Illness Severity as a Correlate of Quality of Life of Patients Living with Diabetes in a Nigerian Teaching Hospital

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Abstract
Background: Diabetes mellitus is a chronic disorder with a significant impact on the quality of life of the affected individual. **Purpose**: This study assessed the severity of diabetes symptoms and quality of life of patients living with diabetes and receiving care at the Obafemi Awolowo University Teaching Hospitals Complex, (OAUTHC), Ile-Ife, Nigeria. This is with the view to determining the impact of illness severity on the quality of life of these patients. **Method:** A descriptive design was adopted, 39 clients attending the Endocrinology Clinic in OAUTHC, Ile-Ife participated in the study. Data was collected using a questionnaire adapted from World Health Organisation Quality of Life Scale and analysed descriptively and inferentially. **Results:** Findings from this study revealed that 43.6% of the patients were experiencing severe symptoms of diabetes and 84.6 % had a good quality of life. There was a moderate, negative correlation (r=-0.402) between diabetes severity and the quality of life. Furthermore, there was a little, positive correlation (r=0.215) between patients' educational level and their quality of life. **Conclusions / Implications for Practice:** The study concluded that in spite of the diabetes symptoms, majority of the respondents had good quality of life and respondents with higher education were more likely to have a better quality of life.

Keywords: *Diabetes, Endocrinology Clinic, Illness Severity, Nigeria, Quality of life*

Introduction

Diabetes Mellitus is considered as a worldwide epidemic with more than 400 million individuals living with the disease (Standl, 2019; World Health Organization, 2016). This figure will likely increase to a staggering 690 million by 2045 (Cho *et al*., 2018). Type 2 diabetes is the most diagnosed with an incidence that ranges between 90% to 95% with more than a million new cases seen annually among the Americans (Portugal, 2017). In Australia, chronic diseases like diabetes have been recorded to have a high whopping figure contributing to over 70% of the disease burden; this is expected to increase to 80% by 2020 (Hamar *et al*., 2013; Jordan & Osborne, 2007). In the same vein, China, one of the most populous countries, also has 109.6 million adults living with diabetes, the highest worldwide (Hu & Jia, 2018), while India has the second highest rate of 69.1 million (Tripathy *et al*., 2017). In Africa, the prevalence rate of diabetes cases is estimated to be 25 million people while in Nigeria the number of adults living with diabetes is estimated as 4 million (Adeloye *et al*., 2017).

Clients living with diabetes mellitus (DM) must follow medical regimens, which include: diet, exercise, regular blood glucose monitoring and adherence to prescribed medications to ameliorate the risk of acute and chronic complications associated with the disease (Rubin & Peyrot 2001). These persons require life-long self-management, which may involve lifestyle changes to remain healthy (Schulman-Green, *et al.* 2012). They often feel overpowered by the needs that the ailment places on them and their loved ones (Shear 2012) Owing to its chronic nature, DM requires an extended period of management and individual care to forestall complications; it is also associated with huge financial and social costs to individuals, families and society (Gusmai, Novato & Nogueira, 2015). On medical wards in Nigerian hospitals, DM patients have a longer hospital stay and the highest medical bills with diverse complications, such as stroke, heart failure and lower extremity amputation from foot gangrene.

Expectedly, diabetes remains one of the costliest diseases to manage largely because of associated complications and comorbidities. This phenomenon has also been observed in a quarter to a third of all admissions in Nigerian medical wards (Fasanmade & Dagogo-Jack, 2015). All the aforementioned can be burdensome and may affect the quality of the life of such individuals irrespective of age and sex (Prajapati, Blake, Acharya & Seshadri, 2017). A study has shown that, even though there are available effective treatments, at least half of the patients living with diabetes do not achieve satisfactory glycaemic control (Kristensen *et al.*, 2001). The implication of this is that these people are at risk of unwarranted suffering from serious complications of the disease (Skovlund & Peyrot, 2005). Chronic complications of diseases are associated with high morbidity and mortality of diabetes and with a remarkable reduction in the wellbeing or quality of life (QoL) of patients (Spasić, Radovanović, Đorđević, Stefanović & Cvetković, 2014).

