

## Quality of Life in Diabetic Patients: A Case-Control Study

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### Abstract

**Objective:** Quality of life (QOL) is an intellectual concept consisting of positive and negative aspects of an individual's life and indeed it demonstrates the method by which a person perceives the health condition as well as the other aspects of his/her life and reacts to them. Currently, assessment of QOL is more considered because of the increased prevalence of chronic diseases. So, the current study was conducted to assess the QOL in type 2 diabetic patients compared to non-diabetic subjects.

**Materials and Methods:** A case-control study was conducted in Yazd Health Monitoring Research Center on 50 diabetic patients and 50 healthy people in March 2014. The data collection instrument had two parts: 1-demographic and disease related check list; 2-Persian validated and reliable version of SF-36. Descriptive and multivariate statistics were done with the statistical software SPSS-17 (Chicago, IL, US)

**Results:** 50 participants were included in case and control groups. Fifty percent of patients were female and most of them (42%) were between 41-60 years old. The mean  $\pm$  standard deviation of quality of life score in cases and controls were  $54.95 \pm 13.17$  and  $68.87 \pm 28.57$  respectively. The mean of quality of life score in physical functioning, vitality, role emotional, social functioning and bodily pain domains were significantly different between case and control groups.

**Conclusion:** Our study showed lower levels of QOL in diabetic patients in comparison with control group. This is in agreement with previous studies and may be related to complications of DM, or numerous problems which diabetic patients encounter. Improving of QOL by appropriate education and follow-up must be emphasized to the management of diabetic patients.

**Keywords:** Quality of life, Diabetic

## Introduction

Diabetes Mellitus (DM) is an ancient disease and a main cause of morbidity and mortality worldwide. World Health Organization (WHO) estimates that the number of patients with diabetes will be approximately 300 million in 2025 (1). DM

causes various physical and psychological disadvantages and albeit medical treatments are beneficial in reducing these problems, but the disease and its complications can lead to unhealthy lifestyle (2-3).

Quality of life (QOL) is an intellectual concept consisting of positive and negative aspects of an individual's life and indeed it demonstrates the method which a person perceives the health condition as well as the other aspects of his/her life and reacts to them. Currently, assessment of QOL is more considered because of the increased prevalence of chronic diseases (4).

Studies show that DM may have negative influences on general health and feeling of wellbeing, and in other word QOL (5). The incidence of diabetes is rapidly increasing in developing countries and Middle East (6).

Some studies even showed significant negative influences of diabetes on different aspects of QOL of the patients (7). Management of chronic diseases is of great importance in healthcare and given to their incurable nature and non-imminence of death, improving of QOL is considered as a goal. Thus, it may be regarded as an algorithm in medical and health researches and should be also in line with the health development and ameliorating the function of the patients.

Quality of life is very important in diabetic patients. Absence of self-care, poor control of blood sugar and diabetic complications lead to decrease of quality of life (8). Improving of diabetic patient's Quality of life decreases poor control of blood sugar, diabetic complications and burden of diabetes (9-10).

Given to the results of the previous studies, further researches are needed to better elucidate the relationship between the QOL and demographic characteristics of diabetic subjects. So, the current study was conducted to assess the QOL in type 2 diabetic patients compared to non-diabetic subjects.

## Materials and Methods

A case-control study was conducted in Yazd Health Monitoring Research Center on 50 diabetic patients and 50 healthy people in March 2014. The sample size was calculating by comparison of means from two different population formula, the accepted type 1 error was 0.05, the accepted power was 80% and the

expected differences between groups was 0.1. Diabetic patients were selected by systematic random sampling. The inclusion criteria were patients older than 30 years, having type 2 diabetes mellitus, at least one visit last three months.

Exclusion Criteria were having chronic diseases such as heart failure, chronic kidney disease, chronic lung disease, diabetic foot or limb amputation, and moderate to severe retinopathy. Control group was selected from patients' family members who were group-matched according to age and sex. Exclusion criteria in control group were chronic disease or fasting blood sugar >100 mg/dl.

### Data collection

The data collection instrument had two parts: 1-demographic and disease related check list; 2- Persian validated and reliable version of SF-36. The same investigator (A.A) collected all the information by private interview. The SF-36 is a quality of life scoring system with 36 items and 8 domains. Each question score is between 0 (minimum) to 100(maximum). Higher score demonstrated better quality of life.

