



Quality of Life Among the Type 2 Diabetes Mellitus Clients in Tabuk, Saudi Arabia

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Abstract

Objective: The objective of this study is to assess the quality of life using the D39 questionnaire in the patients of diabetes Mellitus in Tabuk, KSA.

Background: The emerging rise in number of diabetes and rising complications need special attention by the health care providers. One of the key management of the diabetes is on the self-effort of the patients. Compliance is the best way to control diabetes and to prevent its complications. The behavior of the client on the health advices helps to control diabetes. Enlightening and encouraging patient to manage diabetes can go a long way in lowering the burden of diabetes, on health care services. Primarily focuses in enhancing quality of care to those domains that considered to be areas of poor quality of life. Furthermore, the result may give a clear understanding about the factors that affect quality of life that can contribute in disease management, self-care management, effective ways in prolonging quality of life and to lessen the sufferings of the patients with diabetes.

Methods: A Cross sectional study was conducted among the type 2 diabetes mellitus clients from the diabetic clinic in Tabuk city, KSA. Sample size was 75. This study was carried out for the period of 6 months. Convenience sampling method was used to select the participants. The Diabetes 39 (D-39) Instrument Evaluation, containing five dimensions: energy and mobility (15 items), diabetes control (12), anxiety and worry (4) social overload (5) and sexual behaviour (3), was used to collect the data.

Results and Discussion: The results of this study revealed that the nearly half of the clients who participated in this study was hypertensive (48%). Nearly one fourth of the clients were suffering from diabetes more than 10 years. The mean scores on the quality of life questionnaire dimensions include, Energy and mobility: Mean-42.88, SD-17.57, Diabetes Control: Mean-37.65, SD-13.54, Anxiety and worry: Mean-11.01, SD-4.88, Sexual behavior: Mean- 9.07, SD-5.4, Social burden: Mean-13.15, SD-5.43. Overall scores in the QOL shows improvement is needed in all the subsections.

Conclusion: This study identified the impact of clients self-perceived quality of life. Most of the studies have reported the similar findings. These results indicate the necessity of improving the quality of life (QoL) of client with diabetes and strengthening diabetes education program.

Keywords: Quality of Life; Diabetes Mellitus; Saudi Arabia

Introduction

International Diabetes Federation (IDF) [1] had reported that in the world 463 million people have diabetes and 55 million people in the MENA Region. They also reported that the prevalence of diabetes in KSA among adult population about 18.3%. Centers for Diseases control and Prevention (CDC) has listed diabetes as one of the common problems on the Saudi Arabia. Many of studies have highlighted that this is one of the alarming issue in Saudi Arabia, which need special attention by the Ministry of Health. One of the key management of the diabetes is on the self-effort of the patients. Compliance is the best way to control diabetes and to prevent its complications. The behavior of the client on the health advices helps to control diabetes. Enlightening and encouraging patient to manage diabetes can go a long way in lowering the burden of diabetes, on health care services. This study will be focused on quality of life among the diabetic patients in Tabuk, Saudi Arabia. This study will also focus on the important associated factors such as age, gender, hypertension, obesity, duration of diabetes and regularity in treatment.

Diabetes is one of the most worldwide prevalent chronic diseases that impact the quality of life. The aim of the diabetic treatment is not only on the medications, it goes beyond that. It depends on the quality of life.

Low compliance to treatment regimens is a complex problem among the care of chronic illness including diabetes. It leads to high prevalence of complications. Dietary modifications, exercise regimen, medications and monitoring blood glucose levels are very important part of management on the self-care part of the client [2,3].

A study at the University Diabetes Center in Riyadh reported 78.7% had negative (i.e., unfavorable) ADDQOL scores. This study also reported with the significant association between the degree of control, duration of diabetes and complications [4].

