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Original Article

The relationship between socioeconomic and therapeutic factors with the quality of life among the patients type II diabetes

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ABSTRACT

Background: It is necessary that we have more information about the quality of life (QOL) of diabetics, their special characteristics and socioeconomical characteristics that affect QOL in type II diabetic patients. The aim of this study was to investigate the QOL in type II diabetic patients and relationship of QOL in type II diabetic patients with socioeconomical and treatment factors in Bojnord City, Iran.

Methods: This study was a cross-sectional study. The subjects, in this study, were patients with type II diabetes referring to the diabetes clinic in the city of Bojnord, sampling was done randomly, according to the formula of samples and resources, 218 samples were estimated. For data collection, a two-part questionnaire containing demographic and disease characteristics and QOL questionnaire SF36. After collecting the information and entering data in the software SPSS using χ^2 statistics test, one-way ANOVAs, t-test, and correlation coefficient were analyzed.

Results: In this study, 218 patients with type II diabetes were analyzed of which 77 (35.3%) were male and 141 (64.7%) were female and most of the cases were married (96.3%). The mean age of the participants was 55.45 ± 11.44 years and also the average weight, body mass index, and duration of disease were 71.94 ± 12.17 kg, 27.18 ± 4.53, and 2720.78 ± 2504.63 days, respectively. The highest average among the eight dimensions of QOL is in physical function. The total score of the QOL was 55.94 ± 18.63. Furthermore, the findings showed that QOL of 66 people (30.3%), 56 people (27.7%), 59 people (27.0%), and 37 people (17.0%) is undesired, poor, good, and desirable, respectively. The results of t-test and ANOVA showed between gender, education, type of treatment and QOL in type II diabetic patients studied; there was a statistically significant difference ($P \leq 0.050$).

Conclusion: To increase the QOL for diabetics, attention to the self-care training programs and continuous monitoring and regular of patients have an important role.

Keywords: Socioeconomic factors; Quality of life; Diabet; SF36

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1. Introduction

The epidemic of diabetes is one of the most important causes of mortality and disability in the world (between 5.1% and 5.3% of the total population of the world). It is estimated that by 2030 the number of people with type II diabetes will reach 366 million [1]. In addition to the high incidence and the outbreak of diabetes in the world, its serious complications such as retinopathy, nephropathy, neuropathy, non-traumatic amputations, atherosclerosis, and kidney disorders have also raised concerns about the disease [2]. In Iran, in 2005, the prevalence of diabetes was 7.7%, equal to 2 million people, and it is predicted that if the current process continues, in 2025 the cases will reach about 5.2 million [3]. This process is happening while healing in diabetic patients is almost impossible. Thereby improving the quality of life (QOL) is usually the most important goal of primary health care [4]. Because type II diabetes is chronic, causes disabilities, paralysis, and the need of lifelong care, so it severely affects the patients QOL [5]. In fact, the life expectancy of people with diabetes is 10 years less than the general population due to the effects of the illness. The reduction of life expectancy is due to premature death and living with disability which leads to a reduced QOL [6]. The studies on the expenditure of diabetic patients show high costs of treatment. According to the American Diabetes Association in 1997, the medical expenses per each diabetic person were 3.8 times more than

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an equal non-diabetic person [7].

QOL is one of the characteristics that is valuable for patients and causes well-being; feeling healthy develops and maintains a reasonable physical, emotional, and intellectual performance; so that he can maintain his abilities in valued activities of his life [8]. According to the World Health Organization in 1966, the QOL is the beliefs of a person in his life and the way he lives according to his culture and values and correlating the above with the goals, expectations, standards, and the priorities that he has [9]. In the medical sector, structural QOL is associated with the sense of social utility. When the QOL is defined by social utility, it's strongly associated with people's physical limitations or signs of sickness. The ability of patients to improve their lives, including meaningful participation in the society through useful activities or valuable social roles is examined in this definition of the QOL [10].

Improving QOL is not only useful and valuable for the diabetics but also the medical and health-care costs associated with it also decrease [11]. QOL and socioeconomic factors (culture, education, social status, disease, income, the place of living, age, and gender) are linked [12]. Therefore, the knowledge and ability to control the cultural, social, technical, economical, and geographical environment in the society where organizations and health-care institutions are active in new roles of management in giving health services and increasing the patients QOL; this is important for the diabetics due to the nature of the disease. Hence, it is necessary that we have more information about the QOL of diabetics, their special characteristics, disease conditions environmental, and social characteristics that affect and decrease their QOL [13].

