

Psychosocial Predictors of Health-Related Quality of Life among Diabetes Patient 1 and 2

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Received date: October 26, 2018; Accepted date: October 30, 2018; Published date: November 6, 2018

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Abstract

Diabetes Mellitus (DM) is a chronic disease with increase morbidity and mortality. It could be associated with significant adverse outcomes including poor health related quality of life. In Sub-Saharan Africa, Nigeria has a large share of the morbidity and mortality of DM of which larger percentage of the population (both DM 1 and 2) remain undiagnosed. Several psychosocial factors have been found to be associated with better health related quality of life among Diabetes Mellitus (DM) patients; however there is a dearth of local research work on the psychosocial predictors of health related quality of life among this group of persons. This study examined the psychosocial (emotional distress, self-efficacy, perceived social support and self-management) of health related quality of life among type 1 and 2 diabetes mellitus patient in Federal Medical Centre, Abeokuta, Ogun State, Nigeria. An ex-post facto design was utilized among a total of 85 adult patients with type 1 and 2 diabetes mellitus. The study utilized the purposive sampling technique. A questionnaire focusing on medical and socio-demographic profile, emotional distress ($r=0.91$), self-efficacy ($r=0.93$), perceived social support ($r=0.63$), self-management ($r=0.63$) and health related quality of life ($r=0.35$) was administered to the participants. Data were analyzed using descriptive statistics, correlation analysis, t- test and regression analysis at 0.05 levels of significance. Three hypotheses were tested. The results revealed that emotional distress, self-efficacy, perceived social support and self-management jointly predicted health related quality of life ($R^2=0.24$; $F=6.34$; $p<0.01$). Demographic and medical factors revealed a joint prediction on health related quality of life ($R^2=0.19$; $F=2.23$; $p<0.05$). Also, the result also revealed type 2 DM patient had a better health related quality of life than their counterpart ($t=-2.00$; $df=83$; $p<0.05$). Emotional distress and self-efficacy positively correlated with health related quality of life of respondents. Hence, Psychologist and other medical practitioners should utilize this resource by advocating for an improvement of self-efficacy in management plans of DM patients to enhance their health related quality of life.

Keywords: Health related quality of life; Emotional distress; Self-efficacy; Perceived social support; Diabetes Mellitus

Introduction

Diabetes is a demanding disease with a major effect on the quality of life of patients and their families [1]. Diabetes Mellitus (DM) is a pandemic that constitutes a major public health problem worldwide, both by the number of people affected and by the socioeconomic implications presented by the management and treatment of the disease and its complications. DM is a chronic disorder that is not only assuming pandemic proportions worldwide but also poised to affect the developing countries of the world much more than their developed counterparts [2]. It is a condition primarily defined by the level of hyperglycaemia giving rise to risk of micro-vascular damage (retinopathy, nephropathy and neuropathy). It is associated with reduced life expectancy, significant morbidity due to specific diabetes related micro-vascular complications, increased risk of macro-vascular complications (ischaemic heart disease, stroke and peripheral vascular disease), and diminished quality of life [3]. It is one of the major causes of disease morbidity and mortality in Nigeria and throughout the world in which there is no known cure. Although biological factors are important for causes of diabetes however it is important to understand role of behavioral, cultural and lifestyles related factors for self-care and management of diabetes and impact of diabetes on health related quality of life.

Barcaccia and Barbara defined Quality of Life (QoL) as the general well-being of individuals and societies, outlining negative and positive features of life [4]. It observes life satisfaction, including everything from physical health, family, education, employment, wealth, religious beliefs, finance and the environment. Although quality of life is a multidimensional concept that cut across many domains such health, wealth, satisfaction with life, finance, environment, social belonging and employment. When quality of life is considered in the context of health and disease, it is commonly referred to as Health-Related Quality of Life (HRQoL) to differentiate it from other aspects of quality of life. Since health is a multidimensional concept, HRQoL is also multidimensional and incorporates domains related to physical, mental and emotional, and social functioning. HRQoL goes beyond the direct measures of health and focuses on the quality-of-life consequences of health status. According to Phillip health related quality of life is a multidimensional construct comprising the individual's subjective perception of physical, emotional and social well-being, including both a cognitive component (e.g. satisfaction) and an emotional component (e.g. happiness) [5]. This study will specifically focus on the health related quality of life in the overall quality of life. Several studies, mainly from high-and middle-income countries, have described the negative impact of diabetes on HRQoL. It has been found that particularly individuals with macro-vascular complications such as stroke and ischemic heart disease often report substantial deteriorations in HRQoL [6-8]. Moreover, a comprehensive review on this topic suggested a strong association between the

