



# Comparing the Quality of Life and Emotional Intelligence among Patients with Psychosomatic Disease (Type 2 Diabetes) and Healthy Individuals

Loghman Ebrahimi<sup>1\*</sup>, Mina Masoumi<sup>2</sup>, Atefeh Hojjati<sup>2</sup>, Roghayeh Abedi Firozjaie<sup>2</sup>,  
Mohammad Abdi<sup>2</sup>

## ABSTRACT

Type 2 diabetes is one of the psychosomatic diseases, and stress has a great effect on its development, severity, recurrence, and chronicity. The present study was carried out in order to compare quality of life and emotional intelligence among type 2 diabetic patients and healthy individuals. The present study was a causal-comparative investigation. The statistical population included all type 2 diabetic patients who had referred to the hospitals and clinics of Zanjan, Iran during 21<sup>st</sup> May to 21<sup>st</sup> August 2016. Convenience sampling was employed. The sample size was 160 individuals (80 patients and 80 healthy individuals). Data collection instruments were SF-36 Quality of Life Questionnaire and Schutte Emotional Intelligence Scale. MANOVA was utilized to analyze the collected data. The results of the present study showed that there was a significant difference between patients with type 2 diabetes and healthy individuals in terms of quality of life and components of physical health and mental health ( $p < 0.01$ ). There was also a significant difference between them with regard to their emotional intelligence and components of emotion regulation, emotion expression, and emotion use ( $p < 0.01$ ). Based on the results of the present study regarding the remarkable effect of diabetes on decrease in quality of life and emotional intelligence among patients, it is highly significant to pay attention to quality of life and mental status of such individuals and try to improve them through better training, following up, and controlling the disease, and these issues need to be taken into serious account in treatment of these patients.

**Key Words:** Quality of life, Emotional Intelligence, Type 2 Diabetes

**DOI Number:** 10.14704/nq.2017.15.3.1097

**NeuroQuantology 2017; 15, 3:12-19**

12

## Introduction

Type 2 diabetes is a dangerous chronic disease that is characterized by abnormalities in metabolism of carbohydrate, protein, and fat. Although diabetes has various symptoms, glucose intolerance or increased blood glucose is its most common distinctive symptom. The patient with diabetes does not either produce or respond to

insulin; therefore, the level of blood glucose rises and the individual will experience short- and long-term complications of diabetes (Baghianimoghadam, Afkhamiardakani, Mazloumi, & Saeezadeh, 2006). Diabetes is one of the chronic conditions and one of the important causes of mortality and disability all over the world.

**Corresponding author:** Loghman Ebrahimi

**Address:** <sup>1</sup>-Assistant Professor, Department of psychology, University of Zanjan, Zanjan, Iran; <sup>2</sup>-M.A in clinical psychology, Islamic Azad University of Zanjan, Zanjan, Iran

**e-mail** ✉ L.ebrahimi@znu.ac.ir

**Relevant conflicts of interest/financial disclosures:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

**Received:** 25 July 2017; **Accepted:** 2 September 2017



According to the latest statistics, about 117 million people are suffering from this disease in the world, and it is estimated that this figure will reach 300 million people in 2025. Prevalence of this disease in Iran has been estimated to be about 6% that is 4 million people (Saadatjou, Rezvani, Tabi'i & Oudi, 2011).

