOVA. The study among other things found out that, there was a weak to moderate correlation between psychosocial factors such as stress, anxiety, depression, social support and the attitude towards self-care. The study recommended that health care professionals should endeavor to counsel patients on stress management techniques, need for regular exercises and therapy on how to handle their thoughts and emotions in times of feelings of helplessness and hopelessness in order to reduce anxiety among diabetic patients.

KEY WORDS

Diabetes

Glycemic level

Stress

Depression

Anxiety

Social support

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DEDICATION

To my husband, Benjamin Wireko Asibey and my son Nana Gyasi for being so

wonderful, I love you!

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CHAPTER ONE

INTRODUCTION

Background to the Study

Diabetes is a combination of heterogeneous disorders commonly presenting with episodes of hyperglycaemia and glucose intolerance, as a result of lack of insulin, defective insulin action, or both (Sicree, Shaw & Zimmet, 2006). Such complications arise due to derangements in the regulatory systems for storage and mobilization of metabolic fuels, including the catabolism and anabolism of carbohydrates, lipids and proteins emanating from defective insulin secretion, insulin action, or both (Votey& Peters, 2004).

Classification of diabetes mellitus is based on its aetiology and clinical presentation. As such, there are four types or classes of diabetes mellitus, that is; type 1 diabetes, type 2 diabetes, gestational diabetes, and other specific types (Sicree et al., 2006). Type 1 diabetes is said to account for only a minority of the total burden of diabetes in a population although it is the major type of the diabetes in younger age groups in majority of well-to-do countries. The incidence of type 1 diabetes is increasing in both rich and poor countries. Furthermore, a shift towards type 1 diabetes occurring in children at earlier ages is imminent (Sicree et al., 2006). Both types of diabetes require lifestyle changes in order for the patient to adjust to the disease and to minimize health complications.

Diabetes is one of the chronic disorders that require daily monitoring and relatively strict compliance to both medical and lifestyle regimens. Globally, the incidence of diabetes is likely to exceed 250 million people by

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2025, which is a measure of the scale of the problem this condition is likely to present in the future (American Diabetes Association, 2006). It is evidence of how diabetes will be one of the foremost public health challenges facing the world in the decades ahead. Accordingly diabetes belongs at the top of the healthcare agenda but it has yet to be afforded that position (American Diabetes Association, 2006).

It is estimated that 7% of the U.S's Population has diabetes. The prevalence rate for children with insulin dependent diabetes is approximately one per 400 to 500 children. About 6.2 million people have diabetes and are unaware of it (American Diabetes Association, 2006). Nearly 177,000 children and youth under 20 years of age have diabetes (National Diabetes Education Program, 2006).

According to the International diabetes Federation, Africa, "387 million people have diabetes in the world and more than 22 million people in the Africa Region; by 2035, this figure will almost double." In a research conducted by the International Diabetes Federation, Africa, in 2014, there were 450,000 cases of diabetes in Ghana in 2014. This shows the assurgency of the disease in the country.

Prevalence rates of impaired glucose tolerance (IGT) and impaired fasting glucose (IFG), when measured are double or tripled the diabetes prevalence, which suggests that higher numbers of individuals are at risk of developing diabetes in the future. In the year 2012, the Ghana News Agency (GNA) reported that about four million people may be affected with diabetes mellitus in Ghana (GNA, 2012).

The implications of a diagnosis of diabetes on the person and their family are immense. Many experience various emotions such as shock, anxiety, depression or guilt. Living with diabetes provides a daily challenge, as its management requires frequent and continuous effort from the person living with the condition (The American Diabetes Association, 2005). This incorporates such factors as home blood glucose monitoring, meal and exercise planning, and adherence to medications (The American Diabetes Association, 2005).

People living with diabetes experience complex psychosocial challenges including psychological and emotional insecurities, and limited social support. Management and self-care are poor, and healer-shopping between medical systems is common. Major limitations exist with diabetes care including poor diabetes education, a lack of guidelines for diabetes care, erratic supply of essential diabetes drugs at health facilities and poorly trained health care professionals to manage diabetes including doctors, nurses and dieticians (The American Diabetes Association, 2005).

Statement of the Problem

Effective management of blood glucose levels is a critical element of diabetes management (Votey & Peters, 2004). Large trials have demonstrated the importance of tight glycemic control for protecting against microvascular and neuropathic complications such as blindness and end-stage renal disease in individuals with diabetes. (UK Prospective Diabetes Study [UKPDS] Group, 1998). Effective glucose management depends largely on self-care; it requires regular self-monitoring of blood glucose and medication management that may include insulin administration. Individuals should also engage in a

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rigorous self-monitoring regimen including self-regulation of diet and physical activity to prevent and treat hypo- and hyperglycemias, along with regular foot, eye, and dental exams (American Diabetes Association (ADA), 2010).

Barriers to these self-care behaviours undermine effective blood glucose management, and likely contribute to elevated levels or poor glycemic control (Quandt, 2005). Psychosocial factors such as, depression, stress, anxiety and lack of social support are frequently found among individuals with diabetes. Though studies have shown reciprocal relations between psychosocial factors and glucose levels, for example, some studies have reported that poor glycemic control leads to psychosocial challenges, which can hinder goal-directed diabetes self-care behaviours (Quandt, 2005).

Conversely, it is also likely that the presence of psychosocial factors affect glycemic control, largely through their relationships to behavioural mediators. That is, the presence of psychosocial factors may alter the attitude of disease self-management and impair patients' functioning, which may interfere with good glycemic control by limiting individuals' ability to adhere to medication and other self-care behaviours (Iwata & Munshi, 2009). Therefore, psychosocial factors may be considered a potential barrier to self-care, the cornerstone of glucose management. The implications of psychosocial factors for effective diabetes management are understudied in Ghana, despite the fact that outcomes of ineffective diabetes management are known to be poor; patients with diabetes are not often screened or evaluated for the presence of psychological challenges.

Screening for unrecognized barriers to successful management of diabetes may be important when complex treatment regimens are prescribed.

Additionally, the research to date has largely failed to focus on specific effects such as depression or anxiety, (Iwata & Munshi, 2009). The extent to which different mental conditions are associated with glycemic control is an important research topic. Patients with diabetes often struggle with these conditions, and these mental distresses may complicate the treatment of diabetes and diabetes care goals. This study was to examine the extent to which psychosocial factors, specifically, depressive symptoms, and symptoms of anxiety, stress and perceived social support are related to blood glucose levels of persons living with diabetes

Purpose of the Study

This study sought to determine the relationship between psychosocial factors such as anxiety, depression, stress and social support and glucose level of persons living with diabetes. Specifically, the study will sought to address the following objectives:

1. To determine whether there is a link between stress and self care

2. To determine whether there is a link between anxiety and self care

3. To examine the link between depression self care

4. To determine the link between social support and self care

5. To examine the link between attitude towards self care and glycemic level

6. To examine the link between socio-demographic factors and self care.

7. To find out if there is significance difference in male and female diabetic patients with regards to their self care

8. To find out if there is significance difference in the way diabetic patients take care of themselves with regards to age

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9. To find out if there is a significance difference in the way diabetic patients take care of themselves with regards to their educational level

Hypotheses

Hypothesis 1: There is no relationship between stress and attitude towards self care.

Hypothesis 2: There is no relationship between anxiety and self care

Hypothesis 3: There is no relationship between depression and self care

Hypothesis 4: There is no relationship between social support and self care

Hypothesis 5: There is no relationship between glucose level and self care

Hypothesis 6: There is a significant link between socio-demographic factors (i.e. age, sex, & education) and attitude towards self-care

Hypothesis 7: There is no significance difference between male and female diabetic patients' attitude towards self care.

Hypothesis 8: There is no significance difference in attitude of diabetic patients towards self care regarding age level

Hypothesis 9: There is no significance difference in attitude of diabetic patients' attitude towards self care in relation with their educational level

Significance of the Study

The results of the study would help in bringing out the psychological and social challenges people living with diabetes have. The results would provide feedback to health workers and policy makers of the psychological and social struggles of those living with diabetes. It would also help authorities to make policies on psychosocial adjustments and social support for these patients.

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The results of the study would serve as a guide to health care professionals in developing psychological services for diabetic patients which will help them to maintain a normal glucose level. Research on the relationship between psychosocial issues and blood glucose level may contribute to a better understanding of the characteristics of psychosocial conditions that may affect the ability of diabetic patients to self-manage their disease effectively to control blood glucose level. Finally, the study would contribute to research in the area of diabetes adding to existing research by helping to address the gap in literature regarding the psychosocial implications and blood glucose level of people with diabetes.

Delimitation

The study was delimited to the St. Michael's Catholic Hospital, Pramso in the Bosomtwe District of the Ashanti Region of Ghana. Persons living with diabetes were the subjects of study. Specifically, the study covered only those who are from 12 years to 80 years and have been diagnosed with diabetes for over 3 months and also those who are outpatients. In-patients were excluded from the study because it was presumed that they may not be well enough to respond appropriately to questions that would be asked.

Limitations

This section of the study dealt with what might affect the validity and reliability of the instrument. One of the major limitations of this study was the high illiteracy level of the respondents. Most of the respondents could not read and write and so the questions had to be read out to them. This led to the researcher spending more time on each client. It therefore took a very long time in trying completing the questionnaire during the data gathering.

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Another limitation was the number of items on the questionnaire. Since the questionnaire was designed to measure five areas of the respondents, the items were bulky which scared away some of the patients because they thought it would waste their time. A very negligible number of them failed to complete the questionnaire. Their responses could have enriched the data. However, since most of the patients responded, it could be said that even though it affected the quantity of the data, it is infinitesimal making the data very reliable and valid.

Organisation of the Study

The study was organized into five main chapters. The first chapter dealt with the general introduction of the study, covering the background to the study, statement of the problem, purpose of the study, research questions, and significance of the study, delimitation of the study, limitations of the study and Organisation of the Rest of the Study. Chapter Two of the study dealt with the review of related literature. It covered the theoretical framework/conceptual base of the study. It also had a section for empirical review under which studies related to the research were reviewed.

Chapter Three also dealt with the methodology which includes: research design; population; sample and sampling procedure; research instrument; validity and reliability of instrument; data collection procedure; as well as data analysis. Chapter Four of the study dealt with the presentation of results/findings of the study. The final chapter, which was Chapter Five, covered the summary of the study, conclusions based on the findings, and recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Overview

This chapter presents the literature reviewed for the study. It focused on the conceptual and theoretical frameworks and other key themes that rose in the hypotheses. The conceptual issues looked at the general concept in diabetes.

The theoretical review highlights some relevant theories that explained psychological factors. The empirical review on its part looked at studies that were done on psychological factors and blood glucose levels of diabetic patients.

Theoretical Framework

For the purpose of this study, four theories were adapted which include the following. The following theories were considered:

Diathesis-stress model (Zuckerman, 1999)

The diathesis stress model views psychological disease as the result of the interaction between a person's vulnerability for a disorder and stress. A susceptible individual may never manifest a mental illness until he encounters a type or degree of stress that is enough to trigger it. The diathesis-stress model suggests that some individuals are vulnerable to stress related diseases. This is because either genetic weakness or biochemical imbalance inherently predisposes them to those diseases. The model holds that some people are predisposed to react abnormally to environmental stressors.

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The diathesis-stress model assumes that two factors are necessary to produce disease. First, the person must have a relatively permanent predisposition to the disease and second, that person must experience some sort of stress. Diathetic individuals respond pathologically to the same stressful conditions with which most people are able to cope. For people with a strong predisposition to a disease, even a mild environmental stressor may be sufficient to produce an illness episode (Zuckerman, 1999).The biological traits produced by the genetic disposition are the diathesis. The term "diathesis'' has, however, been broadened to include cognitive and social predispositions that may make a person vulnerable to a disorder. In this broader sense, the diathesis is the necessary antecedent condition for the development of a disorder or problem, whether biological or psychological (Zuckerman, 1999).

Stress–diathesis models presume that all people have some level of diathesis for any given psychiatric disorder (Monroe & Hadjiyannakis, 2002). However, individuals may differ with regard to the point at which they develop a disorder depending on the degree to which predispositional risk factors exist and on the degree of experienced stress. Thus, relatively minor stressors may lead to a disorder in persons who are highly vulnerable. It therefore, presupposes that diathesis and stress add together to produce the disorder.

In a study, Schroeder (2004) revealed that surgical patients with low coping competence were vulnerable to developing depression in the months following their surgery than patients with better coping skills. Abuse or maltreatment during childhood may create another source of vulnerability to

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physical and psychological disorders. As adults, these individuals show increased vulnerability to schizophrenia, anxiety and depression (Stein, Schork & Gelaraton, 2008).

In diabetes, diathesis may predispose the individual through inheritance. Stress may contribute to both types of diabetes. First, stress may contribute directly to the development of insulin-dependent diabetes or type 1 diabetes through the disruption of the immune system, possibly during infancy. Stress may also contribute to the development of type 2 diabetes through its effects on the cytokines that initiate an inflammatory process that affects metabolism and produces insulin resistance (Black, Markides & Ray 2003). It may also contribute to type 2 diabetes through its possible effect on obesity through poor eating habits. The diathesis-stress model therefore holds that, a person's diathesis (vulnerabilities) must be considered along with stressful life events in predicting who will get sick and who will stay well; it allows for a great deal of individual variability in who gets sick and who stays well under conditions of stress (Black, et al, 2003).

The biopsychosocial model (Engel, 1977)

The biopsychosocial model is a general model or approach stating that, biological, psychological (which entails thoughts, emotions, and behaviors), and social (socio-economical, socio-environmental, and cultural) factors, all play a significant role in human functioning in the context of disease or illness. It posits that, health is best understood in terms of a combination of biological, psychological, and social factors rather than purely in biological terms (Santrock, 2007). This is in contrast to the biomedical model of medicine that suggests every disease process can be explained in terms of an underlying

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deviation from normal function such as a virus, gene or developmental abnormality, or injury (Santrock, 2007).

In terms of disease causation, biological component of the biopsychosocial model seeks to understand how the cause of the illness stems from the functioning of the individual's body. The psychological component looks for potential psychological causes for a health problem such as lack of self-control, emotional turmoil, and negative thinking. The social part investigates how different social factors such as socioeconomic status, culture, poverty, technology, and religion can influence health (Santrock, 2007). The biopsychosocial model is not just about causation but about how any clinical condition (medical, surgical or psychiatric) can either be seen narrowly as just biological or more widely as a condition with psychological and social components, which will impinge on a patient's understanding of her condition and will affect the clinical course of that condition (Halligan & Aylward, 2006).

The biopsychosocial model implies that treatment of disease processes, such as type two diabetes, requires that the health care address biological, psychological and social influences upon a patient's functioning. In a philosophical sense, the biopsychosocial model states that the workings of the body can affect the mind, and the workings of the mind can affect the body (Halligan & Aylward, 2006). This means both a direct interaction between mind and body as well as indirect effects through intermediate factors (DiMatteo, Haskard & Williams, 2007).

The biopsychosocial model presumes that it is important to handle the three together as a grow ing body of empirical literature suggests that patient

perceptions of health and threat of disease, as well as barriers in a patient's social or cultural environment, appear to influence the likelihood that a patient will engage in health-promoting or treatment behaviours, such as medication taking, proper diet or nutrition, and engaging in physical activity (DiMatteo, Haskard & Williams, 2007).

Theory of reasoned action (Fishbein & Ajzen, 1975)

The Theory of Reasoned Action (TRA) is a model that finds its origins in the field of social psychology. This model developed by Fishbein and Ajzen (1975) defined the links between beliefs, attitudes, norms, intentions, and behaviours of individuals. According to this model, a person's behavior is determined by its behavioural intention to perform it. This intention is itself determined by the person's attitudes and his subjective norms towards the behavior. Fishbein and Ajzen (1975) defined the subjective norms as "the person's perception that most people who are important to him think he should or should not perform the behavior in question" (Fishbein & Ajzen 1975, p.302). According to TRA, the attitude of a person towards a behavior is determined by his beliefs on the consequences of this behavior, multiplied by his evaluation of these consequences.

Beliefs are defined by the person's subjective probability that performing a particular behavior will produce specific results. This model therefore suggests that external stimuli influence attitudes by modifying the structure of the person's beliefs. Moreover, behavioural intention is also determined by the subjective norms that are themselves determined by the normative beliefs of an individual and by his motivation to comply to the norms. From Davis, Bagozzi and Warshaw (1989) point of view, in the

Theory of Reasoned Action (TRA) behavioural intention is a function of: (i) the individual's attitude towards the behaviour and evaluation of performing it. This attitude refers to expectations and evaluation of outcome. (ii) The individual's perception of social pressure to perform the action (the subjective norm) and whether he/she is motivated to comply with this pressure (wanting the approval of significant others: spouse, family, doctor). Thus, the TRA places the individual within their social context.