number and severity of complications with worsening quality of life [9]. Diabetes affects the mental functioning of patients, but not in a uniform manner. It has been proved that certain psychosocial factors, such as health beliefs, social support, coping style, stress and personality traits, can have a direct or indirect effect on quality of life [10]. Social dispositions may be more significant for lower quality of life than the presence of coexisting diseases implication. Patients generally characterized as depressive experience a lower quality of life than patients without depression [11]. Conversely, diabetics with an optimistic outlook on life and a strong belief in self-efficacy, as well as those who use active, solutions-oriented problem-solving strategies for coping with stress often enjoy a good quality of life [11]. The present study was interested in looking at variables that can help increase DM patient health quality of life. Hence, this study considered the psychological predictors of emotional distress, self-efficacy, perceived social support and self-management on health related quality of life of persons living with diabetes.

Literature/Theoretical Underpinning

Emotional distress refers to as patients negative evaluation of their feelings on their physical health status as a result of complications caused by the disease and cost associated in its treatment. A Chinese study reported that emotional distress was the most important explanatory factor for quality of life, the study however showed that Depressive Symptoms (DS) instead of Diabetes-Related Distress (DRD) had a more consistent, negative, and independent effect across all the domains of HRQoL. Similar patterns of association were also reported by Carper et al. [12] who stated that DS severity was associated with poorer HRQoL specifically on the achievement, psychosocial growth and environment domains while DRD was associated with poorer HRQoL on the achievement domain. Fisher et al. reported that DRD and DS were related, but were distinct constructs associated with the various aspects of HRQoL that were beyond demographic and clinical factors [13]. Sundaram et al. reported the pervasive effects of DS among adult patients with T2D on a number of QoL measures that included the generic health status and diabetes-specific QoL [14]. Horvath reported that the degree of diabetes-specific QoL perception was associated with the severity of DS among Brazilian patients with T2D [15]. Similarly, DS among the elderly German patients with T2D was one of the independent predictors for HRQoL [16]. Besides DS, other mental disorders such as anxiety and schizophrenia had also been reported to be significant predictors for poorer diabetes-specific QoL [10]. Smets et al. reported that quality of life in patients with diabetes neuropathy and T2DM could be affected by numerous demographic and psychosocial factors such as age, marital status, education, depressive symptoms, fatigue and psychological stress have been found to influence quality of life (QoL) and the results also demonstrated that both subjective factors, such as depressive symptoms and domains of multidimensional fatigue affected HRQoL [17].

Self-efficacy refers to as confidence in one's ability to perform goal-directed behaviors when confronted with impediments [18]. Self-efficacy has been a consistent predictor of quality of life in patients across chronic illness conditions [19,20]. Research has focused on associations between disease-related self-efficacy and disease-specific quality of life [21,22]. In addition, Scholz et al. reported that general self-efficacy may be associated with a broader spectrum of quality of life [23]. Studies indicate that both self-efficacy and HRQoL can improve in response to self-management interventions for chronic

conditions [24]. In addition, among people with chronic medical conditions (e.g., asthma, congestive heart failure) and unipolar depression, higher levels of self-efficacy to manage their chronic condition are related to higher HRQoL [25-27]. Hansson suggests that improvements in self-efficacy may be associated with improvements in quality of life among people with serious mental illnesses [28]. In patients with myocardial infarction, self-efficacy has been found to be positively associated with self-management and psychological well-being [26] and quality of life [29]. In a study conducted by Brink et al. they reported that general self-efficacy measured four months after MI was positively related to physical and mental HRQoL [30]. Other studies have found similar relationships between self-efficacy and quality of life in persons dealing with cardiac illness [26,29]. Thus it appears that persons scoring high on self-efficacy scales experience better HRQoL. Moreover, studies have demonstrated that self-efficacy is associated with health behavior [31] and plays an important role in cardiac rehabilitation [32].