Descriptive and multivariate statistics were done with the statistical software, SPSS-17 (Chicago, IL, US). The correlation of age and quality of life score was done by Pearson correlation. Comparison between quality of life score in male and female was done by T-Test. Analysis of variance (ANOVA) was performed to compare of quality of life score in education, career and marital status.  $P$ -value <0.05 was considered significant.

## Results

A total of 50 participants were included in case and 50 participants in control groups. Table 1 shows the description of demographic variables in cases and controls.

The mean  $\pm$  standard deviation of quality of life score in cases and controls were  $54.95 \pm 13.17$  and  $68.87 \pm 28.57$  respectively. The mean of quality of life score in physical functioning, vitality, role emotional, social functioning and bodily pain domains were

**Table 1. demographic characteristics of cases and controls**

demographic characteristics	Case N (%)	Control N (%)	P-value
<b>Gender</b>			
Male	25(50)	28(56)	0.051
female	25(50)	22(44)	
<b>Age</b>	55.31±14.22	53.2±13.21	0.062
<b>Education</b>			
Elementary	34(68)	16(32)	0.031
High school	14(28)	22(44)	
College and higher	2(4)	12(22)	
<b>Marital status</b>			
Single	2(4)	5(10)	0.040
Married	37(74)	41(82)	
Divorced& widow	11(22)	4(8)	
<b>Career</b>			
Worker	5(10)	12(24)	0.001
Office Worker	7(14)	24(48)	
Unemployed	17(34)	1(2)	
Retired	21(42)	13(26)	

significantly different between case and control groups (Table 2). There were no significant differences between cases and controls in general and mental health domains. The physical functioning domain score was different between office worker and retired diabetic patients ( $P$ -value<0.01) and there were no significant differences in quality of life score between different demographic groups.

## Discussion

Our study showed lower levels of QOL in diabetic patients in comparison with control group which is in agreement with previous studies done by Vazirinejad et al (11). The results may be related to complications of DM, or numerous problems which diabetic patients encounter.

Similar results were found in Vazirinejad et al study. They compared the QOL scores in 100 diabetic patients and the same number of non-

diabetic subjects (12).

In the Saydi et al study in Zanjan (Iran), QOL scores were not different between the groups; this may be attributed to differences in the culture, lifestyle and health services (13). There was no significant association between the QOL and age in our study. However, Alavi et al (14) and Saadatjoo et al (15) showed that this association was significant. This is a predictable finding because of increasing physical and emotional restrictions in elderly patients. We did not find any relationship between the QOL and marital status, but Sadegie et al in a study reported that QOL was significantly better in married vs. single diabetic patients (16). Also Bakhtiary et al showed significant association between the QOL and marital status (17).

In contrast with these findings, in another study, single patients had better QOL compared to married ones. This has been attributed to better management of DM and its

**Table 2. comparison of SF-36 domains in case and control groups**

SF-36 domains	Case	Control	P-value
Physical functioning	38.5±28.6	54.5± 12.0	0.001*
Vitality	50.1±10.8	57.9±20.0	0.016*
Mental health	53.9±10.0	61.9±20.3	0.015*
Social role functioning	53.81±18.5	68.0±21.9	0.001*
Bodily pain	60.9±24.0	48.1±19.7	0.004*
General health perceptions	52.4±8.4	50.6±14.7	0.454
Emotional role functioning	67.5±14.6	47.4±23.4	0.004*
Physical role functioning	55.0±37.5	53.5±11.3	0.780

\* Significant

Data are presented as mean± standard deviation

complications, less responsibilities and having more time for adhering to the medical advices (18). The current study showed no significant association between the QOL and gender of the patients which was in accordance with some previous researches in this regard (14,17,19,20), but the study done by Nejati showed that there is significant association between the QOL and gender, and female QOL score is higher than male. Social and cultural factors related to gender in different communities had different effect on QOL in male and female (21). In employee and disabled diabetic patients, the association of job with QOL was significant in “physical functioning” scale. The results were similar to the studies done by Sedaghaty Kasabkhi et al (22) and Vahdaninia et al (23). However, no significant associations of QOL and other demographic items were found in our study, which may be due to small sample size of the study. In our study, in both diabetic and non-diabetic groups, the relationship between QOL and all the scales except “general health” and “role limitations due to physical health” was significant. These scales were also significantly associated with QOL in the studies done by Mohammad Zeydi et al (24) and Hadi et al (25).