In several studies, the QOL of people with diabetes has been analyzed. Vares's study results showed that 60% of diabetic patients have a poor QOL in comparison to most healthy people [14]. Also according to the results of Mint's study, people with diabetes compared to those without a chronic disease have the lowest QOL [15]. In another study, Tal analyzed the socioeconomic factors in type II diabetes patients and the consequences of the disease. The results showed that the diabetics with a lower socioeconomic status have the most environmental challenges and experience a lower socio-psychological means such as the ability to adapt [16]. And in a study in France by title: QOL assessment of type II diabetic patients in general medicine showed that The QOL of type II diabetics was negatively influenced by age (> 75 years), female gender, loneliness, and the absence of professional or physical activity and self-management of glycemia was associated with improved QOL [17]. Moreover, Piper et al.'s study [18] showed that the majority of patients with type II diabetes mellitus among adults in North Carolina did not have good self-management skills, based on the education and blood glucose-monitoring criteria established and patients with poor health-related QOL had significantly increased odds of good diabetes mellitus self-care practices. And in another study in Iran 330, the patients with diabetes were studied that the mean of QOL in diabetic patients with and without depression was 50.7 ± 14.0 and 60.5 ± 13.3, respectively, that was significant in two groups [19].

Although there have been studies in Iran to assess and identify the QOL in diabetic patients, there is still a lot unknown about diabetes and QOL. Which should be detected based on findings and programs should be developed for detecting people at risk of decreased QOL and interventions to enhance the QOL should be done. Therefore, this study aimed to investigate the QOL in type II diabetic patients and its association with socioeconomic and treatment factors on the QOL of some patients in Bojnord City, Iran.

2. Methods

This study was a cross-sectional study to verify and analyze socioeconomic and health factors with life quality in type II diabetic patients. The subjects, in this study, were patients with type II diabetes referring to the diabetes clinic in the city of Bojnord, sampling was done randomly, according to the formula of samples and resources, 218 samples were estimated. Initially, all patients eligible for the study who had the criteria (including 1 - consent 2 - At least 6 months passed the treatment 3 - lack of chronic disease 4 - definitive diagnosis of diabetes by a specialist) were put in a separate list then the samples were selected by simple random sampling, and if one did not want to work the next sample would be replaced by simple random sampling. For data collection a two-part questionnaire containing demographic and disease characteristics and QOL questionnaire SF36 which is used in various studies and its reliability and validity is measured was used [20]. Experts were trained and after obtaining permission from the Department of Health and the city health clinic referred to Bojnord's clinic and they phone called to give the subjects' awareness, obtain consent from patients for an interview and they were invited to complete the questionnaire. After collecting the information and entering data in the software SPSS software (version 18, SPSS Inc., Chicago, IL, USA) using χ^2 statistics test, one-way ANOVAs, t-test and correlation coefficient were analyzed.

3. Findings

In this study, 218 patients with type II diabetes were analyzed of which 77 (35.3%) were male and 141 (64.7%) were female and most of the cases were married (96.3%). The mean age of the participants was 55.45 ± 11.44 years and also the average weight; body mass index (BMI) and duration of disease were 71.94 ± 12.17 kg, 27.18 ± 4.53 and 2720.78 ± 2504.63 days, respectively. Other results and related social and economic factors are as outlined (Table 1).

According to table 2, the highest average among the eight dimensions of QOL is in physical function. The total score of the QOL was 55.94 ± 18.63.

Furthermore, the findings show that 66 people (30.3%) T 56 people (27.7%), 59 people (27.0%), and 37 people (17.0%), respectively, rated the QOL as undesired, poor, good, and desirable.

The results of t-test and ANOVA showed between gender, education, type of treatment and QOL in type II diabetic patients studied; there was a statistically significant difference ($P \leq 0.05$). As the QOL of men was better than women and as the subjects had a lower education their QOL was lower and those who were only using a pill to control the disease had a better QOL. But between the QOL of elderly and marital status, occupation, place of residence, and income, no significant differences was observed (Table 3).