Perceived social support refers to the perception that one is cared for, has assistance available from other people when needed and that one is part of a supportive social network. Uchino et al. reported that higher perceived social support may contribute to better HRQOL directly by promoting health behaviors, improving psychological states, or enhancing cardiovascular, neuroendocrine, and immune functions [33]. Existing research indicates associations between higher perceived or received social support and increased adherence to antiretroviral treatment regimens [34,35] and higher CD4 cells count [14,36]. Barrera et al. [37] and Cohen et al. [38] suggested that social support may also contribute to better health indirectly by preventing people from seeing stressful events as threats or preventing or altering maladaptive behavioral responses to stressful events once they occur. For example, higher social support has been linked to low levels of depression [35,39-41] and low level of depression is, in turn, associated with better HRQoL [42-46]. Social support of people living with HIV/AIDS (PLWHA) was significantly correlated with health-related quality of life [47]. Research on PLWHA indicates that a supportive social environment, particularly friends and family acceptance, was significantly associated with quality of life [48,49]. Miller reported that alienation, rejection, and isolation can threaten hope and well-being of PLWHA [50]. Taking care of physical, psychological, and social relationship was important for maintaining health-related quality of life and social support of PLWHA as reported by Srisurapanont et al. [51]. One study by Bastardo et al. suggested that social support is significantly associated with health-related quality of life, with the exception of physical functioning and bodily pain aspects [52]. A low level of social support causes a worsening of physical functioning as reported by Remor [53]. Another study suggested that psychological functioning and physical symptoms were associated with a higher level of social support [54]. Furthermore, the type of social support influences the level of quality of life, as the level of emotional support decreases physical distress, mental distress, activity limitation, depressive symptoms, anxiety symptoms, insufficient sleep, and pain [55], the tangible or functional support seems to be more relevant to PLWHA [56]. Also, quality of life relates both to adequacy of material circumstances and to personal feelings about these circumstances, and it includes overall subjective feelings of well-being that are closely related to morale, happiness and satisfaction [57,58].

Self-management refers to the individual's ability to manage the symptoms, treatment, physical and psychosocial consequences and life style changes inherent in living with a chronic condition. Self-care management is important in improving health outcomes, enhancing

quality of life, and decreasing healthcare costs [59,60]. Guillemin suggested that health-related QoL determines treatment outcomes such as patients demand for care, compliance levels, and satisfaction with treatment [61]. The reduction of negative affect produced by appraisal of illness experience is presumed to influence health outcomes by reducing negative health behaviors and physiological reactivity [35,62]. Yehle et al. reported that self-efficacy may influence the performing of self-care health behaviors that can prevent or moderate the impact of risk factors on the individual's QOL [63]. Self-efficacy plays a very important role in management and control of health behaviors and adoption of a healthy lifestyle in individuals with chronic disease such as diabetes and cardiac patients have been reported [36]. The positive impact of self-care health behaviors on QOL in cardiac patients has been confirmed in several Randomized Controlled Trials (RCTs) involving short-term (less than 6 months) self-care interventions, with 71.0% of findings from RCTs showing improved QOL in the intervention group [64]. Chatziefstratiou et al. have reported that self-care management plays a significant role in the improvement of self-care and the reduction of modifiable risk factors such as cholesterol and Body Mass Index (BMI) [65].

The Cognitive Appraisal and coping was developed by Richard and Lazarus in 1984; the theory has been used to explain psychological distress, efficacy and self-management [66]. It identifies two processes; cognitive appraisal and coping, as critical mediators of stressful person-environment relations and their immediate and long-range outcomes. Cognitive Appraisal theory is the theory in psychology that emotions are extracted from our evaluations (appraisals or estimates) of events that cause specific reactions in different people. Essentially, our appraisal of a situation causes an emotional, or affective, response that is going to be based on that appraisal. Appraisal theories of emotion are theories that state that emotions result from people's interpretations and explanations of their circumstances even in the absence of physiological arousal [67]. These models both provide an explanation for the appraisal of emotions and explain in different ways how emotions can develop. In the absence of physiological arousal we decide how to feel about a situation after we have interpreted and explained the phenomena. Thus the sequence of events is as follows: event, thinking, and simultaneous events of arousal and emotion. Social psychologists have used this theory to explain and predict coping mechanisms and people's patterns of emotionality.