A cross-sectional survey was conducted in the Al Hasa region during the period of June 2010 to June 2011 had reported the therapeutic non-compliance of the participants was 67.9%. This study also highlights the factors influencing the non-compliance are fe-

male gender, level of education, urban population, irregularity of the follow-up, non-adherence to drug prescription and non-adherence to exercise regimen [5].

Various studies had reported different level of compliance and quality of life due to diabetes. Most of them are to the lower scores [6]. Prevention of complication is one of key management in the diabetes. Good compliance rates will also help to improve the quality of life and prevention of complications. Hence this research is aimed to assess the quality of life, glycemic control and level of compliance. The result of this study will be useful to the health care providers in caring diabetes clients.

The purpose of the study is to measure the quality of life among the clients with Diabetes. Very few studies were conducted on the aspect quality of life among the diabetes clients in Saudi Arabia. Especially in tabuk region no studies were conducted. The outcomes of the research will be utilized by the health care professionals in caring of the Diabetes clients.

Background of the Study

A study among the diabetic foot ulcer clients at King Chulalongkorn Memorial Hospital, Bangkok, Thailand suggested that good quality of life is significantly related to good diabetes self-management and fasting blood sugar control in type 2 diabetes patients with foot ulcer [7].

In a study from Saudi Arabia among the Adolescents reported a cumulative mean HRQoL score of 64.8 and their parents had reported significantly lower scores of 60.3 ($p = 0.003$). The lowest scores reported by both of them were for "Worry". These findings from this study identified the importance of an interdisciplinary, biopsychosocial and family centered care approach to adolescents with a chronic disease [8].

In a study of Trikkalinou, A., Papazafiropoulou, A. K., and Melidonis, A. [9] about Type 2 diabetes and quality of life concluded that diabetic's QoL becomes worse when complications start to develop or comorbidities coexist and affects major components of QoL which differs in terms of ethnicity, environment, gender socioeconomic status, culture, profession dietary and lifestyle habits do exist.

A result of study conducted in Diabetes clinic in Birjand that the mean scores for quality of life and VAS were significantly higher in the men, employed and patients < 50 years age. The quality of life for the type 2 diabetes patients is affected by numerous factors including sex, occupation, duration of the disease and the presence of complications such as neuropathy and nephropathy [10].

A systematic review and meta-analysis conducted from January 1st 2000 to May 31st 2016 to find out the related factors of QOL of type 2 diabetes patients. The result study showed that the longer duration of having diabetes could cause the worse QOL, complications could affect the QOL of type 2 diabetes patient, physical exercise help prolong patients' QOL and diet control had no significant association with the QOL of type 2 diabetes [11].

Research objectives

- To assess the quality of life among the Diabetes Clients.
- To determine the percentage of clients in compliance to the treatment regimen.
- To assess the relationship between the quality of life and the selected socio demographic variables.

Methodology

Study setting and design

This prospective cross-sectional descriptive study was conducted in the Diabetic clinic, Tabuk, Saudi Arabia. Patients were recruited by convenience sampling. Clients aged above 18 years who were able to speak Arabic or English were included in the study. Patients who were diagnosed by the diabetic clinic were included for the study. Totally 75 clients were included for the study.

Inclusion criteria

- The clients who are with the diabetes were included.
- The clients who are suffering from disease more than one year were included.
- The clients who are diagnosed by the clinic were included.
- The clients who were willing to participate will be included for the study.

Exclusion criteria

- The clients who were not interested were excluded from the study.
- The clients who were not stable were excluded from the study.

Data collection

The diabetes clients were interviewed by Diabetes (39) Quality of life questionnaire (Boyer and Earp, 1997). Initially, the researchers obtained permission to use the D-39 questionnaire. The D-39 includes 39 items in five domains, specifically energy and mobility (15 items), diabetes control (12 items), anxiety and worry (four items), social and peer burden (five items), and sexual functioning (three items). The clients scores were recorded in Seven point scale which ranging from 'not affected at all' to 'extremely affected'. The tool consists of two sections. Section A- Socio demographic variables and Section B- Diabetes (39) Quality of life. The participants were given instruction about the aims, procedure and benefits of the study. Consent was taken before the interview.