Table 1. Distribution of the socioeconomic characteristics

Variable	Groups	Frequency (%)
Education	Illiterate	72 (33)
	Primary	57 (26.1)
	Guidance Elementary	23 (10.6)
	Diploma	33 (15.1)
	Collegiate	23 (21.1)
Employment status	Employee	39 (17.9)
	self-employed	23 (10.5)
	Housewife	122 (56)
	Retired	28 (12.8)
	Worker	6 (2.8)
Income (thousand to mans)	500 less than	30 (17.1)
	Between 500 and 750	35 (19.9)
	Between 750 and 1000	74 (42)
	More than 1000	37 (21)
Accommodations	City	179 (82.9)
	Village	37 (17.1)
Marital status	Single	8 (3.7)
	Married	209 (96.3)

Pearson correlation coefficient revealed that there is an inverse relationship between the ages of patients with diabetes, duration of diabetes and BMI, so that with increasing age, increasing duration of sickness and BMI, the QOL reduces (Table 4).

Table 2. The mean and SD of the eight dimensions of the quality of diabetic patients

Dimension	Number	Average	SD
Physical function	218	66.21	26.79
Social role	218	50	43.40
Emotional role	218	52.29	45.90
Energy	218	65.6	21.43
Social	218	48.08	12.32
Pain	218	54.28	30.98
General health	218	42.36	16.55
Total score of quality of life	218	55.94	18.63

SD: Standard deviation

4. Discussion

The findings showed that only gender and education of the socioeconomic variables (jobs, income, place of residence, gender, education, and marital status) have a significant relationship with the QOL in type II diabetes patients. So that by increasing the level of education and being male the QOL increases. Furthermore, all clinical variables considered in the study (type of treatment, duration of illness, BMI, and age) had a significant effect on the type II diabetes patients QOL. In according to the specific index of QOL is not in Iran country so we could use the mean of 50 ± 10 as the normal and acceptable index for the QOL in elderly [20]. The mean overall QOL in diabetic patients was (55.94) that is higher than 50. Furthermore, according to the results of the eight aspects of QOL analysis, except of from the social aspect, the average scores was ≥ 50.

Table 3. Relationship quality of life with the socioeconomic variables

Variable	Average	P
Career		
Employee	44.21 ± 19.20	0.760
Self-employed	46.16 ± 17.44	
Housewife	45.27 ± 18.33	
Retired	44.18 ± 19.32	
Worker	43.17 ± 17.56	
Treatment		
Pill	60.12 ± 17.00	0.007
Insulin	46.45 ± 19.3	
Both	46.99 ± 19.10	
Sexuality		
Male	60.33 ± 21.60	0.012
Female	53.61 ± 15.6	
Income (thousand tomans)		
Less than 500	55.15 ± 16.30	0.540
500-750	45.76 ± 22.10	
750-1000	50.18 ± 20.20	
More than 1000	49.38 ± 18.54	
Education		
Illiterate	51.82 ± 17.40	0.001
Primary	50.25 ± 17.00	
Elementary	63.44 ± 17.70	
Diploma	63.37 ± 20.40	
Academic	64.55 ± 17.70	
Marriage		
Single	46.32 ± 20.55	0.092
Married	45.22 ± 19.24	
Place of residence		
City	56.4 ± 18.6	0.392
Village	53.5 ± 19.1	

In this study, the relation between education and QOL for patients with diabetes estimated to be positive so the higher the educational level the QOL was better. The results of various studies also indicate a significant relation between QOL and education [21-24]. The impact of education on QOL may be due to increased awareness of the importance of diet, exercise, proper use of drugs, and the control of risk factors for chronic diseases such as diabetes. Furthermore, higher education may lead to higher social class and enhanced economic efficiency and increased self-esteem and QOL [25].

Table 4. Correlation coefficients between quality of life, age, duration of illness and BMI

Correlation	BMI		Duration of illness		Age	
	Coefficients	P	Coefficients	P	Coefficients	P
Quality of life	−0.176	0.012	−0.283	0.000	−0.181	0.008

People with higher education can rely on their own health knowledge and self-care practices to increase their QOL. Another variable that was significant in relation to the QOL in patients with type II diabetes is gender. The study showed that QOL is better for diabetic men than diabetic women. The results of Mohammadpour et al.'s study [26] in Tabriz and Esteban in Spain [27] are similar to this study. However, in Zahmatkeshan et al.'s study [21], there was no significant gender-specific relation to QOL. It seems that women had lower QOL maybe due to greater vulnerability of women against mental and physical problems or gender inequality in the use of health services, which can reduce their QOL.