Coping on the other hand is defined as the person's constantly changing cognitive and behavioural efforts to manage specific external and or internal demands that are appraised as taxing or exceeding the person's resources [66]. Coping arises from appraisal that the demands of an event exceed personal resources and is motivated by the emotional response to harm and threat [66]. This appraisal serves two primary functions: to change the person-environment relationship and to influence the level of emotional distress. Coping comprises the cognitive and behavioral efforts required to manage the internal or external environment when a level of dissonance exists in a person's perception of their ability and resources to deal with the psychological stress [66]. The present study investigates the joint and independent predictive strength of emotional distress, self-efficacy, perceived social support and self-management on health related quality of life. The study is relevant to patients living with DM on how to cope with the disease as well as been optimistic that the disease will not affect their life negatively. This study will also be of benefit to resource experts who might want to rehabilitate people who always have negative attitude toward quality of life from proper health experts. Information's gained from this study can be used to organize seminars, and conferences on

the need for people leaving with DM to always have high self-efficacy and self-management toward their health challenges. This study will therefore serve as generated information that will give indications to the government and other stakeholders on how to mitigate and improve the practice of our health institutions in Nigeria so that DM patient can have confidence in visiting our health institutions for palliative care. The findings will also be useful as a morale booster for people who perceive themselves has been having low self-efficacy and low self-management regarding their disease. In general, the overall outcome of the study contributes to existing knowledge on mental health seeking need and to improve the lifestyles of the millions of people who struggle with diabetes every day.

However, the following research question was raised; will there be joint and independent influence of emotional distress self-efficacy, perceived social support, self-management and health related quality of life among diabetes mellitus patient? Will there be significant influence of emotional distress, self-efficacy, perceived social support, self-management and health related quality of life among diabetes mellitus patient? Three hypotheses would be tested:

1. Emotional distress, self-efficacy, perceived social support and self-management will independently and jointly predict health related quality of life.
2. Demographic and medical factors will independently and jointly predict health related quality of life.
3. Type 2 diabetes patient will significantly score higher on health related quality of life than patient with Type 1 diabetes.

Methods

Design and sampling

The study was a survey research design. The independent variables investigated were emotional distress, self-efficacy, perceived social support and self-management while the dependent variable is health related quality of life. A purposive sampling was adopted to recruit participants into the study. Federal Medical Centre, Abeokuta was purposively selected from the list of Federal public hospital from the South Western part of Nigeria. The participant in this study only include people who have been diagnosis of diabetes mellitus 1 and 2 and are currently receiving palliative care at the proposed research setting and exclude pregnant women and mentally ill patient.

Participants and setting

The sample size of the study consists of a total number of 85 purposively selected diabetes mellitus 1 and 2 that are currently receiving palliative care at the proposed research setting. The age of the sample ranged between 24 and 54 years with a mean of 42.98 and a standard deviation of 11.48. Twenty-nine (34.1%) males and 56 (65.9%) females participated in the study. Participants marital status reveals that 17 (20.0%) were Single, 58 (68.2%) were Married, 3 (3.5%) were Divorced/Separated and 7 (8.2%) were Widowed. Forty-seven 47 (55.3%) were Christian 34 (40.0%) were Muslim and 4 (4.7%) were from other religion. Their ethnicity shows that 62 (72.9%) are Yoruba indigene 2 (2.4%) are of Hausa indigene 12 (14.1%) are of Igbo indigene 9 (10.6%) are of other indigene. Respondent educational qualification revealed that 26 (30.6%) are Primary/Secondary, 20 (23.5%) are NCE/OND holders, 29 (34.1%) are Degree/HND holders. 8 (9.4%) are MSc holder, 2 (2.4%) are PhD holders. The study took

place at the Federal Medical Centre, Abeokuta of Ogun State, and South Western part of Nigeria.