Ethical consideration

This study was approved by department Ethical Committee. The researchers obtained permission for conducting the study. Confidentiality and anonymity of participants was maintained in this study. The purpose and procedures of the study was explained to the participants. The participants were explained that the participation is purely voluntary and at any time they can withdraw from the study.

Results and Discussion

The Statistical Package for Social Sciences (IBM SPSS Statistics 20) software was used for analysis.

Table 1 shows the percentage distribution of the study sample based on the demographic characteristics. One fourth of the study participants were less than 30 years (25.3%). Only 14.7% of the study participants were more than 61 years old. More number of male participated in the study (56%). Among the study sample nearly half of them were hypertensive. Among the study partici-

Demographic variables	Sections	f	Percentage
Age	Less than 30	19	25.3
	31- 40 years	16	21.3
	41-50 years	18	24
	51-60 years	11	14.7
	More than 61 years	11	14.7
Gender	Male	42	56
	Female	33	42
Hypertension	Yes	36	48
	No	39	52
Duration of Diabetes	Less than 5 years	27	36
	6-10 years	24	32
	More than 10 years	24	32
BMI	18.5 to <25	19	25.3
	25.0 to <30	23	30.6
	30.0 or higher	33	44
Treatment	Following regular treatment regimen	45	60
	Not following the regular treatment regimen	30	40

Table 1: Demographic findings (N = 75).

pants 36% were having diabetes less than 5 years, nearly one third of them between 6-10 years and nearly one third of them were having diabetes more than 10 years old. Nearly half of the study participants fall in the category of obesity and 30 per cent of the study population were overweight. More than half (60%) of the study samples were following up the regular treatment.

Table 2 shows the median, the mean and standard deviation of the domains and the total score of the D-39 obtained by the study

subjects. 15 items related to the category of energy and mobility. 12 items were related to Diabetes control. 4 items were related to anxiety and worry. 5 items were related to social burden and 3 items related to sexual behaviors. In all the sub section the mean scores were low (Energy and mobility: Mean-42.88, SD-17.57, Diabetes Control: Mean-37.65, SD-13.54, Anxiety and worry: Mean-11.01, SD-4.88, Sexual behavior: Mean- 9.07, SD-5.4, Social burden: Mean-13.15, SD-5.43). Over all mean scores also low (Mean-113.76 with SD-38.55).

QOL Subsections	Energy and Mobility	Diabetes Control	Anxiety and Worry	Sexual Behavior	Social Burden	Quality of Life among Diabetes patients
Mean	42.88	37.65	11.01	9.07	13.15	113.76
Median	35.00	38.00	10.00	7.00	12.00	107.00
Std. Deviation	17.576	13.545	4.889	5.451	5.434	38.559
Minimum	17	15	4	3	5	48
Maximum	85	76	25	21	29	200

Table 2: Mean, Median and standard deviation of the subsections of Quality of Life Scale (N - 75).

