■ Original article

Quality of life in diabetic elderlies

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Abstract

Background and Purpose: Diabetes in the elderly is mostly associated with increased risk of development and worsening of geriatric syndromes. In addition, it has a significant impact on various aspects of individuals with these syndromes. Therefore, this study aimed to evaluate the quality of life (QOL) in elderly diabetic patients.

Methods: This descriptive and analytical study was conducted on 88 elderly diabetic patients (selected from 1400 diabetic patients) with medical records at diabetes centers in Kashan, Iran in 2006. The study tools were demographic questionnaire and Older People's Quality of Life Questionnaire (41-item version), applied to evaluate the general (13-52 scores), specific (27-108 scores) and total (40-160 scores) aspects of QOL. Data analysis was performed in SPSS version 16 using univariate and multivariate logistic regression models.

Results: In total, 65.9% of the patients were female and 34.1% were male. In terms of the aspects of QOL (i.e., general, specific and total), 68.2%, 77.3% and 53.4% of the elderly patients had weak scores, respectively.

Conclusion: Given the low QOL in the majority of elderly diabetic patients, our results indicated that these type of patients need special healthcare. In other words, this study reaffirmed the role of caring for the health of elderly diabetic patients.

Keywords: Diabetes, Elderly, Quality of life

Introduction

Studies have shown that aging is a phenomenon associated with various biological, psychological and social aspects (1). Elderly individuals are a stratum of society, regarded as a growing population with special needs in industrially developed countries (especially in science and technology) (2). According to the United Nations standards, the starting point of aging is 60 years; however, it is important to accept the fact that age is not the exact indicator of changes associated with aging (3). Available surveys have indicated that about 13% of the world population in 2000 consisted of elderly individuals and it is expected to reach 20% by 2040 (4).

The elderly population of Iran (male and female) comprised for 6% and 5.7% of the total population in 1995, respectively. These statistics could reach 9.4% and 9.1% by 2020, respectively (3). Since functional abilities of the elderly are decreased by

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aging, the quality of life (QOL) could be affected as well (5).

QOL is a broad concept and includes all aspects of life. According to the literature, QOL is decreased by aging (5, 6). Any chronic disease could have an extensive impact on QOL, especially in the elderly (7). Scientific breakthroughs for achieving longevity will be dangerous and useless if physical and psychological health at higher ages is not taken into consideration (3). Diabetes in the elderly has become one of the most important public health problems in the 21st century (8). This disease is one of the most common metabolic disorders in the elderly with debilitating and dangerous side effects, such as blindness, amputation, kidney failure and cardiovascular diseases (9). The risk of being diagnosed with diabetes after the age of 65 years is 30%, and elderly patients comprise for one-half of the population with diabetes (3). According to the World Health Organization (WHO), the number of cases of older adults diagnosed with diabetes will reach 300 million in 2025. Even in some races, this number is expected to reach 50% of the total population (10). Unfortunately, no accurate statistics are available on the number of elderly diabetic patients in Iran. Results obtained by Peiman & et al. (2012) indicated that the prevalence of diabetes in Ilam, Iran is 22.2% and 14.3% in elderly women and men, respectively (11).

Previous studies have suggested that QOL of elderly diabetic patients is poor and weak. According to the literature, patients with diabetes and lesser self-care suffer from more complications, including blindness, depression and foot ulcer (12). It's been marked that approximately all aspects of life could be affected by diabetes (13).

Suggested by Tang research (2006), QOL of elderly diabetic patients was low in the social dimension, compared to young patients (14). In a study by Lyoid et al. (2001), age had a significant negative impact on the most important aspects of QOL in older patients with diabetes (15). It was reported in another study (2014) that participants perceived a positive QOL, with the exception of mental health and well-being domains (16). Interventional and changeable characteristic of most of the factors

contributing to the QOL of elderly allows the authorities to conduct appropriate interventions in various areas of society, particularly those related to general health (17). Evaluation of QOL in patients with diabetes has been recognized as one of the most important aspects of treatment and care around the world (18). A review of the literature revealed that few studies have been conducted on the subject of QOL in the elderly in Iran. Since assessment of contributing factors and growing population of the elderly can help plan for better caring, this study aimed to evaluate the QOL in elderly diabetic patients.

