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# Assessment of Family Functioning and Its Relationship to Quality of Life in Diabetic and Non-Diabetic Women

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## ABSTRACT

**Introduction:** One of the most important components and health indicators, especially among people with chronic diseases is quality of life. One of the possible factors which may impact on quality of life of diabetic patients is family functioning. This study aimed to determine the relationship between family functioning and quality of life of diabetic and non-diabetic women.

**Methods:** In this correlational cross-sectional study, 180 women (diabetics and non-diabetics) who referred to health centers in Mashhad in 2014-2015 were studied. Data were collected using SF-36 questionnaire and Mc Master Family Assessment Device (FAD). Data were analyzed using descriptive and statistical tests by SPSS ver.13 software.

**Results:** The result showed that diabetic women reported family impairment compared with none diabetic women. There was a significant relationship between the family functioning and quality of life in diabetics and non-diabetic women. Based on the results of the stepwise regression model, among factors of family function only the factor of behavioral control was able to predict the quality of life in diabetic women.

**Conclusion:** Regarding the study findings, good family function associated with better quality of life in diabetics and healthy women. Therefore, due to disturbed family function in diabetic's women implementation of training programs and consulting services could improve their quality of life.

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## Introduction

Diabetes type II is one of the most common chronic disease worldwide. The prevalence of this disease is increasing in developing countries. In 2012 over 371 million people had diabetes in the world, which is expected to increase to 552 million by 2030.<sup>1,2</sup> Diabetes also caused 4.6 million deaths and at least 465 billion US dollars in healthcare expenditures (11% of total healthcare expenditures in adults aged 20-79 years) in 2011.<sup>3</sup> The data represented by the National Survey of Risk Factors for Non-Communicable Diseases of Iran indicate that the number of patients suffering from diabetes, among the 25-64 years old Iranians is 7.7%, equal to 2 million patients, which half of them are not aware of their

disease.<sup>4</sup> The disease is associated with serious complications such as blindness, limb amputation, heart disease and chronic renal failure which effects on one's health.<sup>5,6</sup> The disease has a huge impact on psychological and social performance of diabetic patient. Although medication can relieve the symptoms of this disease, but the side effects of these medication could have a negative impact on their quality of life.<sup>7</sup> Moreover, addressing the psychological and social factors related to chronic diseases is very important.<sup>8,9</sup>

One of the concepts emerged in this time is quality of life. Along with the use of preventive proceedings and treatment of disease, the researchers found that this variable could be used as a significant assessment of the health status of the

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community.<sup>10</sup> In 1993, WHO defines Quality of Life as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.<sup>10</sup>

The quality of life is important because, if ignored, could lead to disappointment, lack of motivation for any effort, reduction of social, economic, cultural, and health activities or in the deeper dimensions could influence socio-economic development of a country. In other words, improving the quality of life is a health promotion step and this is the ultimate goal of all governments.<sup>11</sup>

Testa & Simonson have shown that measurement of quality of life could be used to assess the human and financial costs, benefits of new programs and interventions, benefits of new therapeutic strategies and to assess changes in physical, functional, mental and social aspect of patients' health. In addition, measuring quality of life can quantify the impact of a disease and its treatment on the individual's life.<sup>12</sup>

In the case of diabetes, most experts also agree on this point that in the evaluation of these patients should not only focus on physical symptoms and objective signs but also their mental and subjective symptoms should be considered. Since the physical, psychological and social aspect of health among diabetic patients is affected, the concept of quality of life seemed to be more important.<sup>13</sup> Quality of life has two physical and psychological dimensions, which both is affected by diabetes.<sup>14</sup> For example, results of Hatamloo Sadabadi *et al.*, in Tabriz indicated that mean score of quality of life among women with type II diabetes was lower than non-diabetic women.<sup>15</sup>

There are different factors affecting the quality of life, such as health system, the workplace, the community and the patient's family. Among them, little research has been done on the patient's family.<sup>16</sup>