Research instrument

The main instrument for sourcing information for this research was a structured questionnaire which consists of six sections: A-F. Section A consists of the social demographic characteristics of participants such as, age, gender, marital status, and educational status, type of diabetes and duration of illness. Section B is a 12 item scale of Health related quality of life adapted from Health Survey (36) developed by Ware et al. [68]. The 12 items in the questionnaire are in two domains which are the mental health (MCS 12) and physical health (PCS 12). The SF-12 survey contains categorical questions (e.g. yes/no) that assess limitations in role functioning as a result of physical and emotional health. The survey also contains likert response formats including those that are on a three-point scale (e.g. limited a lot, limited a little, or not limited at all) that assess limitations in physical activity and physical role functioning. In addition a five-point scale (e.g. not at all, a little bit, moderately, quite a bit, and extremely) that assesses pain, and a five-point scale that assesses overall health (excellent, very good, good, fair, and poor) are included. The SF-12 also contains a six-point scale (e.g. all of the time, most of the time, a good bit of the time, some of the time, a little of the time, and none of the time) that assesses mental health, vitality, and social functioning. The SF-12 is scored using the two summary scores, mental health (MCS12), and physical health (PCS12) with a mean of 50 and a standard deviation of 10. In this study a Cronbach alpha coefficients of 0.35 was obtained. Section C captured Emotional distress which was assessed with 5-item scale of Problem Area in Diabetes Scale short form (PAID-5) developed by McGuire et al. [69]. Responses for this scale were measured on a 4-point scale ranging from 0=not a problem, 1=minor problem, 2=moderate problem, 3=somewhat serious problem and 4=serious problem and a Cronbach alpha of 0.91 was obtained. High scores by participants indicate high frequency of emotional distress and vice versa. Section D consist of an 8 items scale of Self-efficacy empowerment scale short form (DES-SF8) developed by Anderson et al. [70]. The response format was 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5=strongly agree. The scale is scored by averaging the scores of all completed items: (Strongly Disagree=1 to Strongly Agree=5). The reliability of the DES-SF using the original data set was alpha=0.93. Section E assessed perceived social support with a 12 item of Multidimensional scale of perceived social support developed by Zimet et al. [71]. The scale has three domains which are: perceived support from family, perceived support from friends and perceived support from significant other. The format of the scale range from 1=Very Strongly Disagree, 2=Strongly Disagree, 3=Mildly Disagree, 4=Neutral, 5=Mildly Agree, 6=Strongly Agree, 7=Very Strongly Agree. The cronbach alpha of 0.95 was obtained for this scale. Section F measured Self-management; this variable was measured with a 16-item scale developed by Schmitt et al. [72] at the Research Institute of the Diabetes Academy Mergentheim. Respondents rated the extent to which each description applies to them on a four-point Likert scale (3 'applies to me very much' to 0 'does not apply to me'), referring to the previous eight weeks. Item scores are transformed so that higher scores indicate more desirable self-management behaviour (requiring reverse-scoring of negatively-keyed items) and summed/transformed to five scale scores with ranges from 0 to 10. Cronbach coefficient of 0.63 was obtained for this study.

Procedure for data collection

Having obtained the necessary permission from the hospital Health Research Ethics Committee (HREC) and having purposively selected the participants because of its focus group, instructions were read aloud to all the participants at the beginning of the study. Participants were made to understand that the purpose of the research was purely academic and they were informed to respond to the questions honestly. Having been assured of the anonymity and confidentiality of their responses, participants' consents were sought and obtained. The questionnaires were distributed to participants who were present, by the researcher and participants were not given any incentive for participation. All questionnaires were administered in both English and Yoruba language and all participants completed the questionnaires by themselves during their clinic period, except two, who indicated they were not willing to complete the questionnaire for personal reasons. A total of 87 questionnaires were administered, and 85 participants completed their questionnaires properly. The completed copies were scored and analyzed with Statistical Package for the Social Sciences (SPSS) software version 22.

Statistical analysis

The statistical tools employed in this study were descriptive statistics, correlation analysis, linear regression and t-test for independent samples.

Ethical approval and consent

Ethical approval was obtained from the hospital Health Research Ethics Committee (HREC). Both verbal and written consents were obtained from the participants before the questionnaires were administered.

Results

Variables	1	2	3	4	5	Mean	S.D
Emotional Distress	-					10.99	5.61
Self-efficacy	0.15	-				34.78	6.73
Perceived Social Support	-0.06	0.42**	-			59.75	19.68
Self-Management	0.02	0.09	-0.03	-		24.68	7.82
HRQOL	0.36**	0.38**	0.17	0.04	-	29.95	4.07

Note: **Correlation significant at 0.01 level two tailed.