Diabetes is a chronic disease with fatal complications and is known as the main cause of amputation, blindness, chronic kidney failure, and heart disease. Although medical treatments reduce its complications, they disrupt lifestyle (McDonald, 1999). If diabetic patients fail to take good care of themselves and control their blood glucose, increased complications of diabetes lead to a decrease in quality of life (Baghianimoghadam, & Afkhaniardakanim, 2007). The results of relevant studies have indicated that diabetes as a negative effect on quality of life, and can endanger the patient's physical performance, mental status, and social performance (Saadatjou *et al.*, 2011; Trief *et al.*, 2002; Safavi, Samadi, & Mahmoudi, 2013; Ghafarzagdegan *et al.*, 2013; Monjamed *et al.*, 2006; Wissam, Zakia & Kate, 2014; Lewko & Misiak, 2015; Nyanzi, Wamala, & Atuhaire, 2014). There is a mutual relationship between disease and quality of life, and physical disorders and physical symptoms have a direct effect on all aspects of quality of life (Ghafarzagdegan *et al.*, 2013). Quality of life is a multidimensional, subjective, and dynamic concept (Borzou *et al.*, 2010) which covers the fields of health, physical performance, mental health, social performance, satisfaction with treatment, concern about future, and the sense of wellbeing (Achhab *et al.*, 2008). According to the definition proposed by World Health Organization (WHO), quality of life refers to the individuals' understanding of their situation in their lives regarding culture, value system in which they live, and their goals, expectations, standards, and priorities. Therefore, it is a quite mental subject and cannot be seen by others and is based on the individual's understanding of different aspects of life (Izadi *et al.*, 2014). Diabetic patients are faced with numerous problems in dimensions of quality of life, and these patients' social-individual and economic situation has a significant effect on their quality of life (Ghanbari, 2001). Moreover, some physical and mental problems such as depression, anxiety, disability, inactivity, and obesity will finally lead to a decrease in quality of life among them (Ghavami *et al.*, 2006). The chronic nature of diabetes affects the patient's body, psyche, and social-individual performance; therefore, it is

highly significant to examine different aspects of health and quality of life among these patients. Diabetes is a serious public health problem that threatens the patient's quality of life and can lead to severe chronic complications and is an important cause of disability and death in many countries (Tal *et al.*, 2011). Furthermore, in recent years, quality of life has been known as an important outcome of health in medical treatment and the main issue in taking care of diabetic patients (Snok, 2000). Different studies have shown that many type 2 diabetic patients have a low quality of life (Bayati, 2008; Kiadaliri, Najafi & Mirmalek-Sani, 2013; Lewko & Misiak, 2015; ALAboudi *et al.*, 2016).

An important factor in determining the individual's satisfaction with life and quality of life is emotional intelligence that directly affects the individual's mental health (Narimani, Habibi, & Rajabi, 2011). Individuals with high emotional intelligence can adapt themselves to life problems more easily and are more satisfied with life (Ramezani, & Nazarian Madovani, 2013). Baron (2005) regards emotional intelligence as a set of 43/5000 non-cognitive capacities, capabilities, and skills that enhance the individual's ability to successfully deal with environmental requirements. He defined emotional intelligence in 5 components: Intrapersonal component including decisiveness, independence, self-awareness, and self-esteem; interpersonal component including empathy and social responsibility; compatibility component including flexibility, reality test, and problem-solving ability; stress management component including controlling shocks and tolerating stress, and general mood components including hopefulness and happiness. Emotional intelligence offers social, cognitive, and biological advantages. Studies have shown that people with high emotional intelligence have lower levels of stress hormones and other emotional excitement indicators (Soltanifar, 2007). In addition to having a direct effect on health, emotional intelligence is the mediator of personality and health (Hosseinzadeh, Khademi, & Mousalrezaeei Aghdam, 2013). According to Vanrooy and Viswesvaran (2004), emotion and regulating it play different roles in physical and mental health. Individuals who are emotionally intelligent understand and evaluate their emotional states correctly, know how and when express their feelings, and regulate their mood states effectively. These capacities make successful coping through certain trends which include exact



emotional insight and revelation (Narimani, Habibi, & Rajabi, 2011).

