The Perceived Quality of Life amongst Diabetic Patients Attending the Outpatient Department at a District Hospital in South Africa

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Abstract

Diabetes is one of the most prominent chronic diseases in the world today. South Africa has the highest prevalence of this disease in Sub-Saharan Africa. The purpose of treatment is not solely symptom remission but a comprehensive approach to enhancing the overall quality of life despite the limitations connected with the disease. The study aimed to assess the influence of socio-demographic factors with the perceived quality of life amongst diabetic patients attending the Outpatient Department at a District Hospital in Gauteng Province, South Africa. A cross-sectional study was undertaken on 270 diabetic patients from November 2016 to January 2017 in a district hospital. A researcher-administered questionnaire, using the modified version of the Short Form 36 -2 tool, was used to collect data on the socio-demographic, clinical characteristics, and quality of life. The analysis included descriptive statistics and logistic regression. The mean age was 55 years, and the seventy-four percent of the participants had been diagnosed with diabetes within the past five years. The mean scores for quality of life were 50.44 and 51.38 for the Physical Component Summary and the Mental Health Component Summary, respectively. Regression analysis showed that being married, having education, and not having co-morbid diseases were protective factors associated with the physical component of quality of life. Health workers should consider symptom stressors, functional status, emotional well-being/mental health, and the multiple chronic diseases of the patients during the assessment. Allied health workers play a significant role in the life of diabetic patients.

Keywords: Diabetic patients, Emotional wellbeing, Quality of life, Sociodemographic.

Introduction

Diabetes mellitus, a non-communicable disease, has become a public health challenge. There are four hundred and twenty-two million people living with diabetes mellitus in the low- or middle-income countries, with 1.5 million deaths in worldwide [1] and 321,100 deaths in Africa. Countries affected by Diabetes mellitus in Africa are South Africa, the Democratic Republic of Congo, Nigeria and Ethiopia, and it is stated that it will increase from 14.2 million (2015) to 34.2 million by 2040 [2]. The primary goal of diabetes mellitus is to improve the quality of life (QOL) through early diagnosis and treatment. There are 4 different components to assess the quality of life (physical, mental, cogitative, psychological, and social components) [3]. Although the Quality of Life (QOL) of patients with diabetes is not a new concept in the literature, there was a paucity of local information among diabetic patients in South Africa on health-related quality of life (HRQOL). The impact of the disease on a patient's QOL is often ignored during the consultation with health workers.

There are various tools used to measure QOL. These include Short Form-36(SF-36), Euro QOL (European quality of life), EQ-5D (EuroQOL-5

dimensions), QWB-SA (Quality of well-being questionnaire) and WHOQOL-Bref (the World Health Organization quality of life-Brief), etc. [4].

Ugandan study reported the commonest age group to be below 50 years, followed by 50-59 years [5]. The Pretoria study [6] showed that a majority (54%) of the patients were married, followed by those who were widowed (29%). The high proportion of elderly participants (36%) in this study probably explains the high percentage of widowed subjects. Similarly seen in an American study [7]. The Pretoria study showed that widows had significantly poorer QOL than married or single respondents (p< 0.01). Married and divorced subjects had significantly worse QOL when compared to their single counterparts in the UK study (p< 0.05 and < 0.01, respectively).

A study conducted in America showed that the quality of life was low amongst diabetic patients [8]. A population study using the SF-36 questionnaire conducted in Australia [9] to assess the quality of life with diabetes and depression showed that there were more patients with depression compared to non-diabetic patients (24% vs 17%). The mean score was low (43) and (48.6) for physical and mental component summaries.

Methods

Design and Sample Size

A descriptive cross-sectional study was undertaken on 270 diabetic patients over a three-month period (1 November 2016, to 31 January 2017) in a district hospital in South Africa. Patients included were 18 years and older, had been diagnosed with diabetes mellitus for at least one year (Type 1 and Type 2), and provided consent. The exclusion criteria were those who had diabetes in pregnancy, who were too ill to participate, those who were seen after normal working hours, in casualty or during weekends, and those who had participated in the pilot study. Three hundred and seven patients were approached, 17 declined, 290 patients were

willing to participate, but 20 were excluded as they were less than 18 years, had DM less than 1 year and were too ill to participate. The total number of participants for the study was 270.