However, intention does not always result in action, which may be influenced by other factors. The TRA has been used to explain regimen compliance with variable success. In diabetic patients, there is a relation between intention and behaviour, with some influence of social norm (Connor &, Norman, 1996)

Social ecological theory (Bronfenbrenner, 1992)

The Social Ecological Model is a comprehensive public health approach that addresses an individual's risk factors and also the norms, beliefs, social and economic systems that create the conditions for a disease occurrences and management. Developed by Urie Bronfenbrenner in 1979, the model conceptualizes that Health behaviours, including physical activity participation, are thought to be improved when environments and policies support healthy choices, and individuals are motivated and educated to make those choices (WHO, 2006).

The social ecological theory begins to address the complexities and interdependencies between socioeconomic, cultural, political, environmental, organizational, psychological, and biological determinants of health (Stokols, 1996). The framework offers a model for the integration of multiple

perspectives into the planning of interventions for behavior change. The social ecological theory proposes that any individual behaviour is supported and influenced by numerous other systems and groups (Wandersman, Valois, Ochs, Cruz, Adkins & Goodman, 1996).

The theory also proposes that lasting behaviour change requires programs that target multiple levels of influence (Emmons, 2000). Levels of influence include intrapersonal factors, interpersonal processes, institutional factors, community factors, and public policy (McLeroy, Bibeau, Steckler,& Glanz, 1988). There is considerable evidence that personal characteristics and behaviours are critically associated with the development of numerous diseases, including obesity and diabetes (Kaplan & Toshima 1990). The majority of individuals who develop prediabetes and diabetes have a genetic disposition and have health behaviours that contribute to obesity (Beck-Nielsen & Hother-Nielsen, 1996). The ability of individuals to change their behaviours to optimize health in diabetes self-management is influenced by knowledge, skills, beliefs, attitudes, and self-confidence (Diabetes Prevention Research Group, 2002). Individual-level interventions that encompass medical and interpersonal components are important and have demonstrated effectiveness in diabetes care and obesity management but are limited in terms of reaching populations (Diabetes Prevention Research Group, 2002).

Interpersonal

Relationships with family, friends, neighbours, and colleagues also play an influential role in the health behaviours of individuals (McLeroy, Bibeau, Steckler, & Glanz, 1988). Social support has been shown to mediate life stress, influence well-being, and promote healthy behaviours (Emmons,

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2000; McLeroy et al., 1988). Substantial research has documented the positive influence of social support and social networks on health status and health behaviours (Kaplan & Toshima, 1990).

With respect to diabetes, social support has been associated with better diabetes self-management and better metabolic control (Brown & Hedges, 1994; Trief, Himes, Orendorff & Weinstock, 2001). Thus, to expand reach, programs should ideally target intrapersonal and associated support networks.

Institutional

Many individuals spend a substantial proportion of time in organizational settings, such as work, school, or churches. Therefore, these organizational structures and processes can have a significant influence on health and health behaviours. These organizations can also provide a context for health-promotion activities, promoting social acceptability and social support for behavior change. There is substantial research to support the benefit of health-promotion programs at places of employment (Sorensen, Emmons, Hunt, & Johnston, 1998).

Programs have targeted smoking cessation, alcohol cessation, nutrition education, physical activity promotion, and health screening. There is strong evidence that work-site smoking policies, cafeteria food choices, food labelling, and incentives for physical activity support positive health behaviour (Kaplan et al., 2000). Access to large groups of people and the promotion of new behaviour in social support net works are some of the benefits of work-based interventions (McLeroy et al., 1988).Churches have a long history of addressing the unmet health needs of the African American community and

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are viable settings for conducting health interventions(Ammerman, Washington, Jackson, weathers, Campbell, Davis 2002).

Pastoral sermons, individual and group support programs, and peer advisor programs have been some of the approaches that have been effective in churches. For example, a church-based weight loss program administered by trained community volunteers for urban African American women at risk for diabetes was effective in demonstrating a clinically significant weight loss (5% of body weight) in comparison to a control group (McNabb, Quinn, Kerver, Cook, & Karrison, 1997).

The school environment has been recognized as having an important influence on youth nutrition and physical activity, as youth spend up to 8 hr per day in school. Unfortunately, school-based physical activity programs have decreased, and unhealthy nutritional choices have proliferated over the past several decades. To address the increased prevalence of overweight and obesity in youth, school-based interventions have been deemed essential (Glanz, 1999).The distinct advantage of interventions aimed at the aforementioned institutions is the ability of the institutions to target numerous levels of influence, including the individual. The key to optimizing this potential effectiveness is to actually target the institutional environment in addition to the placement of a health-promotion program for individuals at each organization.

Community

Community influences on health can be defined in many ways. The most common include the living conditions within a prescribed geographical area. There is growing literature indicating that characteristics of

neighbourhoods and communities, such as business, recreation, and educational opportunities, are associated with the health and health behaviours of individuals (Kaplan, et al. 2000).

Community campaigns, although often expensive and difficult to undertake, have demonstrated the potential of multiple-level interventions in terms of outcomes and reach (Sorensen et al., 1998). For example, Nashville Reach 2010 was a large-scale project to reduce cardiovascular disparities in African Americans through community presentations in grassroots organizations, newspaper and radio coverage, church-based exercise classes, restaurant menu changes, and extended community health clinic hours (CDC, 2003).

Public policy

Public policy influences health through regulatory channels at the local, state, and national levels. Public policy approaches generally require a coordinated and sustained plan of action because the process can be slow and arduous (McKinlay, 1993). Lobbying and consensus building are challenging endeavours. An excellent example of the potential of public policy to influence health is the tobacco control process. Through the coordination of scientists, citizens, and the legal system, change was forced in the tobacco industry (McKinlay & Marceau, 2000). Nutrition labelling and the proposed tax on non nutritious food represent policy approaches aimed at healthy eating.

Advocates of the social ecology framework stress the importance of integrating interventions that target multiple levels of influence and the importance of coordinating linkages between levels. For example, cholesterol-screening programs without linkages to education and treatment may not reach

their full intervention effect potential. Additionally, screening, education, and nutritional treatment programs may be limited if neighbourhoods, schools, or both do not provide access to healthy foods. Targeting multiple levels of influence and providing linkages between services are more likely to enhance the value of each service (Stokols, 1996).No level of intervention is deemed more important, as each approach has the potential to provide a complementary contribution toward health (McKinlay, 1993).

Self-care theory (Orem, 1995)

Research in the field of caring science and self-care activities of chronic disease (i.e. Type 2 DM) supports Orem's theory of self-care through various definitions and relationships. Therefore, this current study is carried out within the context of Orem's self-care theory (1995). Orem's (1995) self-care theory has two strong concepts which are associated with successful self-care. These are: therapeutic self-care demand and self-care agency. Therapeutic self-care is a summation of the measure of one's ability to perform the demands of self-care in relation to his/her life condition.

Self-care agency is an individual's ability to perform self-care activities, or health endorsing behaviours, on one's own behalf to maintain a healthy lifestyle. It is a complex phenomenon and develops through day to day practices. Also, it can be adapted through the help and guidance of health professionals. This could incorporate self-care ability and is mostly to be applied and developed in mature people to control, manage and regulate decision making surrounding their own health. Self-care agency constitutes three concepts: i) the capability to engage in estimative and productive activities of self-care; ii) the estimative activities of self-care; iii) the

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productive activities of self-care. These components are integrated with each other, and none of them can stand alone. Generally, the concept of number-ii and -iii shows the type of actions, and enables the number-i component specific power (Orem, 1979).

In general, estimative activities of an individual are the action systems accomplished with a purpose of determining what is to be achieved with respect to self-care. Productive activities are accomplished with the objective of meeting existing and known self-care requirements by using particular technologies (Orem, 1979). When patients are able to produce effective self-care, it shows that they have awareness about themselves and their disease condition.

Similarly, their estimative activities' objective is to define what is to be achieved with respect to self-care and the relevant knowledge or awareness encompasses internal and external conditions of the individual (Orem, 1995). The maintenance and development of self-care agency depends on the individual's age, marital status, level of education, socio-economic status, and so on (Mapanga & Andrews, 1995). Health promoting lifestyles (healthy diet, regular exercise, and maintaining normal body weight) are the basic lifestyle modifications in public health promotion (The US Department of Health & Human service, 2009).

Conceptual Review
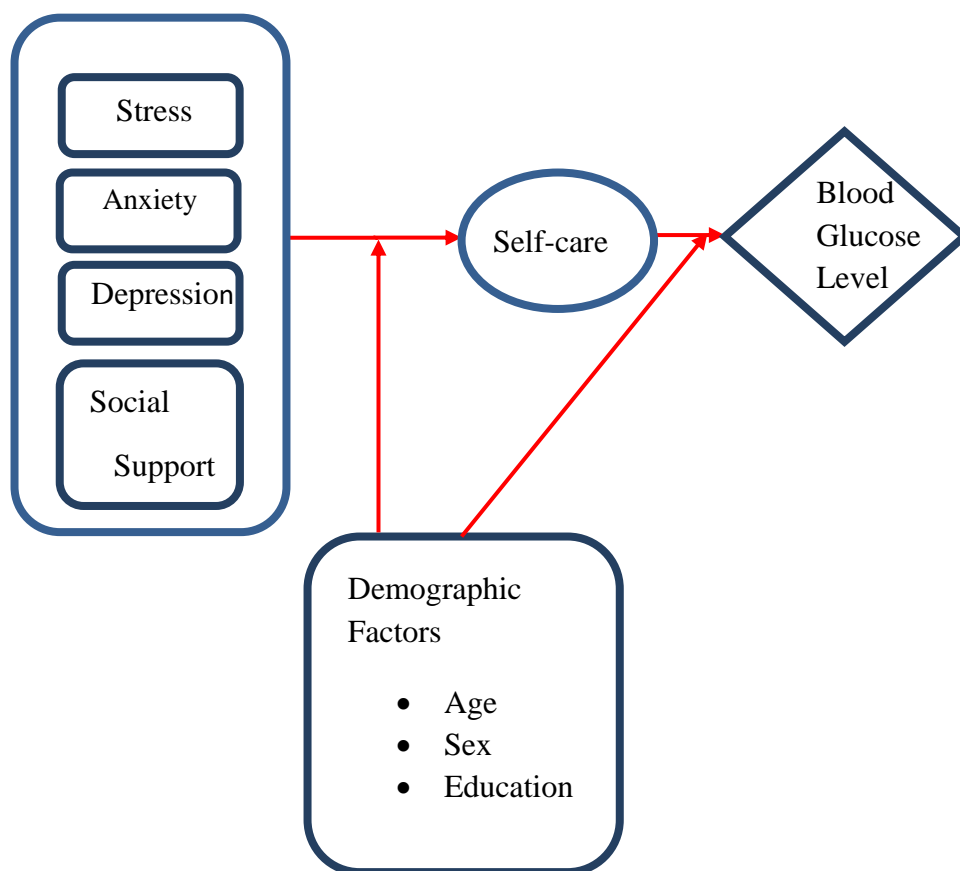
Figure 1 Conceptual Framework

In this model psychosocial factors are assumed to be related to self care which predicts the level of blood glucose of diabetic patients. This relationship is assumed to be modulated by the demographic characteristics of the patients.

Concept of Diabetes

Diabetes mellitus encompasses a group of metabolic disorders characterized by chronic hyperglycaemia (Mayfield, 1998), including high levels of blood glucose resulting from a defect in insulin production (CDC National Diabetes Fact Sheet, 2003). There are four types of diabetes mellitus: type 1, type 2, gestational, and other specific types. Type 1 (IDDM) is often

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classified as juvenile diabetes, usually develops before age 25, and includes insulin dependency. Type 2 (NIDDM) usually develops during adulthood and individuals with this form of the illness are typically non-insulin dependent. Type 2 is the most common form of diabetes, and is associated with a family history of diabetes, older age, obesity, and lack of exercise (Mayfield, 1998).

Gestational diabetes is diagnosed during pregnancy. Other types encompass the rarest forms of diabetes, and result from specific genetic conditions such as surgery, drugs, malnutrition, infections, and other illnesses (National Diabetes Information Clearinghouse, National Diabetes Statistics and General Information, 2004, p. 1). In Ghana various local names are given to diabetes. The Akans call it 'asikyire yadee', it is called 'silki hela' in Ga, 'sukli do' in Ewe, 'kyio skli' in Hausa and 'esikyire ewuli' in Nzema. These various names show how predominant the disease is in the country.

Pathophysiology of Diabetes

Glucose metabolism in people without diabetes is homeostatic (Ellenberg and Rifkin, 1983). When glucose levels start to rise above the normal range, the pancreas releases insulin which lowers glucose in the bloodstream by moving it into muscle for immediate use or into fat and liver cells for long-and short-term storage. When glucose levels begin to fall below the normal range, the pancreas releases glucagon which moves glucose out of liver and fat cells to raise blood glucose (Ellenberg and Rifkin, 1983).

In Type1 diabetes the pancreas loses its ability to reduce any insulin, resulting in uncontrolled elevations of blood glucose. Over a period of hours or days this process results in elevation of free fatty acids as the body breaks down fat cells to produce glucose, and this is accompanied by

associated elevations in ketones and ketoacids. Urine production increases to excrete glucose and ketoacids, resulting in dehydration. Eventually, this condition results to keto-acidotic coma and it is followed by death unless emergency medical intervention is provided.

In the initial stages of Type 2 diabetes insulin production is initially unimpaired, but cell tissues are resistant to the action of insulin. Insulin levels increase in response to the elevation of blood glucose and for a time compensate for insulin resistance. After a period of years, insulin production cannot keep up and begins to lag behind the body's demands. Because of the presence of insulin, keto-acidosis does not develop, but in extreme cases a less common form of coma (hyperosmolar) can result.

In addition to the acute complications of short-term elevations of blood glucose, long term elevations can lead to a number of severe complications. Elevated blood glucose leads to macrovascular damage, resulting in heart attacks, strokes, and gangrene in lower extremities (which may require amputation). Microvascular damage from elevated blood glucose can result in kidney failure, nerve damage, and blindness due to retinopathy.

Research has shown that near normal glucose levels can dramatically reduce the risk of the complications of diabetes (Diabetes Control and Complications Trial Research Group 1993). Therefore, modern diabetes care has the goal of maintaining blood glucose levels as near to normal as possible. Persons with diabetes must consciously manage glucose intake, insulin levels, and energy expenditure to avoid high glucose levels (hyperglycaemia). This task is complicated by the possibility that blood glucose levels can go too low

(hypoglycaemia) as a result of too much insulin, not enough food, or too much exercise (WHO, 1999).

Hypoglycaemia also can have negative consequences, including impaired cognitive functioning, delirium, unconsciousness, and (in severe cases) brain damage and death. Diabetes mellitus is diagnosed in a patient when the fasting whole blood glucose level (capillary blood) is greater than or equal to 6.1mmol/l (110mg/dl) or plasma glucose is greater than or equal to 11.1mmol/l (200mg/dl) two hours after a 75g oral glucose load (WHO, 1999).

It is also diagnosed when glaciated haemoglobin (HbA1c) value greater than or equal to 6.5%. However a value of less than 6.5% does not exclude diabetes diagnosed using glucose tests (WHO, 2011). The disparities in the criteria adopted by MOH in Ghana for diagnosing diabetes mellitus are fasting whole blood glucose level (capillary blood) of 5.7mmol/l or more, random whole blood glucose, taken two hours after a meal or after a 75g glucose load is 7.8mmol/l or more (MOH, 2010). No special reason has yet been stated for this disparity in criterion adopted by MOH, Ghana.

Some of the complications that may arise from diabetes mellitus are cardiovascular diseases, retinopathies, ketoacidosis, nephropathies and diabetes related foot pathologies. The regimens for the management of diabetes consist of lifestyle modification, oral antidiabetic medications and insulin injections (Southern Cross Healthcare Group, 2012).

Etymology of diabetes

The terms "Diabetes" and "Mellitus" are derived from Greek. "Diabetes" denotes "a passer through; a siphon" whereas the "Mellitus" denotes "sweet". It is thought that the Greeks named it so due to the excessive

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amounts of urine produced by diabetics attracted flies and bees (Patlak, 2002).