Occupation, place of residence, income, and marital status are socioeconomic factors that were related to QOL of diabetic patients in the study. There was no significant relationship between these variables and QOL. However, the findings of colleagues, Zahmatkeshan et al. [21], Baghianimoghadam et al. [28] and Aghanuri et al. [29] showed a statistically significant relation between QOL and employment status, which do not match with the results of this study. Having a job leads to a fixed income and is an opportunity for effective social relationships with people in the community which leads to an increase in QOL. However, most of the subjects in this study were housewives this can affect the QOL in patients, and in this regard, it should be noted that housekeeping can be a barrier for accepting social worker roles and so a reduced QOL is followed. Furthermore, no statistically significant differences were observed between the place of residence and the QOL of diabetic patients. Which is unlike the results of Mohammad Pour et al. [26] and Baghianimoghadam et al.'s studies [28]. Yet with the establishment of family doctors in rural areas, increased communication and ease of commuting from rural to urban areas, the villagers also have easy access to health services. However, lifestyle which is one of the most important factors in chronic diseases, especially in diabetes is different in urban and rural life. Moreover, villagers have a more active and healthier life compared to urbanites. Income which is one of the most important economic factors, in this study, we evaluated its relationship with QOL but no significant relationship was seen between these two variables. However in the research of Aghanuri et al. [29], Arastoo et al. [30] and Szwarcwald et al. [31] in Brazil, the subjects' income had a significant relationship with their QOL. The results also showed a significant correlation between QOL and income. No significant relationship could be due to low levels of income and the similarity of the amount of income in the subjects. The results showed that there is no significant relationship between marital status and QOL, the single and married had a similar QOL. Aghanuri et al. [29] and Lima et al. [24] did not show a significant relation between marriage and QOL that correspond with the results of this study. But in the research of Bazrafshan et al. [32] in Shiraz and Hyttinen et al. [33] in Finland, there is a significant relationship between these two variables. Family culture in Bojnoord provides a condition for singles to have the same support as the married, from family members and relatives.

Type of treatment, duration, BMI, age and health factors were examined in this study. Now we will discuss these factors. Between the ages of patients and QOL, statistically significant differences were observed. The results showed that with increasing age QOL reduced. Sadeghi et al. [8] and Mohammadpour et al. [26] both concluded in their studies that the QOL of diabetic patients had negative relation with age which corresponds with this study. The decrease in the QOL could be due to the increasing physical, emotional and self-care limitations or cardiovascular, neurovascular and neuropathy complications and other complications of diabetes caused by aging. Bagheri et al. [34] reported that diabetic patients with vascular complications have lower QOL. There was also a significant correlation between the duration of diabetes and QOL of diabetic patients so that by increasing the duration, QOL is reduced. This could be caused by increasing complications of diabetes with the increase of the duration of illness. Also between BMI and QOL of diabetic patients, there was a statistically significant relationship so that with the increase in BMI, QOL reduced. However, unlike this study, results of Aghanuri et al.'s research [29] and Yan et al.'s research did not show any statistically significant association between BMI and QOL [35]. This is despite the fact that obesity is a risk factor for diabetes and obese people generally have less activity and they do not put proper nutrition into consideration, so they are at the risk of the disease and reduced QOL are as follows. In this regard, proper nutrition and regular physical activity is recommended for these patients. Furthermore, patients with a BMI higher than normal should take part in special self-care programs and pay special attention to their weight. Not only because obesity causes insulin resistance and impaired glucose tolerance but also metabolic disorders and diabetes increase morbidity and mortality [36], and therefore, can lead to decreased QOL in obese diabetics. In this study, a significant correlation was observed between treatment and QOL so the patients who only used pills to control their disease had a better QOL. This result does not have any correspondence with the result of Mohammadpour et al. [26], Alavi et al. [37] and Coffey et al.'s [38]. However, it seems that the use of pills for diabetes control is an easier method than using insulin injection.

The limitations of this study were the specific conditions of patients when responding to the questionnaire and the effect of their diabetes may affect results; they were out of the control of the researcher. Other limitations are that this study was cross-sectional, and the absence of a specific QOL questionnaire for patients with diabetes.

5. Conclusion

According to the results of this study, although QOL scores were above average (50), they are not too far from the average so the QOL is low. The study showed that factors relating to the patient and disease(age, BMI, duration of illness, and type of treatment) had a significant relation with QOL, while socioeconomic factors (jobs, income, and location) had no significant relationship, only education as a socioeconomic variable related to QOL in patients with type II diabetes. Paying attention to the self-care training programs and an accurate disease and patient control has a more important role in comparison to the socioeconomic factors.

