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Evaluation of Quality of Life in the Elderly with Diabetes and Its Related Factors

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Abstract

Background: Diabetes is one of the most common disorders in old age and affects the quality of life of the elderly.

Objectives: This study aimed to evaluate the quality of life in the elderly with diabetes and determine the factors associated with it.

Methods: This cross-sectional study was performed on 130 elderly with diabetes referred to endocrinology clinics affiliated to Zanjan University of Medical Sciences. Sampling was done in an easy and accessible way. Data collection tools included a demographic information questionnaire and a 36-item short-form survey (SF36). Data analysis was performed using SPSS 16 software. For descriptive statistics, mean ± standard deviation and frequency (percentage), and analytical statistics, Kruskal-Wallis and Mann-Whitney tests were used.

***Results*:** The majority of participants in the study were female (56.2%), in the age range of 60-74 years (68.5%), and married (70%). The mean total score of quality of life was 46.33±16.45. The mean score of total quality of life was statistically significantly related to age, marital status, place of residence, employment status, duration of diabetes, and level of education ($P<0.05$). However, there was no statistically significant relationship with gender ($P=0.436$).

Conclusion: The quality of life of the elderly was lower than standard. Older age, loneliness, longer duration of diabetes, rural living, unemployment, and illiteracy were associated with decreased quality of life of the elderly with diabetes; Therefore, it is suggested that policymakers consider the factors identified in this study in future planning to improve the quality of life of elderly with diabetic.

Keywords: quality of life, the elderly, diabetes mellitus

Introduction

In recent years, due to the improvement of living conditions, medical advances, and increasing life expectancy, the elderly population is increasing [1,2]. The elderly population is projected to reach two billion by 2050, about two-thirds of which will be in developing countries. Iran is no exception and the growth of the elderly population is rapid [1]. With the onset of old age, some physiological, psychological, and social functions of individuals will be decreased [3].

Also, in old age, the incidence of chronic and non-communicable diseases such as diabetes increases and reaches its maximum. Thus, 22% of Iranian elderly people have diabetes [4]. Diabetes is one of the causes of disability and mortality in

the elderly [1] and as a chronic metabolic disorder, it severely affects the quality of life of the elderly [4,5]. A combination of diabetes and comorbidities in the elderly can increase the risk of side effects such as falls, disability, death, and hospitalization [6]. Diabetic patients, especially the elderly, have numerous problems in terms of quality of life, and their individual, social, and economic status is affected by this disease [7].

Quality of life is one of the indicators of the condition in the elderly [8]. The World Health Organization defines the quality of life as people's perception of their position in life in terms of culture, life value system, goals, expectations, standards, and priorities, which is completely individual and not visible to others, and it is based on people's understanding of different aspects of their lives [9]. Quality of life in disease refers to people's mental understanding of the impact of clinical conditions on life, and usually, people with chronic illness have different perceptions of life, and the meaning and value of life are mentally different in them. Therefore, it is important to evaluate the effect of chronic disease and its treatment on the patient [1]. Today, the issue of quality of life and how living has received much attention from sociologists and health policymakers. Measuring and evaluating the quality of life in the elderly is one of the main activities in the field of health research and the basis for decision-making regarding the allocation of resources related to the promotion of health and well-being of society [10].

Contradictory results were obtained in the study of quality of life in the elderly with diabetes. In a study in Kerman, the quality of life of the elderly with diabetes was lower than standard. Factors affecting the quality of life such as gender, level of education, consequences of diabetes, income, age, duration of diabetes, and body mass index have been reported in the quality of life of the elderly with diabetes [2]. Some studies have reported moderate quality of life in the elderly with diabetes [1,11]. The results of another study in Tehran showed that the quality of life of the elderly with diabetes was desirable and above the standard [12].

Despite numerous studies on the quality of life of the elderly; however, so far no study has been done on the quality of life in the elderly with diabetes in Zanjan. Also, the definition of quality of life is different in various cultural and social contexts. Therefore, this study was conducted to evaluate the quality of life in the elderly with diabetes and to determine the related factors in Zanjan.

