Quality of Life in Patients of Type 2 Diabetes Mellitus

Nauman Sarir, Tehseen Ashraf Kohistani*, Abdul Rehman Arshad, Gulzar Ali, Sumbal Khitab

Combined Military Hospital Peshawar/National University of Medical Sciences (NUMS) Pakistan, *Combined Military Hospital Okara/ National University of Medical Sciences (NUMS) Pakistan

ABSTRACT

Objective: To document quality of life in type 2 diabetics and identify factors predictive of better quality of life.

Study Design: Cross- sectional analytical study.

Place and Duration of Study: Combined Military Hospital (CMH), Peshawar Pakistan, from Jul to Aug 2019.

Methodology: Adult patients of either gender being treated in outdoor department for type 2 diabetes mellitus were enrolled using non- probability convenience sampling technique. We excluded unwilling patients, those with diabetes for less than 3 months and those unable to comprehend the data collection instrument. Quality of life was assessed using Urdu version of WHOQOL-BREF questionnaire. This was self-administered. Variables potentially affecting quality of life were also recorded: age, gender, duration of diabetes, presence of co-existent hypertension, type of treatment and body mass index.

Results: There were 99 patients, including 44 males, having mean age of 55.01 ± 12.68 years. Median duration of diabetes was 9 years (range: 0.5 to 35 years). Co-existent hypertension was present in 63 patients. Mean BMI was 24.92 ± 5.79 kg/m². Most (60; 59.60%) of them were on insulin. Total score on WHOQOL-BREF questionnaire was 87.19 ± 12.38, whereas the scores for physical, psychological, social and environmental quality of life were 12.06 ± 2.32, 12.90 ± 2.88, 15.82 ± 3.91 and 14.47 ± 1.84 respectively. Male patients were more likely to have better quality of life (Odds Ratio 3.638, 95% CI 1.508, 8.775; *p*=0.004). Other factors did not influence quality of life.

Conclusion: Patients with type 2 diabetes have a poor quality of life. This is true for female patients.

Keywords: Complications of diabetes mellitus, Health related quality of life, Sickness impact profile.

INTRODUCTION

Type 2 diabetes mellitus is a chronic debilitating disease. Global prevalence of diabetes has been projected to reach 54% by 2030.[1] It has recently been reported that 11. 77% people in Pakistan have Type 2 diabetes.[2] Risk factors for type 2 diabetes are family history, obesity, lack of exercise, sedentary life style, poor dietary habits and lack of awareness on the prevention of impaired glucose tolerance.[3] Diabetes causes a serious deterioration in quality of life (QoL).[4] QoL has recently been recognized as an important outcome of medical interventions and has become an essential issue in care of diabetic patients.

The deleterious impact of type 2 diabetes and its complications on QoL warrants timely diagnosis and medical intervention to prevent and treat different micro- and macrovascular complications.[5] The overall QoL is even more profoundly affected in the presence of other coexisting chronic ailments.[6]

Research on QoL assessment in diabetics in general and in type 2 diabetes mellitus has been the focus of medical practitioners, diabetic clinics, endocrinologist and epidemiologists.[7] This is because of the general perception that type 2 diabetes takes a toll on QoL. In a study done on 1072 Korean patients, Lee, *et al*, observed that diabetic patients rate their QoL lower than that of the general healthy population.[8] The association between good QoL and better glycaemic control as well as clinical outcomes has also been documented. For instance, Aro *et al*, showed a direct relationship between glycaemic control and QoL amongst older primary care patients.[9] Similarly, the Hypo-2 study involving 938 Greek patients demonstrated a poor QoL in patients with higher HbA1c.[10]

The disease burden in our country is quite huge. On the contrary, data examining QoL in our local population is scarce. We therefore conducted this study to document QoL in patients with diabetes mellitus type 2 and to identify factors predictive of a better QoL. This would helpfill the gaps in local literature andprovide us important information for better clinical decision making, considering both medical and psychosocial issues faced by our patients.

Correspondence: Dr Nauman Sarir, Department of Medicine, Combined Military Hospital, Peshawar Pakistan
Received: 01 Nov 2019; revision received: 20 Feb 2020; accepted: 09 Mar 2020

METHODOLOGY

This cross-sectional analytical study was carried out at the Medical Outdoor Clinics of Combined Military Hospital Peshawar Pakistan from July to August 2019. The study protocol was approved by Ethics Re-view Committee of the hospital (Serial no 27 dated 18 Oct 2019).

Inclusion Criteria: Patients of type 2 diabetes were included in the study.