Emotional knowledge helps regulate emotions. Therefore, individuals need to develop the abilities related to this level in order to use their knowledge in practice. The ability to regulate emotions leads to preserve mood and approaches to improve it. Individuals without the ability to regulate their emotions are more likely to be influenced by environmental factors (Jana Abadi, 2009). There is much evidence that shows that emotional intelligence is related to the individual's success or failure in different spheres of life (Giganc *et al.*, 2005). In their study, Davis and Humphrey (2012) concluded that emotional intelligence acts as a protective source against stress-disease processes. Moreover, studies showed that there is a negative significant relationship between emotional intelligence and physical and mental health (Shutte *et al.*, 2007).

According to what was referred to above, it is highly important to understand psychological problems among patients with type 2 diabetes in order to resolve such problems due to high expenses the disease imposes on the individual and the society. Various studies have focused on psychological problems of such patients. However, no study in Iran has directly focused on comparing quality of life and emotional intelligence among patients with type 2 diabetes and healthy individuals. As a result, the present study was conducted in order to compare the quality of life and emotional intelligence among patients with type 2 diabetes and healthy individuals.

## Methods

Based on the nature of the subject and the study's aim, the present study was a causal-comparative investigation. The statistical population included all type 2 diabetic patients who had referred to the hospitals and clinics of Zanjan, Iran during 21<sup>st</sup> May to 21<sup>st</sup> August 2016. The total number of them was about 150 patients. The type 2 diabetic patients were selected through a convenience sampling method. In so doing, all type 2 diabetic patients with the study's inclusion criteria, i.e. 1) definitive diagnosis of diabetes by a specialist; 2) age of over 18 years; 3) absence of other chronic and high-risk diseases such as cancer, multiple sclerosis and mental disorders; 4) minimum literacy of elementary fifth grade; and 5) willingness to participate in the study, were selected and provided with questionnaires. The healthy individuals were selected from among the

personnel of the clinics and hospitals and the patients' companions. The two groups were homogenized in terms of their age, gender, and level of education. The sample size was 160 individuals (80 patients and 80 healthy individuals). Data collection instruments were:

**SF-36 Quality of Life Questionnaire:** SF-36 is a standard questionnaire that was designed by Ware *et al* (1992) in the US to measure quality of life among patients and healthy individuals. This questionnaire has 8 types of questions: physical functioning (10 questions), role limitation related to physical health (4 questions), role limitation related to emotional health (3 questions), vitality/fatigue (3 questions), emotional health (4 questions), social functioning (2 questions), pain (2 questions), and general health (2 questions). Moreover, SF-36 provides two general measurement of the functioning; the total score of physical component which measures the physical dimension of health, and the total score of mental dimension of social health (Montazeri *et al.*, 2005). A sample of the questions is, "In general, how do you see your health status?" Each question has at least 2 options and at most 6 option, and the options are graded based on a 0-to-100 scale; 0 indicates the minimum level of performance and 100 the maximum level. The score of each area is calculated by summing up the scores of that area divided by the number of the questions; therefore, quality of life score in each area ranges from 0 (the minimum quality of life score) to 100 (the best quality of life score). In the study carried out by Montazeri *et al* (2005) in Iran and other studies out of the country, its reliability in different dimensions was reported to be at least 0.73 in social functioning dimension and at most 0.96 in role limitation dimension.

**Schutte Emotional Intelligence Scale:** This scale was devised by Schutte *et al* (1988) based on Salovey and Mayer emotional intelligence model (1997). This scale has 33 questions, and measures adaptive abilities including emotional perception, emotional ordering, and emotional exercise based on a 5-point Likert scale ranging from "I completely disagree" to "I completely agree". In scoring this scale, "I completely agree" is given the score of 5 and "I completely disagree" the score of (1). In questions with negative or reverse content, scoring is carried out reversely, i.e. I completely agree is given 1 and I completely disagree 5 (e.g. questions 5, 28, & 33). Although the emotional intelligence scale is composed of three

components, it provides a total score for emotional intelligence that ranges from 36 to 165. Obtaining higher scores on this scale indicates the individual's better situation in the scale (Shutte *et al.*, 2007). Based on Cronbach's Alpha, internal consistency of the scale's questions has been reported from 0.84 to 0.90. Using retest method over 2 weeks through a sample of 28 individuals, the reliability of the scale was obtained to be 0.78. Measuring its correlation with relevant structures has proved that its validity of acceptable (Shutte *et al.*, 2007). Using a sample of 135 individuals, Cronbach's Alpha showed that the Persian version of this scale has a reliability of 0.88 which indicates an acceptable internal consistency. The correlation coefficient among the scores of 42 individuals during an interval of 2 weeks was calculated to be 0.83, which shows the acceptable retest reliability of the scale (Besharat, 2005).