The traditional way of diagnosing diabetes mellitus in ancient Chinese was by

observing whether ants are attracted to a person's urine or not. In medieval

ages, the European doctors tested for diabetes by tasting the urine themselves,

a scene occasionally depicted in Gothic beliefs (Patlak, 2002).

Biochemical background of diabetes mellitus

A regular energy source is a prerequisite for every cell to function in

the human body. Glucose is the body's primary energy source, which

circulates in the blood as a mobilizable fuel source for cells (Piero, 2006)

Insulin is a pancreatic hormone responsible for blood glucose level regulation.

The hormone binds to its receptor sites on peripheral side of the cell

membranes. It affords entry of glucose into respiring cells and tissues via

requisite channels.

Insulin stimulates catabolism on glucose into pyruvate through

glycolysis (Piero, 2006). It also regulates glycogenesis from excessive

cytosolic glucose and lipogenesis from excessive cytosolic acetyl-COA. These

metabolic events are antagonistic to metabolic events triggered by the

hormone glucagon. When glucose levels are at or below threshold, glucose

stays in the blood instead of entering the cells (Belinda, 2004). The body

attempts to arrest hyperglycaemia, by drawing water out of the cells and into

the bloodstream. The excess sugar is excreted in the urine. This is why

diabetics present with constant thirst, drinking large amounts of water, and

polyuria as the cells try to get rid of the extra glucose. This subsequently leads

to glucosuria, that is, sugar in urine (Piero, 2006).

As hyperglycaemia prolongs, the body cells are devoid of glucose due to the lack of insulin. This forces the cells to seek alternative mobilizable energy sources. In this regard, the cells turn to fatty acids stored in adipose tissue. The fats are not fuel sources for the red blood cells, kidney cortex and the brain. The red blood cells lack mitochondria in which beta-oxidation pathway rests. The fatty acids cannot pass the blood-brain barrier. To avail energy to such cells and tissues, the acetyl arising from catabolism of fatty acids is diverted to ketogenesis to generate ketone bodies, which can serve as alternative fuel sources for such cells and tissues. These ketone bodies are also passed in the urine, thereby leading to ketonuria, which characterizes diabetes mellitus. Build up of ketone bodies in the blood produces ketosis.

Ketone bodies are acidic in nature and therefore, their build up in blood lowers blood pH, leading to acidosis. A combination of ketosis and acidosis lead to a condition called ketoacidosis. If left untreated, ketoacidosis leads to coma and death (Belinda, 2004).

Signs and symptoms of diabetes

According to Cooke and Plotrick (2008), the classic symptoms of untreated diabetes are polyuria (increased urination), polydipsia (increased thirst), and polyphagia (increase hunger). Symptoms may develop rapidly (weeks or months) in type 1 DM, while they usually develop much more slowly and may be subtle or absent in type 2 DM (Cooke & Plotrick, 2008). Several other signs and symptoms can mark the onset of diabetes although they are not specific to the disease. In addition to the known ones above, they include blurry vision, headache, fatigue, slow healing of cuts, and itchy skin. Prolonged high blood glucose can cause glucose absorption in the lens of the

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eye, which leads to changes in its shape, resulting in vision changes. A number of skin rashes that can occur in diabetes are collectively known as diabetic (Cooke & Plotrick, 2008).

Management of diabetes mellitus

Life style management is apparently the cornerstone of management of diabetes mellitus. It is recognized as being an essential part of diabetes and cardiovascular disease prevention (Inzucchi, 2002). Meta-analyses demonstrate that lifestyle interventions, including diet and physical activity, led to a 63% reduction in diabetes incidence in those at high risk. Lifestyle modification programs have demonstrated encouraging improvement in risk factors for diabetes; however, the effect on diabetes incidence has not been reported (Inzucchi, 2002). The dietary management of diabetes mellitus is a complement of lifestyle management. It has a positive effect on long term health and quality of life.

Dietary management aims at optimal metabolic control by establishing a balance between food intake, physical activity, and medication to avoid complications. In type 2 diabetes, the dietary objective is for improved glycemic and lipid levels and weight loss as appropriate (Piero, 2006). In spite of the underscored importance of lifestyle measures in diabetes therapy, most diabetics cannot escape the value of pharmacotherapy to achieve target glucose concentrations. Different oral hypoglycaemias have been in use to aid in maintenance of blood glucose level at the requisite threshold in diabetics through distinct mechanisms (Inzucchi, 2002). Sulfonylureas and the nonsulfonylurea establish normoglycemia by regulating endogenous insulin secretion; alpha-glucosidase inhibitors work by delaying intestinal

carbohydrate absorption; thiazolidinediones (TZDs) maintain normoglycemia by enhancing insulin sensitivity primarily by increasing peripheral glucose disposal, and suppressing hepatic glucose production. Metformin works by decreasing hepatic gluconeogenesis while at times also increasing peripheral glucose mobilization and disposal (Curtis, 2007). Synthetic insulin injections are also a therapy against type I diabetes mellitus. Curtis, (2007) reports that despite many effective oral hypoglycaemic agents available to manage type 2 diabetes, 5% to 10% of the population with diabetes experience secondary failure.

Secondary failure arises as a result of deteriorating beta cell function, poor compliance to treatment, weight gain, reduced exercise, dietary changes, or illness. A major drawback associated with hypoglycaemic agents is that they are expensive and harbour adverse effects on patients Plant derived medications have also found immense use in the management of diabetes mellitus. Piero (2006) notes that there is a new trend in the world to turn to phytodrugs to avoid the adverse effects associated with conventional hypoglycaemic agents.

Complications

All forms of diabetes increase the risk of long-term complications. These typically develop after many years (10–20), but may be the first symptom in those who have otherwise not received a diagnosis before that time.

The major long-term complications relate to damage to blood vessels. Diabetes doubles the risk of cardiovascular disease and about 75% of deaths in

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diabetics are due to coronary artery disease. Other "macrovascular" diseases are stroke, and peripheral vascular disease.

The primary complications of diabetes due to damage in small blood vessels include damage to the eyes, kidneys, and nerves (Cukierman, 2005). Damage to the eyes, known as diabetic retinopathy, is caused by damage to the blood vessels in the retina of the eye, and can result in gradual vision loss and blindness (W.H.O, 2014).Damage to the kidneys, known as diabetic nephropathy, can lead to tissue scarring, urine protein loss, and eventually chronic kidney disease, sometimes requiring dialysis or kidney transplant(W.H.O,2014). Damage to the nerves of the body, known as diabetic neuropathy, is the most common complication of diabetes (W.H.O, 2014).The symptoms can include numbness, tingling, pain, and altered pain sensation, which can lead to damage to the skin. Diabetes-related foot problems (such as diabetic foot ulcers) may occur, and can be difficult to treat, occasionally requiring amputation. Additionally, proximal diabetic neuropathy causes painful wasting and weakness. There is a link between cognitive deficit and diabetes. Compared to those without diabetes, those with the disease have a 1.2 to 1.5-fold greater rate of decline in cognitive function (Cukierman, 2005).

Concept of self-care

There are different definitions of self-care in specific cultural and social contexts (Kickbusch, 1989). In the Americas, self-care refers to actions people adopt in favour of their own health without formal medical supervision. It is defined as practices carried out by people and family members through which positive health behaviors are promoted to prevent diseases and treat symptoms (Kickbusch, 1989).

Historically, nursing is a discipline that seeks to educate people in self-care. Self-care is defined as a regulating function, which individuals deliberately use to maintain vital requirements, for development and integral functioning (Orem, 2001). The ability to perform self-care is developed over life through a spontaneous learning process, given the maturation of intellectual curiosity, with guidance and supervision and experience with self-care measures (Orem, 2001).

Self-care is also considered part of people's life style, which is understood as a standards of conduct that reflect on the way individuals interact in the social milieu(Orem, 2001). The concept of lifestyle is broad and involves standards that emerge from the selection of options available to people according to their social and economic circumstances, and the facility with which they can choose other alternatives. Hence, the choice of a healthy lifestyle implies concrete self-care actions such as self-medication, self-treatment, social support and care taken in situations of disease in the individual's environment (Orem, 2001).

The World Health Organization recommended the promoting self-care education to prevent and treat chronic diseases (Kickbusch, 1989). Self-care education for people with chronic health problems should promote the development of self-care skills so that individuals share and assume responsibility for their own health and learn to live better with the disease, change or keep healthy habits, and promote self-reliance so they feel better regardless of the severity of the disease.

Self-care is an efficacious strategy to reduce the costs of health care, reduce the number of hospitalizations and emergency consultations, promote

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the rational use of medication and improve the relationship between health professionals and patients (Kickbusch, 1989). In this context, self-care in health is defined as measures each person individually takes to protect his/her physical, mental and social well-being. Self-care is based on the belief that human beings are capable of caring for their health and includes a series of actions to maintain physical and mental health, prevent diseases, satisfy physical and psychological needs, and seek medical help or to self-medicate (Kickbusch, 1989).

When one considers that individuals with diabetes mellitus present a chronic condition that requires permanent care to maintain quality of life and metabolic control, one perceives the need to develop self-care skills to manage the disease. Especially for people with type 2 diabetes mellitus whose prevalence is associated with lifestyle, introducing changes in daily habits may be an effective strategy to prevent the disease (Otero, Zanetti, Ogrizio & 2008).

Most of the risk factors can be prevented by lifestyle changes for people at high risk. These changes in lifestyle include weight loss for people with obesity, healthy food habits, regular exercise and regular meetings with the health care providers (Tham, Ong, Tan & How, 2004). The health care providers are also important for people who already have type 2 diabetes, as they are the main source of information. The health care provider´s education for people with diabetes is important for their self-care of the disease. If the information is not clear, the patient will miss out important facts, forget it or may not understand it, which will cause lack of self-care or ignorance of the

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importance of a healthy life style to prevent diabetes complications (Tham, et al 2004).

Diet

Overweight people with diabetes type 2 are recommended to lose 5-10% of their weight, and reduce the intake of sugar, fat, alcohol and salt. The International Diabetes Institute (2005) has general nutrition recommendations for patients with diabetes type 2. Of the total energy intake, 50-55 % should come from carbohydrates and 30 % or less from fat. Fruits, vegetables, legumes and whole grain products are an important part of the carbohydrate intake as they have beneficial effects on blood fats and blood sugar control (Nishida, Martinez & Mann, 2007). The protein intake should be 15-20 % of the total intake and the salt intake should be less than 6g per day. No more than 1-2 standard drinks alcohol per day is recommended since alcohol can cause hypoglycaemia (Connor, Annan & Bunn, 2003).

An accurate food planning will help the diabetes patient to maintain a stable blood glucose level, reduce the cardiovascular risk factors and help the patient to get a well balanced diet. Monitoring of 4 metabolic parameters as HbA1c, blood glucose, control of blood pressure, body weight as well as quality of life are also essential to assess the need for changes in diet therapy (International Diabetes Institute, 2005). Both low and high protein diets decrease fasting glucose, weight, insulin concentrations and total and abdominal fat (Parker, Noakes, Luscombe & Clifton, 2002).

Exercise

Studies has shown that physical activity is a key element in the diabetes type 2 self care as it can help the patient to lose weight, and then also

improve the body´s insulin sensitivity and glycemic control. A weight reduction will make the diabetes patient´s insulin production sufficient again and the blood sugar levels will become more normal. When performing physical activity it is still though important for diabetes patients to adjust their food intake and medications to avoid hypoglycaemia (International Diabetes Institute, 2005).

Blood sugar should therefore be checked before and after workout so that the insulin dose can be adjusted on the basis of planned activity. At low blood sugar before a workout carbohydrate should be consumed before, during and after the workout is done. At normal blood sugar before an activity, carbohydrates should only be consumed during the activity if it will last longer than normal. At high blood sugar before training, testing for the presence of ketone in the urine should be done.

The patient should abstain workout if ketone in the urine otherwise it is risk for a further rise of the blood glucose during exercise due to absence of insulin (International Diabetes Institute, 2005). The common health goal is to achieve at least 150 minutes of physical activity every week, and it is been shown that people who have diabetes and exercise regularly have considerably lower mortality rates over 12-14 years. Strength developing activities should therefore be performed at least twice a week, and it is important to adopt other healthy lifestyle habits as well, for example using the stairs instead of the elevator or walking to the shop instead of driving (International Diabetes Institute, 2005). Kirk, Mutrie, MacIntyre & Fisher (2003) showed that exercise consultation increases the physical activity level in people with type 2 diabetes, when compared with patients getting standard exercise leaflets.

Foot Care

Foot complications are common among diabetes type 2 patients. The disease can cause neuropathy, which make the patient unable to feel any blisters or stones in the shoes. The blood circulation can also be reduced to the foot (peripheral vascular disease), which can make it difficult for wounds or ulcers to heal.

This complication of non-healing wound can lead to amputations of toes, foot or legs (American College of Foot and Ankle Surgeons, 2009). This can lead to loss of quality of life, physical loss and economical burden in terms of industrial disability and health care loss (Nabuurs-Franssen, Huijberts, Nieuwenhuijzen Kruseman, Willems & Schaper, 2005). This is why it is important that these patients get optimal foot care and also intensive glycemic control. It helps to reduce the diabetic foot complications, improves survival and it is also cost-effective.

A higher level of foot ulcer prevention will also obtain great health benefits (Ortegon, Redekop & Wilhelmus Niesse, 2004). The patients need to inspect their feet daily, to see if there are any blisters, redness, cuts, nail problems or swelling. It is also important to wash the feet daily in lukewarm water with a sponge or washcloth and dry the feet carefully, especially between the toes (American College of Foot and Ankle Surgeons, 2009).The daily foot wash should be supplemented with a foot bath about once a week. After washing it is important to moisturize the feet, but not between the toes, which can cause fungal infection (American College of Foot and Ankle Surgeons, 2009).

The patients have to cut their nails when needed. The nails should not be too long, which can cause wounds, neither to short, which make the nail grow inwards. They have to be cut the nails straight and file the edges. If there are any calluses or corns, they have to go to their foot specialist to get professional help. The diabetes patients have to change socks everyday to dry and clean socks that fits good, not to elastic, thick or bulky. The feet have to be warm during night and socks could be a solution if they are freezing during night time.

Warm socks and shoes during winter and rain is necessary. Before the diabetes patients put on their shoes, they have to look inside their shoes, to be able to see if there are any stones or any other objects in the shoes and see that the shoes are not broken. The diabetes patients should not walk barefoot anywhere as they can step on something and get a cut or scratch.

They should wear shoes or slippers instead. It is necessary to go to the foot doctor regularly to prevent small sores develop into large ulcers. Other preventive measures to not develop foot ulcers are to have control over the blood glucose and stop smoking (American College of Foot and Ankle Surgeons, 2009).

Self-monitoring of blood glucose

Some patients with type 2 diabetes self monitor their blood glucose levels regularly at home, which is associated with a better improvement of the metabolic control (Benjamin, 2002). It is also important for people with diabetes type 2 with regular follow-ups at healthcare settings, so they can evaluate the self care, by taking blood samples for blood glucose and HbA1c.

They also discuss the importance of a good self care to prevent complications (Quittenbaum, 2007).

The regular follow-ups and measuring of Glycated haemoglobin (HbA1c) should be done every 3-6 month. If a patient is self-monitoring his/her glucose level it is also important to make sure the patient knows how the equipment works and how to interpret the results. The self monitoring of glucose levels can be done with urine or blood tests, but blood testing is optimal. How frequent monitoring will be done 6 depends on the available resources in the country concerned and on the available resources for the individual (International Diabetes Institute, 2005).

Self monitoring of blood glucose levels is essential to improve the quality and safety of the treatment for patients with diabetes type 2 who are treated with insulin. The self-monitoring should be done before each meal and at bedtime if possible (International Diabetes Institute, 2005). Blood glucose should be checked at least 4 times per day (Benjamin, 2002). This will help to prevent hypoglycaemia and the patient can have control over his/her glucose levels.

Concept of Depression

Depression is a common mental disorder that presents with depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite, and poor concentration. Moreover, depression often comes with symptoms of anxiety. These problems can become chronic or recurrent and lead to substantial impairments in an individual's ability to take care of his or her everyday responsibilities. At its

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worst, depression can lead to suicide. Almost 1 million lives are lost yearly due to suicide, which translates to 3000 suicide deaths every day.

Depressive episode involves symptoms such as depressed mood, loss of interest and enjoyment, and increased fatigability. Depending on the number and severity of symptoms, a depressive episode can be categorized as mild, moderate, or severe. An individual with a mild depressive episode will have some difficulty in continuing with ordinary work and social activities, but will probably not cease to function completely. During a severe depressive episode, on the other hand, it is very unlikely that the sufferer will be able to continue with social, work, or domestic activities, except to a very limited extent.