Energy and Mobility	1 n (%)	2 n (%)	3 n (%)	4 n (%)	5 n (%)	6 n (%)	7 n (%)
3. Decrease or lack of energy	15 (20%)	24 (32%)	11 (14.7%)	13 (17.3%)	7 (9.3%)	3 (4%)	2 (2.7%)
7. Other health problems besides diabetes	33 (44%)	13 (17.3%)	11 (14.7%)	7 (9.3%)	5 (6.7%)	2 (2.7%)	4 (5.3)
9. Feeling of weakness	23 (30.7%)	16 (21.3%)	12 (16%)	9 (12%)	10 (13.3%)	4 (5.3%)	1 (1.3%)
10. Restrictions on how far you can walk	15 (20%)	19 (25.3%)	12 (16%)	11 (14.7%)	5 (6.7%)	6 (8.0%)	7 (9.3)
11. Need to perform exercise regularly	20 (26.7%)	14 (18.7%)	14 (18.7%)	9 (12%)	9 (12%)	4 (5.3%)	5 (6.7%)
12. Loss of Vision and blurred vision	26 (34.7%)	15 (20.3%)	8 (10.7%)	14 (18.7)	4 (5.3%)	4 (5.3%)	4 (5.3%)
13. Not being able to do what do you want	19 (25.3%)	18 (24%)	13 (17.3%)	11 (14.7%)	7 (9.3%)	5 (6.7%)	2 (2.7%)
16. Disease other than diabetes	15 (20%)	13 (17.3%)	13 (17.3%)	13 (17.3%)	8 (10.7%)	9 (12%)	4 (5.3%)
25. Complications due to diabetes	17 (22.7%)	19 (25.3%)	10 (13.3%)	11 (14.7%)	9 (12%)	3 (4%)	6 (8%)
29. Not being able to do house work	23 (30.7%)	17 (22.7%)	13 (17.3%)	10 (13.3%)	3 (4%)	7 (9.3%)	2 (2.7%)
32. Need to rest several times a day	13 (17.3%)	13 (17.3%)	16 (21.3%)	12 (16%)	12 (16%)	7 (9.3%)	2 (2.7%)
33. Difficulty in climbing stairs	22 (29.3%)	15 (20%)	9 (12%)	8 (10.7%)	10 (13.3%)	6 (8%)	5 (6.7%)
34. Difficulties in talking care of yourself .	47 (62.7%)	10 (13.3%)	9 (12%)	4 (5.3%)	2 (2.7%)	2 (2.7%)	1 (1.3%)
35. Restless sleep	19 (25.3%)	11 (14.7%)	12 (16%)	15 (20%)	6 (8%)	8 (10.7%)	4 (5.3%)
36. Walking slower than others.	21 (28%)	22 (29%)	8 (10.7%)	12 (16%)	2 (2.7%)	5 (6.7%)	5 (6.7%)

Table 3: Frequency and percentage distribution of the Energy and Mobility Section of the quality of life scale.

Table 3 shows the frequency and percentage distribution of energy and mobility section of quality of life scale. On the items on the energy and Mobility, most of the study participants had chosen towards “less affected”. However some participants had chosen toward the more affected or extremely affected. The following items had more than 25 percentage of the responses fall on the extremely affected side (5,6,7): Difficulty in climbing stairs, restless and sleep, need to rest several times a day, complications due to diabetes, disease other than diabetes, walking restrictions and need to perform exercise regularly. 62.7% of the study sample had least affected with the difficulties in taking care. Less than half of the study sample (44%) least affected with the other health problems.

Table 4 describes the frequency distribution and percentage of the diabetic control section of the D 39 Scale. Based on the findings, less than one fourth of the sample had not affected at all in all the items related to diabetic control. Rest of the sample are affected with various degrees in the scale score 2-7.

Table 5 describes the responses of diabetic clients on self-perception and severity. In self-perception of the quality of life only 16% were least affected and 4% were severely affected. The responses for “how severe do you think diabetes is?” only one tenth of the study sample (10.7%) least affected, 17.3% were severely affected.

Significance of the socio demographic variables: The mean scores quality of life was stronger among the following age groups: Less than 30 and 31-40. Male gender had higher mean in all the subsections than female gender. Duration of illness less than 5 years had stronger mean scores than the other categories. History of hypertension had significant with the diabetes control. Sexual Behavior - and 31 to 40. The following demographic variables were significant with the sub scales of quality of life. Age and social burden (F-2.343, sig- .043), gender and overall quality of life (F-.1.995, sig - 0.05), hypertension and Diabetes control (F-0.003, sig- 037), regular treatment regimen and diabetes control (F-0.007, sig- 04) and overall quality of life (F-1.231, sig- 0.5).