Exclusion Criteria: Patients of diabetes for less than 3 months and those unable to comprehend the data collection instrument were excluded from the study.

A minimum sample size of 97 was calculated using Free Statistics Calculator version 4. We assumed anticipated effect size ($f2$) of 0.15, desired statistical power level of 0.8, six predictors and α of 0.05.[11]

After obtaining verbal consent, demographic data was recorded using non-probability convenience sampling technique. We also captured data about variables that could potentially affect quality of life. QoL was assessed using Urdu version of WHO QoL-BREF questionnaire.[12] This was self-administered. Patients were asked to fill out the forms in as much time as they needed. A specially trained paramedic was also available to help the patients in case of any problems in filling the forms.

Data was analysed using SPSS version 20. Quantitative data was expressed as mean ± standard deviation. Univariate and multi variate logistic regression was used to identify impact of different factors on quality of life. These included age, gender, duration of diabetes, presence of co-existent hypertension, type of treatment (oral hypoglycaemic agents vs. insulin) and body mass index. All variables with p-values >0.100 on univariate stage were excluded from multivariate analysis.

RESULTS

There were 99 patients, including 44 males and 55 females, having mean age of 55.01 ± 12.68 years. Median duration of diabetes was 9 years (range: 0.5 to 35 years). Co-existent hypertension was present in 63 (63.64%) patients. BMI was 24.92 ± 5.79 kg/m2. Most of them were on insulin (59; 59.60%). A lesser proportion of patients (40; 40.40%) were on oral hypoglycaemic agents alone. Total score on WHO QoL-BREF questionnaire was 87.19 ± 12.38, whereas the scores for physical, psychological, social and environmental quality of life were 12.06 ± 2.32, 12.90 ± 2.88, 15.82 ± 3.91 and 14.47 ± 1.84 respectively. As shown in the Figure,

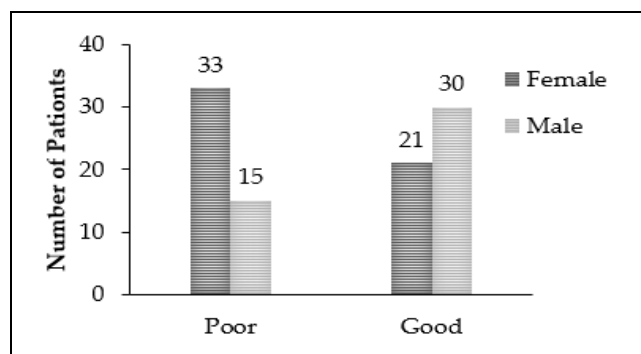male patients were more likely to have better quality of life (Odds Ratio 3.638, 95% CI 1.508, 8.775; p=0.004).

Figure: Relationship between gender and quality of life.

Shorter duration of diabetes and use of oral hypoglycaemic agents were associated with better QoL at univariate stage, but this significance was lost at multivariate stage of regression analysis. Age, presence of co-existent hypertension and BMI did not influence QoL in our patients (Table).

Table: Factors affecting quality of life.

Factors	Univariate Regression		Multivariate Regression	
	OR (95% CI)	p	OR (95% CI)	p
Age	1.001 (0.968, 1.035)	0.943	-	-
Gender	3.143 (1.375, 7.184)	0.007	3.638 (1.508, 8.775)	0.004
Duration of Diabetes	0.940 (0.890, 0.994)	0.031	0.958 (0.898, 1.022)	0.194
Co-Existent Hypertension	1.540 (0.674, 3.520)	0.306	-	-
Type of Treatment	2.526 (1.101, 5.792)	0.029	2.183 (0.806, 5.916)	0.125
BMI	0.976 (0.911, 1.047)	0.498	-	-

DISCUSSION

American Diabetes Association recommends monitoring QoL as a key measure for effective disease management and improved clinical outcomes.[12] Different questionnaires and tools assessing QoL are available. Examples include the Diabetes Quality of Life Measure, Diabetes-Specific Quality of Life Scale, Appraisal of Diabetes Scale, Type 2 Diabetes Symptom Checklist, Audit of Diabetes-Dependent Quality of Life, besides many others. We assessed Qol in patients with type 2 diabetes using Urdu version of WHO QoL-BREF questionnaire because the reliability and validity of the instrument in Pakistani population has been checked and documented in the past.[13] In our study, we found the total WHO QoL-BREF score of 87.19 ± 12.38, whereas the scores for physical, psychological, social and environmental quality of life were 12.06 ±