Because “general health” can be regarded a psychological component of QOL which appraises the person’s idea about himself/herself health, it may be biased with confounders like individual’s underlying depression. Initial screening of the study participants may be helpful in reducing these confounders.

There are many reviews of QOL in different disease and disabilities as a chronic disease.

QOL scores in healthy people were higher than people with disabilities in a study in USA, but there were no differences between types of disabilities. The study of Dijkers on patients with spinal cord injury showed that

these patients have lower mental health score (26).

It may be concluded from this study that DM has considerable negative impacts on the QOL; so, the improving of QOL by appropriate education and follow-up must be emphasized for the management of diabetic patients.

Moreover, this approach may delay early disability and increase the life expectancy in Iranian diabetic population.

In our study, average of QOL score in Diabetic patient is 28.57. Baghiani research on 120 Diabetic patients showed that the average of QOL was 25.65 and this is close to our study.

The results showed that our study findings were according to other studies (27). The study on 156 men with prostate cancer in Japan showed lower quality of life score in patients with chronic disease (28).

Researchers in a study on 126685 healthy people and cancer patients over 65 years in American national institute concluded that physical activity and mental health field of QOL were disrupted (29). Fogari et al. in a study on QOL concluded that stress, harsh conditions and pain are the reasons of QOL decrease in persons with chronic disease (30). Therefore patients with chronic disease had lower QOL.

The small sample size and differences between case and controls are our study limitations. It is better in future studies to consider diabetes complications as a marker of quality of life score.

**Conclusion:** Our study showed lower levels of QOL in diabetic patients in comparison with control group. This is in agreement with previous studies and may be related to complications of DM, or numerous problems which diabetic patients encounter. Improving of QOL by appropriate education and follow-up must be emphasized to the management of diabetic patients