Diabetes Control	1 n (%)	2 n (%)	3 n (%)	4 n (%)	5 n (%)	6 n (%)	7 n (%)
1.Daily use of medications	14(18.7%)	20(26.7%)	16(21.3%)	12(16%)	9(12%)	2(2.7%)	2(2.7%)
4.Following a prescribed treatment	17(22.7%)	14(18.7%)	19(25.3%)	9(12%)	12(16%)	1(1.3%)	3(4%)
5.Dietary restrictions	15(20%)	7(9.3%)	17(22.7%)	17(22.7%)	13(17.3%)	4(5.3%)	2(2.7%)
14. Having diabetes	12(16%)	20(26.7%)	16(21.3%)	9(12%)	11(14.7%)	4(5.3%)	3(4%)
15. Losing control over sugar level	15(20%)	13(17.3%)	13(17.3%)	13(17.3%)	8(10.7%)	9(12%)	4(5.3%)
17. Having to test sugar level	12(16%)	13(17.3)	17(22.7)	12(16%)	13(17.3%)	4(5.3%)	4(5.3%)
18. Time required for control	13(17.3%)	18(24%)	16(21.3%)	14(18.7%)	11(14.7%)	2(2.7%)	1(1.3%)
24. Trying to keep diabetes controlled	14(18.7%)	21(28.0%)	16(21.3)	12(16%)	8(10.7%)	1(1.3%)	3(4%)
27. Keep track sugar levels	16(21.3%)	21(28%)	13(17.3%)	13(17.3%)	6(8%)	2(2.7%)	4(5.3%)
28. Needing to eat at regular intervals	15(20%)	17(22.7%)	14(18.7%)	12(16%)	9(12%)	5(6.7%)	3(4%)
31. Having an organized schedule due to diabetes.	13(17.3%)	19(25.3%)	21(28%)	6(8%)	7(9.3%)	5(6.7%)	4(5.3%)
39. diabetes in general.	14(18.7%)	13(17.3%)	13(17.3%)	15(20%)	10(13.3%)	7(9.3%)	3(4%)

Table 4: Frequency and percentage distribution of subsection of quality of life scale: Diabetes control.

Overall QOL	1 n (%)	2 n (%)	3 n (%)	4 n (%)	5 n (%)	6 n (%)	7 n (%)
Self perception of quality of life	12(16%)	11(14.7%)	9(12%)	20(26.7%)	16(21.3%)	4(5.3%)	3(4%)
How severe do you think diabetes is ?	8(10.7%)	9(12%)	4(5.3%)	15(20%)	13(17.3%)	13(17.3%)	13(17.3%)

Table 5: Distribution of diabetic clients based on self-perception of quality of life.

Discussion

In the present study, it was found that the quality of life had been affected in all the aspects in similar manner: Energy and mobility: Mean-42.88, SD-17.57, Diabetes Control: Mean-37.65, SD-13.54, Anxiety and worry: Mean-11.01, SD-4.88, Sexual behavior: Mean-9.07, SD-5.4, Social burden: Mean-13.15, SD-5.43. The most affected areas in the scale was energy and mobility and diabetes control. In planning and implementation of health care the nurses need to include all the subsection of D-39, which will help in approaching the client holistically. A study from rural area of eastern Nepal had reported the following findings in the sub sections of the quality of life. This study found the highest mean (SD) score was in social burden domain (56.26 ± 12.07), followed by sexual functioning domain (54.35 ± 9.47), Anxiety and worry domain (54.33 ± 7.76), en-

ergy and mobility domain (51.46 ± 8.73) and diabetes control domain (50.08 ± 10.84) [12]. Prasanna Kumar H R [13] had reported that type 2 DM has a negative impact on patients perceived QoL.