Site

The study was conducted at the outpatient department of Dr Yusuf Dadoo Hospital, a public district hospital in Gauteng, South Africa, that caters for two third of the district with various types of patients (informal, rural, semi-urban and urban areas). The outpatient department operates from Monday to Friday (08:00-16:00), and five doctors care for an average of 120 patients daily. Between 100 and 150 diabetic patients seek consultation each month.

Measuring tool

A researcher-administered questionnaire, written in English, was modified from a previously validated tool (SF-36 version 2). The questionnaire contained the socio-demographic factors, clinical factors and quality of life.

The SF -36 v2 Health survey [10] is a generic measure of health status with 36 questions that yields an eight-scale profile of functional health and well-being, as well as two psychometrically based physical and mental health summary measures and a preference-based health utility index. It has proven useful in surveys of general and specific populations, in comparing the relative burden of diseases, and in differentiating the health benefits produced by a wide range of treatments.

The SF-36-v 2 questionnaire was of interest for this study for the following reasons: high internal consistency and reliability on all scales of the questionnaire. The Cronbach's alpha was 0.76–0.86 and was used in diabetic patients in different countries. It has high construct validity, is sensitive to change, has been adapted in 29 countries and has been translated into over 30 languages including English and Afrikaans.

In South Africa, the SF36 questionnaire has been used to assess QOL in patients with chronic

diseases (such as rheumatoid arthritis and HIV), and surgical patients discharged from ICU. Since no study had used the SF-36 questionnaire for diabetic patients in South Africa, the researcher thought that it would be a useful measuring tool.

The SF-36 questionnaire had 36 items measuring eight scales of health: social functioning vitality, role limitations due to emotional problems, mental health, physical functioning, role limitations due to physical problems, body pain, and general health perception. There was a single unscaled item asking respondents about health changes over the past year.

These eight scales of health were summarized into two major components.

1. The physical component summary comprising physical functioning, role limitations due to physical problems, body pain and general health perception.
2. The mental health component summary comprising social functioning, vitality, role limitations due to emotional problems and mental health.

For each scale of the SF-36 questionnaire, item scores were coded, summarized, and transformed onto a scale from 0 (lowest well-being) to 100 (highest well-being).

Participants with scores of <50% were classified as low QOL, and participants with scores of ≥50% were classified as high QOL. This was done in accordance with the standardized scoring (<50= low QOL, ≥50 = high QOL) for the SF-36 summary scores (PCS and MCS). In this study, the researcher chose 50% of the total score of PCS and MCS as the cut-off point in categorizing the QOL as high or low.

Data Collection

A nurse at the outpatient reception who screens the patients directed all the diabetic patients to the researcher's consultation room. The researcher explained the research, patient information leaflet and the consent form to the patients.

Each patient was given an information sheet (which explained the purpose of the study and provided contact details of the researcher) and a consent form. Those who signed the consent form were now seen by the researcher. The patients who refused to participate in the study were taken back their spot in the queue to be seen by another doctor. The patients were first seen for their problems, and then the researcher would interview the participants. Each completed questionnaire was kept in a box and taken by the researcher at the end of the day. It was kept in a closed cupboard for the confidentially and safety of the files.

All files were colour-coded to avoid repetition of the patients, but identifying data were excluded to guarantee anonymity. Captured data was transferred to MS Excel, which was password-protected, and only the main researcher knew the password.

Data Analysis

The data was captured and analysed in Stata 12. Descriptive statistics such as frequency and percentages were used on socio-demographic features, a physical component summary (PCS) and a mental component summary (MCS). The associations between socio-demographic features and PCS/MCS were tested using chi-square and logistic regression. Statistical significance was considered if the P-value was ≤0.05 and the confidence interval was 95%. Ethical approval was granted by Witwatersrand University (M160215).

Pilot Study

A pilot study was conducted on eight participants in August 2017 to test the questionnaire and get an estimated time for the participants to read the information leaflet and answer the questionnaire. It was concluded that no questions needed modification, and it could be answered within 20 minutes. The

respondents, data and results were not used for the actual study.