Methods

This cross-sectional study was performed on 130 elderly with diabetes in 2019-2020. The study population included all elderly with diabetes referred to endocrinology clinics affiliated to Zanjan University of Medical Sciences. Sample size according to the estimated prevalence of diabetes in the elderly [5,13] and taking into account the statistical confidence intervals of 95% ($z_{1-a/2}$=2, a=0.05), p=0.08 and accuracy of 5% (d=0.05) was determined using the following formula [2]:

$$n=\frac{z^2_{1-\alpha/2}\times P\times(1-P)}{d^2}$$

The sample size was estimated at 118 people and 130 people were considered for better results. Sampling was done in an easy and accessible way. The characteristics of the research units included diabetic elderly over 60 years of age covered by endocrinology clinics affiliated to Zanjan University of Medical Sciences, lack of other chronic diseases, and consent to participate in the study. The researcher went to the endocrinology clinics during the morning working hours to complete the questionnaires. The questionnaire was completed by the researcher and after explaining the objectives of the study, emphasizing the optionality of participating in the study, and was done in-person.

The study instruments included a demographic information questionnaire and the SF36. Demographic information questionnaire included age, sex, marital status, level of education, place of residence, employment status, and duration of diabetes. SF36 questionnaire was used to assess the quality of life. This questionnaire has 36 questions in 8 dimensions that measure the quality of life in 2 subscales of physical health, mental health, and overall. The subscales of physical health include physical functioning, role limitations due to physical health, pain, and general health. The subscales of mental health include role limitations due to emotional problems, energy/fatigue, emotional well-being,

and social functioning. The lowest score on each scale is zero and the highest score is 100, and a higher score is a better quality of life [2]. In the study of Psychometrics Montazeri et al., the validity and reliability of this questionnaire were confirmed and Cronbach's alpha coefficient was reported to be 0.7 [14].

Ethical considerations include obtaining the code of ethics (IR.ZUMS.REC.1398.108) from the ethics committee of Zanjan University of Medical Sciences. The necessary permits from the relevant authorities, obtaining informed written consent from the participants after introducing the objectives of the study and the researcher, voluntary presence in the study, the anonymity of the questionnaires, and the confidentiality of all information of the participants were considered.

The collected data were analyzed using SPSS 16 software. For descriptive statistics, mean (standard deviation) and frequency (percentage) were presented. Kruskal-Wallis and Mann-Whitney tests were used for analytical statistics due to the abnormal distribution of quantitative data. The significance level was considered less than 0.05 ($P < 0.05$).

Results

The majority of study participants were in the age range of 60-74 years (89 people), women (73 people), married (91 people), resident of the city (87 people), unemployed (85 people), and illiterate (88 people). Fifty-two participants in the study had more than 10 years of diabetes history. Demographic characteristics of the elderly with diabetes participating in the study are presented in Table 1.

Table 1: Frequency distribution of demographic characteristics of study participants

		frequency	percentage
Age	60-74	89	68.5
	75-90	30	23.1
	Above 90	11	8.5
Gender	male	57	43.8
	female	73	56.2
Marital status	married	91	70
	single	39	30
Place of residence	city	87	66.9
	Village	43	33.1
Employment status	employed or retired	45	34.6
	unemployed	85	65.4
Duration of diabetes	Under 5 years	35	26.9
	5-10	43	33.1
	Above 10	52	40
Level of education	illiterate	88	67.7
	literate	42	32.3

The mean score of quality of life of the study participants was 44.74±19.26 in the subscale of physical health, 47.92± 15.68 in the subscale of mental health, and 46.33±16.45 in overall. The mean and standard deviation of different dimensions of quality of life in the elderly with diabetes referred to endocrinology clinics affiliated to Zanjan University of Medical Sciences are presented in Table 2. The results show that the highest mean is related to the dimension of emotional well-being (60.61±16.67) and the lowest mean is related to the dimension of role limitations due to emotional health (19.74±33.38).

Table 2: Mean and standard deviation of the dimensions of the quality of life questionnaire in the study participants

Dimensions of quality of life	Min	Max	Mean	Standard deviation
Physical functioning	0	100	56.50	27.30
Role limitations due to physical health	0	100	22.69	35.41
Role limitations due to emotional health	0	100	19.74	33.38
Energy / Fatigue	15	95	55.92	17.45
Emotional well-being	20	100	60.61	16.67
Social functioning	0	100	55.40	20.99
Pain	0	100	57.94	25.59
General health	0	90	41.84	20.90
Physical health subscale	0	88.75	44.74	19.26
Mental health subscale	17.50	98.75	47.92	15.68
Total quality of life score	12	91.88	46.33	16.45

The results showed the mean total score of quality of life with age (p=0.0001), marital status (p=0.0001), place of residence (p=0.004), employment status (p=0.018), duration of diabetes (p=0.0001), and level of education (p=0.0001) has a statistically significant relationship. However, it did not show a significant relationship with gender (p=0.436). The quality of life decreases with age and the duration of diabetes. Also, the quality of life is lower in female patients, single, rural, unemployed, and illiterate (Table 3).