Reinforcement contingencies theory of depression

Reinforcement contingencies theory asserts that depression results from a loss of adequate reward contingencies (Matthew, 1977). Specifically, when positive behaviours are no longer rewarded in ways that are perceived to be adequate, those behaviours occur less frequently and, eventually, become extinct. The eventual extinction of a large spectrum of behaviours reduces the behavioural repertoire of the individual, resulting in the lack of responsiveness and arousal associated with depression. The loss or ineffectiveness of reinforcement can be attributed to a variety of causes:

1. The reinforcing event may be removed. (Matthew, 1977). This is typically related to the loss of an important or rewarding role, such as a job.

2. The behavioural capabilities of the affected individual may be reduced. This relates to the ability the individual has to perform activities that

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previously elicited positive reinforcement. This may be affected by such events as a traumatic injury or event or an ailment such as diabetes.

3. The number of events that are rewarding may be reduced (Matthew, 1977). This is typically linked to the biological aspects of depression, including a deficit in serotonin and dopamine that results in reduction of positive emotions during previously rewarding experiences.

After the removal of reinforcers, the affected individual begins to interpret their behaviour as meaningless due to the lack of obvious consequences. This interpreted lack of control in a given domain is typically generalized, developing into learned helplessness. Learned helplessness is defined as a sense of having no control over outcomes, regardless of your actions. This may mediate the emergence of the lack of responsiveness and arousal observed in persons with depression after a perceived change in positive reinforcers (Matthew, 1977).

In the case of individuals diabetes, this can be explained when blood glucose level continues to rise regardless of all actions in their power to control it such as drug adherence and food adjustments.

Self-regulation

Self-regulation is a sub-category of reinforcement contingency theories. Self-regulation theories emphasize the role of self-implemented reinforcers and environment-dependent reinforcers. These self-implemented reinforcers may explain why some individuals who experience an external loss develop depression and others do not.

Self-regulation begins with a self-evaluation in which the person recalls past performances and monitors their actions, followed by a reward or punishment. Individuals with depression may have unrealistic expectations for themselves, resulting in extreme self-punishment, or alternatively, may not engage in self-regulatory behaviours, depending completely on external sources of reinforcement (Matthew, 1977). In either circumstance, the individual limits their experiences of positive enforcers, leading to a preoccupancy with negative feelings and depression (Rehm, 1981).

Concept of stress

The term stress is an umbrella term for an increasingly wide variety of conditions, responses and experiences. A fundamental problem for any writer or researcher concerned with stress and its effect on behaviour is to attempt to find a definition (Fisher, 1986).

The term stress has been derived from the Latin word 'stringer' which means to draw tight. The term was used to refer to hardship, strain, adversity or affliction. Stress is an integral part of natural fabric of life. It refers both to the circumstances that place physical or psychological demands on an individual and to the emotional reaction experiences in these situations (Pearlin, 1983).

Stress has generally been viewed as a set of neurological and physiological reactions that serve an adaptive function (Franken, 1994). Traditionally, stress research has been oriented toward studies involving the body's reaction to stress and the cognitive processes that influence the perception of stress. However, social perspectives of the stress response have

noted that different people experiencing similar life conditions are not necessarily affected in the same manner (Pearlin, 1983).

Cognitive theory of stress

According to the Cognitive-relational theory of stress, it is defined as a "particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (Lazarus & Folkman, 1984b, p. 19). Appraisals are determined simultaneously by perceiving environmental demands and personal resources.

They can change over time due to coping effectiveness, altered requirements, or improvements in personal abilities. The cognitive-relational theory of stress emphasizes the continuous, reciprocal nature of the interaction between the person and the environment. Since its first publication (Lazarus, 1966), it has not only been further developed and refined, but it has also been expanded recently to a meta-theoretical concept of emotion and coping processes (Lazarus, 1993; Lazarus & Folkman, 1987).

Within a meta-theoretical system approach Lazarus (1991) conceives the complex processes of emotion as composed of causal antecedents, mediating processes, and effects. Antecedents are person variables such as commitments or beliefs on the one hand and environmental variables, such as demands or situational constraints, on the other.

Mediating processes refer to cognitive appraisals of situational demands and personal coping options as well as to coping efforts aimed at more or less problem-focused and emotion-focused. Stress experiences and coping results bring along immediate effects, such as affects or physiological

changes, and long-term results concerning psychological well-being, somatic health and social functioning. Schwarzer (n.d) postulated that there are three meta-theoretical assumptions: transaction, process, and context. It is assumed, first, that emotions occur as a specific encounter of the person with the environment and that both exert a reciprocal influence on each other; second, that emotions and cognitions are subject to continuous change; and third, that the meaning of a transaction is derived from the underlying context, i.e., various attributes of a natural setting determine the actual experience of emotions and the resulting action tendencies.

According to Schwarzer (n.d) research has mostly neglected these meta-theoretical assumptions in favour of unidirectional, cross-sectional, and rather context-free designs. Within methodologically sound empirical research it is hardly possible to study complex phenomena such as emotions and coping without constraints. Also, on account of its complexity and transactional character leading to interdependencies between the involved variables, the meta-theoretical system approach cannot be investigated and empirically tested as a whole model. Rather, it represents a heuristic framework that may serve to formulate and test hypotheses in selected subareas of the theoretical system only. Thus, in practical research one has to compromise with the ideal research paradigm.

Investigators have often focused on structure instead of on process, measuring single states or aggregates of states. However, stress has to be analyzed and investigated as an active, unfolding process. More precisely, stress appraisal processes need to be predicted by environmental and personal

variables as antecedents, and coping strategies and long-term effects need to be considered.

Concept of anxiety

Anxiety is a general term for several disorders that cause nervousness, fear, apprehension, and worrying. These disorders affect how we feel and behave, and they can manifest real physical symptoms. Mild anxiety is vague and unsettling, while severe anxiety can be extremely debilitating, having a serious impact on daily life.

People often experience a general state of worry or fear before confronting something challenging such as a test, examination, recital, or interview. These feelings are easily justified and considered normal. Anxiety is considered a problem when symptoms interfere with a person's ability to sleep or otherwise function. Generally speaking, anxiety occurs when a reaction is out of proportion with what might be normally expected in a situation.

Anxiety is not the same as fear. Fear and anxiety can be differentiated in four domains: duration of emotional experience, temporal focus, specificity of the threat, and motivated direction. Fear is defined as short lived, present focused, geared towards a specific threat, and facilitating escape from threat; while anxiety is defined as long acting, future focused, broadly focused towards a diffuse threat, and promoting excessive caution while approaching a potential threat and interferes with constructive coping (Sylvers, Lilienfeld & Laprairie, 2011).

Anxiety can be experienced with long, drawn out daily symptoms that reduce quality of life, known as chronic (or generalized) anxiety, or it can be

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experienced in short spurts with sporadic, stressful panic attacks, known as acute anxiety. Symptoms of anxiety can range in number, intensity, and frequency, depending on the person. While almost everyone has experienced anxiety at some point in their lives, most do not develop long-term problems with anxiety.

The behavioural effects of anxiety may include withdrawal from situations which have provoked anxiety in the past (Barker, 2003). Anxiety can also be experienced in ways which include changes in sleeping patterns, nervous habits, and increased motor tension like foot tapping (Barker, 2003).

The emotional effects of anxiety may include "feelings of apprehension or dread, trouble concentrating, feeling tense or jumpy, anticipating the worst, irritability, restlessness, watching (and waiting) for signs (and occurrences) of danger, and, feeling like the mind has gone blank as well as having nightmares or bad dreams, obsessions about sensations, a trapped in the mind feeling, and feeling like everything is scary.

The cognitive effects of anxiety may include thoughts about suspected dangers, such as fear of dying, fear that the chest pains are a deadly heart attack or that the shooting pains in the head are the result of a tumour or aneurysm. There is an intense fear when one thinks of dying, or may think of it more often than normal, or can't get it out of the mind (Rapee, Ronald, Heimberg, & Richard, 1997).

Concept of social support

Social support has been defined by Neal Krause (2001), one of the most prolific researchers in this area, as an unwieldy conceptual domain. There are multiple classifications of social support. One often cited

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classification proposed by Barrera (1986) consists of three commonly acknowledged kinds of support: social embeddedness, received support, and perceived support. Social embeddedness refers to the frequency of interaction what an individual has with members of his/her social network. Received support includes the emotional and instrumental help that is actually provided by network members to an individual, whereas perceived support is an individual's perception that support would be available from network members were it necessary.

To date, a large body of research consistently shows that measures of perceived support exert the strongest and most consistent effects on health and well-being in late life (Krause, 2001). This is consistent with the stress-buffering model of social support discussed earlier (Cohen & Wills, 1985), which maintains that social support has the potential to buffer, or protects individuals from the potentially negative influence of stressful events. Despite the documentation of the importance of perceived support on health and wellbeing in later life, much of the existing research on social support and self-management of diabetes has focused on social networks, rather than perceived support. Thoits (1992) defines social networks as peoples ties to one another, in particular to the structure of those ties (e.g. the number of ties a person has, the frequency of his or her contact with network members, the role relationship of each member to the target respondent As such, Thoits definition of social network subsumes Barerraís concept of embeddedness. Thoits (1992) maintains that the impacts of perceived support and social networks are empirically distinct.

Whereas perceived support is contingent on problems, social networks can be a source of problems as well as mobilized in the face of problems. Social networks can be sources of positive and negative influence. However, when the perceived support of a person with diabetes is measured, often times the focus is solely on positive aspects of the relationship. In the context of managing diabetes, both negative and positive aspects of social networks can impact management efforts. Negative and positive perceived support from friends and from family are two main sources of negative and/or positive impact on support.

Empirical Review

Self-care in diabetes

Self-care in diabetes has been defined as an evolutionary process of development of knowledge or awareness by learning to survive with the complex nature of the diabetes in a social context (Coope, Booth & Gill, 2003). Because the vast majority of day-to-day care in diabetes is handled by patients and/or families (Etzwiler, 1994) there is an important need for reliable and valid measures for self-management of diabetes (McNabb, 1997). There are seven essential self-care behaviors in people with diabetes which predict good outcomes.

These are healthy eating, being physically active, monitoring of blood sugar, compliant with medications, good problem-solving skills, healthy coping skills and risk-reduction behaviours (A.D.A, 2008). These proposed measures can be useful for both clinicians and educators treating individual patients and for researchers evaluating new approaches to care. Self-report is

by far the most practical and cost-effective approach to self-care assessment and yet is often seen as undependable.

Diabetes self-care activities are behaviours undertaken by people with or at risk of diabetes in order to successfully manage the disease on their own (A.D.A, 2008). All these seven behaviours have been found to be positively correlated with good glycemic control, reduction of complications and improvement in quality of life (Povey & Clark-Carter, 2007). In addition, it was observed that self-care encompasses not only performing these activities but also the interrelationships between them (Deakin, McShane, Cade & William, 2005).

Diabetes self-care requires the patient to make many dietary and lifestyle modifications supplemented with the supportive role of healthcare staff for maintaining a higher level of self-confidence leading to a successful behavior change (Shobhana, Begum, Snehalatha, Vijay & Ramachandran, 1999).

Socio-demographic characteristics and self care

Diabetes mellitus (DM) has become a problem of a great magnitude and major public health concern. In some countries, diabetes affects up to 10% of the population aged 20 years and older. Benoit, Fleming and Philis-Tsimikas, (2005) found out that .prevalence has been increasing in younger patients.

Ciechanowski, Russo, Katon, VonKoff, Ludmam and Lin (2004) found that to maintain adequate glycemic control, patients typically follow a self-management regimen involving frequent self-monitoring of blood glucose (SMBG), dietary modifications, exercise, education, and medication

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administration. Collaboration and negotiation with health care providers, family members, and others is essential so that such behaviour changes are optimally supported and encouraged. The findings of this study revealed that non compliance with SMBG was noted in young age and high level educated subjects. On the contrary, non compliance with dietary management was seen in old and low level educated subjects. Tan and Magarey (2008) reported that poor diet control was found among older subjects with low level of education.

In elderly diabetics, management is always on challenging task due to atypical disease presentation, often absent classical symptoms, presence of other coexisting conditions that delays the diagnosis, dietary advice not followed properly and due to non-compliance with drug therapy (Parikh, 2007). Delamater (2006) also added that low socioeconomic status and low levels of education have been associated with lower regimen adherence and greater diabetes-related morbidity. In their research on compliance management to diabetes self-management in rural El-minia in Egypt, Awadella and Mahfouz (2011) found out that good adherence to diabetes self-management was reported in 41.7% of adult diabetic patients who showed good adherence to diet instructions, but only 21.4% to blood glucose test. They added that it can be concluded that adherence to self-management of diabetes is suboptimal among rural adult diabetic community. Longer duration of diabetes was significantly associated with poor glycemic control. Awadella and Mahfouz further added that interventions aiming at improving diabetes control should be multifaceted and should involve more effective measures of weight control and more frequent clinic visits and should increase patients' adherence to treatment regimens.

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Family members should be informed about their important roles in encouraging patients to undergo a glycemic control. Education through a multidisciplinary approach may improve the glycemic control in selected elderly patients with DM. Policy decisions for improving diabetes outcome should target barriers to health care access and focus on developing programs to help population groups at high-risk. As to the adherence to the prescribed diet, patients should be well informed and the diet regimens are recommended to be simplified.

In a study by Coker, Ohaeri, Lawal and Orija (2000), they found out that Demographic characteristics such as low occupational status, duration of illness and sexual dysfunction were significantly associated with Psychiatric symptoms. Further outcomes revealed that affective disorders among diabetic patients were significantly predicted by the patient's characteristics such as age, female gender, living alone, insulin treatment in Type 2 diabetes, hypoglycaemia problems and poor glycemic control. However, anxiety symptoms among the diabetic patients were significantly associated with female gender, younger age and Type 2 diabetes.

In a similar study by Roupa et al., (2009) examined the occurrence of anxiety and depression symptoms in patients with Type 2 Diabetes Mellitus with regard to sex and body mass index (BMI). The impacts of the respondents" demographic and clinical features were examined on their anxiety and depression levels. The self–completed questionnaire (HADS) was used for anxiety and depression level evaluation and the results showed that percentages of anxiety symptoms in women were three times higher in

comparison to men. The study also showed women to have had a twofold percentage of depression symptomatology than men.

Additionally, when the relation between sex, age and Body Mass Index (BMI) and depression-anxiety symptoms was examined, it was shown that high BMI favours the occurrence of modest or severe symptomatology, as risk increases for any additional BMI unit. Lloyd et al. (2000) also investigated the effects of sex on the relationship between depressive symptoms and HbA1c and found that the prevalence of moderate to severe depression was significantly associated with elevated HbA1c (>9%) in men but not in women. These studies provide an insight to how patients" gender can influence their mental health outcomes and this can help clinicians in addressing gender-related issues.

Depression and self-care

Depressive symptoms in people with diabetes mellitus are of concern because of their association with poor diabetes self-management (i.e., diet modification, physical activity, insulin injections) and an increased risk for diabetes-related complications (De Groot, Kushnick, Doyle, Merrill, McGlynn, Shubrook, Schwartz, 2010). Furthermore, comorbid depression in people with diabetes mellitus is associated with functional disability, low work productivity, and low health service use (Black, 2003). As a result, increased attention in recent years has been given to understanding the relationship between depressive symptoms and diabetes mellitus (Talbot & Nouwen, 2000).

Several studies have reported a significant association between depressive symptoms and glycemic status. A community-based study among

Native Hawaiians, with and without diabetes mellitus, found a significant association (odds ratio = 3.2) between prevalence of depression and elevated haemoglobin A1c (HbA1c) levels (≥7%), after controlling for the effects of age, sex, education, social support, and body mass index Other studies have also found a significant association between depressive symptoms and glycemic status among people with type 1 and type 2 diabetes, after controlling for such variables as number of complications, smoking age, sex, education, type of diabetes, and perceived health status (Lustman, & Clouse, 2005). A mean effect size (0.16) for the relationship between depressive symptoms and glycemic status was reported among seven studies that included only people with type 2 diabetes.

This meta-analysis supports a significant low-moderate association between depressive symptoms and glycemic status. Suleiman, Hamdan, Tamim, Mahmood, and Young, (2010) also reported in their study that diabetes complications and mental health status are significantly related. That is, diabetic patients who are depressed experienced poor self-care, adherence problems and severe physical symptoms.