Materials and Methods

This analytical and descriptive study was conducted in Kashan, Iran, with a sample size calculated based on the results of similar previous studies (7). First, 310 elderly patients were randomly selected from 1400 patients diagnosed with diabetes, who had medical records in the only diabetes center of Kashan. This medical center was located in the center of Kashan with a moderate socioeconomic condition.

Inclusion criteria were age <60 years, Iranian nationality, the desire to cooperate with our researcher and the ability to respond to the questions. After the objectives of the study were explained to the subjects through a phone call, they were asked to complete the Older People's Quality of Life Questionnaire (OPQOL) at the diabetes center. Exclusion criteria were lack of desire to participate in the study for any reason and partial completion of the questionnaire. In total, 88 questionnaires were completed by the samples. The ethical issues of the study were confirmed by the Research Ethics Committee of Kashan University of Medical Sciences, and informed written consents were obtained from the samples prior to study. Study tool was a validated questionnaire for assessing the QOL of patients with diabetes, designed in Tarbiat Modares University in Tehran, Iran. Scientific validity of the research instrument has been reviewed in Alavi survey and confirmed by 15 experts (19). In addition, the test-retest reliability of this questionnaire was reported

in a two-week interval at the correlation-coefficient of 95% and split-half reliability of 98% (20).

The questionnaire used in this study (OPQOL) has three parts. In the first stage, the underlying variables were mentioned, such as age, gender, marital status, education level, duration of diabetes, treatment method, the type of diabetes and body mass index (BMI). Moreover, the existence of other diseases, such as heart disease, kidney failure, blood pressure, and vision loss, were assessed through the evaluation of medical records of each patient. In the second stage, 13 questions were asked to assess the general QOL of the patients. General QOL is related to the assessable indices for all of the patients and non-patients. In total, patients could achieve 13-52 scores in this part. In the third stage, 28 questions were asked about health-related QOL in patients with diabetes, which was focused on the survey of special effects of one disease on the QOL. In this part, one question was specifically designed for single patients and one was provided just for married individuals. Therefore, patients could achieve 27-108 scores in this part.

Totally, 41 questions were asked about general and specific QOL, considered as the total QOL. Grading of the questionnaire was based on quadruple Likert scale (score range: 1-4). Therefore, each patient could obtain a score between 40 and 160, and increased scores were indicative of improved QOL. Total QOL scores higher than 133, within the range of 110-133 and lower than 110 were considered good, moderate, and weak, respectively. In terms of specific QOL, scores higher than 90, within the range of 77-90 and lower than 77 were considered good, moderate, and weak, respectively. With regard to general QOL, scores higher than 43, within the range of 35-43 and lower than 35 were considered as good, moderate, and weak, respectively.

After the objectives of the study were explained to the patients on arrival, questionnaires were completed at the center. Patients' characteristics were recorded to eliminate rework. In case of illiteracy of the participants, the questionnaire was read for the patient by the researcher and responses were recorded. The study protocol was confirmed by the Institutional Review Board (IRB) and Research Ethics Committee of Kashan University of Medical Sciences. In addition, permissions were obtained from the authorities of the diabetic center in Kashan, and informed written consents were obtained from the samples prior to study. The Helsinki Ethical Declaration was also considered to protect the participants' rights.

After data collection, descriptive statistics (frequency and percentage) were calculated and the relationship between QOL and studied variables (e.g., age, gender, type of diabetes, occupational status, number of children, BMI and underlying disease) were assessed using univariate and multivariate logistic regression models. Data analysis was performed in SPSS version 16 and *P-value* less than 0.0.5 was considered statistically significant.

Results

In total, 65.9% of the participants were female and 34.1% were male. Mean age of the participants was 67.61±6.49 years. The majority of participants were married (96.6%) and illiterate (71.6%). Data on the relationship between demographic and disease-related variables are presented in Table 1. According to the results, 68.2% of the elderly patients in the aspect of total QOL, 77.3% of the cases in the aspect of specific QOL and 53.4% in the aspect of general QOL had weak scores. The relationship between underlying variables and the QOL of elderly diabetic patients are represented in Table 2.