At some studies, family function is one of the indicators of quality of life and mental health of the family and its members.<sup>17</sup> The

family function has been defined as "the ability of families to coordinate and adapt the changes throughout life, resolve the conflict, cooperate between members and success in disciplinary patterns, respect the boundaries between individuals and respect the rules and principles which help the family to protect the entire family system". Basically, the families functional refers to the ability to cope with stress, conflicts and problems; so that family could be able to do its roles, duties and functions.<sup>18</sup> Also, the family function show that how the family acts to meet the needs of their members and the community.<sup>9</sup>

Dimension of family function includes general performance, problem solving, communication, roles, emotional response, emotional involvement and control of behavior.<sup>18, 19</sup>

Family function has been introduced as one of the main factors affecting the quality of life. As an example, Rodriguez-Sanchez *et al.*, indicated that there was a relationship between family function and quality of life.<sup>20</sup>

Diabetes, as a chronic disease, makes many changes in the aspects of life which is hard to control without the support of family and community. To control this chronic illness, it is necessary to make overall changes in the life style of the patients. Such changes are related mainly to the environment, especially the family of the patient. For example, it has been found that 60% of patients with type II diabetes have undesirable quality of life compared to healthy individuals. Being older, unemployment, being female and low levels of family support has made them more vulnerable.<sup>8</sup>

Therefore, understanding the relationship between family function and important variables such as quality of life is critical in order to provide family-centered care and interventions to improve the performance of family function, especially in people with chronic diseases such as diabetes type II.

However, studies evaluating perception of family function by individuals with diabetes are scarce in the literature. This study, therefore, aimed to assess the relationship

between family function and quality of life in diabetic and non-diabetic women.

## Materials and methods

In this cross-sectional study, 180 women who referred to health centers in Mashhad, 2014-2015 were studied. According to a pilot study conducted on 40 subjects (20 diabetic women and 20 non-diabetics), the sample size was calculated. Quality of life means scores in diabetic and non-diabetics women were 63.77 (4.85) and 70.71 (15.69), respectively. Then, using related formulas and considering  $\alpha=0.05$ ,  $\beta=0.2$ , 77 subjects were estimated to be recruited in each the group and we selected 90 for ensuring the sufficient sample.

Health care centers were selected using of cluster sampling method. According to the population covered by health centers in Mashhad, ten health centers were selected. Women who have the inclusion criteria and referred to the centers were asked to participate in this study after fulfilling written informed consent. Diabetic women were selected from patients who referred to diabetes-control unit and non-diabetics women were selected from the healthy women who referred to other units in those health care centers using of convenience sampling method.

Inclusion criteria were women aged 18 -60 years, ability to read and write, married, living with her spouse, being recognized of type II diabetes by the specialist and being diagnosed for at least one years.

Exclusion criteria were drug and alcohol addiction, a psychological crisis, psychological disorder and chronic diseases such as cancer and asthma.

Data were collected using a demographic questionnaire which includes age, occupation, education level of patient and her spouse, socio-economic status, marriage status, number of pregnancies, number of children, number of labors, type of delivery, methods of contraception and duration of diabetes. In addition, the Mc Master Family Assessment Device (FAD) was used to assess the family

function and SF-36 questionnaire was used to assess quality of life in both groups. Then, blood sugar levels, HgA1c and body mass index (BMI) were assessed in both groups by the researcher. Self-report method was used for data collection.

Family Assessment Device (FAD) questionnaire is one of the most reliable tools for evaluation of the family based on Mc Master Model. This tool has 53 items and it was designed in 1983 by Epstein and Bishop to describe the organizational and structural characteristics of the family<sup>21</sup>. This scale has 7 dimension including problem solving, communication, roles, affective response, affective involvement, behavior control and general functioning. Questions are available in 4 -Likert response from "strongly disagree= 1" to "fully agree = 4". Higher scores indicate worse levels of family functioning. Cronbach's alpha coefficient of this test in the Epstein et al., study was 0.92 and 0.72 to 0.92 for its subscales.<sup>21</sup> The questionnaire has been used in Iran and its validity has been confirmed.<sup>18</sup>