Perceived social support and self care

Research documents that social network members can negatively or positively impact the efforts of a person with diabetes to manage the disease (Wallhagen, 1999). Rhodes (1998) also explains further that relationships can have a positive impact; it is also possible that such relationships can have a negative impact. Disappointment, conflict, intrusiveness, and criticism which can result in negative health outcomes and in the case of diabetes, a lack of self-management of regimen areas are also possible (Toljamo & Hentinen,

2001). Schaefer, McCaul, and Glasgow (1986), in a study of family behaviours and relationships to adherence and metabolic control, found out that individuals with diabetes negative perceptions of support from family were associated with lower adherence to diabetes management areas (i.e. glucose testing, diet adherence, and insulin injections. On the other hand, positive impacts have shown to affect an individual's management of the disease (Glasgow & Tolbert, 1988)

Toljamo and Hentinen (2001) found that adherence to self-care regimens (insulin treatments, monitoring blood glucose, exercise, and self-care away from home) was associated with emotional and instrumental support from friends and family. It is believed that the perceived availability and knowledge of friends and family as being present positively impacts self-management efforts of individuals with diabetes (Thoits & Hewitt, 2001) positive social network may also help in better regulation of their blood glucose level (Trief, 2001).

Stress and self care

There is no evidence that stress causes diabetes. However, stress may sometimes unmask diabetes, by causing blood glucose levels to rise (Kahn & Weir, 1996). This is often seen after a heart attack or stroke, where raised blood sugar levels may be encountered for the first time. In people who have diabetes, the fight-or-flight response does not work well. Insulin is not always able to let the extra energy into the cells, so glucose piles up in the blood (ADA, 2007). Making things worse, many sources of stress are not short-term threats. For example, it can take many months to recover from surgery. Stress hormones that are designed to deal with short-term danger stay turned on for a

long time. As a result, long-term stress can cause long-term high blood sugar levels. Many long-term sources of stress are mental. Like physical stress, mental stress can be short term from taking a test to getting stuck in a traffic jam. It can also be long term, from working for a demanding boss to take care of an aging parent. In mental stress, the body pumps out hormones to no avail.

Physical stress, such as illness or injury, causes higher blood glucose levels in people with either Type of diabetes. Stress blocks the body from releasing insulin in people with Type 2 diabetes. According to Wijenaike (2002) and ADA (2007) the diagnosis of diabetes usually comes as a shock and is certainly a stressful time. Changes in lifestyle including stoppage of smocking, diet and learning to manage injections may all contribute in addition to the worry regarding chronic illness (Davis, Bagozzi & Warshaw, 1989).

In people who have diabetes, stress can alter blood sugar levels. It does this in two ways. First, people under stress may not take good care of themselves. People who are anxious are under pressures and may lose appetite and skimp on eating, or reach for not-so healthy quick fixes like candy or chips and sometimes seek refuge in food and drink. This can take the form of chocolates, sweets and crisps, often in between meals (ADA, 2007). The intake of alcohol may be increased. Many people who are under stress turn to food as a source of 'comfort'. This pattern of 'comfort eating' can often play havoc with blood sugar level.

Further anxiety leads to less exercise. The results can be disastrous for people with diabetes. They may forget, or not have time, to check their sugar levels or plan good meals (ADA, 2007). Second, stress hormones may also

alter blood sugar levels directly as it antagonizes the action of insulin. While in most people glucose levels go up with mental stress, while in others can go down. Diabetic mice under physical or mental stress have elevated glucose levels. The effects in people with Type 1 diabetes are more mixed. People with Type 1 diabetes may develop elevated blood glucose levels and ketoacidosis. Those with Type 2 diabetes usually gain weight and develop obesity and often blood sugar levels are raised (ADA, 2007). Inflammatory signalling pathways can also become activated by metabolic stresses originating from inside the cell as well as by extra-cellular signalling molecules. It has been demonstrated that obesity overloads the functional capacity of the endoplasmic reticulum and that this endoplasmic reticulum stress leads to the activation of inflammatory signalling pathways and thus contributes to insulin resistance (Wellen & Hotamisligil, 2005).

Additionally, increased glucose metabolism can lead to a rise in mitochondrial production of reactive oxygen species. Reactive oxygen species production is elevated in obesity, which causes enhanced activation of inflammatory pathways (Wellen & Hotamisligil, 2005). Physical stress, such as illness or injury, causes higher blood sugar levels in people with either type of diabetes. For some people with diabetes, controlling stress with relaxation therapy seems to help. It is more likely to help people with Type 2 diabetes than people with Type 1 diabetes.

Stress blocks the body from releasing insulin in people with Type 2 diabetes, so cutting stress may be more helpful for these people. People with Type 1 diabetes do not make insulin, so stress reduction does not have this effect. Reducing stress can help people with Type 1 diabetes take better care

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of them. Some people with Type 2 diabetes may also be more sensitive to some of the stress hormones. Relaxing can help by blunting this sensitivity. In people with Type 2 diabetes, mental stress often raises blood glucose levels. It is easy to find out whether mental stress affects glucose control. Many glucose meters have the capability to enter personal notes and data when one perform checks, or jot it down in a stress journal (Wijenaike, 2002). Once one begins recording stress levels, most people with diabetes figure out pretty quickly what makes his blood sugar to go up. People with diabetes should stay conscious of eating well and exercising regularly.

Coping style is how a person deals with stress. People who use them tend to have less blood sugar elevation in response to mental stress (ADA, 2007). Hyperglycaemia induces the overproduction of oxygen free radicals and consequently increases the protein oxidation and lipid oxidation. A significance difference in the mean plasma concentration of total antioxidant status was observed in diabetic patients. A statistically significant higher values of protein carbonyl groups and MDA as lipid peroxides were observed in diabetic patients with slight reduction in the synthesis of nitric oxide. It is interesting to note that there was a decrease in the antioxidant levels with corresponding increased protein and lipid oxidation. Decreased levels of proteins - albumin, transferring, ceruloplasmin and heptoglobulins and variable GC globulin fractions in diabetes were found compared to normal healthy controls (Vadde & Jailkhani, 2007). According to Lloyd, Smith and Weinger (2005), research has revealed that stressful experiences have an impact on diabetes.

Stress may play a role in the onset of diabetes. It can have a deleterious effect on glycemic control and can affect lifestyle. Emerging evidence strongly suggests, however, that interventions that help individuals prevent or cope with stress can have an important positive effect on quality of life and glycemic control (Vadde & Jailkhani, 2007). The clinical implications of this research illustrate the need for greater understanding of the effects of stress, as well as a serious acceptance of the need for psychosocial support for people in this predicament (Vadde & Jailkhani, 2007).

Anxiety and self-care

The development of anxiety symptoms in patients with diabetes may arise from a number of underlying causes (Green, Feher & Catalan, 2000). While research on the bio behavioural mechanisms between anxiety and diabetes is generally lacking, plausible mechanisms linking anxiety and diabetes include reactions to the stress associated with the self-management of diabetes and underlying biological changes that may be associated with both anxiety and glycemic control. According to a research by Weinger and Lee (2006), they found out that diabetes-related stress, including feeling overwhelmed by diabetes and its care, feeling discouraged with the treatment plan, and feeling fearful of the future, may contribute to symptoms of anxiety.

Weinger and Jacobson (2001) also found out that, the stress of dealing with diabetes may impact patients' psychosocial functioning and quality of life, which may also increase the risk for developing anxiety symptoms Certain aspects of the diabetes self-care regimen, such as frequent self-testing of blood glucose and insulin injections, may also lead to the development or

exacerbation of anxiety symptoms, such as phobias, intrusive worry, and avoidance (Green, Feher & Catalan, 2000).

The anticipation before or avoidance of activities such as self-testing may contribute to problematic anxiety, panic disorder, or generalised anxiety disorder. Diabetes patients may experience short-term, episodic stress related to self-care activities, or more long-term, chronic stress related to living with a chronic illness, which may eventually develop into anxiety symptoms or a chronic anxiety disorder (Petrak, Herpertz, Albus, Hirsch, Kulzer, & Kruse, 2005). Further, patients may develop anxiety symptoms due to fears of hypoglycaemia, complications, or mortality. Some patients may be able to better manage diabetes related stress or general life stress than others, based on their coping skills: use of maladaptive coping could increase the risk for anxiety in patients with diabetes (Sultan, Epel, Sachon & Vaillant). Studies suggest that patients who use a variety of coping mechanisms, including both task-based coping and emotion based coping, have better emotion regulation and diabetes control (Sultan et al., 2008).

Moreover, in a research by Peyrot, McMurry, and Kruger (1999); Yi, Yi, Vitaliano, and Weinger (2008), they found out that emotion-based coping, such as anxious and angry styles, is associated with poor glycemic control Patients who experience diabetes-related stress may become entrenched in a vicious cycle anxiety and avoidance related to their self-care may cause them to be less adherent to their treatment regimen, which may in turn affect their blood glucose control or cause complications thus leading to even greater levels of anxiety (Weinger & Lee, 2006). Finally, psychiatric illness such as anxiety disorders often co-occurs with tobacco and other substance use,

highlighting a potential pathway between anxiety and worse diabetes outcomes (Spangler, Summerson, Bell, & Konen, 2001)

Summary of Literature Review

This part of the study looked at the summary of the literature review; the conceptual issues in diabetes, causes, signs and symptoms, treatment, prevention and its complications. The concept of the psychosocial factors in the study has also been explained. Self-care which is the cornerstone of appropriate blood glucose management has also been explained. The theories which support this study have also been discussed in relevance to the study.

A critical appraisal of the existing literature on psychosocial factors and blood glucose levels revealed that although a great deal of research has been carried out with respect to the subject matter internationally, very little has been documented on diabetic patients in Ghana. A careful look at prevailing situations in the diabetic clinics and in the literature reviewed so far show that diabetic patients have psychosocial issues. There is therefore the need to conduct this study with the hope that the outcome will provide mechanisms to inform health workers to give attention to these psychosocial issues.

CHAPTER THREE

RESEARCH METHODS

Introduction

In this chapter, the various methods that were used to collect and analyze data are discussed. The areas covered the research design, the population, sample size, sampling technique, instruments for the data collection, the data collection procedures as well as the data analysis.

Research Design

Since the study sought to obtain self-report information about diabetic patients' opinions, perceptions, beliefs and attitudes, the most appropriate design for this study was the cross-sectional survey which is a type of descriptive research. Descriptive research provides an accurate portrayal or account of characteristics of a particular individual, situation or group for the purpose of discovering new meaning, describing what exists, determining the frequency with which something occurs and categorizing information (Burns & Grove, 2001).

These authors state that the purpose of descriptive research is the exploration and description of the phenomenon in real-life situation. This approach is used to generate new knowledge about concepts or topics about which limited or no research has been conducted. Through descriptive research, concepts are described and relationships are identified that provide a basis for further quantitative research and theory testing. In this study, diabetic patients were requested to describe some psychosocial factors in relation to their self care.

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Population

The target population for the study were diabetic patients who attended diabetic clinic at the St. Michael's Hospital at Pramso, in the Bosomtwe district in the Ashanti Region of Ghana. The accessible population however was patients who had been diagnosed with diabetes for over 3 months. The Bosomtwe district was chosen because of the characteristics of the patients, since the district is quite close to the Kumasi the regional capital, most of the clients who attended the clinic were from the Kumasi metropolis and most also came from the villages within the district. This was to help the researcher to get both urban and rural characteristics in the research participants. Secondly, the District was chosen because it had a recorded prevalence of diabetes and had regular and well organised diabetic clinics. Thirdly, it had a broad range of health practitioners engaged in diabetes care. Fourth, it was within reasonable driving distance from Kumasi to permit a sequential process of data collection.

The study was conducted on types 1 and 2 diabetics who form the majority of patients with diabetes mellitus and remain on a lifelong treatment. Patients who were medically diagnosed to have diabetes mellitus and had been attending the diabetes clinic for at least three months were eligible to participate in the study. This criterion was used because patients who had had the disease for at least six months were the most appropriate people to tell how the disease has impacted on their psychological wellbeing. Diabetic patients from ages 12 to 80 years were included in the study. For eligible participants who would be below 18 years, consent was sought from a parent or guardian prior to their inclusion into the study. Patients would have to be an out-

patient. In-patients were excluded from the study as they may not be well enough to respond appropriately to questions that would be asked.

Sample and Sampling Technique

The total number of diabetic patients at the St. Michaels's clinic was approximately 160. Using the Krejcie and Morgan Table (1970), to determine sample size, the sample size for the study should have been 113 but only 110 participants responded to the questions later. The convenience and purposive sampling procedures were employed to select the sample size. Convenience sampling also called accidental sampling involves choosing the nearest or available individuals to serve as respondents. In purposive sampling, the researcher purposely chooses subjects who in her opinion are thought to be relevant to the research topic.

Research Instrument

Glycemic control was assessed by Glycated haemoglobin (HbA1c), a generally accepted index of average blood glucose level over the previous 12 to 16 weeks. Glycated haemoglobin (HbA1c) was measured by the use of ion-exchange high-performance liquid chromatography, a methodology that measures only the Glycated haemoglobin (Hb1Ac) fraction of glycohemoglobin (reference range 3.6 %–6.0%). The level of diabetes control was assessed using a measure of fasting blood glucose. The measurement was done by qualified laboratory personnel who work in the St. Michaels Catholic hospital.

A self designed semi-structured questionnaire was used to collect data on the socio-demographic profile of patients. Areas assessed included age,

sex, employment status and educational level. The following instruments were adapted for use for the psychosocial factors:

Self-Care Inventory (Greca, 1988)

The self care inventory would also be adopted to assess how patients are able to do self regulatory activities in relation to their condition. The Self-Care Inventory (SCI), a 13-item self-report measure, was developed by La Greca (1988) to assess patients' perceptions of the degree to which they adhere to treatment recommendations for their diabetes self-care. The instrument was subsequently revised (La Greca, 1992) and now consists of 14 items. On the SCI, self-care is defined as the daily regimen tasks that the individual performs to manage diabetes. In conjunction with focus groups conducted with diabetes educators, items for the SCI were developed to reflect the main aspects of the treatment regimen for type 1 diabetes (Skyler & Cahill, 1981).

The SCI includes items that focus on blood glucose testing and monitoring, insulin and food regulation, exercise, and emergency precautions (e.g., carrying sugar to treat reactions). However, many of the items also may be applicable to individuals with type 2 diabetes. Internal consistencies for the SCI items have been reported to be 0.80. Delamater et al. (1997) reported a test-retest reliability of 0.77.

Scale of depression in diabetes (Kokoszka, 2013)

The six-item Likert-type rating scale, self-rating scale of depression in diabetes was used to assess depression in the patients. The scale is a simple tool to monitor the presence of depressive symptoms in patients with diabetes mellitus. While its completion by the patient and the calculation of results

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takes less than five minutes, the scale offers a relatively good opportunity to diagnose symptoms of depression.

The scale is characterised by high reliability and validity. It is brief and may be used during routine medical evaluations. The existing norms enable it to be used for the detection of depressive disorders in diabetic patients. The reliability of the Depression in Diabetes Self-Rating Scale is high (Cronbach's alpha = 0.81). The scale also demonstrates a good validity, as measured by Pearson's coefficient of correlation with the overall score (r = 0.72).

The Multidimensional scale of perceived social support (Zimet, Dahlem, Zimet & Farley, 1988)

The Multidimensional scale of perceived social support (MSPSS) was used to assess respondents' perceived availability of social support. The scale is a self-report measure designed by Zimet, Dahlem, Zimet, and Farley (1988) to assess perceive adequacy of social support (Section C). The scale is made up of 12 items with a respondent asked to rate how much he/she agrees with the statements on a seven- point Likert scale response format. The scores range from 1= very strongly disagree to 7= very strongly agree. Such statements include the following, "my family tries to help me and I can count on my friends when things go wrong". Factor analysis revealed that the scale consists of three factors: perceived social support from family, friends, and a significant other.

The scale also yields a total score of perceived social support. Higher scores on the scale indicate higher perceived social support. The total perceived social support was utilized in the current study. The MSPSS has demonstrated strong psychometric properties. In the original study of the

scale, (Zimet et al., 1988), with 275 Duke University undergraduates, coefficient alpha for the scales was reported as follows; Total scale (0.88), Family (0.87), Friends (0.85) and Significant other (0.91). Test-retest reliability of the Total Scale after 2 to 3 months was 0. 85. The three subscales also demonstrated adequate stability with the following reliabilities: Family (0.85), Friends (0.75), and Significant other (0.72). Internal consistency of the MSPSS across the different samples was reported with the following coefficient alphas: Total scale (0.84–0.92), Family (0.81-0.90), Friends (0.90–0.94) and Significant other (0.83-0.98).