## References

1. Sadegie Ahari S, Iranparvar Alamdari M, Amani F, Siahpoush H. The effect of complication of type 2 diabetes on patients' quality of life. *Journal of Ardabil University of medical sciences*.2009; 8(4):394-492. (In Persian)
2. Vares Z, Zandi M, Baghaei P, Masoudi Alavi N, Mirbagher Ajorpaz N. Study of quality of life and associated factors in diabetes mellitus patients of Kashan Diabetic center .*Iranian journal of nursing Reasearch*.2010;5(17):14-22.(In Persian)
3. Thmmassen HV, Berkowitz J, Thommasen AT, Michalos AC. Understanding relationships between diabetes mellitus and health – related quality of life in a rural community. *The international Electronic Journal of Rural and Remote Health Research, Education, Practice and Policy*. Rural and Remote Health 5: 441. (Online), 2005.  
[http://www.rrh.org.au/publishedarticles/article\\_print\\_441.pdf](http://www.rrh.org.au/publishedarticles/article_print_441.pdf)
4. Rustoen T. Hope &quality of life, two central issues for cancer patients: a theorical analysis .*cancer Nurse* 1995; 18(5):355-61.
5. Borzou SR, Salavati M, Safari M, Hadadnejad SH, Zandieh M, Torkaman B. Quality of life in type 2 diabetic patients reoffered to Sina hospital, Hamadan. *Zahedan Journal of research in medical sciences*.2011; 13(4):43-6. (In Persian)
6. Khoja TA, Farid SM. Family health survey; principle report, Riyadh, MOH 2003.
7. Mata cases M, Roset Gamisans M, Badia Llach X, Antonanzas Villar F, Ragel Alcazar J. Effect of type 2 diabetes mellitus on quality of life of patients treated at primary care consultation in Spain. *Aten primaries* 2003;31(8):493-9.
8. Michael JF. Diabetes Foundation, clinical diabetes. *American diabetes Assosiation* 2008;26,77-82.
9. Sarah W,Gojka R,Andress G,Richard S.Global Prevalence of diabetes ,diabetes care 2004;27:1047-25.
10. Eljidi A, Rafael T. health related quality of life in diabetic patients and controls without diabetic patients and controls without diabetes in refugee camps in the gaza strip.*BMC public health* 2006;6(268):1-9.
11. Vazirnejad R, Sajadi M, Maghool N. A historical cohort study assessing the effect of diabetes on the quality of life patients.*Pejouhesh*.2010;34(1):35-40.(In Persian)
12. Bahmani B, Tamadoni M, Asgari M. Quality of life and its relation to religion attitude in students of Azad University in Tehran. *Teb va Tazkieh* 2004;53:32-44.
13. Saydi N, Fayazi S, Ramazani A. Comparison of quality of life among diabetic and non diabetic patients after open heart surgery.*Journal of Rafsanjan University of medical sciences* 2011;10(2):144-50.(In Persian)
14. Masoudi Alavi N .Quality of life in diabetic patients in Iran diabetic center .*Journal of Kermanshah University of medical science*. 2004; 8(1):49-56.
15. Saadatjoo A, Rezvani M .comparsion quality of life in diabetic patients with non diabetic persons. *Modern care journal*.2011; 9(1):24-31.
16. Bagheri H, Nozhat Taghavi H, Hasani MR. Evaluation of Quality of life in patients with diabetes mellitus based on its complications referred to Emam Hossein Hospital, shahroud, Shahrekourd University of medical sciences *Journal*. 2005; 2(7):56-60.
17. Bakhtiyari M, Salehi M, Zayeri F,Mobasheri F.Quality of life among disable and healthy individuals. A comparative study .*Iranian journal of epidemiology* 2012;8(2):65-72.
18. Darvishpoor Kakhki A , Abed Saeedi ZH, Yaghmaie F, Alavi Majd H, Montazeri A .checking of quality of life with Individual characteristic of patient reoffered to hospitals of Tehran 2004.*Iranian Journal of Endocrinology and Metabolism* .2006;8(1):49-56.
19. Senz B, Felicioli P, Moreau A, Le Goaziou MF. Quality of life assessment of type 2 diabetic patients in general medicine. *Press Med* .2004; 33(3):161-6. (In Persian)
20. Saatci E, Tahmiscioglu G, Bozdemir N, Akpinar E, Ozcan S, Kurdak H. The well-being and treatment satisfaction of diabetic patients in primary care. *Health and Quality of Life Outcomes* 2010;8:67.
21. Nejati V, Ashayeri H. Health related quality of life in elderly in Kashan. *Iranian journal of psychiatry and clinical psychology* 2008;14:56-61.
22. Sedaghaty kasabkhi M, Ehsani M. Comparison quality of life in diabetic patients with non diabetic persons .*Journal of Babol university of medical science*.2006;9(5):55-60.
23. Vahdaninia M, Gashtasbi A, Montazeri A, Gandek B .quality of life linked with health in elderly. *Payesh journal*.2004;4(2):113-20.
24. Mohamadi Zeydi A ,Khalaj M, Taghizadeh M. Survey of quality of life in persons with low back pain. 2005;1(2):119-24.
25. Hadi N, Malekan L. Survey of health and quality of life in teachers of primary schools of shiraz. *Journal of Hormozgan University of medical science*.2005;1(4):387-92.
26. Dijkerso M. A Meta-analysis of effect of disamblement componats. *Adapted physical Activity Quarterly* 2007;15(3):829-40.
27. Baghiani Moghadam MH, Afkhami-Ardekani M, Mazloomi SS, Saaidzadeh M. Quality of life in type 2 patient in yazd, *Journal of shahid sadoughi*



- university of Medical sciences.2006;4(14):49-54.(In Persian)
28. Perkins HY, Baum GP, Taylor CL, Basen-Engquist KM. Effects of treatment factors .co morbidities and health- related quality of life on self-efficacy for physical activity in cancer survivors. *psycho oncology* 2009;18(4):45-110.
29. Smith AW ,Reeve BB, Bellizzi KM, Harlan LC, Klabunde CN, Amsellem M, et al .Cancer ,comorbidities, and health .related quality of life of older adults. *Health cancer finance Rev* 2008;29(4):41-56.
30. Fogari R, Zoppi A. Effect of anti hypertensive agents on quality of life in elderly .*Drug aging* 2004;21(6):377-93.