Table 1: Zero-Order correlation shows the relationship among the variables of study.

Correlation analysis was conducted to determine the relationship among all the variables of the study in (Table 1) above. Results show that emotional distress ($r=0.36$, $p<0.01$) and self-efficacy ($r=0.38$, $p<0.01$) were significant and positive correlates of health related quality of life. However, the result also show that self-efficacy and perceived social support ($r=0.42$, $p<0.01$) were correlate of each other.

Hypothesis one stated that, emotional distress, self-efficacy, perceived social support and self-management will independently and jointly predict health related quality of life. The result above partially supported the alternate hypothesis [$F(3, 85)=6.34$, $R=0.491$, $R^2=0.241$,

P<0.01)]. That is, the multiple regression coefficients of the four predictors (Emotional distress, Self-efficacy, Perceived social support and Self-management) shown the relationship strength of (0.49=49%) on health related quality of life, with coefficient determination of (0.24=24%) at 0.01% level of significance. In other words, (0.49=49%) variance in Emotional distress, Self-efficacy, Perceived social support and Self-management brings about per unit change in the health related quality of life.

Predictors	β	T	Sig	R	R ²	Δ R2	F	Sig
Emotional distress	0.32 2	3.23	<0.0 1	-	-	-	-	-
Self-Efficacy	0.3	2.73	<0.0 1	-	-	-	-	-
				0.49 1	0.24 1	0.20 3	6.3 4	<0.0 1
Perceived Social Support	0.06 3	0.58 4	>0.0 5	-	-	-	-	-
Self-Management	0.01 2	0.11 7	>0.0 5	-	-	-	-	-

Table 2: Summary table of linear regression showing the independent and joint predictive strengths of Emotional distress, Self-efficacy, Perceived social support and Self-management on Health related quality of life.

Moreover, there was independent prediction of Emotional distress ($\beta=0.32$, $t=3.23$, $P<0.01$) on health related quality of life. 0. That is Emotional distress shown 32 standardized regression coefficients which is the variance in the health related quality of life that can be accounted for by Emotional distress. Also, Emotional distress shown (3.23), which is the value of its prediction on health related quality of life at (0.01) level of significance. Although, there was also an independent prediction of Self-efficacy ($\beta=0.30$, $t=2.73$, $P<0.01$) on health related quality of life with standardized regression coefficient of (0.30) which is the variance in its prediction on health related quality of life at (0.01) level of significance (Table 2).

Predictors	β	T	Sig	R	R ²	Δ R2	F	P
Gender	-0.05	-0.477	>0.05	-	-	-	-	-
Age	0.066	0.512	>0.05	-	-	-	-	-
Religion	0.055	0.508	>0.05	-	-	-	-	-
Education Status	0.111	1.039	>0.05	-	-	-	-	-
				0.436	0.19	0.105	2.23	<0.05
Marital status	-0.039	0.32	>0.05	-	-	-	-	-
Ethnicity	0.315	2.94	<0.01	-	-	-	-	-
Duration	0.186	1.498	>0.05	-	-	-	-	-
Type of Diabetes	0.231	2.118	<0.05	-	-	-	-	-

Table 3: Summary of multiple regression showing the independent and joint prediction of demographic and medical factors on health related quality of life.

Consequently, Perceived social support ($\beta=0.63$, $t=0.584$, $P>0.05$) shown insignificant independent prediction on health related quality of life. Also, Self-management ($\beta=0.012$, $t=0.117$, $P>0.05$) did not independently and significantly predict health related quality of life. Hence, hypothesis one was partially accepted and confirmed.

The results of the linear regression displayed in (Table 3) above reveals that Gender, Age, Religion, Educational Qualification, Marital Status, Ethnicity, Duration and Type of Diabetes ($R^2=0.19$, $F=2.23$, $p<0.05$) jointly predicted health related quality of life. Demographic and medical factors accounted for 19% of the variance observed in the prediction of health related quality of life. The table also shows that ethnicity ($\beta=0.32$, $p <0.01$) and type of diabetes ($\beta=0.23$, $p<0.05$) significantly independently predicted health related quality of life.