Beck anxiety inventory (**Beck, 1988**)

This was created by Dr. Aaron T. Beck and other colleagues, is a 21-question multiple-choice self-report inventory that is used for measuring the severity of anxiety in children and adults. The questions used in this measure ask about common symptoms of anxiety that the subject has had during the past week (including the day you take it) (such as numbness and tingling, sweating not due to heat and fear of the worst happening).

It is designed for individuals who are of 7 years of age or older and takes 5 to 10 minutes to complete. Several studies have found the Beck Anxiety Inventory to be an accurate measure of anxiety symptoms in children and adults. Reliability: Internal consistency for the BAI = (Cronbach's α=0.92) Test-retest reliability (1 week) for the BAI = 0.75 (Beck, Epstein, Brown, & Steer, 1988). Validity: The BAI was moderately correlated with the revised Hamilton Anxiety Rating Scale (.51), and mildly correlated with the Hamilton Depression Rating Scale (0.25)

Questionnaire on stress in patients with diabetes-revised (Duran, Herschbach, Waadt, Strain& Zettler, 1995)

The revised QSD (QSD-R) contains 45 questions that define eight stress scales for patients with diabetes: leisure time, depression/fear of future, hypoglycemia, treatment regimen/diet, physical complaints, work, partner, and doctor-patient relationship. The revised measure was assessed in 1930 patients with both type 1 and type 2 diabetes. This measure was adapted and refined to make it more applicable to the study context. Cronbach's alpha ranged from 0.69 to 0.81 for the eight scales.

Test-retest reliability for the eight scales ranged from 0.45 to 0.73. In a subset of 80 patients, correlations between QSD-R scales and two other measures of stress (the State-Trait Anxiety Inventory and the Beck Depression Inventory) show significant relationships with correlations between 0.36 and 0.71. The overall QSD-R score correlated very well with these scales (0.62 and 0.61, respectively). As with the QSD, patients with complications or poor HbA1c control scored higher than others.

Validity and Reliability of the Instrument

In order to test the validity and reliability of the research instruments, the instruments were tested with a small sample similar to the potential respondents.Burns and Grove (2001) defined pilot test as a smaller version of a proposed study conducted to refine the methodology. It is developed much like the proposed study, using similar subjects, the similar settings, the same treatment, the same data collection and analysis techniques.

The instrument was given to an expert, my supervisor, to ascertain how they met face and content validity. The suggestions as given by the expert

were used to effect the necessary changes to improve upon the instrument. Thereafter, a pilot test of the instruments was conducted whereby the questionnaires were administered in the Holy Family Catholic hospital in the Eastern Region and a total of 20 respondents were used for the testing.

This area was chosen for the pilot testing because the persons living with diabetes who are the subjects of study have similar characteristics as compared with what pertains in the St. Michael's Catholic Hospital, Pramso in the Bosomtwe District of the Ashanti region. The data gathered were analysed and the Cronbach's alpha established for each of the items that fall under the five hypotheses formulated to guide the study.

The first part, Self-care Inventory-Revised Version (SCI-R) consisted 13 items (items nr. 1-13) obtained a Cronbach alpha value of 0.736. The second part was the Questionnaire on Stress for Diabetic Patients (QSD-R) included 44 items (items nr. 14-54) covering various relevant areas of the diabetic`s life had a Cronbach alpha of 0.929. Depression in Diabetes Self-Rating Scale consisted 6 items (items 55, 56, 57, 58, 59, 60) with a Cronbach`s alpha value of 0.70.

The Multidimensional Scale of Perceived Social Support consisted 12 items (Items Nr. 61-72) obtained a Cronbach`s alpha value of 0.831. the final part, Beck Anxiety Inventory (BDI) included 21 items (items nr. 73-93) had a Cronbach`s alpha 0.91. Apart from these, the overall Cronbach's alpha value of 0.841 was achieved for all the items. Therefore, the instrument was considered reliable and appropriate to collect the relevant data to answer the hypotheses posed. Also Fraenkel and Wallen (2000) posited that "for research purposes a useful rule of thumb is that reliability should be at 0.70 and

preferably higher". With this, the instrument could be said to be of good quality capable of collecting useful data for the study. The queries that came out of the item analyses were catered for. The reliability of the instruments was determined using Statistical Product for Service Solutions (SPSS). All these actions were taken to ensure that the instrument would be capable of collecting quality and useful data for the study.

Data Collection Procedure

For the procedure, ethical clearance was obtained from the Institutional Review Board of the University of Cape Coast. A letter of introduction from the Department of Educational Foundations and the Ethical Clearance certificate were sent to the Bosomtwe District Health Directorate for permission to use the St. Michael's Hospital. The approval letters from the district health directorate were sent to the hospital for introduction as well as permission. After, the permission was granted at the Hospital, a date was fixed for the commencement of the data collection.

The hospital holds its clinic twice every month, which are the third and fourth Thursdays in every month. Data was collected between 17th December 2015 and 10th of March 2016. Staff of the clinic was given training on the administration of the questionnaires and they helped in the data collection. Data was collected within a period of three months. An average of 40 participants was reached in each clinic day.

On the first day of the data collection, the researcher was introduced to the patients by the nutrition officer in charge of the clinic. The purpose of the research was explained to the patients. They were also assured that, it was a voluntary exercise and that they had the right to decline participation. Notice

of consent was read to them and those who volunteered to participate were given a consent form to write their names and sign or make a mark indicating their voluntary participation. In all, 141 patients were approached. One hundred and ten (110) voluntarily agreed to participate in the study. This means that 41 patients declined to respond to the questionnaire.

Out of the 31, 11 gave excuse as not feeling too well, 17 said they were hungry and wanted to go home and eat after seeing the doctor and the remaining 3 wanted to know if they would be given some assistance in their diabetes care such as provision of cereals which was previously provided or provision of personal glucometer after participation. Since such assurance could not be given, they declined participation.

The respondents who were able to read and write were administered the questionnaires in a pen-and paper form. Those who were unable were interviewed by following the questions on the questionnaires.

Data Analysis

The data was checked for mistakes committed by respondents. The questionnaires were coded and entered into the computer for analysis. SPSS version 20 was used for the analysis. Descriptive and inferential analyses were carried out. Descriptive statistics (means, standard deviation, frequencies and percentages) were used for background of the respondents as well as the objectives.Descriptive statistics are used to describe the basic features of the data in a study. They are numbers that are used to summarize and describe data.

Pearson correlation was used to analyze hypotheses 1-6. Correlation analysis allows one to examine the extent of the interrelatedness of variables

such as knowledge and attitude, knowledge and practices, as suggested by Healy and Mc Kay (2000). Pearson correlation is a measure of the strength of a linear association between two variables.

Independent t-test was used to access the differences between male and female diabetic patients and that is for hypothesis 7. The independent t- test, also called student's t-test is an inferential statistical test that determines whether there is a statistical significant difference between the means in two unrelated groups. The significance alpha was set at 0.05. Analysis of Variance (ANOVA) was used to establish the difference between ages as well as educational levels of the diabetic patients, this is for hypotheses 8and 9.

The ANOVA is used to determine whether there are any significant differences the means of three or more independent variables. It compares the means the means between the groups we are interested in and determines whether any of those means are significantly different from each other. Specifically, it tests the null hypothesis.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

Introduction

This study sought to determine the relationship between psychosocial factors such as anxiety, depression, stress and social support and glucose level of persons living with diabetes. This chapter discusses the data analysis and findings from the respondents. The findings are discussed in relation to the research hypotheses.

The data analysis was divided into two. The first part dealt with the background information of the respondents and the second part dealt with the presentation and the discussion of the main results.

Personal (Biographic) Data

This section of the questionnaire covered the respondents' age, sex, level of education, marital status and employment status. The result was presented in Table 1.

Table 1- *Socio-demographic characteristics of Respondents (n=110)*

Variables	Sub-scale	Frequency	Percentage
	12-20 years	0	0
	21-30 years	0	0
Age group	31-40 years	8	7.3
	41-50 years	14	12.7
	51-60 years	41	37.3
	60+ years	47	42.7
	Male	24	21.8
Sex	Female	86	78.2
	Primary	30	27.3
	Middle School/JHS	58	52.7
Educational Level	Secondary	8	7.3
	Tertiary	6	5.5
	None	8	7.3
	Married	74	67.3
	Separated	4	3.6
Marital Status	Divorced	12	10.9
	Widowed	18	16.4
	Never Married	2	1.8
	Employed	71	64.5
	Unemployed	35	31.8
Employment Status	Retired	4	4.6
	Student	0	0

Source: Field survey, Asibey (2016)

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Table 1 shows respondents' socio-demographic information. It was noted that the majority 86 (78.2%) of the respondents were female while the remaining 24 (21.8%) of the respondents were male. This result means that female respondents exceeded the male counterpart. Regarding the age group of respondents, it was found out that the age group of respondents ranged from 12 years to 60+ years. It emerged that 47 respondents representing 42.7% were in the age group of 60+ years. This was followed by 41 (373%) respondents who indicated 51-60 years as their age group. Again, 14 and 8 respondents representing 12.7% and 7.3% indicated 41-50 years and 31-40 years as their age group respectively. This result means that the majority of the respondents were in the age group of 51-60+ years. Though these findings were contradictory to the findings of Benoit et al (2005) who revealed that the prevalence of diabetes is in the younger ages, they dealt with only type 1 diabetes which is common in children. This study however looked at both types of diabetes.

Concerning educational level, it was realized that the majority 58 (52.7%) of the respondents attended middle /JH schools. This was followed by 30 respondents representing 27.3% who indicated that they attended only primary school while 8 respondents representing 7.3% and 6 (5.5%) reported that they attended secondary schools and tertiary. This result implies that on the whole, the respondents were fairly educated. From Table 1, it was found out that most 74 (67.3%) of the respondents were married while 18 (16.4%) and 12 (10.9%) of them were found to be widowed and divorced. Similarly, Table 1 shows that, most 71 (64.5%) of the respondents were employed while 35 of them representing 31.8% were unemployed and 4 (4.6%) indicted that

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they were retired. This result implies that the majority of the respondents are working and they could afford to finance their conditions regarding diabetes.

Table 2- *Respondents Glycemic level (n=110)*

Glycemic level	Frequency	Percentages
Low	00	00
Normal	19	17.3
High	91	82.7
Total	110	100

Source: Field survey, Asibey (2016)

Table 2 shows the result of the glycemic level of the diabetes patients. Most medical professionals define glycemic level by using the blood glucose goals. It was found that the majority, 91 (82.7%) of the respondents had high glycemic level while 19 of them representing 17.3% were found to have had normal glycemic level. This means that most of the respondents were having above 6.0 glycemic index (GI) and only 17.3% are having 3.6-60 GI. In relation to diabetes, hyperglycaemia refers to chronically high blood glucose levels. This means that majority of the respondents are having high blood glucose levels. This implies that the diabetes patients' are prone to a wide range of chronic complications that affect almost every system in the body.

On the other hand, it was found out that only 19 (17.3%) of the diabetes patient had normal Glucose levels. People who have diabetes should be testing their blood glucose regularly at home. Regular blood glucose testing helps determine how well your diabetes management program of meal planning, exercising and medication (if necessary) is doing to keep your blood glucose as close to normal as possible

Analysis of Hypothesis

Table 3- *Correlation Analysis between Psychosocial factors and attitude towards Self-care*

		Total self care
Total Stress	Pearson Correlation	-0.395[**]
	Sig. (2-tailed)	0.000
	N	110
Total Anxiety	Pearson Correlation	-0.199[**]
	Sig. (2-tailed)	0.037
	N	110
Total Depression	Pearson Correlation	-0.130
	Sig. (2-tailed)	0.001
	N	110
Total Social Support	Pearson Correlation	.160
	Sig. (2-tailed)	.004
	N	110

Source: Field survey, Asibey (2016)   **. Correlation is significant at the 0.05 level (2-tailed).

Hypothesis 1: There is no relationship between stress and self-care

The main objective of this research hypothesis was to determine whether there is an association between stress and self-care. Pearson correlation (r) was used in the analysis. Correlation analysis is used to describe the strength and direction of the linear relationship between two variables.

Pearson correlation co-efficient (r) can only take on values from –1 to +1. The sign out the front indicates whether there is a positive correlation (as one variable increases, so too does the other) or a negative correlation (as one variable increases, the other decreases).

From Table 3, the relationship between stress (as measured by the QSD-R) and perceived self-care (as measured by the SCI-R) was investigated using Pearson product-moment correlation co-efficient. It was revealed that there was a moderate, negative correlation between the two variables, r = 0.395, n = 110, p < 0.005, with moderate levels of stress associated with moderate levels of self-care. This means that the more stressful people feel, the less self-care attitude they adopt. The correlation between stress and self-care was statistically significant with a p-value of less than 0.05.

This implies that stress is significant psychosocial factors that influence self-care of patient living with diabetes. Stress helps to explain nearly (r^2=0.156) 16 per cent of the variance in respondents' scores on the attitude towards self-care as result of diabetes. This is a respectable amount of variance explained when compared with a lot of the research conducted in the social sciences. It is concluded that stress is negatively related to self-care and is a significant factor in influence patient living with diabetes attitude towards self-care; hence we fail to reject the hypothesis. These findings are consistent with that of Lloyd, Smith and Weinger who revealed in their research that stressful experiences have an impact on diabetes.

According to the Cognitive-relational theory of stress, which is defined as a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and

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endangering his or her well-being (Lazarus & Folkman, 1984)? This means that, stress may lower an individual's ability to properly take care of him or herself which may subsequently affect the glucose level of such a person. These findings are also in agreement with the study of Black (2003) who revealed that stress may contribute to both types of diabetes. First, stress may contribute directly to the development of insulin-dependent diabetes or type 1 diabetes through the disruption of the immune system, possibly during infancy. Stress may also contribute to the development of type 2 diabetes through its effects on the cytokines that initiate an inflammatory process that affects metabolism and produces insulin resistance (Black, 2003).

Hypothesis 2: There is no relationship between anxiety and self-care

The main objective of this research hypothesis was to determine whether there is an association between anxiety and self-care. From Table 3, the relationship between anxiety (as measured by the BDI) and perceived self-care (as measured by the SCI-R) was investigated. There was a weak negative correlation between the two variables, $r = -0.199$, $n = 110$, $p < .005$, with weak levels of self-care associated with higher levels of anxiety. This means that the less people living with diabetes take care of themselves, the more anxious they are. Also, the high levels of anxiety may prevent people with diabetes from taking care of themselves well.

The correlation between anxiety and self-care was statistically significant with a p-value of less than 0.05. This implies that anxiety is a significant psychosocial factor that influences self-care of patients living with diabetes. The correlation co-efficient (r) between anxiety and self-care was 0.0396. This implies that anxiety helps to explain nearly 4 percent of the

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variance in respondents' scores on the attitude towards self-care. It is concluded that anxiety is negatively related to self-care and it is a significant factor in influencing self-care of patient living with diabetes, hence the hypothesis is retained.

The results of the study were in line with the findings of Weinger and Lee (2006) who found out that diabetes-related stress, including feeling overwhelmed by diabetes and its care, feeling discouraged with the treatment plan, and feeling fearful of the future, may contribute to symptoms of anxiety. Weinger and Jacobson (2001) also found out that, the stress of dealing with diabetes may impact patients' psychosocial functioning and quality of life, which may also increase the risk for developing anxiety symptoms.

The findings are also in line with that of Peyrot, McMurry, and Kruger (1999); Yi, Yi, Vitaliano and Weinger (2008), who found out that emotion-based coping, such as anxious and angry styles, is associated with poor glycemic control. Patients who experience diabetes-related stress may become entrenched in a vicious cycle of anxiety and avoidance related to their self-care may cause them to be less adherent to their treatment regimen, which may in turn affect their blood glucose control or cause complications thus leading to even greater levels of anxiety.

Hypothesis 3: There is no relationship between depression and self-care

The main objective of this research hypothesis was to examine the relationship between depression and self-care. Table 3 indicates correlation analysis between depression and self-care of patient living with diabetes. The relationship between depressions and perceived self-care (as measured by the SCI-R) was analyzed and discussed using Pearson product-moment correlation

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co-efficient. There was a low, negative correlation between the two variables, $r = -0.130$, $n = 110$, $p < 0.005$, with high levels depression associated with low levels of self-care. The correlation between depression and self-care was statistically significant with a p-value of less than 0.05. This implies that depression is a significant psychosocial factor that influences self-care of patient living with diabetes. The correlation co-efficient (r) between depression and self-care was 0.0169. This implies that depression helps to explain nearly 2 per cent of the variance in respondents' scores on the attitude towards self-care. It is concluded that depression is negatively related to self-care and a significant factor in influencing self-care of patient living with diabetes; hence the hypothesis fails to be rejected.