6. Conflict of Interests

Authors have no conflict of interests.

7. Acknowledgments

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References

(1) World Health Organization. Diabetes [Online]. [cited 2008]; Available from: URL: http://www.who.int/mediacentre/factsheets/fs312/en
(2) LeRoith D, Taylor SI, Olefsky JM. Diabetes mellitus: A fundamental and clinical text. Philadelphia, PA: Lippincott Williams & Wilkins; 2004.
(3) Amini M, Parvaresh E. Prevalence of macro-and microvascular complications among patients with type 2 diabetes in Iran: a systematic review. Diabetes Res Clin Pract 2009; 83(1): 18-25.
(4) Ghanbari A, Yekta P, Atrkar Roushan Z. Effective factors on quality of life in diabetic patients. J Guilan Univ Med Sci 2001; 10(37-38): 82-9. [In Persian].
(5) Wee HL, Cheung YB, Li SC, Fong KY, Thumboo J. The impact of diabetes mellitus and other chronic medical conditions on health-related Quality of Life: is the whole greater than the sum of its parts? Health Qual Life Outcomes 2005; 3: 2.
(6) Dunn SM, Welch GW, Butow PN, Coates AS. Refining the measurement of psychological adjustment in cancer. Aust J Psychol 1997; 49(3): 144-51.
(7) Coelho R, Amorim I, Prata J. Coping styles and quality of life in patients with non-insulin-dependent diabetes mellitus. Psychosomatics 2003; 44(4): 312-8.
(8) Sadeghie Ahari S, Arshi S, Iranparvar M, Amani F, Siahpoosh H. The effect of complications of type II diabetes on patients' quality of life. J Ardabil Univ Med Sci 2008; 8(4): 394-402. [In Persian].
(9) Leininger M. Quality of life from a transcultural nursing perspective. Nurs Sci Q 1994; 7(1): 22-8.
(10) Ghaffary G, Karimi A, Nowzeri H. Trend study of quality of life in Iran. Quarterly of Social Studies and Research in Iran 2012; 1(3): 107-34. [In Persian].
(11) Glasgow RE, Ruggiero L, Eakin EG, Dryfoos J, Chobanian L. Quality of life and associated characteristics in a large national sample of adults with diabetes. Diabetes Care 1997; 20(4): 562-7.
(12) King CR, Hinds PS. Quality of life: from nursing and patient perspectives: Theory, research, practice. Burlington, MA: Jones & Bartlett Learning; 2003.
(13) Di Iorio A, Longo AL, Mitidieri CA, Bandinelli S, Capasso S, Gigante M, et al. Characteristics of geriatric patients related to early and late readmissions to hospital. Aging (Milano) 1998; 10(4): 339-46.
(14) Roman SH, Harris MI. Management of diabetes mellitus from a public health perspective. Endocrinol Metab Clin North Am 1997; 26(3): 443-74.
(15) Mensing C, Boucher J, Cypress M, Weinger K, Mulcahy K, Barta P, et al. National standards for diabetes self-management education. Task Force to Review and Revise the National Standards for Diabetes Self-Management Education Programs. Diabetes Care 2000; 23(5): 682-9.
(16) Tol A, Pourreza A, Shojaeizadeh D, Mahmodi M. Assessing of socio-economic components and disease outcomes among type 2 diabetic patients in teaching hospitals of tums, 2010. Hospital 2011; 10(2): 1-9. [In Persian].
(17) Senez B, Felicioli P, Moreau A, Le Goaziou MF. Quality of life assessment of type 2 diabetic patients in general medicine. Presse Med 2004; 33(3): 161-6.
(18) Piper CN, Chalakalal S, Sebastian N, Warren-Findlow J, Thompson ME. Race, socioeconomic status, health-related quality of life, and self-care of type 2 diabetes mellitus among adults in North Carolina. South Med J 2015; 108(4): 212-6.
(19) Derakhshanpour F, Vakili MA, Farsinia M, Mirkarimi K. Depression and quality of life in patients with type 2 diabetes. Iran Red Crescent Med J 2015; 17(5): e27676.
(20) Sedaghati Kasbakhi M, Ehsani M, Ghanbari A. Comparative study of quality of life in type 2 diabetic patients with non-diabetic people. J Babol Univ Med Sci 2007; 9(5): 55-60. [In Persian].
(21) Zahmatkeshan N, Bagherzadeh R, Akaberiyan SH, Yazdankhah Fard M, Mirzaei K, Yazdanpanah S, et al. Assessing Quality of Life and Related Factors in Bushehr's Elderly People. J Fasa Univ Med Sci 2012; 2(1): 53-8. [In Persian].
(22) Aghamolaei T, Tavafian SS, Zare S. Health related quality of life in elderly people living in Bandar Abbas, Iran: a population-based study. Acta Med Iran 2010; 48(3): 185-91.
(23) Abbasimoghadam MA, Dabiran S, Safdari R, Djafarian K. Quality of life and its relation to sociodemographic factors among elderly people living in Tehran. Geriatr Gerontol Int 2009; 9(3): 270-5.
(24) Lima MG, Barros MB, Cesar CL, Goldbaum M, Carandina L, Ciconelli RM. Health related quality of life among the elderly: a population-based study using SF-36 survey. Cad Saude Publica 2009; 25(10): 2159-67.
(25) Alexandre Tda S, Cordeiro RC, Ramos LR. Factors associated to quality of life in active elderly. Rev Saude Publica 2009; 43(4): 613-21.
(26) Mohammadpour Y, Haririan HR, Moghaddasian S, Ebrahimi H. Surveying the quality of life and its dimensions among the type 2 diabetes patients referred to the Diabetes center of Tabriz university of medical sciences. J Urmia Nurs Midwifery Fac 2008; 6(1): 26-37. [In Persian].
(27) Pena MM, Hernandez B, V, Fernandez Cordero X, Gil de MA, Rodriguez PM, Lopez-de Andres A, et al. Self-perception of health status, mental health and quality of life among adults with diabetes residing in a metropolitan area. Diabetes Metab 2010; 36(4): 305-11.
(28) Baghianimoghadam MH, Afkhamiardakani M, Mazlomi S, Saeedizade M. Surveying the quality of life of the type 2diabetes patients. J Shaheed Sadoughi Univ Med Sci 2007; 14(4): 49-54. [In Persian].
(29) Aghanuri A, Mahmoudi M, Salehi H, Djafarian K. Quality of life in the elderly people covered by health centers in the urban areas of Markazi Province, Iran. Salmand Iran J Ageing 2012; 6(22): 20-9. [In Persian].
(30) Arastoo A, Ghassemzadeh R, Nasseh H, Kamali M, Rahimi Foroushani A, Arzaghi M, et al. Factors affecting quality of life in elderly diabetic residents of the kahrizak geriatric nursing home of Tehran. Iran J Endocrinol Metab 2012; 14(1): 19-24. [In Persian].
(31) Szwarcwald CL, Souza-Junior PR, Esteves MA, Damacena GN, Viacava F. Socio-demographic determinants of self-rated health in Brazil. Cad Saude Publica 2005; 21 Suppl: 54-64.
(32) Bazrafshan MR, Hosseini Ma, Rahgozar M, Sadat Madah B. Quality of elderly's life in Shiraz, Jahandidegan club. Salmand Iran J Ageing 2008; 3(7): 33-41. [In Persian].
(33) Hyttinen L, Kekalainen P, Vuorio AF, Sintonen H,