SF-36 questionnaire is also one of the most common and most comprehensive tools for measuring the quality of life. This tool was designed in 1993 by Ware and his colleagues. It has 36 questions in eight subscales: Physical functioning, role limitations due to physical problems, role limitations due to emotional problems, bodily pain, social function, emotional health, vitality, and general health.<sup>22</sup> Scores ranged from 0-100 grades and higher scores indicated better quality of life.<sup>22</sup> Validity and reliability of Persian version of this questionnaire has been confirmed ( $\alpha = 0.82$ ) by Montazeri et al.<sup>23</sup>

Data were analyzed using SPSS ver.13 software. To test the normality, Kolmogorov-Smirnov and Shapiro-Wilk were used. Data were analyzed using the independent t-test, Mann-Whitney, chi-square test and stepwise regression model and analysis of covariance. All statistical tests were considered significant at level of 0.05.

This study was approved by the Institutional Review Board and the Research Ethics Committee of Mashhad University of

Medical Sciences (Ethical code: 920970). The objectives of the study were explained to all participants and all of them signed a written informed consent and were assured of the confidentiality of their individual information as well as the being voluntary for participating in the study.

## Results

In this study, data from 180 women (90 diabetic and 90 non-diabetic) were analyzed. The mean age of diabetic women and none-

diabetic women was 35.45 (6.62) and 34.80 (6.23) year's old, respectively. Based on the results of the independent t-test, there was not significant differences between the groups in terms of mean age ( $P>0.05$ ). Most of the subjects in diabetic group (40.0%) and non-diabetes (48.9%) had educated diploma ( $P>0.05$ ). Additionally, among the study participants, 66.7% of diabetic and 63.3% non-diabetic were in average economic status ( $P=0.377$ ). Other characteristics are shown in Table 1.

**Table 1.** Comparison of demographic and clinical variables between women with and without diabetes

Variable	Diabetics N (%)	Non-diabetics N (%)	p
Age <sup>‡</sup>	35.45 (6.62)	34.80 (6.23)	0.495
Length of marriage <sup>‡</sup> (years)	16.01 (8.32)	14.08 (7.02)	0.097
Number of labors <sup>‡</sup>	2.17 (0.97)	2.00 (1.09)	0.251
<b>Job</b>			0.235
Housewife	73 (81.1)	68 (75.6)	
Employed	17 (18.9)	22 (24.4)	
<b>Education</b>			0.269
Less than diploma	36 (40.0)	26 (28.9)	
Diploma	39 (43.3)	44 (48.9)	
University education	15 (16.7)	20 (22.2)	
<b>Economic status</b>			0.377
Less than average	30 (33.3)	33 (36.7)	
Average	60 (66.7)	57 (63.3)	
<b>Previous delivery methods</b>			0.376
Normal delivery	45 (50)	39 (43.3)	
Cesarean	21 (23.3)	25 (27.8)	
Both of them	22 (24.4)	14 (15.6)	
<b>Condition according to the HBA1C</b>			
Controlled	74 (82.2)	-----	
Not-controlled	16 (17.8)	-----	

<sup>‡</sup>Mean (SD)

The quality of life in diabetic women and non-diabetics were 58.75 (16.24) and 68.93 (18.10), respectively. Based on the results of the independent t-test, there were significant differences between the two groups in terms of quality of life scores ( $P=0.001$ ).

The mean of family function score in diabetic women and in the control group were 15.97 (2.43) and 14.83 (2.82), respectively. Based on the results of the independent t-test,

the difference between two groups was significant ( $P=0.005$ ).

Spearman correlation test results showed a negative significant relationship between the family function and quality of life in people with diabetes ( $r=-0.460$ ,  $P=0.001$ ) (Table2). According to Pearson correlation test, this relationship was significant in the control group, as well ( $r=-0.335$ ,  $P=0.002$ ) (Table3).

Based on the results of the stepwise regression model only the factor of behavioral

control among dimensions of family function was able to predict the quality of life in diabetic women (P=0.001) (Table 4). On the other hand, the emotional response,

communication, and general functioning variables were able to predict 31% of variance of the quality of life in non-diabetic participants (P=0.001) (Table 5).