Result

The mean age was 55.1 ± 8.6 with the age group (50-59 years). Most of the respondents were black (68%), South African (92%), married (53%), females (60%) who had a primary school education (50%), were employed (52%), and had a monthly income of < R5 000 (55%). (Table 1). Table 2 shows that the majority (74%) of respondents have been diagnosed with diabetes within the previous 5 years.

Table 1. Socio-demographic Characteristics of the Study Respondents

Characteristics	Frequencies (N=270)	Percentages (%)	Mean ± SD
Age (years)			
≤ 39	12	4.44	55.1 ± 8.6
40-49	62	22.96	
50-59	116	42.96	
> 60	80	29.63	
Gender			
Male	109	40.37	-
Female	161	59.63	
Country of birth			
South African-born	249	92.22	-
Foreign-born	21	7.78	
Race			
Black	184	68.15	-
White	45	16.67	
Coloured	41	15.19	
Level of education			
No educational background	38	14.07	-
Primary	135	50.00	
High school and above	97	35.92	
Marital status			
Single	28	10.37	-
Married (married and cohabiting)	142	52.59	
Divorced/Separated	67	24.81	
Widowed	33	12.22	
Income			
< R5,000/month	149	55.18	-
≥R5,000/month	121	44.81	
Source of income			
Employment	111	41.11	-
Pension	4	1.48	
Depending on family member	84	31.11	
More than one source	71	26.30	
Number of dependents			
None	2	0.74	-

1-2	97	35.93	
3-4	142	52.59	
>4	29	10.74	
Employment			
Unemployed	129	47.78	-
Employed	141	52.22	
Unemployed Category N=129			
No work	84	65.12	-
Pensioner	45	34.88	

Table 2. Diagnosis of Diabetes of the Study Respondents

Time of diagnosis of Diabetes	N	%
< 5 years	71	26.30
≥ 5 years	199	73.70

Figure 1 shows that sixty-two percent of participants reported low quality of life in the physical component, with a minimum score of 28 and a maximum of 83, and a mean score of ±SD (50.44 ±12.3). Sixty-three percent of the participants reported low QOL in the mental health component, with a minimum score of 33 and a maximum score of 90 and a mean score of ±SD (51.38 ±11.53). Only Physical and social functioning were score high.
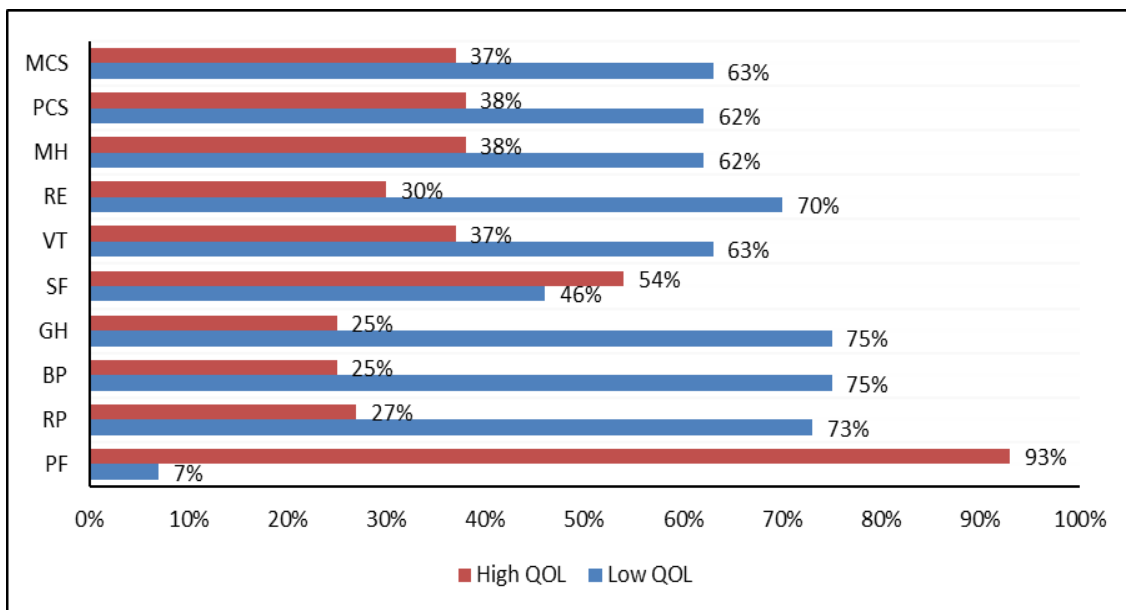
Figure 1. Physical and Mental Health Component Summaries of the QOL Perceived by Diabetic Patients