The results of the current study showed low overall mean scores. (Mean-113.8, SD-38.5). This shows that the participants were lacking quality of life. Diabetes Mellitus had greater impact on the components of the quality of life. Similarly, Patients with type-2 DM in Qassim showed low self-perceived HRQOL [14]. A study from abha, KSA showed that the majority of Saudi diabetic patients had non-favorable Quality of life scores. More than one fifth of patients scored less than -4.0 in the Quality of life scale Al-Shehri, F.S. [14]. A study by Ayman A., *et al.* (2014) in Riyadh, KSA indicated significant association between DM and HRQOL.

The present study had reported that age, male gender, longer duration of illness and hypertension were affecting the quality of life in general. The variables were identified with the significant results: Age and social burden (F-2.343, sig- .043), gender and overall quality of life (F-1.995, sig - 0.05), hypertension and Diabetes control (F-0.003, sig- 037), regular treatment regimen and diabetes control (F-0.007, sig- 04) and overall quality of life (F-1.231, sig- 0.5). Similarly a study from Qassim also reported that female gender, low education, co morbidities were significant factors in determining the quality of life [14]. In a study from Nepal had reported that Increasing age affects sexual life and mobility of the type 2 diabetic patient. The domain sexual functioning is difference by sex and presence of co-morbidity. Similarly, domain diabetic control is affected by duration of disease and educational status of the patient. Similarly, a study from Riyadh, Saudi Arabia had reported moderate Health-related quality of life HRQoL among patients with T2DM. In their study impaired HRQoL is mainly in terms of pain/discomfort and mobility due to diabetes [15]. A study from multi-specialty hospital, India [13] had reported QoL and gender, age, domicile, education status, occupation, family structure, duration of type 2 DM, HbA1c, insulin treatment, and the presence of comorbidities. Similarly Al Hayek, Ayman A., *et al.* [16] reported from a study at major tertiary hospital in Riyadh, Saudi Arabia that indicates a significant association between DM and Health related quality of Life (HRQOL). Gender, economic status, diabetes treatment type and complication of DM were independent risk factors for majority of the subscales of HRQOL.

A study from Thailand had reported that diabetes self-management had a significant association with quality of life ($r = 0.35$, $p < 0.05$) [7]. In this study also it was revealed that the regular treatment regimen affecting the quality of life. Educating and training the clients in managing themselves will help in regaining the quality of life and control over the disease.

The results of this study revealed that the most of the participants affected by the self-perception of the diabetes and perception on the severity of diabetes.

Recommendations

Similar study can be carried out with the larger sample. Some of the important areas of which affects the client perception could be included such as knowledge about diabetes, diet, exercise, insulin and anxiety about the illness. Similar studies need to be conducted at different areas to have the better idea about the QOL among diabetes clients. Large number of sample can be studied.

Summary

This study was conducted to assess the quality of life using the D39 questionnaire in the patients of diabetes Mellitus in Tabuk. The results showed that the quality of life had been affected in all the aspects in similar manner: Energy and mobility: Mean-42.88, SD-17.57, Diabetes Control: Mean-37.65, SD-13.54, Anxiety and worry: Mean-11.01, SD-4.88, Sexual behavior: Mean- 9.07, SD-5.4, Social burden: Mean-13.15, SD-5.43. The most affected areas in the scale was energy and mobility and diabetes control. Overall, the self-perception of quality of life being affected for the clients with diabetes. They need proper guidance and support in improving the perception about their condition. The educational program need to be conducted individual and group basis on the diabetes clinic. Voluntary groups from diabetes clients can be developed to handle the education and supportive sessions.

Conclusion

Overall this study had revealed that less than half the clients were affected with the quality of life in all the subsections. The highest area affected are energy and mobility and diabetes control. Self-perception about the quality of life is very important for the successful treatment and also to decrease the burden of diabetes. Active and effective coping strategies, sense of enhanced wellbeing and good self-management of diabetes will helps in reducing the complication. The nurses should focus on the areas of quality of life in caring for clients who have diabetes. The community nursing must focus of awareness campaign, self-screening programs and educational programs to overcome the complications of diabetes. These activities will support the quality of life and also support the national goal in controlling diabetes.

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