Conversely, Gender ($\beta=-0.050$, $t=-0.477$, $p>0.05$), Age ($\beta=0.066$, $t=0.512$, $p>0.05$), Religion ($\beta=0.055$, $t=0.508$, $p>0.05$), Educational Status ($\beta=0.111$, $t=1.039$, $p>0.05$), Marital Status ($\beta=-0.039$, $t=-0.320$, $p>0.05$), and duration ($\beta=0.186$, $t=1.498$, $p>0.05$) did not independently and insignificantly predicted health related quality of life (Table 3).

Type of diabetes	N	Mean	SD	t	df	Sig
Type 1	28	28.71	3.3	-	-	-
				-2	83	<0.05
Type 2	57	30.56	4.29	-	-	-

Table 4: Summary of t-test showing type of diabetes differences on health related quality of life.

The results of the t-test reveal the difference between the mean scores of type 1 and type 2 diabetes mellitus patient on health related quality of life scale. The mean scores indicate that type 2 diabetes mellitus patient (mean=30.56, $SD=4.29$, $p<0.05$) significantly have more health related quality of life than their type 1 counterparts (mean=28.71, $SD=3.30$) (Table 4).

Discussion

The findings of this study indicated that emotional distress, self-efficacy, perceived social support and self-management jointly predicted health related quality of life among the participants of study. This outcome corroborates the conclusions of Coffman [73] evaluated relationships between depression, social support and self-efficacy on quality of life among a sample of 115 older Hispanic adults with self-reported type 2 diabetes and found that the majority of participants needed support in the form of transportation; family was the major source of support (46.4%), followed by government-sponsored social programs (28%) and medical professionals (17.6%). Interestingly, a negative but significant relationship between support and self-efficacy was identified, which indicated that the more support an individual needed, the lower his/her level of self-efficacy [73]. Overall, result support that improving self-efficacy in this population may lead to longer life expectancy and improved QoL [73]. Several studies have found that improved diabetes self-management, which is critical to achieving metabolic control and reducing diabetes complications, leads to better QoL [9, 74-77]. Jacobson reported that lower scores on all SF-36 scales were associated with greater severity of complications for patients with either type of diabetes, and with number of complications among those who had type 1 diabetes [78]. Among those with type 2 diabetes, who had fewer complications, the number

of complications was a weak predictor of SF-36 scale scores. A similar pattern of findings was reported for the association between number and severity of complications and scores on DQoL scales, with treatment satisfaction and disease impact scales consistently sensitive to severity of complications and less consistently responding to number of complications. Also, Peyrot and Rubin indicated that the presence of complications was associated with increased DQOL treatment burden scores.

This study also revealed the significant joint prediction of demographic factor on health related quality of life. This result confirms the conclusion of Akinyemi et al. who examined some socio demographic factors on quality of life among adults in a community in south west Nigeria [79]. The study found that age, gender, marital status, and educational qualification jointly predicted quality of life among the sampled respondent. Over the past decade, differences between men and women with T2DM have been intensively investigated, revealing that the women with diabetes appeared to have worse HRQoL and mental well-being than the men with diabetes [50,80]. The present study reported no significant differences in patient gender and their health related quality of life. Age has been another parameter which has an effect on the HRQoL of diabetic patients [81]. Hanninen reported that age has no effect on diabetic patient's HRQoL [82]; however, another study reported that patients who are less than 40 years of age have significantly better QoL than other age groups [83]. The present study found a no significant relationship between age and HRQoL. In addition, it is understood that men and women with diabetes face different challenges in the management of their condition [56].

Peyrot et al. found that study subjects who graduated from college were significantly less likely than those with less education to report symptoms of depression or anxiety consistent with the presence of a clinical disorder [84]. Glasgow et al. reported that survey respondents who reported more education and higher income also scored higher on all sub-scales of the SF-20 [85]. However, findings of this research report no significant relationship between educational status and health related quality of life of the studied participants.

In the studies by Connell et al. [86] and Murrell et al. [87] Marital status appears to be related to quality of life in the general population and Peyrot et al. [84] found that study subjects who were not married were significantly more likely than those who were married to report symptoms of depression consistent with the presence of a diagnosis of clinical depression. Jacobson et al. reported a pattern of relationships between marital status and quality of life (as measured by the SF-36 and DQOL), which indicated that separated or divorced individuals experienced worse quality of life than those who were single or married [78]. A study of people with type 2 diabetes conducted in Norway found that those living alone reported lower levels of physical functioning and psychosocial well-being than those who lived with others. The current study reported no relationship between the marital status of participants and HRQoL.