X axis: Perceived percentage & Y axis: Different components of the Physical and mental health summary

Note

MCS: Mental Health Component Summary; PCS: Physical Component Summary; MH: Mental Health; RE: Role limitations due to emotional problems; VT: Vitality; SF: Social Functioning; GH: General Health; BP: Body Pain; RP: Role limitations due to physical problems; PF: Physical Functioning; QOL: Quality of life.

Table 3 shows that those above 60 years of age is 24 times were 24 times more likely to report low quality of life when compared to those below 40 years of age (OD 24.1, P= 0.006,

CI 2.47-235.23). Those with primary school education were less likely to report low quality of life (OD 0.21, P=0.05, CI 0.04-1.02) when compared to those with no education.

Married people were less likely to report low quality of life when compared with single people (OD 0.03, P=0.05, CI 0.10-0.99). Similarly,

widowed were less likely to report low quality of life. (OD 0.09, P=0.04, CI 0.01-0.91).

People with no co-morbid disease were less likely to report low quality of life when compared to those with co-morbid disease (OD 0.34, P=0.01, CI 0.14-0.80).

<p align="center">Table 3. Quality of Life and Sociodemographic Feature</p>

Variables for Physical component summary	Odds ratio	P value	95% CI
40-49	0.50	0.37	0.11-2.25
50-59	3.13	0.22	0.51-19.50
>60	24.10	0.006	2.47-235.23
Primary	0.21	0.05	0.04-1.02
High school and above	0.78	0.76	0.15-3.97
Married	0.30	0.05	0.10-0.99
Divorced	1.72	0.48	0.38-7.70
Widowed	0.09	0.04	0.01-0.91
≥ 5 years	1.45	0.52	0.46-4.52
No comorbid disease	0.34	0.01	0.14-0.80
Variables for Mental health component	**Odds ratio**	**P value**	**95% CI**
50-59yrs	0.78	0.74	0.18-3.42
Married	2.56	0.22	0.56-11.57
Divorced	1.60	0.48	0.43-6.04
≥ 5 years	1.72	0.61	0.21-14.09
No comorbid disease	0.58	0.43	0.15-2.25

Discussion

The study was evaluating the quality of life amongst diabetic mellitus patients in a district hospital and if socio-demographic factors contributed to these changes.

The mean score in the physical component of QOL (50.44) was higher than the Australian and American studies, where mean scores were 43 and 46.06, respectively. In the current study, the physical functioning (PF) was reported to have the highest score, which showed that the diabetic participants were able to carry out basic activities such as carrying groceries, sweeping, climbing a few stairs, and walking 100 meters. Body pain (BP), role limitations due to physical problems (RP) and general health (GH), were reported to have affected them, and their scores were low. Black South African diabetic patients tended to have poorer general health and more body pain than the healthy black patients. This means that symptom distress might be a primary factor for low scores in the physical component of QOL. An American study confirms this statement by stating that there was a strong association between greater symptom distress and low HRQOL among low-income older African. Symptom distress was a major determinant of HRQOL in patients with type 2 diabetes.

The mean score in the mental health component of QOL (51.38) was lower than the Australian and American studies, where their mean scores were 53.4 and 58.52, respectively. In the current study, the social functioning (SF) item of the mental health component showed that they could engage in normal social activities with family, friends and neighbours, or groups.

This contradicted the Pretoria study, which suggested that social functioning reflected the residential area of the participants and that insecurity or lack of facilities limited their social activities. The other items of the mental health component (role limitations due to emotional problems [RE], vitality [VT] and mental health [MH]) of this study were scored and reported low by most of the patients.

Religion had a positive effect on the physical and mental well-being of the health outcomes of the individuals in the American study, and this current study did not examine the relationship as it was not part of the objectives.

Depression was also a factor in the above study, and it has been proven that clinical depression is common amongst diabetic mellitus patients. We need to explore for depression during our consultation and treat it which will improve the quality of the patients.