2.32, 12.90 ± 2.88, 15.82 ± 3.91 and 14.47 ± 1.84 respectively which indicated overall good quality of life as compared to that found by Sreedevi *et al*, in Karala, India.[14] This could be because our patients are provided free treatment facilities and they are regularly followed. An interesting phenomenon is the physical domain being affected the most. This was also seen in another study done recently in Nigeria.[15] Most probably, different complications associated with diabetes have the greatest influence on physical capabilities. All the other three domains of QoL tested were also negatively affected in our patients. The psychological element is characterized by a greater incidence of depression in diabetics. A study done previously by one of the authors of this paper at Bagh (Azad Kashmir) revealed different grades of depression in 38% of the 133 outdoor type 2 diabetic patients.[16] However, we neither formally test our patients for depression nor referred them to the psychiatry team for evaluation as a part of this study. Similarly, a weaker social aspect is characterized by suboptimal relationship with, and hence support from close family members and friends.

In our study, the quality of life was documented relatively better in the individual domain as well. However, male type 2s diabetics were found to have good quality of life as compared to female diabetics which has also been observed by Jedi, *et al*, In Gaza Strip.[17] A recent review of Iranian studies also documented better QoL in male diabetics.[18] The most plausible explanation for this is a better social life in our male patients. On the contrary, majority of women in our society are housewives who spend most of their time at home and are less empowered as compared to the opposite gender. This phenomenon is more marked in the lower socioeconomic groups that constitute the major bulk of patients seen at our hospital. This disparity is the most likely reason for a poorer QoL in female patients documented in this study.

In this study, we found no association between duration of diabetes and quality of life. This is in contrast to the results of a study done in Malaysia.[19] This is most likely due to physical and mental adaptation to the requirements of chronic disease process. Khalili *et al*, and Muhammadi, *et al*, have documented better QoL in patients using oral regimens for diabetes.[20,21] However, treatment modality had no effect on the quality of life in our patients.

Type 2 Diabetes mellitus affects all the systems of the body as disease progresses such as cardiovascular, renal, nervous system and retina. All these affect the quality of life deleteriously. In addition to the complication of diabetes, other coexisting chronic diseases also impair functional capacity (physical, psychological, social and environmental) and thus quality of life, which was not seen in our patients. We also found that coexisting hypertension didn't affect our patient which was against the results found by Chin *et al*, in South Korea.[22] Madmoli *et al*, found in their study that the quality of life scores in diabetes decrease with the advancing age as complications are being seen. However, we found that age did not affect QoL scores in our study.[23] This could be because of tight glycaemic control, adherence to treatment and regular follow up in our study.

The major strength of this study was self administration of questionnaires, which eliminated social desirability bias. However, the results would have been more interesting had we recorded data on glycaemic control in our patients. Because of the short duration of study, we could include only a small number of patients and thus evaluated a limited number of variables affecting QoL. Another important limitation of our study is our inability to quantify the impact of patient's educational status and level of comprehension on their ability to fill out the responses correctly.

RECOMMENDATIONS

The current study highlights a very important, yet frequently ignored aspect of disabilities attributable to diabetes. We suggest that QoL should be assessed regularly in diabetic patients. More efforts need to be made to improve QoL in female patients, possibly by providing them greater social support.

CONCLUSION

QoL is impaired in patients with type 2 diabetes mellitus. This is more marked in females. More emphasis thus needs to be placed on management of female type 2 diabetics to improve clinical outcomes.

Conflict of Interest: None.

Authors' Contribution

NS:, SK: Acquisition of data, drafting the article, final approval, agreement to be accountable, TAK:, ARA: conception and design, critical revision, final approval, agreement to be accountable, GA: analysis and interpretation of data, drafting the article,final approval, agreement to be acountable.