Table 3: Comparison of the mean and standard deviation of total quality of life score based on demographic characteristics

Total quality of life score		Mean	Standard deviation	P-value
Age	60-74	51.12	15.55	0.0001
	75-90	39.35	13.36	
	Above 90	26.61	8.12	
Gender	male	47.61	14.98	0.436
	female	45.33	17.54	
Marital status	married	51.07	15.41	0.0001
	single	35.28	13.30	
Place of residence	city	49.25	17.88	0.004
	Village	40.42	11.08	
Empoyment status	Employed or retired	50.99	16.96	0.018
	Unemployed	43.86	15.71	
Duration of diabetes	Under 5 years	55.11	16.73	0.0001
	5-10	45.8	15.82	
	Above 10	40.85	14.40	
Level of education	ةiterate	55.91	15.15	0.0001
	illiterate	41.76	15.08	

Discussion

This study aimed to evaluate the quality of life in the elderly with diabetes and determine the factors associated with it. There is no normal standard in Iran to determine the quality of life of people. However, an average of 50 with a standard deviation of 10 can be considered as a standard and acceptable indicator for the quality of life of the elderly [2,15]. Accordingly, the overall score of quality of life in the elderly with diabetes referred to endocrinology clinics affiliated to Zanjan University of Medical Sciences was lower than the standard. There was a relationship between quality of life and age, marital status, place of residence, employment status, duration of diabetes, and level of education.

In the present study, the mean score of quality of life in the subscale of physical health, mental

health, and the total score was lower than the standard level which is consistent with the results of the study of Borhaninejad (2016) in Kerman, Wares (2017) in Kashan, Zahmatkeshan (2012) in Bushehr, and Nguyen (2018) in Vietnam [2,5,6, 16]. However, in some studies, the quality of life of the elderly has been reported at a moderate and higher level [1,10-12,17,18], which was not in line with the results of the present study. This difference may be due to cultural, social, and economic differences, the use of different quality of life measuring instruments, differences in the age range, and the level of education in participants.

In the present study, the mean scores in the physical health subscale were lower than the mental health subscale. This finding was consistent with the results of study of Borhaninejad (2016) in Kerman and Kooshyar (2015) in Mashhad [1,2]. The existence of physical problems, disabilities, and the occurrence of chronic diseases such as diabetes in old age are involved in this issue [19].

Based on the results the lowest mean score of quality of life in the elderly was related to the dimension of role limitations due to emotional health. This finding was in line with the results of Khazaei Jalil's (2015) study in Shahroud [20]. This can be due to reasons such as an increased incidence of mental disorders (depression, loneliness) over the age of 65, as well as factors such as retirement, losing a spouse, and living in a nursing home that can lead to disability in the elderly [21].

According to the findings of the present study, the highest mean score of quality of life was related to the dimension of emotional well-being. This finding was in line with the results of the Nejati (2008) study in Kashan [22]. Emotional well-being means having maximum positive emotion and minimum negative emotion. People with high emotional well-being experience more positive emotions, positively evaluate their past, present, and future, others, events, and describe them as pleasant. In contrast, people with low well-being assess these as unfavorable and experience more negative emotions. Emotional well-being is one of the important indicators of mental health, quality of life, and life satisfaction, and many factors such as social, personality, emotional, cultural, spiritual, etc. play a role in people's well-being [23]. In the study population, families pay special attention to and respect the high status and dignity of the elderly. This may be related to this finding in the present study.

Based on the results, there is a relationship between age and quality of life. With age, the level of quality of life decreases. To justify this, it can be said that with age, cases such as increasing the prevalence of chronic diseases such as diabetes, depression, decreased physical function occurs that can reduce the quality of life [4,24-26]. This finding is in line with the results of the study of Cheraghi et al. (2019) in Hamedan [10]. In the study of Abbasabad Arabi (2015) in Tehran, the quality of life decreases with age, but this relationship has not been significant [12]. The reasons for this difference are the number (85 people) and the difference in the age range of participants (60 to 75 years) in the study.