**Table 2.** The relationship between the family function and quality of life in diabetic women

Variable	Family function	Problem solving	Communication	Roles	Affective respond	Affective involvement	Behavior control	General functioning
Quality of life	r=-0.460 P=0.001	r=-0.265 P=0.011	r=-0.211 P=0.046	r=-0.099 P=0.352	r=-0.377 P=0.001	r=-0.328 P=0.002	r=-0.415 P=0.001	r=-0.274 P=0.009
Physical health	r=-0.382 P=0.001	r=-0.177 P=0.095	r=-0.130 P=0.221	r=-0.061 P=0.566	r=-0.339 P=0.001	r=-0.275 P=0.009	r=-0.340 P=0.001	r=-0.234 P=0.026
Psychological health	r=-0.482 P=0.001	r=-0.319 P=0.002	r=-0.266 P=0.011	r=-0.125 P=0.241	r=-0.366 P=0.001	r=-0.317 P=0.002	r=-0.437 P=0.001	r=-0.279 P=0.008

**Table 3.** The relationship between the family function and the quality of life in non-diabetic women

Variable	Family function	Problem solving	Communication	Roles	Affective respond	Affective involvement	Behavior control	General functioning
Quality of life	r=-0.335 P=0.002	r=-0.199 P=0.059	r=0.076 P=0.478	r=-0.315 P=0.003	r=-0.401 P=0.001	r=-0.256 P=0.015	r=-0.312 P=0.003	r=-0.082 P=0.448
Physical health	r=-0.256 P=0.017	r=-0.091 P=0.395	r=-0.095 P=0.377	r=-0.226 P=0.033	r=-0.315 P=0.002	r=-0.123 P=0.248	-0.175 P=0.099	r=-0.035 P=0.748
Psychological health	r=-0.348	r=-0.247 P=0.019	r=-0.061 P=0.568	r=-0.342 P=0.001	r=-0.408 P=0.001	r=-0.325 P=0.002	-0.379 P=0.001	r=-0.109 P=0.312

**Table 4.** Stepwise regression analysis to predict the quality of life based on family functioning in diabetic women

Predictor variables	B	β	t	p
Behavior control	-15.09	-0.415	-4.281	0.001

R<sup>2</sup>=0.172

**Table 5.** Stepwise regression analysis to predict the quality of life based on family functioning in non-diabetic women

Predictor variables	B	β	t	p
Affective respond	-21.438	-0.757	-6.015	0.001
Communication	13.245	0.316	2.800	0.006
General functioning	19.715	0.252	2.001	0.040

R<sup>2</sup>=0.317

## Discussion

According to studies, the most important indicator for the assessment of health care in chronic diseases is quality of life.<sup>15,24</sup> In order to achieve the desired quality of life in diabetic patients, we must study and understand the quality of life and its related

factors. In this study, the quality of life of people with diabetes was significantly at lower level than the others. People with diabetes experience different kinds of physical, mental, emotional and social problems that many of these problems could lead to decreased quality of life scores. Diabetes and its treatment, such as

insulin injections and dietary restrictions in daily life cause a lot of problems which lead to worsening quality of life of patients.<sup>13</sup>

The findings of this study is in line with the results of the studies which have been conducted in Iran by Saadatjoo *et al.*,<sup>7</sup> Kiadaliri *et al.*,<sup>14</sup> Hatamloo Sadabadi *et al.*,<sup>15</sup> Soltan Ahmadi *et al.*,<sup>25</sup> Vares *et al.*,<sup>26</sup> Vazirinejad *et al.*,<sup>27</sup> and and by Thommasen *et al.*,<sup>28</sup> and Issa *et al.*,<sup>29</sup> in other countries.

In the present study, diabetic women reported worse family functioning than non-diabetics ones. This study also reported a significant negative relationship between family function and quality of life in diabetics and non-diabetics women. This means that, good family function associated with positive outcomes for quality of life.