These finding is congruent to the study of Lustman et al. (2005) who conducted a meta-analytical review of studies that reported statistically significant and non-significant findings on the relationship between depressive symptoms and glycemic status. They reported small (0.11) to moderate (0.19) effect sizes for the relationship between depressive symptoms and glycemic status among 21 studies that included people with type 1 and type 2 diabetes.

The findings are also in line with a study in a community-based study among Native Hawaiians, with and without diabetes mellitus, found a significant association (odds ratio = 3.2) between prevalence of depression and elevated haemoglobin A1c (HbA1c) levels ($\geq 7\%$), after controlling for the effects of age, sex, education, social support, and body mass index.

Hypothesis 4: There is no relationship between social support and self-care

The main objective of this research hypothesis was to determine whether there is a relationship between social support and self-care. From Table 3, it can be seen that there was a low, positive correlation between the two variables, r = 0.160, n = 110, p < .005, with low levels of social support associated with lower levels of self-care. This means that the less social support diabetic patients have, the lower self-care attitude people living with diabetes adopt.

This implies that social support is a significant psychosocial factor that influences self-care of patients living with diabetes. Social support helps to explain about (r^2=0.0256) 3 per cent of the variance in respondents' scores on the attitude towards self-care as result of diabetes. It is concluded that social support is positively related to self-care and a significant factor influencing patients living with diabetes attitude towards self-care; hence the hypothesis is retained.

These results are in line with the study of previous researchers who documented that social network members can negatively or positively impact the efforts of a person with diabetes to manage the disease. Notably among them is the work of Toljamo and Hentinen (2001), who revealed that adherence to self-care regimens (insulin treatments, monitoring blood glucose, exercise, and self-care away from home) was associated with emotional and instrumental support from friends and family. This suggests that the perceived availability and knowledge of friends and family as being present positively impacts self-management efforts of individuals with diabetes and help in better regulation of their blood glucose level.

The result is also consistent with the stress-buffering model of social support discussed earlier (Cohen & Wills, 1985), which maintains that social support has the potential to buffer, or protects individuals from the potentially negative influence of stressful events. However, despite the documentation of the importance of perceived support on health and wellbeing in later life, much of the existing research on social support and self-management of diabetes has focused on social networks, rather than perceived support.

Whereas perceived support is contingent on problems, social networks can be a source of problems as well as mobilized in the face of problems. Social networks can be sources of positive and negative influence. However, when the perceived support of a person with diabetes is measured, often times the focus is solely on positive aspects of the relationship

Hypothesis 5: there is no relationship between attitude towards self-care and glycemic levels

Table 4- *Correlational Analysis between Attitude towards self-care and blood glucose level*

		Total Self-care
Total Glucose Level	Pearson Correlation	-.063
	Sig. (2-tailed)	.013
	N	110

Source: Field survey, Asibey (2016)   **. Correlation is significant at the 0.05 level (2-tailed).

From Table 4, the relationship between blood glucose level and perceived self-care (as measured by the SCI-R) was investigated. It was found out that there was a weak, negative correlation between the two variables, r = 0.063, n = 110, p <.005, with weak self-care attitudes associated with high levels of glucose. This means that the less self-care attitude people living with diabetes adopted the higher glucose level they experience. The correlation between blood glucose level and self-care was statistically significant with a p-value of less than 0.05. This implies that blood glucose level is a significant psychosocial factor that influences self-care of patient living with diabetes.

Blood glucose level helps to explain about 0.4 per cent of the variance in respondents' scores on the attitude towards self-care as result of diabetes. It is concluded that self-care is negatively related to blood glucose level and self-care is a significant factor influencing the blood glucose level of patients living with diabetes, hence the hypothesis is retained. This finding was in line to the previous studies which shown reciprocal relations between psychosocial

factors, perceived social support and glucose levels, for example, some studies have reported that poor glycemic control leads to psychosocial challenges, which can hinder goal-directed diabetes self-care behaviours (Brands, Biessels, de Haan, Kappelle, & Kessels, 2005; Cukierman-Yaffe et al., 2009).

The presence of psychosocial factors may alter the attitude of disease self-management and impair patients' functioning, which may interfere with good glycemic control by limiting individuals' ability to adhere to medication and other self-care behaviours (Katon et al., 2009; Schonfeld et al., 1997; Sinclair, Girling, & Bayer, 2000). Therefore, psychosocial factors may be considered a potential barrier to self-care, the cornerstone of glucose management.

Hypothesis 6: There is no significant difference between socio-demographic factors (sex, age and educational level) and self-care.

Table 5- *Correlation Analysis between demographic factors and self-care*

		Age	Sex	Education Level
	Pearson Correlation	-.143	.046	.426[**]
Total Self-care	Sig. (2-tailed)	.137	.632	.000
	N	110	110	110

Source: Field survey, Asibey (2016)   **. Correlation is significant at the 0.05 level (2-tailed).

Table 5 indicates the correlation analysis between socio-demographic factors (sex, age and educational level) and self-care among people living with diabetes. The relationship between age, sex and educational level and self-care was investigated using Pearson product-moment correlation coefficient.

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Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. Concerning age, there was a low, negative correlation between the two variables [r –0.143, n=110, p>0.005], with older age associated with lower levels of self-care. This means that as people living with diabetes increase in their ages or grows in terms of their ages, their level of self-care decrease. These findings are in line with that of Parikh (2007), who posited that diabetic management in the elderly is always a challenging task due to atypical disease presentation, often absent classical symptoms, presence of other coexisting conditions, dietary advice not followed properly and due to non-compliance with drug therapy.

However, it is seen that age is not a significant factor influencing and determining people self-care towards diabetes because the p-value (0.137) is greater than 0.005. With regard to sex, there was a weak, positive correlation between the two variables [r=0.046, n=110, p>0.005], with sex (male or female) associated with lower levels of self-care. This implies that the sex of a person with diabetes has not much impact on how they take care of themselves. It is seen that sex (gender) is not a significant factor influencing and determining people self-care towards diabetes because the p-value (0.632) is greater than 0.005. However, some studies have documented the relationship between gender and psychological conditions such as anxiety and depression and have found that anxiety symptoms among the diabetic patients were significantly associated with female gender, younger age and Type 2 diabetes.

In a similar study by Roupa et al., (2009) examined the occurrence of anxiety and depression symptoms in patients with Type 2 Diabetes Mellitus

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with regard to sex and body mass index (BMI). The impacts of the respondents" demographic and clinical features were examined on their anxiety and depression levels. The self–completed questionnaire (HADS) was used for anxiety and depression level evaluation and the results showed that percentages of anxiety symptoms in women were three times higher in comparison to men.

The study also showed women to have had a twofold percentage of depression symptomatology than men. Additionally, when the relation between sex, age and Body Mass Index (BMI) and depression-anxiety symptoms was examined, it was shown that high BMI favours the occurrence of modest or severe symptomatology, as risk increases for any additional BMI unit. Lloyd et al. (2000) also investigated the effects of sex on the relationship between depressive symptoms and HbA1c and found that the prevalence of moderate to severe depression was significantly associated with elevated HbA1c (>9%) in men but not in women. These studies provide an insight to how patients" gender can influence their mental health outcomes and this can help clinicians in addressing gender-related issues.

As evident in Table 5, there was a moderate, positive correlation between educational level and self-care (r= .426, n=110, p<0.005), with moderate or high educational level associated with higher levels of perceived self-care. This means that as people living with diabetes increase their level of education, their level of self-care towards diabetes increases. Moreover, it is seen that educational level is a significant factor influencing and determining people self-care towards diabetes because the p-value (0.000) is less than 0.005.

This is in line with a study done by Delamater (2006) who concluded that that low socioeconomic status and low levels of education have been associated with lower regimen adherence and greater diabetes-related morbidity.

Table 6- *Independent Samples T-test on Male and Female Diabetes Patients'*

Attitude of Self-care

Self-care	Group	N	Mean	Std. Dev.	df	t-value	p-value
Perception of self-care	Male	24	40.92	6.82			
	Female	86	41.43	3.84	108	-0.480	0.003

Source: Field survey, Asibey (2016)

Table 6 shows the results of the independent sample t-test on diabetes patients' attitude towards self-care. From Table 6, it was realized that male diabetes patients had a mean score of (M=40.92; SD=6.82) while the female diabetes patients had a mean score of (M=41.43; SD=3.84). This shows that the male diabetes patients had more negative attitude towards self-care. Again, the standard deviation (SD=6.82) of the male diabetes patents indicates that the individual male patient scores on attitude towards self-care varied more than that of the female patients (SD=3.84). However, when the means scores of the two groups were tested using the independent samples t-test at 5% significant level, two-tailed, the results revealed that there was a statistically significant difference between the male and female diabetes patients attitude towards self-care (t(108)=-0.480, p = 0.003). Therefore, the null hypothesis fails to be rejected.

Table 7- *Descriptive Statistics of Diabetes Patients Attitude towards Self-care Across Age*

Ages	N	Mean	Std. Dev	Min	Max
31-40 years	8	41.50	3.16	37.00	45.00
41-50 years	14	42.57	4.18	38.00	49.00
51-60 years	41	41.95	4.34	33.00	49.00
60 years and above	47	40.36	5.10	23.00	46.00
Total	110	41.32	4.62	23.00	49.00

Source: Field survey, Asibey (2016)

Table 7 gives information about the age categories of the diabetes patients regarding their attitude towards self-care. It was found that the respondents age group of 41-50 years had a mean score of (M=42.57; SD=4.18; n=14), age group of 51-60 years had a mean score of (M= 41.95; SD=4.34; n=41), 31-40 years had a mean score of (M=41.50; SD=3.16; n=8) and the age group of 60 years had a mean score of (M=40.36; SD=5.10; n=47). From the statistics of the age group of diabetes patients, the age group of 41-50 years had the higher mean score and this was followed by the age group of 51-60 years.

From the preliminary analysis, the Levene's test was used to ascertain whether the variance in the scores is the same for each of the age group of diabetes patients, from the analysis, the Significance value (Sig) for Levene's test was 0.725 which is greater than the alpha or critical value of 0.05. This implies that the assumption of homogeneity has not been violated for this sample [$F(3, 106)= 1. 286$, $p= 0.0.283$ at the 0.05 alpha level].

Table 8- *ANOVA Test for Age and Self-care attitudes of diabetic patients*

	Sum of Squares	Df	Mean Square	F	Sig
Between Groups	81.682	3	27.227	1.286	.283
Within Groups	2244.182	106	21.172		
Total	2325.864	109			

Source: Field survey, Asibey (2016)

Table 8 shows the overall F ratio for the one-way ANOVA test. It noted that the F ratio (1.286) is not significant (p =0.283) at the 0.05 alpha level. This implies that there is no significant difference among the mean scores on age group of diabetes patients towards self-care. Therefore, the study concluded that there was no statistically significant difference at the p >0.005 level in age group of diabetes patients o their attitude towards self-care [F (3, 106) = 1.286, p = 0.283].

Table 9- *Descriptive Statistics of Diabetes Patients Attitude Towards Self Care Across Educational Level*

Educational Level	N	Mean	Std. Dev	Min	Max
No Formal Education	8	36.50	2.20	34.00	39.00
Primary	30	42.60	3.71	35.00	48.00
Middle School/JHS	58	41.88	3.70	33.00	49.00
Secondary	8	43.50	2.45	40.00	46.00
Tertiary	6	33.00	8.53	23.00	42.00
Total	110	41.32	4.62	23.00	49.00

Source: Field survey, Asibey (2016)

Table 9 gives information about the educational levels of the diabetes patients regarding their attitude towards self-care. It was found that the respondents with no formal education had a mean score of (M=36.50; SD=2.20; n=8), respondents who had primary education obtained a mean score of (M= 42.60; SD=3.71; n=30), respondents with Middle School/JHS had a mean score of (M=41.88; SD=3.70; n=58), respondents with Secondary education obtained a mean score of (M=43.50; SD=2.45; n=8), and respondents with Tertiary education had a mean score of (M=33.00; SD=8.53; n=6). From the statistics of the educational level of diabetes patients, respondents with Secondary education had the highest mean score and this was followed by respondents with Primary education, Middle School/JHS, no formal education and Tertiary education respectively.

From the preliminary analysis, the Levene's test was used to ascertain whether the variance in the scores is the same for each of the age group of diabetes patients, from the analysis, the Significance value (Sig) for Levene's

test is 4.977 which is greater than the alpha or critical value of 0.05. This implies that the assumption of homogeneity has not been violated for this sample [F(4, 105)= 11. 453, p= .0.000 at the 0.05 alpha level].

Table 10- *ANOVA test for Diabetic patients' attitude towards Self-care and Educational Level*

	Sum of Squares	Df	Mean Square	F	Sig
Between Groups	706.508	4	176.627	11.453	0.000
Within Groups	1619.355	105	15.422		
Total	2325.864	109			

Source: Field survey, Asibey (2016)

The Table 10 shows whether the overall F ratio for the one-way ANOVA is significant. It noted that the F ratio (11.453) is significant (p =0.000) at the 0.05 alpha level. This implies that there is a statistically significant difference among the mean scores on the educational levels of diabetic patients towards self-care. Therefore, the study concluded that there is a statistically significant difference at the p < 0.005 level in educational level of diabetic patients on their attitude towards self-care [F (4, 105) = 11.453, p = 0.000].The effect size, calculated using eta squared, was 0.30.

The actual difference in mean scores between the groups was moderate based on Cohen's *d* (1988, pp. 284–287) interpretation of effect size. Post-hoc comparisons using the Tukey HSD test indicated that the mean score for primary school (M = 42.60, SD = 3.71) was significantly different from

Tertiary (M = 33.00, SD = 8.53), and None (M = 36.50, SD = 2.20). However,

Middle school (M = 41.87, SD = 3.69), and Secondary school (M = 43.50, SD

= 2.44) did not differ significantly from the primary school.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Overview

The study sought to ascertain the association between psychosocial factors and glycemic level of diabetic patients in the Bosomtwe District of the Ashanti region. This chapter presents the summary, conclusions and recommendations for the study.

Summary

Effective management of blood glucose levels is a critical element of diabetes management. Large trials have demonstrated the importance of tight glycemic control for protecting against microvascular and neuropathic complications such as blindness and end-stage renal disease in individuals with diabetes, (UK Prospective Diabetes Study [UKPDS] Group, 1998).

Effective glucose management depends largely on self-care; it requires regular self-monitoring of blood glucose and medication management that may include insulin administration. Individuals should also engage in a rigorous self-monitoring regimen including self-regulation of diet and physical activity to prevent and treat hypo- and hyperglycemias, along with regular foot, eye, and dental exams (American Diabetes Association (ADA), 2010). Barriers to these self-care behaviours undermine effective blood glucose management, and likely contribute to elevated levels or poor glycemic control (Quandt, 2005). Psychosocial factors such as, depression, stress, anxiety and lack of social support are frequently found among individuals with diabetes.

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Therefore, this research sought to determine the relationship between psychosocial factors such as anxiety, depression, stress and social support, age, attitude towards self-care and glucose level of persons living with diabetes at the St. Michael's Hospital, Pramso in the Bosomtwe district of the Ashanti Region. In order to find answers to the hypotheses that were formulated to guide the study, the descriptive survey research design (cross-sectional survey) was employed.

The study covered diabetic patients who attend diabetic clinic at the St. Michael's Hospital, Pramso in the Bosomtwe district of the Ashanti Region. In all, 110 respondents were involved in the study. The convenience and purposive sampling procedures were used to select the diabetic patients to serve as respondents.

The questionnaire was used to gather the requisite data for the study. A set of four point Likert scale type of questionnaires for the diabetic patients was used to gather data from the respondents. It is worthy to note that these instruments were subjected to reliability and validity test. The data gathered from the respondents was analysed with statistical tools such as frequencies, percentages, means and standard deviations, Pearson product moments correlation coefficient, t- test, as well as one-way ANOVA were used. The following are the main findings of the study.