REFERENCES

1. Herman WH. The global agenda for the prevention of type 2 diabetes. Nutr Rev 2017; 75(Suppl 1): 13-18.
2. Meo SA, Zia I, Bukhari IA, Arain SA. Type 2 diabetes mellitus in Pakistan: Current prevalence and future forecast. J Pak Med Assoc 2016; 66(12): 1637-1642.
3. Bellou V, Belbasis L, Tzoulaki I, Evangelou E. Risk factors for type 2 diabetes mellitus: An exposure-wide umbrella review of meta-analyses. PLoS One 2018; 13(3): e0194127.
4. Trikkalinou A, Papazafiropoulou AK, Melidonis A. Type 2 diabetes and quality of life. World J Diabetes 2017; 8(4): 120-129.
5. Singh R, Teel C, Sabus C, McGinnis P, Kluding P. Fatigue in type 2 diabetes: impact on quality of life and predictors. PLoS One 2016; 11(11): e0165652.
6. Adriaanse MC, Drewes HW, van der Heide I, Struijs JN, Baan CA. The impact of comorbid chronic conditions on quality of life in type 2 diabetes patients. Qual Life Res 2016; 25(1): 175-182.
7. Mauricio D. Quality of life and treatment satisfaction are highly relevant patient-reported outcomes in type 2 diabetes mellitus. Ann Transl Med 2018; 6(11): 220.
8. Lee WJ, Song KH, Noh JH, Choi YJ, Jo MW. Health-related quality of life using the Euro Qol 5D questionnaire in Korean patients with type 2 diabetes. J Korean Med Sci 2012; 27(3): 255–260.
9. Aro AK, Karjalainen M, Tiihonen M, Kautiainen H, Saltevo J, Haanpää M, et al. Glycemic control and health-related quality of life among older home-dwelling primary care patients with diabetes. Prim Care Diabetes 2017; 11(6): 577-582.
10. Yfantopoulos I, Katopodis P, Rombopoulos G, Yallouridis A, Chantzaras A, Kossiva E, et al. The influence of glycemic control in the quality of life of type 2 diabetes mellitus patients in Greece-the Hypo2 Study. Value Health 2016; 19(7): A679.
11. Hassali MA, Saleem F, Bashir S, Hashmi F, Aljadhey H. A cross-sectional assessment of health-related quality of life among type 2 diabetic patients in Pakistan. J Pharm Bioall Sci 2016; 8(1): 64.
12. American Diabetes Association (ADA). Lifestyle management: standards of medical care in diabetes. Diabetes Care 2019; 42(1): S46-S60.
13. Lodhi FS, Raza O, Montazeri A, Nedjat S, Yaseri M, Holakouie-Naieni K. Psychometric properties of the Urdu version of the World Health Organization's quality of life questionnaire (WHOQOL-BREF). Med J Islam Repub Iran 2017; 31(1): 129.
14. Sreedevi A, Cherkil S, Kuttikattu DS, Kamalamma L, Oldenburg B. Validation of WHOQOL-BREF in Malayalam and determinants of quality of life among people with type 2 diabetes in Kerala, India. Asia Pac J Public Health 2016; 28(1 Suppl): 62S-9S.
15. Ababio GK, Bosomprah S, Olumide A, Aperkor N, Aimakhu C, Oteng-Yeboah A, et al. Predictors of quality of life in patients with diabetes mellitus in two tertiary health institutions in Ghana and Nigeria. Niger Postgrad Med J 2017; 24(1): 48–55.
16. ArshadAR, Alvi KY. Frequency of depression in type 2 diabetes mellitus and an analysis of predictive factors. J Pak Med Assoc 2016; 66(4): 425-429.
17. Eljedi A, Mikolajczyk RT, Kraemer A, Laaser U. Health-related quality of life in diabetic patients and controls without diabetes in refugee camps in the Gaza strip: a cross-sectional study. BMC Public Health 2006; 6(1): 268.
18. Kiadaliri AA, Najafi B, Mirmalek-Sani M. Quality of life in people with diabetes: a systematic review of studies in Iran. J Diabetes Metab Disord 2013; 12(1): 54.
19. Chew B-H, Mohd-Sidik S, Shariff-Ghazali S. Negative effects of diabetes-related distress on health-related quality of life: an evaluation among the adult patients with type 2 diabetes mellitus in three primary healthcare clinics in Malaysia. Health Qual. Life Outcomes 2015; 13(1): 187.
20. Khalili M, Sabouhi F, Abazari P, Aminorroaya A. Comparing the quality of life in insulin recipient and refusal patients with type 2 diabetes. Iranian J Nursing Midwifery Res 2016; 21(4): 351-356.
21. Mohammadi S, Evaluation of quality of life among type 2 diabetes patients. Int J Comm Med Public Health 2017; 3(1): 51-56.
22. Chin YR, Lee IS, Lee HY. Effects of hypertension, diabetes, and/or cardiovascular disease on health-related quality of life in elderly Korean individuals: a population-based cross-sectional survey. Asian Nurs Res (Korean Soc Nurs Sci) 2014; 8(4): 267-273.
23. Madmoli M, Madmoli Y, Khodadadi M, Samsamipour M. Some factors affecting quality of life in patients with diabetes: A systematic review. Ann Microbiol Infect Dis 2019; 2(1): 26-30.

....