According to the data provided in Table 2, a relationship was observed between the independent variables related to general QOL of elderly patients with diabetes using logistic regression (univariate model). The variables of tingling, numbness and vision loss were associated with general QOL. After entering the variables in the multivariate logistic regression model (P<0.2), vision loss (OR=3.77, CI=1.37-10.35) and numbness (OR=2.98, CI=1.14–7.79) were remained in the model, which had a significant relationship with general QOL.

As shown in Table 2, a survey was used to assess the relationship between independent variables and the specific QOL of elderly diabetic patients

Table 1. Frequency rate of the demographic variables and related diseases

Variable			Variable		
Age (M±SD)		67.61±6.49	Heart disease N (%)	Yes	45 (51.1)
Height (M±SD)		1.6±1.17		No	43 (48.9)
Weight (M±SD)		71.25±1.65	Kidney failure N (%)	Yes	68 (77.3)
BMI (M±SD)		27/66±5/39		No	20 (22.7)
Duration (M±SD)		13.63±9.07	Tingling N (%)	Yes	36 (40.9)
Gender	Female	58 (65.9)		No	52 (59.1)
	Male	30 (34.1)	Limp numbness N (%)	Yes	63 (71/6)
Marital status	Single	3 (3.4)		No	25 (28.4)
	Married	85 (96.6)	Incontinence N (%)	Yes	78 (88.6)
Occupational status	Housewife	57 (64.8)		No	10 (11.4)
	Retired	22 (25)	Blood pressure N (%)	Yes	29 (33)
	Others	9 (10.2)		No	59 (67)
Diabetes	Type I	7 (8)	Vision loss N (%)	Yes	27 (30.7)
	Type II	81 (92)		No	61 (69.3)
Treatment method	Oral	55 (62.3)	Numbness N (%)	Yes	47 (53.4)
	Insulin	33 (37.5)		No	41 (46.6)
Education level	Illiterate	63 (71.6)	Urinary retention N (%)	Yes	84 (95.5)
	Below diploma	22 (25)		No	4 (4.5)
	Diploma	2 (2.3)	Others N (%)	Yes	83 (95.4)
	above diploma	1 (1.1)		No	5 (4.6)

using univariate logistic regression model. The results were indicative of an association between the specific QOL and the variables of treatment method, kidney failure, tingling, numbness, and limb numbness. After entering the variables with in multivariate logistic regression model (P<0.2), type of diabetes (OR=6.12, CI=0.76-49), treatment method (OR=3.84, CI=1.18- 12.51) and numbness (OR=5.88, CI=2.11-16.42) were remained in the model, which revealed a significant association

Table 2. Evaluation of the relationship between underlying variables and the QOL of elderly patients with diabetes using multivariate regression model

Variable		General QOL		Specific QOL	
		OR	CI (95%)	OR	CI (95%)
Age		1	0.93-1.06	0.99	0.93-1.06
Gender		0.46	0.18-1.13	0.46	0.19-1.14
BMI		1.03	0.96-1.11	1.03	0.95-1.11
Marital status (single/married)		3	0.26-34.39	2.59	0.22-29.72
Occupational status	Housewife	0.43	0.1-1.79	0.31	0.07-1.38
	Retired	0.8	0.16-3.79	0.5	0.09-2.52
	Other	1.25	-	2	-
Duration		0.97	0.93-1.02	0.98	0.94-1.03
Diabetes (type I/type II)		4.03	0/73-22.07	3.45	0.63-18.88
Treatment method (oral/insulin)		2.06	0/82-5.13	4.03	1.54-10.52
Heart disease (yes/no)		1.98	0.83-4.7	1.76	0.75-4.13
Kidney failure (yes/no)		2.51	0.82-7.69	6.37	1.7-23.78
Tingling (yes/no)		4.26	1.72-10.57	3.23	1.33-7.84
limb numbness (yes/no)		2.19	0/8-5.98	6.56	2.01-21.33
Incontinence (yes/no)		0.41	0.1-1.59	2	0.48-8.3
Blood pressure (yes/no)		1.93	0.78-4.78	1.92	0.78-4.73
Vision loss (yes/No)		4.77	1.8-12.61	1.92	0.77-4.81
Numbness (yes/no)		3.83	1.53-9.59	7.99	2.99-21-29
Urinary retention (yes/no)		0.68	0.09-5.06	2.47	0.24-24.8

between them and specific QOL.