### Results

In the present study, the data collected from 160 subjects (80 patients with diabetes and 80 healthy individuals) were analyzed, and the results are presented below. Mean and standard deviation of the groups in factors of quality of life and emotional intelligence are presented in Table 1, below.

**Table 1.** Mean and standard deviation of the study's variables in the two groups

	Diabetes group		Healthy group	
	Mean	SD	Mean	SD
Total quality of life	55.57	16.54	67.93	14.70
Physical health	57.03	20.35	67.057	16.77
Mental health	54.11	18.01	68.80	18.94
Total emotional intelligence	118.087	14.41	128.22	12.24
Emotion regulation	35.38	6.25	39.81	5.35
Emotion expression	47.21	7.09	49.98	5.89
Emotion use	35.48	5.13	38.42	5.31

As indicated in Table 1, the mean and standard deviation of the total quality of life were 55.57 and 16.54 in the diabetes group, and 67.93 and 14.70 in the healthy group. Moreover, the mean and standard deviation of the total intelligence were 118.087 and 14.41 in the diabetes group, and 128.22 and 12.24 in the healthy group.

In order to analyze the data related to the difference between the type 2 diabetic patients and healthy individuals in terms of quality of life and emotional intelligence, MANOVA was utilized.

Before it, the assumptions of this test were examined using Kolmogorov-Smirnov test, Box's test, and Levene's test. The results showed that  $p > 0.05$  in all assumptions; therefore, MANOVA could be used to test the assumptions.

**Table 2.** The results of Wilk's Lambda Test in MANOVA of quality of life and emotional intelligence of the diabetes patients and healthy individuals

Test	Value	F	df error	df effect	Sig.	$\eta^2$
Wilk's Lambda Test	0.806	18.927	157	2	0.001	0.194

The results of Wilk's Lambda Test show that there is a significant difference between the two groups at least in one of the variables of quality of life and emotional intelligence ( $F_{(157, 2)} = 18.927, p < 0.01$ ).

**Table 3.** MANOVA results of group effects on quality of life and emotional intelligence in the diabetes patients and healthy individuals

Source	Dependent variable	SS	df	MS	F	Sig.	$\eta^2$
Group	Quality of life	6107.983	1	6107.983	24.940	0.001	0.136
	Emotional intelligence	4110.756	1	4110.756	22.994	0.001	0.127

Table 3 shows that there was a significant difference between the two groups in terms of quality of life ( $F_{(1, 158)} = 24.940, p < 0.01$ ), such that the score of quality of life among the diabetes group was significantly lower than the healthy group. The variable of group predicts 13.6% of the variance of quality of life. Moreover, there was a significant difference between the diabetes patients and the healthy individuals in terms of emotional intelligence ( $F_{(1, 158)} = 22.994, p < 0.01$ ), such that the score of emotional intelligence was significantly lower in the diabetes group than the healthy group. The variable of group determines 12.87% of the variance of emotional intelligence.

**Table 4.** The results of Wilk's Lambda Test in MANOVA of quality of life components of the diabetes patients and healthy individuals

Test	Value	F	df error	df effect	Sig.	$\eta^2$
Wilk's Lambda Test	0.853	13.549	157	2	0.001	0.147



The results of Wilk's Lambda Test show that there is a significant difference between the two groups at least in one of the components of quality of life (physical health and mental health) ( $F_{(157, 2)}=13.549, p<0.01$ ).