QoL is a valuable means of assessing the individual or population wellbeing and health status. The assessment of the patient's quality of life is recognized as an indispensable body of scientific knowledge. The concept of QOL can be described in relation to the state of health: satisfaction and wellbeing in the physical, psychological, socio-economic and cultural spheres (Gusmai *et al.*, 2015; Seidl & Zannon, 2004). WHO, defined QOL "as individual's perception of their position in life in the context of the culture and value systems in which they live in and in relation to their goals, expectations, standards and concerns" (World Health Organization; Group 1998 in Gusmai *et al.*, 2015). The physical, social and psychological environments of an individual directly impact their response to care and may contribute to their wellbeing.

Fasanmade and Dagogo-Jack (2015) reported that DM as a non-communicable illness had gained a tremendous influence in the sub-Saharan region and with a more devastating effect among Nigerians. In addition, individuals with DM are left with reduction in their life expectancy as well as QoL. This situation exposes the patient and families to various degrees of burden due to poor access to quality healthcare. Cong *et al.* (2012), and Scollan-Koliopoulos, (2013) opined that DM is associated with multiple medical complications that decrease the health-related quality of life (HRQOL) and contribute to suboptimal physical and mental functioning and earlier mortality. Papadopoulos *et al.* (2017) also argued that diabetes complications have important effects on patients' quality of life as well as socio-economic implications. Similarly, Papadopoulos *et al.* (2007) further established that measuring HRQOL in Type II DM is important to monitor the outcome of the conditions and this is increasingly used as an outcome measure to monitor the burden of the DM of the population. Jain, Shivkumar and Gupta (2014) also opined that health-related quality of life (HRQOL) is, therefore, a crucial concept motivating self-care in diabetes. Despite the array of studies on DM, little is known about the quality of life and its

contributing factors among adults with DM in Nigerian teaching hospitals. This study therefore assessed the quality of life of adults living with diabetes in relation to the severity of the disease and management among patients attending Endocrinology Clinic in a Nigerian tertiary health facility.

Methodology

A descriptive design was used. The study was conducted among 39 adult clients living with Type 2 Diabetes Mellitus (T2DM) attending the Endocrinology Clinic at Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC), Ile-Ife Nigeria between July and August 2018. OAUTHC is one of the leading teaching hospitals in Nigeria that render primary, secondary and tertiary services. The hospital enjoys a wide range of patronage from within and outside Osun State. OAUTHC comprises, among other wards and units, the Endocrinology Clinic where the study was conducted. The clients attending the clinic weekly were identified from the record book and selected consecutively for the study. The selected clients were approached on arrival at the clinic and informed about the purpose of the study. We obtained informed consent from the participants and only those who consented were enrolled in the study. Data was collected over a period of one month, which is the average time for the clients to return to the clinic for check-up. This was done to avoid repeatedly selecting the same set of clients**.** Instrument for data collection was a self-administered questionnaire with three sections; A, B and C. Section A contains socio-demographics; Section B assessed the severity of the condition and contains 7 items on the signs and symptoms of DM, including increased urine output, excessive thirst, weight loss, hunger, fatigue, skin problems and slow healing wounds. Questions were asked to assess the severity of each of the symptoms and options were rated on a 5-point Likert scale inquiring 'None = 0', 'Mild = 1', 'Moderate = 2', 'Severe = 3', and 'Very Severe = 4',. These scores were computed to 0-28 while 0 = None, 1-14 = Mild, 15-21 = Moderate and 22-28 = Severe Symptoms.

Section C was adapted from the World Health Organisation Quality of Life Scale (WHOQOL-BREF). The WHOQOL-BREF is a globally accepted and validated instrument to measure the quality of life of people living with diabetes. The instrument is self-administered and comprises a set of 26 items divided into four domains, namely: physical, psychological, social and environment. The instrument comprises 26 items on a 5-point Likert scale, inquiring individual perception and satisfaction with health within the past two weeks representing 'How Much', 'How Completely', How Often', 'How Good' or 'How Satisfied'. The WHOQOL-BREF has been validated and psychometric properties established (Carvalho-Lima *et al.*, 2017; Wakawa *et al.*, 2014). The questionnaire was administered by one of the researchers weekly for a period of 4 weeks.