The mean age (55.1 ± 8.6) in this study was slightly lower than the Kenyan study (56.4 years) and very low when compared to studies from developed countries. This might be a reflection that patients are better cared for and live longer in developed nations before they develop a non-communicable disease.

The most common age group in this study was similar to other studies in this country. Either diabetes mellitus is more common in middle-aged populations than the younger populations or patients in the middle-aged group seek more medical help than other age groups.

The study conducted in Pretoria showed that physical function, role function and general health (three of the four scales of the physical component of QOL) were poor in the older group than their younger counterparts. Similar findings were seen in the current study(P=0.00). It is very difficult to specify that diabetes mellitus was the cause as there are many changes in this older age group, and it can be considered as a confounding factor.

The majority of the diabetic participants were primary school attendees in most of the studies except for the Alberton study, where they were high school attendees. A systematic review proved that lower educational levels were a predictive factor to impaired HRQOL. The study showed that education was a protective factor in the physical component (p= 0.004). Education in patients have proven to prevent many diseases and death. We should encourage the community to educate themselves as we can use it to teach preventive measures like exercise and a balanced diet.

Employment seems to be a protective factor in both physical and mental health components of QOL (P= 0.000). Other studies have shown a significant association between employment and high QOL score. The Pretoria study showed that employed respondents had significantly better physical and role functioning, mental and general health, and less body pain than unemployed respondents (p< 0.01). Employment improves their physical, and mental state and quality of life.

Married diabetic patients tend to seek more medical help than their counterparts in most of the studies reviewed [11]. The current study showed that separated/divorced participants had low QOL when compared to their single counterparts in the physical and mental health components (P= 0.007 and 0.030, respectively). This is similar to the UK study [11], in which significantly worse QOL was reported in divorced subjects compared to their single counterparts. The Pretoria study showed that widows had significantly poor physical and role functioning and more body pain than married or single respondents. Being married was a protective factor (p= 0.05) in the current study. During a patient consultation, it is important to consider the marital status of the patient as it has an impact on their lifestyle.

The current study showed that participants who had equal to or more than five years duration of diabetes were seven times more likely to have low QOL in the physical component, which concurs to the Kenyan study. The Alberton study [12] did not find any significant relationship, but the Kenyan study

reported the physical domain to be significantly related to the duration of diabetes, using the WHO-QOL BREF tool. However, all the studies used different measuring tools. A systematic review of QOL in diabetic patients in a primary care setting in Nordic countries stated that the duration of diabetes is one of the predicting factors of impaired HRQOL. The longer the duration of diabetes, the poorer the QOL, a non-modifying factor. We need to educate the community to prevent diabetic mellitus.

Various studies have looked at the relationship between co-morbid diseases and the QOL, but no significant correlation was found. Having no co-morbid disease was a protective factor in the physical component of QOL (p= 0.01). This finding contradicted the above studies.

The limitations of the study were the following: A cross-sectional survey was used to explore the prevalence of QOL in diabetic patients, it could have weakened the strength of the study. A qualitative study would have given a better understanding of QOL among these participants, but due to time constraints, the researcher decided to use the SF-36v2 tool, which looked at the perceptions of the participants in a quantitative manner. A qualitative method is recommended for future studies. Reporting bias cannot be fully excluded as a convenient sampling method was used, and the results were dependent on the participants' self-reporting on QOL. This might have affected the mean score of the items in the SF-36v2.

In summary, symptom stressors, mixed co-morbid diseases, duration of diabetes, functional limitation due to emotional, and physical problems and depression might be associated with low QOL in the current study.

Conclusion

Quality of life in diabetic patients has been assessed worldwide by using various measuring tools, which were cited in the literature section of this study. This study showed that there was poor quality of life amongst diabetic patients. Marital status, education, employment, income, co-morbid disease, and the onset of diabetes must be considered during the consultation as it has an impact on the quality of life. Recommendations are:

A holistic approach in managing a diabetic mellitus patient should consider symptom stressors, functional status, emotional/mental well-being and multiple chronic diseases during clinical assessment of a diabetic patient; Support group and social gathering should be implemented for these patients; Further studies should examine the effects of depression, religion, and QOL of diabetic patients.

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Conflict of Interest

The authors declare that there are no competing interests in this article.

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