**Table 5.** MANOVA results of group effects on quality of life components in the diabetes patients and healthy individuals

Source	Dependent variable	SS	df	MS	F	Sig.	$\eta^2$
Group	Physical health	4017.319	1	4017.319	11.547	0.001	0.068
	Mental health	8635.027	1	8635.027	25.265	0.001	0.138

Table 5 shows that there was a significant difference between the two groups in terms of physical health ( $F_{(158, 1)}=11.547, p<0.01$ ), such that the score of physical health in the diabetes group was significantly lower than the healthy group. The variable of group predicts 6.8% of the variance of physical health. Moreover, there was a significant difference between the two groups regarding their mental health ( $F_{(158, 1)}=25.265, p<0.01$ ), such that the score of mental health was significantly lower in the diabetes group than the healthy group. The variable of group predicts 13.8% of the variance of mental health.

**Table 6.** The results of Wilk's Lambda Test in MANOVA of emotional intelligence components of the diabetes patients and healthy individuals

Test	Value	F	df error	df effect	Sig.	$\eta^2$
Wilk's Lambda Test	0.847	9.364	156	3	0.001	0.153

The results of Wilk's Lambda Test show that there is a significant difference between the two groups at least in one of the components of emotional intelligence (emotion regulation, emotion expression, and emotion use) ( $F_{(156, 3)}=9.364, p<0.01$ ).

According to the results presented in Table 7, there was a significant difference between the two groups regarding to the component of emotion regulation ( $F_{(1, 158)}=23.100, p<0.01$ ), such that the score of emotion regulation was significantly lower in the diabetes group than the control group. The variable of group predicts 12.8% of the variance of emotion regulation. Moreover, there was a significant difference between the two groups regarding emotion expression ( $F_{(1, 158)}=7.235, p<0.01$ ), such that the

score of emotion expression was significantly lower in the diabetes group than the control group. The variable of group predicts 4.4% of the variance of emotion expression. In addition, the two groups were significantly different regarding emotion use ( $F_{(1, 158)}=12.649, p<0.01$ ), such that the score of emotion use was significantly lower in the diabetes group than the control group. The variable of group predicts 7.4% of the variance of emotion use.

**Table 7.** MANOVA results of group effects on emotional intelligence components in the diabetes patients and healthy individuals

Source	Dependent variable	SS	df	MS	F	Sig.	$\eta^2$
Group	Emotion regulation	783.225	1	783.225	23.100	0.001	0.128
	Emotion expression	308.025	1	308.025	7.235	0.001	0.044
	Emotion use	345.156	1	345.156	12.649	0.001	0.074

## Discussion and conclusion

The present study was carried out in order to compare the quality of life and emotional intelligence among patients with type 2 diabetes and healthy individuals. Results showed that type 2 diabetic patients had a lower quality of life compared to healthy individuals. This finding is in agreement with the studies conducted by Saadatjou *et al* (2001), Safavi *et al* (2013), Ghafarzadegan *et al* (2013), Kiadaliri *et al* (2013), Alabudi *et al* (2016), Wissman *et al* (2014), and Lewko and Misiak (2015) who showed that patients with type 2 diabetes had a lower quality of life compared to healthy individuals. In justifying this finding, it can be stated that there is an interaction between disease and quality of life, and physical disorders and presence of physical symptoms have a direct effect on quality of life dimensions (Ghafarzadegan *et al.*, 2011). Individuals with diabetes are faced with numerous physical, mental, and social problems which can lead to a decrease in the quality of their lives. Complications of diabetes such as inactivity, obesity, depression, and anxiety can lead to a decrease in quality of life (Ellis *et al.*, 2005). Even treatments for diabetes such as insulin injections and nutritional restrictions cause problems in the patients' daily life and lead to a decrease in the quality of their lives (Vares *et al.*, 2010). The