Sampling Procedure and size

The target population comprised all the patients living with T2DM attending the Endocrinology Clinic at OAUTHC during the period of data collection. A purposive sampling technique was adopted. The inclusion criteria include all the T2DM patients 18 years and above attending the clinic that have the means of livelihood and or/ have family or relations that participate in their care. During the period of this study, the clinic had an average of thirty regular clinic attendees. Some came on weekly, bi-weekly or monthly bases, depending on their stability. Although many of them were seen repeatedly during the course of the study, they were only recruited once. The clinic patient record's were used as the sampling frame

Ethical Approval

The Ethics and Research Committee, Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Nigeria granted approval for the study with the approval number ERC/2018/07/04. Besides, permission to collect data from patients was obtained from the Head of Endocrinology Clinic OAUTHC, Ile-Ife. On each of the clinic days, all the patients were approached to participate in the study. They were educated about the purpose

of the study and their consent was sought. All consenting patients were administered the questionnaire.

Data Analysis

Data generated from the study was analysed descriptively and inferentially using the Statistical Package for Social Sciences version 20.

Results

Respondents' Socio-demographic Characteristics

Table 1 shows that the ages of the respondent range from 24-79 years with a mean of 57.15 ± 12.69 years and 51.3% being males, Christians (94.1%), married (79.5%) and from the Yoruba ethnic group (94.85). Also, more than half (51.3%) had tertiary education and 59% earned between N15000 and N30,000 monthly. Age: Range = 24-79, Mean = 57.15 (± 12.69)

Table 1 *Socio-Demographic Characteristics of Respondents*

Variable	Freq (n=39)	Per cent (%)
Age		
<30	2	5.1
31-40	2	5.1
41-50	4	10.3
51-60	14	35.9
61-70	14	35.9
>70	3	7.7
Sex		
Male	20	51.3
Female	19	48.7
Religion		
Christianity	37	94.1
Islamic	2	5.1
Marital status		
Single	5	12.8
Married	31	79.5
Widow/widower	3	7.7
Ethnicity		
Yoruba	37	94.8
Hausa	1	2.6
Igbo	1	2.6
Occupation		
Civil servant	10	25.6
Clergy	2	5.1
Retiree	11	28.2
Self-employed	15	38.5
Others	1	2.6
Income level/month		
5000-15000	10	25.6
15000-30000	6	15.4
30000-above	23	59
Educational level		
Primary	5	12.8
Secondary	12	30.8
Tertiary	20	51.3

Table 2 *Respondents Symptoms of Diabetes Mellitus*

Severity	Freq	Per cent (%)
Mild (1-14)	22	56.4
Severe (22 - 28)	17	43.6
Total	39	100

Table 2 shows that 56.4% experienced mild diabetes symptoms while 43.6% experienced severe symptoms.

Table 3 presents their quality of life. The study reveals that 84.6% have a good quality of life. A further analysis was conducted to explore the relationship between the severity of diabetes, quality of life and the educational level of the respondents using Pearson correlation analysis. The results revealed a moderate, negative correlation between diabetes and quality of life.

Table 3a: *Quality of Life of Respondents*

Domain	Minimum score	Maximum score	Mean score	SD	% of participants who scored above the mean
Physical	12	29	20.8	7.2	71.7
Psychological	9	18	13.9	3.1	72.2
Environment	12	24	16.8	3.3	70
Social	3	10	7	2.1	70

Table 3b: *Summary of Quality of Life of Respondents*

Quality of life	Freq	%
Poor (<48)	2	5.1
Good (48-76)	33	84.6
Very good (>76)	4	10.3
Total	39	100

Also, there is a little, positive correlation between educational level and quality of life (Table 4).

Table 4 *Correlation between Diabetes, Educational Level And Quality Of Life*

Pearson Correlation

	Diabetes severity	Quality of life	Educational level
Diabetes severity	1	-0.402	-0.142
Quality of life	-0.402*	1	0.215
Educational level	-0.142*	0.215*	1

*Correlation is significant at the 0.05 level (2-tailed)

Discussion

This study assessed the quality of life of the patients living with diabetes attending care at a tertiary health facility in South-western Nigeria. Results from this study revealed that majority (43.6%) of the participants have severe experiences of diabetes symptoms. This supports the Rwegerera *et al.* (2018) and Rajagopalan (2005) studies, which revealed that diabetes is regularly associated with serious short term complications.

Although some authors (Issa and Baiyewu (2006 & Tennvall and Apelqvist, 2000) have confirmed that patients with diabetes have poor QoL, however, Oliva, Fernández-Bolaños and Hidalgo (2012) in their study concluded that the QoL of an individual living with diabetes may not be lower than that of others without diabetes. This report is in tandem with findings from our study where a higher percentage of the respondent (84.6%) have a good quality of life. This also correlates with a study by Amelia, Lelo,

Lindarto and Mutiara (2018) that ascertained that a vast majority of patients with T2DM are in good QoL in three domains of QoL, namely: physical health, social relationship and Environment health.