Another finding of the study showed that there is no significant relationship between gender and quality of life. Older men with diabetes had a better quality of life. However, this relationship was not significant. The results of a review study indicate that female gender is a negative determinant of quality of life in the elderly [8]. This finding was inconsistent with the results of studies by Kooshyar (2015) in Mashhad [1], Abbasabad (2015) in Tehran [12], Cheraghi (2019) in Hamedan [10], and Borhaninejad (2016) in Kerman [2]. Due to gender differences and characteristics, women are more vulnerable to mental and physical problems than men, which can be effective in reducing their quality of life [1]. Most elderly women in Zanjan are inactive, housewives, and economically dependent. On the other hand, due to customary and traditional restrictions, they do not welcome remarriage, so they live alone and without a spouse. The mentioned factors can be related to the low quality of life in elderly diabetic women in Zanjan. The findings of the present study on the relationship between quality of life, marital status, and employment support this issue.

According to the results of the study, a significant relationship was observed between marital status and quality of life. The quality of life was better in married elderly . This may be due to the supportive role of spouses, especially in old age. This finding was in line with the results of the study of Kooshyar [1], Abbasabad Arabi [12], and

Cheraghi [10]. In some studies, although married elderly had a better quality of life, this relationship was not significant [2,12], which is inconsistent with the results of the present study.

In this study, the results showed that there is a significant relationship between employment status and quality of life. As a result, the unemployed elderly had a lower quality of life. In justifying this issue, it can be said that having a source of income and economic and financial security, especially in the elderly, can be effective in improving their quality of life. The results of a study confirming this finding show that diabetic elderly with good economic status and higher income had a better quality of life [2,12].

The present study showed that there is a significant relationship between quality of life and place of residence (city or village). The quality of life of the elderly living in the city was better than that of the elderly living in the village . This may be due to access to more health and welfare facilities in urban life. This finding was inconsistent with the results of the study of Haji Hashemi et al. (2013) in Shahriar [27] and inconsistent with the results of the study of Cheraghi et al. (2019) in Hamedan (10) and Heidari (2019) in Abadeh [28]. Although the relationship between place of residence and quality of life was significant in the study of Cheraghi, according to the results of his study in terms of physical and mental health of rural elderly had a better quality of life due to social relationships, contact with friends, and the use of this support network.

The results of this study showed that there is a significant relationship between the duration of diabetes and quality of life. The longer the duration of diabetes in the elderly, the lower the quality of life. The results of a review study indicate that sick elderly people have a lower quality of life than elderly people who are in good health. Chronic diseases such as diabetes and its progressive complications, and drug use can reduce the quality of life in the elderly [8,12].

In our study, a significant relationship was observed between level of education and quality of life. Literate elderly had a better quality of life. This finding was consistent with the results of some studies on quality of life in the elderly [1,2, 10,12]. In one study, having higher education was introduced as a positive determinant of the quality of life of the elderly [8]. The level of education can be effective in increasing the quality of life by increasing the level of knowledge and awareness of people about the importance of diet, exercise, proper use of drugs, and controlling risk factors for chronic diseases such as diabetes [2]. In the study of Arastoo et al. (2011) in Tehran, although the quality of life scores in literate people was better than illiterate people, however, the relationship between level of education and quality of life was not significant [29] which is inconsistent with the results of the present study.

The limitations of the present study include the following: Since cultural and social factors affect the quality of life, Therefore, as with other descriptive studies, the possibility of generalizing the results of the present study to communities with different socio-cultural contexts is limited. Another limitation in the present study was the unwillingness of the participants to cooperate, which was explained by the researcher about the goals and importance of the study, and considering that the study population was elderly, the researcher completed the questionnaire. Other limitations of the present study include the lack of discovery of cause and effect in descriptive studies. It is suggested that in the future a study be designed and conducted to compare the quality of life in diabetic and non-diabetic elderly with larger sample size.

Conclusion

The results of the present study showed that the level of quality of life in the elderly with diabetes referred to endocrine clinics affiliated to Zanjan University of Medical Sciences is lower than the standard. Age, marital status, duration of diabetes, place of residence, employment status, and level of education were identified as factors affecting the quality of life of the elderly with diabetes. Therefore, it is suggested that health officials and policymakers in plans to improve the health and quality of life of diabetic elderly to consider the factors identified in this study.

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affiliated with Zanjan University of Medical Sciences, and patients who participated in this study.

Conflict of interest

The authors declare that they have no conflict of interest.

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