results of the present study showed that individuals with type 2 diabetes have a lower quality of life compared to healthy individuals. This finding is in line with that of the studies carried out by Saadatjou *et al* (2011), Safavi *et al* (2013), Ghafarzadegan *et al* (2013), Monjamed *et al* (2006), Wissman *et al* (2014), and Lewko and Misiak (2015), and Nyanzi *et al* (2014) who concluded that patients with diabetes have a lower quality of life in all dimensions. In justifying this finding, it can be stated that diabetes causes a general change in the body which reflects as deprivation from physical, mental, and social relaxation. The chronic nature, frustrating treatments, and debilitating and threatening complications affect physical and psychological aspects of the patient's life (Mehrabizadeh Honarmand, Eidi Bayegani & Davoodi, 2012). Moreover, due to their conflict with the disease and its treatment, the patients usually feel failure and disappointment, and their mental and social wellbeing will be affected (Polonsky, 2002). The results of the study also showed that the patients with type 2 diabetes obtained lower scores in emotional intelligence compared to the healthy individuals. This finding is in line with the results of the studies carried out by Nikpour (2012) that indicated that there was a negative significant relationship between emotional intelligence and mental disease, Shafi'itabar *et al* (2008) who showed that emotional intelligence had a positive relationship with extroversion, openness to experience, compromise, and conscientiousness and a negative relationship with neuroticism, and Khanjani *et al* (2010) that concluded that there was a negative significant relationship between emotional intelligence and depression and anxiety.

In justifying this finding, it can be stated that emotional intelligence can decrease the level of reactivity of physiological systems of the body to stress. Low reactivity leads to an increase in the level of stress and controls the individual's arousal. Moreover, individuals with high emotional intelligence minimize the effects of stress by resorting to health-related behaviors (no smoking, healthy diet, physical activity, etc.) (Alipour, Ahmadi Azghandi & Meh Abadi, 2012). High emotional intelligence can enhance the individual's general quality of life and personal and social successes, and it is an important factor in determining life success and psychological wellbeing (Rajabpour & Tavakolzadeh, 2007). It seems that intelligent individuals can more easily *get along* with diabetes and its negative

consequences such as fear, anxiety, and depression by being aware of their emotions and managing their emotions more easily.

As it was stated, the results of the present study showed that individuals with type 2 diabetes have a lower level of emotion regulation than healthy people. In justifying this finding, it can be said that emotion regulation leads to a decrease in negative feelings and an increase in positive behaviors and adaptive behaviors (Ashkani & Heydari, 2014). Due to their physical and mental problems caused by their disorder, individuals with type 2 diabetes may be unaware of their positive and negative emotions, and when they are in life situations, they may not be able to use their emotions well, because their physical and mental problems cause them to evaluate themselves negatively in social situations and engage themselves less with social situations, whose negative effects can appear as problems in social and emotional dimensions.

The results of the study also showed that individuals with type 2 diabetes have a lower level of emotion expression and emotion use than healthy individuals. A study that verifies the above finding was not found. In justifying this finding, it can be stated that emotional intelligence plays a great role in human's compatibility and incompatibility. Individuals that can understand and control their own and other's emotions, they can use them favorably to motivate themselves and others, face with fewer daily problems, and have higher levels of psychological and physical health.

Every study is inevitably faced with limitations; therefore, it is necessary to interpret the findings according to the limitations. Among the limitations of the present study is that the findings of the present study can be generalized to the patients with diabetes in Zanjan, and generalizing them to other diabetic patients needs to be carried out with much caution and knowledge. Moreover, the present study was a cross-sectional investigation; therefore, it is difficult to conclude about the causality. Given the existing theoretical limitations and findings of the present study, it is recommended that this study should be carried out in other geographical regions and in different cultures on larger sample sizes. Moreover, future studies are suggested to focus on quality of life and emotional intelligence in other psychosomatic disorders and compare with patients with type 2 diabetes.

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