Key Findings

1. It was realized that, there was a moderate, negative correlation between stress and the attitude towards self-care. The correlation between stress and self-care was statistically significant with a p-value of less than 0.05. Hence, the null hypothesis that stated that

there was no relationship between stress and attitude towards self care was rejected

2. Concerning the relationship between anxiety and attitude towards self-care, it was realised that, anxiety is negatively (-.199) related to self-care but it is seen as a significant psychosocial factor in influencing self-care of patient living with diabetes. Therefore, the null hypothesis which stated that there was no relationship between anxiety and self care was rejected

3. With regard to the relationship between depression and attitude towards self-care, it was found out that, there was a weak negative relationship between depression and attitude towards self-care. Yet, depression was seen as a significant psychosocial factor in influencing attitude towards self-care of patient living with diabetes. Thus, the null hypothesis which indicated that there was no relationship between depression and self care was rejected

4. In line with social support and attitude towards self-care, it was realised that, there was a weak, positive correlation between social support and attitude towards self-care. The correlation between social support and self-care was statistically significant with a p-value less than 0.05. Therefore, the null hypothesis that there was no relationship between social support and self care was rejected to attitude towards self-care failed to be rejected.

5. It was found out that, there was a weak, negative correlation between attitude towards self-care and blood glucose level. The correlation between blood glucose level and self-care was

statistically significant with a p-value less than 0.05. Hence, the null hypothesis which indicated that there was no relationship between glycaemic levels and self-care was rejected.

6. Concerning socio-demographic factors (age, gender and educational level) and attitude towards self-care, it was realised that, there was a low negative (–.143) correlation between age and attitude towards self-care. Yet, age was not a significant factor influencing and determining people self-care towards diabetes because the p-value (0.137) is greater than 0.005. Therefore, the null hypothesis which indicated that there was no relationship between age and self care was rejected. In relation to gender and attitude towards self-care, it was found out that, male people living with diabetes have lower level of self-care. Although, there was a statistically significant difference between the male and female diabetic patients attitude towards self-care, gender was not a significant factor influencing and determining people self-care towards diabetes because the p-value (0.632) is greater than 0.005. Therefore, the null hypothesis which indicated that gender had no relation with self care was rejected. Again, there was a moderate, positive correlation between the educational level and self-care. Moreover, it was seen that educational level was a significant factor influencing and determining people self-care towards diabetes. Therefore, the null hypothesis which indicated that educational level had no relation with self care was rejected

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7. On the issue of the glycemic level, it was realised that, the majority of the respondents were having high blood glucose levels. This implies that the diabetes patients' are prone to a wide range of chronic complications that affect almost every system in your body.

8. It was realised that, male diabetes patients had more negative attitude towards self-care. In addition, the standard deviation (SD=6.82) of the male diabetes patients indicates that the individual male patients scores on attitude towards self-care varied more than that of the female patients (SD=3.84). However, when the means scores of the two groups were tested using the independent samples t-test at 5% significant level, two-tailed, the results revealed that there was no statistically significant difference between the male and female diabetes patients attitude towards self-care ($t(27.184)=-0.354$, $p=0.726$). Therefore, the null hypothesis which stated that there was no statistically significant difference between male and female diabetic patients attitude towards self-care failed to be rejected.

9. It was found out that, there was no statistically significant difference between the age group of diabetic patients and their attitude towards self-care. Therefore, the null hypothesis which indicated that there was no statistically significant difference between the age group of diabetic patients and their attitude towards self-care failed to be rejected.

Conclusions

The findings of this study highlighted the need to integrate psychosocial approaches in the treatment of diabetes. Failure to consider the ways that these factors combine and interact can lead to underestimation of the impact of psychosocial factors on people with diabetes.

To prevent diabetes related morbidity and mortality, there is an immense need of dedicated self-care behaviours in multiple domains, including food choices, physical activity, proper medications intake and blood glucose monitoring from the patients. Though multiple demographic, socio-economic and social support factors can be considered as positive contributors in facilitating self-care activities in diabetic patients, role of clinicians in promoting self-care is vital and has to be emphasized. Realizing the multi-faceted nature of the problem, a systematic, multi-pronged and an integrated approach is required for promoting self-care practices among diabetic patients to avert any long-term complications.

Recommendations

Based on the findings and conclusions drawn from the study, some recommendations to some key stakeholders of education and health are outlined as follows.

1. It is recommended that since stress is a part of normal life and elimination of stress is unrealistic or impossible, hospital administrations and health care professionals should endeavour to counsel patients on stress management techniques in order to militate against their (diabetic patients) vulnerability to contracting diseases. Patients should be encouraged to take proper care of themselves,

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maintain appropriate behaviours and learn relaxation techniques and other methods of managing stress so that they (patients) have control over stress and its effects on physical and mental health.

2. Ghana Health Service together with health professionals need to recommend diabetic patients for psychological therapy on how to handle their thoughts and emotions in times of feelings of helplessness and hopelessness in order to reduce anxiety among diabetic patients and ensure proper self-care attitudes. This is because, negative attitudes and feelings of hopelessness can upset the body's hormone balance and deplete the brain chemicals required for feelings of happiness or calm, as well as have a damaging impact on the immune system and other parts of the body.

3. In order to ensure no or lower levels of depression for diabetic patients and increased attitude towards self-care, health professionals should encourage diabetic patients to change their lifestyle and engage in increased physical activities through frequent exercises in order to reduce depression. This is because, exercise has the tendency to elevate mood and have the efficacy to reduce symptoms of depression. Scientifically, exercise stimulates the body to produce serotonin and endorphins, which are chemicals in the brain (neurotransmitters) that alleviate depression. In addition, participating in an exercise program can increase self-esteem, self-confidence, and sense of empowerment, as well as improve social connection and enhance relationships which altogether have a positive impact on a depressed individual.

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4. The Ghana Health Service together with the health professionals should ensure public education on the need for social support networks for diabetic patients by maintaining strong relationships with diabetic patients in order to ensure an increase in attitude towards self-care. This is because, friends and family can help make realistic assessment of threat and their support can bolster confidence in dealing with issues, remain calm and help maintain proper attitude towards self-care among diabetic patients.

5. The Ghana Health Service together with healthcare professionals should encourage patients to maintain proper self-care management through eating proper balanced diet, proper self-examination, adequate sleep, education on personal test for sugar level at home, etc. in order to ensure positive attitudes towards self-care.

6. Again, concerning the demographic factors (age, gender, and educational level), since age was not a significant factor influencing/determining patients' self-care attitude. It is recommended that, health professionals encourage both the young and old to ensure proper self-care attitudes and practices. Therefore, there is the need for the Ghana Health Service to ensure intensive education (formal, informal, non-formal education) across the nation in order to encourage people to develop proper self-care attitude.

Suggestions for Further Research

This study examined the relationship between psychosocial factors such as anxiety, depression, stress and social support and glucose level of

persons living with diabetes at the St. Michael's Hospital, Pramso in the Bosomtwe district of the Ashanti Region.

The study could be replicated in other regions in the country to find out what persists there. Again, the questionnaire served as the only instrument for data collection. Future studies may incorporate observation and interview guides to make the study more interactive.

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APPENDIX A

Questionnaire for Diabetic Patients

DEPARTMENT OF EDUCATIONAL FOUNDATIONS

QUESTIONNAIRE FOR DIBETIC PATIENTS

Dear Participant, your help is needed in a research I am conducting to find out the association between psychosocial factors and glycemic level of diabetic patients. I would be very grateful if you would respond to the questions as objectively as possible for the success of the study. **Your response will be treated with utmost confidentiality**. Also the response would only be used for the purpose of the thesis and to help contribute to a better understanding of the characteristics of psychosocial conditions that may affect the ability of diabetic patients to self-manage their disease effectively to control blood glucose level.

Thank you.

Instruction: Please, respond appropriately to the following questions by **ticking[√]** or writing your answer (s) in the space (s) provided.

Glycemic level _____

Socio-demographic Characteristics

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Please complete the following questions by filling in the blank, **ticking [√]**, or circling the most accurate response. If you are unsure about how to answer a question, please give the best answer you can.

1. Age

   12 - 20 years [   ]   20– 30 years   [   ]   30 - 40 years   [ ]

   40 - 50 years [   ]   50 - 60 years   [   ]   above 60 years [ ]

2. Sex   Male   [   ]   Female   [   ]

3. Level of Education

   Primary   [   ]   Middle School / JHS [   ]

   Secondary   [   ]   Tertiary   [   ]

   Other (please specify) _____

4. Marital Status

   Married   [   ]   Separated   [   ]

   Divorced   [   ]   Widowed   [   ]

   Never Married [   ]

5. Employment status

   Employed   [   ]   Unemployed   []

   Retired   [   ]   Student   [   ]

Self Care Inventory-Revised Version (SCI-R)

Please **tick(√)** the appropriate box that best corresponds to your answer. The options are **Very often (VO),often (O),Sometimes (S)** and**Not at all (N)**.How have you followed your diabetes treatment plan in the past 1-2 months?

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		VO	O	S	N
1	Check blood glucose with monitor				
2	Record blood glucose results				
3	If type 1: Check ketones when glucose level is high				
		VO	O	S	N
4	Take the correct dose of diabetes pills or insulin				
5	Take diabetes pills or insulin at the right time				
6	Eat the correct food portions				
7	Eat meals/snacks on time				
8	Keep food records				
9	Read food labels				
11	Carry quick acting sugar to treat low blood glucose				
12	Come in for clinic appointments				
13	Wear a Medic Alert ID				
14	Exercise				

Questionnaire on Stress for Diabetic patients – Revised (QSD-R) Scale

Please **tick(√)** the appropriate box that best corresponds to your answer. The options are **Very often (VO),often (O),Sometimes (S)** and**Not at all (N)**.

		VO	O	S	N
1	My diabetes makes me give up tasty foods.				
2	I have to plan my free time because of my diabetes.				
3	I am worried about my spouse / partner.				

		VO	O	S	N
4	Promotional prospects in my current job are limited because of my diabetes.				
5	If I do not stick to the prescribed treatment, I feel guilty when I see my doctor.				
		VO	O	S	N
7	Different doctors give me different information regarding my diabetes.				
8	Often there is not enough food in my diet plan to feel full.				
9	It bothers me that, whatever I do, I have to take my therapeutic equipment with me.				
10	At times I can´t help worrying that I will develop complicationlater in life.				
11	The idea of being alone at work or at home for long episodes of time frightens me.				
12	I often notice my low blood sugar too late.				
13	Having diabetes means I must eat even if I am not hungry or not having appetite.				
14	My physical ability is limited because of my diabetes.				
15	I feel less attractive to others since I developed diabetes.				
16	My diabetes prevents me from spontaneous physical activities.				
17	I suffer from excessive sweating.				

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18	Traveling has become complicated and awkward because of my diabetes.				
19	I suffer from episodes of weakness / lack of energy.				

		VO	O	S	N
20	I often suffer from physical distress or discomfort due to my diabetes.				
21	I feel guilty if I do not stick to my diet.				
22	During low blood sugar I suffer from emotional states one might describe as "irritable, aggressive".				
23	I feel I am insufficiently informed about my diabetes.				
24	I have had less sex since the onset of my diabetes.				
25	I often worry about passing out during low blood sugars.				
26	It sometimes happens that friends try to talk me into "not following my treatment plan just this once".				
27	Having diabetes makes it particularly hard for me to find a new job.				
28	I suffer from irritability.				
29	My doctors do not spend enough time with me.				
30	Due to my diabetes, I cannot spend free time as I wish.				
31	I feel like a handicapped person.				
32	My activities at home and / or at work are made more difficult at times because of my diabetes.				
33	I have problems at work due to sick days caused by my diabetes.				
34	I suffer from intense mood swings.				
		VO	O	S	N

		SD	D	A	SA
35	My relationship with my spouse / partner has become worse of my diabetes.				
36	I have the impression that my doctor does not treat my diabetes in the best possible way.				
37	It is difficult for me to have mentioned my diet on parties or in restaurants.				
38	I suffer from pain in my feet.				
39	Pricking my finger to monitor my blood sugar is uncomfortable.				
40	I tend to take things to seriously.				
41	In some ways I feel I am at a disadvantage compared to other people.				
42	I suffer from nervousness / restlessness.				
43	I am often thirsty or have a dry mouth				
44	I often worry about needing assistance later in life.				
45	At times I worry that my children may also get diabetes.				

Depression in Diabetes Self-Rating Scale

Please **tick(√)** the appropriate box that best corresponds to your answer. The options are **Strongly Disagree (SD),Disagree(D), Agree(A)** and **Strongly Agree (SA)**.

		SD	D	A	SA

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1	Despite my diabetes I cope pretty well in life				
2	I often feel pleasure in everyday life				
3	I often feel I would be ready to take additional medication to considerably reduce my depressed mood				
4	I do not cope with my life				
5	I generally feel happy and my diabetes has little effect on my well-being				
6	When I think about my disease, I feel like crying				

Multidimensional Scale of Perceived Social Support

Please **tick(√)** the appropriate box that best corresponds to your answer. The options are **Strongly Disagree (SD),Disagree(D), Agree(A)** and **Strongly Agree (SA)**.

		SD	D	A	SA
1	There is a special person who is around when I am in need.				
2	There is a special person with whom I can share my joys and sorrows.				
3	My family really tries to help me.				
4	I get the emotional help and support I need from my family.				
5	I have a special person who is a real source ofcomfort to me.				
6	I can count on my friends when things go wrong.				

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7	My friends really try to help me.				
8	I can talk about my problems with my family.				
9	I have friends with whom I can share my joys and sorrows.				
10	There is a special person in my life who cares about my feelings.				
11	My family is willing to help me make decisions				
12	I can talk about my problems with my friends.				

Please indicate how much you have been bothered by the following list of anxiety symptoms during the past week including today by ticking the corresponding space in the column.The options are **Not at all (N),Mildly**

(Mi), Moderately(Mo) and **Severely(S)**.

		N	Mi	Mo	S
1	Numbness or tingling				
2	Feeling hot				
3	Unsteadiness in legs				
4	Unable to relax				
5	Fear of the worst happening				
6	Dizzy or lightheaded				
7	Heart pounding or racing				
8	Unsteady				
		N	Mi	Mo	S

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9	Terrified				
10	Nervous				
11	Feelings of choking				
12	Hands trembling				
13	Shaky				
14	Fear of losing control				
15	Difficulty breathing				
16	Fear of dying				
17	Scared				
18	Indigestion or discomfort in the stomach				
19	Faint				
20	Face flushed				
21	Sweat (not due to heat)				

APPENDIX B

Ethical Clearance

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
ETHICAL REVIEW BOARD

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref: CES-ERB/CR/VO12/003

Your Ref: ....

Date: ....·03· 2016.....

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

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

Dear Sir/Madam,

**ETHICAL REQUIREMENTS CLEARANCE FOR RESEARCH
STUDY**

The bearer, ...Elsie Wireko Asibey........... Reg.
No ED/CHP/14/0001 is an M.Phil /Ph.D student in the Department of
....,

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

College of Education Studies, University of Cape Coast, Cape Coast,
Ghana. He/She wishes to undertake a research study on the topic
...Association between Psychosocial factors...
...and Glycemic levels of Diabetic patients...
...in the Koventure District of the Ashanti Regic.
The Ethical Review Board (ERB) of the College of Education Studies
(CES) has assessed the proposal submitted by the bearer. The said 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 that may be needed to facilitate the conduct
of the said research.

Secretary, CES-ERB
Dr. (Mrs.) L. D. Forde
lforde@ucc.edu.gh
0244786680

Thank you.
Yours sincerely.

Dr. (Mrs.) Linda Dzama Forde
(Secretary, CES-ERB)

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APPENDIX C

Introductory Letter

UNIVERSITY OF CAPE COAST

COLLEGE OF EDUCATION STUDIES

DEPARTMENT OF EDUCATIONAL FOUNDATIONS

Telephone: 37440/4 & 32480/3 Direct: 03321-36037
TELEX: 2552, UCC, GH
Telegrams & Cables: University, Cape Coast

Fax: 03321-00184

G.P. 2.2.

Your Ref:

THESIS WORK

LETTER OF INTRODUCTION

We introduce to you Mr./Mrs./Miss/Ms./ ...ELSIE WIREKO ASIBEY... a student from the University of Cape Coast, Department of Educational Foundations. He/She is pursuing a Master of ...PHILOSOPHY... degree in ...CLINICAL HEALTH PSYCHOLOGY...

As part of his his/her requirements, he/she is expected to work on a thesis entitled:-

...ASSOCIATION BETWEEN PSYCHOSOCIAL FACTORS AND ACADEMIC LEVEL of DIABETIC PATIENTS...

He/She has opted to make a study at your Institution/ Establishment for the project. We would be most grateful if you could provide the opportunity for the study. Any information provided will be treated as strictly confidential.

Thank you.

(Dr. Prosper Deku)

HEAD
DEPARTMENT OF EDUCATIONAL FOUNDATIONS
UNIVERSITY OF CAPE COAST
CAPE COAST

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