Few have studied the relationship between race or ethnicity and quality of life in people with diabetes. Peyrot et al. [84] no association between race and measures of anxiety or depression when other demographic and disease factors were controlled, and Glasgow, et al. found no differences between Caucasian and African-American respondents on any dimension of quality of life as measured by the SF-20 [85]. One study by Rankin et al. found that European-Americans scored higher than Chinese immigrants to the United States on all

DQoL scales [88]. However the current study reported a significant association between ethnicity and HRQoL.

Many studies reported an association between increased duration of diabetes and poor HRQoL, in both types of diabetes [85,89]. On the other hand, there are also contradicting findings about the association between duration of diabetes and HRQoL for example, Peyrot et al. reported no significant association between disease duration and depression in a population which included those with type 1 and type 2 diabetes [90]; Parkerson in a study of people with type 1 diabetes found no significant relationship between disease duration and DQoL scores [91]. In this present study the researcher found no significant association between diabetes duration and HRQoL.

This study also revealed that type 2 diabetes patients had a better health related quality life than type 1 patient. This result confirms the conclusion of Jacobson et al. compared HRQoL scores between 240 adults with T1D or T2D, and identified higher HRQoL in T2D after adjusting for demographic factors (i.e., age, marital status and education), diabetes complications, and diabetes duration [1]. In contrast, Finally, in two studies on youth with diabetes, HRQoL was lower among T2D individuals compared to those with T1D [92,93].

Conclusion

This study found that emotional distress, self-efficacy, perceived social support and self-management jointly predicted health related quality of life among the participants, meanwhile emotional distress and self-efficacy independently predicted health related quality of life. The study also found that there was a joint prediction of socio-demographic variables on health related quality of life. However, ethnicity and type of diabetes independently predicted health related quality of life. Identifying the above variable as contributing factors to health related quality of life therefore raises some important public health issues, particularly among the participants population. The findings also revealed that type 2 diabetes patients had a better health related quality of life than type 1 counterparts.

Implication and Recommendation

The above findings suggest that participants' emotional distress, self-efficacy and type of diabetes should be considered when examining health related quality of life of the disease persons. These study findings suggest the importance of having stable health related quality of life even when faced with health challenges. It is hoped that the result will help physicians, nurses, counselors, clinical psychologist and all other professionals who are involved in the care of people living with DM in Nigeria in other to improve their care. The result can as well serve as important tools to guide health care managers, government agencies and non-government organizations in resources allocation, especially in training and hiring health professionals. Findings will also be of benefit to patients living with DM on how to cope with the disease as well as been optimistic that the disease will not affect their life negatively. Findings may also be beneficial to resource experts who might want to rehabilitate people who always have negative attitude toward quality of life from proper health experts. Information gained from this study can be used to organize seminars, and conferences on the need for people living with DM to always have high self-efficacy toward their health challenges. The findings have contributed to existing knowledge relating to the attitudes of patients concerning their quality of life.

It is therefore recommended that individual, community, policy makers, government agencies and non-governmental agencies should ensure that measures are taken to regulate the level of emotional distresses faced by the DM patient and as well enhance self-efficacy in them. Consistent efforts should be made to educate the patient and create adequate awareness on the consequences of poor health related quality of life for the purpose of combating the menace of diabetes mellitus and other chronic health diseases.

Limitations and Suggestions for Future Studies

The participants for this study were selected from a single south-western public hospital, future research may consider a cross sectional study to include other public and private hospitals from the six geopolitical zones in Nigeria for adequate representation as well as wider scope in generalization of the result. Additional Independent variables should be considered in order to explore other factors that could contribute to health related quality of life. However, another major limitation of this study is the sample size used. It is still relatively small, the fact still remains that it did not represent the totality of DM patient in Abeokuta, Ogun state, Nigeria. Thus, a note of caution needs to be sounded when generalizing the study's findings. Future research may also consider the influence of different levels of emotional distress, self-efficacy, perceived social support and self-management as high, low or moderate levels on health related quality of life. This will allow for a deeper understanding of the subject matter.

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