According to the report of Tadele (2015), compliance with basic necessities of managing diabetes can affect the QoL of persons of all ages. Similarly, Tavakkoli and Dehghan (2017) argued that quality of life in all dimensions in patients with diabetes was less than healthy people impressively. In addition, Daneshvar, Khodamoradi, Ghahazanfari and Montazeri (2018) summated that individuals living with diabetes had a notable lower score in some domains of QoL, namely: physical functioning, role limitation due to physical functioning, role limitation due to emotional wellbeing, vitality, social function, bodily pain and general health. Scholars have documented that control of the risk factors associated with vascular diseases is an indispensable role for an enhanced quality of life (Oliva *et al*., 2012). This disparity among different authors may be due to the effectiveness of health care delivery and the personal beliefs of respondents.

Findings from this study have also shown that there is a negative correlation between diabetes severity and quality of life. This is consistent with previous studies that documented that negative relationships between diabetes severity were evidently associated with poorer QOL (Dhillon, Nordin & Ramadas (2019). Similarly, Currie (2006) also established that the severity of diabetic peripheral neuropathy symptoms was predictive of poor health- related utility and decreased quality of life. However, Yazdani-ibn-Taz (2019) established that there was a positive association between dry eye disease severity and impact on QoL in participants with diabetes.

Furthermore, findings from this study revealed that educational level is positively associated with the QoL of respondents. This supports Flatz *et al*. (2015), who reported a significant association between diabetic care and educational status. Patients with higher education level reported better health-related quality of life. Al Hayek, *et al*. (2014) in their study observed that patients with a high school education or less had at least one poor HRQOL outcome. Similarly, Papadopoulos (2007) submitted that lower education is associated with impaired HRQOL and further argued that education is an important discriminator of HRQOL in Type II diabetics. In another study, Alshayban & Joseph (2020) reported that patients having primary education or lower reported severe-extreme impaired HRQoL compared to patients having higher education.

Moreover, Sacerdote *et al*. (2012) examined the influence of educational level on the risk of T2DM and observed that educational level is inversely related to the risk of T2DM. In addition, Khunti *et al*. (2012) reiterated the importance of education in the detection and effective treatment of diabetes. The authors further suggested that diabetes education may promote patients' willingness to take-up and comply with new comprehensive diabetes management regimen (Khunti *et al*., 2012). Similarly, previous studies have established a significant effect of education on the QoL of individuals with diabetes (Ghasemi, Hosseini & Sabouhi (2019). Kueh, Morris, Borkoles & Shee, 2015; Spasić *et al*., 2014). Furthermore, Rwegerera *et al*. (2018) also supported that a lower level of education, was associated with worse QOL outcomes. Similarly, they established a significant effect of education on the QoL of individuals with diabetes (Kueh *et al*., 2015; National Bureau of Economic Research, 2019; Spasić *et al*., 2014). Furthermore, Rwegerera *et al*. (2018) also supported that a lower level of education was significantly related to a worse QOL outcomes

Recommendations
Findings from the study showed that despite the severity of diabetes symptoms, majority of the respondents had good quality of life. Health care practitioners should health

educate clients about the cause, course, prognosis and common manifestations associated with diabetes during the routine clinic. They should also encourage the verbalization of feelings and encourage the optimization of the quality of life by educating patients on diets, exercise and drug usage. Health related programmes that will enhance the quality of the life of patients living with diabetes should be promoted by governments and non-governmental organisations. Primary Health Care should be empowered to effectively screen and manage diabetes; this will enhance a large coverage of the community

Limitations The results of the current study should be considered in light of its limitations. The small sample size limits its statistical power. The small sample may be connected with many factors that are associated with adherence to clinic appointment. These include financial status, satisfaction with care and worsening illness. As a result, repeated visits to the hospital were made to recruit participants. Therefore, the results may not be representative of all DM patients. However, findings from the current study provide significant insight into the relationship between the severity of DM and QoL in Nigeria and other countries with similar settings.

Conclusion
This study concluded that despite the severity of diabetes symptoms, majority of the respondents had a good quality of life. In addition, a negative correlation exists between the severity of diabetes illness and the quality of life.

Conflict of Interest
None

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