Strandberg TE. Health-related quality of life in elderly patients with familial hypercholesterolemia. Int J Technol Assess Health Care 2008; 24(2): 228-34.

(34) Bagheri H, Abrahimi H, Taghavi N, Hasani MR. Evaluation of quality of life in patients with diabetes mellitus, based on its complications, referred to Emam Hossein Hospital, Shahroud. J Shahrekord Univ Med Sci 2005; 7(2): 50-6. [In Persian].

(35) Yan LL, Daviglus ML, Liu K, Pirzada A, Garside DB, Schiffer L, et al. BMI and health-related quality of life in adults 65 years and older. Obes Res 2004; 12(1): 69-76.

(36) Maggio CA, Pi-Sunyer FX. Obesity and type 2 diabetes. Endocrinol Metab Clin North Am 2003; 32(4): 805-22, viii.

(37) Masoudi Alavi N, Ghofranipour F, Ahmadi F, Rajab A, Babaee GR. Quality of life in diabetics referred to iran diabetes association (IDA) (Tehran 2003). Behbood J 2004; 8(2): 47-60. [In Persian].

(38) Coffey JT, Brandle M, Zhou H, Marriott D, Burke R, Tabaei BP, et al. Valuing health-related quality of life in diabetes. Diabetes Care 2002; 25(12): 2238-43.