Discussion

According to the results of the present study, increased life expectancy and aging were associated with non-communicable diseases, including diabetes; therefore, this disease could have a significant impact on various aspects of patients' lives (21). Our findings were indicative of the fact that the majority of participants had weak QOL scores in all three aspects (i.e., general, specific and total). Zahmatkeshan et al. demonstrated in a study that mean scores of the physical and mental health of the elderly in Bushehr was less than the median (m=50) (22). In a study conducted in Jordan, the evaluated elderly patients with type I diabetes had weak total QOL scores (23). However, in a study by Prazeres et al. (2014), QOL of elderly patients with type II diabetes was reported positive (16). It has been known that diabetes has dangerous complications.

Treatment methods, such as insulin injection and dietary restrictions, might lead to difficulties in daily living and reduced QOL. On the other hand, some of the major contributing factors for poor QOL include lack of rehabilitation and psychological centers for improving physical, functional, and psychological capacities of the elderly, problems associated with health insurance services, and medical expenses, which are extremely higher in our country compared to developed countries around the world. Complications of diabetes are also responsible for reduced QOL.

In the present study, the existence of complications, especially cardiovascular complications and diabetic neuropathies (tingling and numbness of limbs), had a negative impact on the general and specific aspects of QOL. Complications of diabetes have been reported in several studies as important factors, adversely affecting the QOL of patients with diabetes (24-26). Moreover, other studies have indicated that diabetic neuropathies are common complications of diabetes, which could significantly reduce QOL (27).

Sharma et al. (2005) conducted a study in Canada to evaluate the effects of diabetic retinopathy (DR) and diabetic macular edema (DME) on QOL. According to the results of the mentioned study, DR and vision loss could lead to reduced health-related quantity and quality of life (28). It is worth mentioning that these results were consistent with our findings. In the present study, insulin injection was accompanied with lower scores of specific QOL. In a study by Ghassemzadeh et al. (2013), the elderly patients treated with pills, had higher QOL (3). On the contrary, patients treated with insulin had higher QOL in a study in Australia (29). Moghadasian et al. (2008) demonstrated in a study that no significant relationship was found between the QOL of patients with diabetes and the relevant treatment method (insulin or pill) (30). This lack of consistency in results might be due to lack of knowledge by elderly diabetic patients about the necessary cares after insulin injection and existence of health issues (e.g., hypoglycemia, pain) and different types of care in different societies.

In the current research, another studied factor was the relationship between BMI and QOL. Contrary to previous studies, no significant relationship was observed between these two variables (31-33), which has been also reported in some of the previous studies (17, 34). Nevertheless, further studies must be conducted on larger sample sizes to confirm the results.

The major limitation of this study was its cross-sectional nature. In this study, the relationship between QOL and variables of income status of the subjects, availability of treatment facilities (in terms of expense), accessibility, healthcare service providing, as well as behaviors and attitudes of healthcare providers was not assessed. The small sample size of our research resulted in reduced generalizability of these findings. Moreover, it was not possible to evaluate the relationship between education level and QOL due to illiteracy of the majority of participants. Therefore, it is recommended that further studies be conducted on larger sample sizes, and comparative studies be performed to evaluate the effect of education on QOL, which might shed a light on other aspects of the relationship between QOL and diabetes.

In addition, it is suggested that similar studies be performed at other times and in different cities of Iran, and the obtained results be compared with our findings. This way, the results could be generalized to the entire elderly population in Iran.

Conclusion

In conclusion, the results of the current study demonstrated that elderly patients of Kashan had weak QOL scores in all aspects of their lives. Therefore, it is necessary to modify healthcare plans to improve the QOL of this vulnerable group. Moreover, it is important to create a strong relationship between patients and healthcare team while designing preventive and rehabilitative programs.

Conflicts of interest

None declared.

Authors' contributions

Data collection and study design were performed by Z. Vares. Data analysis and manuscript drafting were conducted by Z. Aliakbarzadeh Arani.

Acknowledgments

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