Conversely, family dysfunction will follow poorly quality of life. Not meeting the needs of family members in various fields, could lead to affect physical, emotional and social health.<sup>30</sup> A few studies were conducted on the relationship between family function and quality of life of people with chronic diseases, especially using the tools used in this study. But in general, the evidence indicates that proper function and adequate support of families causes better recovering and few complications of diabetic patients. For example, Wang *et al.*, reported a significant negative relationship between the family function and quality of life in Chinese patients with Diabetes type II.<sup>31</sup> Glasgow *et al.*, also state that family support was the strongest factor which persuades patients with diabetic type II to follow their diet.<sup>32</sup>

Wen *et al.*, also reported that there were significant relationship between family support and self-care among patients with Diabetes type II.<sup>33</sup> Their results were consistent with results of this study regarding the family function assessed by Family APGAR questionnaire. Gözet *et al.*, also revealed that there was a significant relationship between perceived social support and quality of life of Turkish diabetic patients.<sup>34</sup> In this regard, Saeed *et*

*al.*, reported the similar findings in a study which conducted in Malaysia.<sup>35</sup> The results of a study by Heidari *et al.*, also showed a significant relationship between family support and glycemic control in patients with diabetic type II.<sup>36</sup> Contradictory with the findings of this study, the results of logistic regression analysis in a study by Manshaee *et al.*, showed no significant relationship between family function and diabetes in Isfahan.<sup>9</sup> In other study, Kahrizeh *et al.*, revealed that there was a significant relation between family function and subjective well-being as one of the indicators of quality of life. This result is in line with the result of our study in term of the relationship between family functioning and quality of life.<sup>17</sup> This result is also consistent with the findings of Bayrami study that have demonstrated a significant relation between family function and happiness.<sup>37</sup> According to findings of Yossefnejad *et al.*, there is a significant positive relationship between family functioning and life satisfaction.<sup>38</sup>

Stepwise regression analysis was used in order to predict the quality of life in this study. The results showed that about 17 percent of the variation in the quality of life in diabetes was explained by the behavior control; while other aspects of family functioning were not able to predict the quality of life. The results revealed that by increasing behavior control in family, quality of life decreases, and the relationship between family functioning and quality of life is affected by behavioral control. Behavior control refers to the manner of the family members which they are respected the rules and standards of the family and they know their duties in emergency situations.<sup>18</sup> Actually, this findings indicate that complications of diabetes causes special emergency situation, which result in impairment of family-balance and each member relations, lack of attention to the rules of family and finally disruption of organized family. This could have a significant impact on reducing the

quality of life for people with diabetes. However, the limited role of the family function aspects in predicting quality of life in women with diabetes, suggests that other factors must be identified.

Unlike women with diabetes, predictive aspects of family functioning in general population of women in reproductive age is different. In other words, three dimensions, including the emotional response, communication and general functioning as able to predict 31% of the variance in quality of life of healthy women.

General Functioning subscale also assesses the overall health/impairment within the family. These findings indicate that these scales play an important role in the family in healthy subjects, which can improve the quality of life of every family.

In this context, based on the findings of Kahrizeh et al., general functioning was the only predictor of subjective well-being in nurses that predict 21% of the variance in quality of life.<sup>17</sup>

In general, based on the results of this study holding workshops or training courses for people with diabetes or even healthy women of childbearing age and their family members, to clear family function role in quality of life is necessary.

There is a chance to design interventions to improve the family function. In fact, due to the high cost of medical interventions, we can strengthen the family functioning and improve quality of life by planning educational interventions.

These interventions will lead to greater effectiveness by emphasizing on teaching methods of coping with crises, respecting the principles and rules of the family, preventing chaos in family foundations in diabetic patients and effective communication skills and mutual understanding of the feelings and emotions of healthy women.

This study had some limitation such as using self-report methods for filling the questionnaires. Moreover, since this study had a correlational design, we cannot find

the causal relationship between these two variables. To demonstrate more findings, future research could be conducted using large sample size. Future research could be showed more validate findings using longitudinal approach and identifying other mediator factors.

## Conclusion

The results of this research showed that women with diabetes had worse quality of life and more unfavorable family function than women without diabetes.

Additionally, there was an important relation between the family function and quality of life in these two groups.

Moreover, the results of multiple stepwise regression show that behavioral control dimension of family function in diabetic patient and emotional response, communication, and general functioning dimensions in healthy women can predict quality of life.

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## Ethical issues

None to be declared.

## Conflict of interest

The authors declare no conflict of interest in this study.

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