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Health related quality of life in both types of diabetes in Shiraz, Iran

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Abstract

Aim: We assessed the dimensions of health related quality of life (HRQOL) in our area, Shiraz, Iran.

Method: In this cross sectional study 300 diabetic patients of both types (I, II) in two specified diabetic healthcare centers and two hundred concomitants of the patients as healthy individuals were enrolled conveniently. Reliable and valid Persian SF-36 questionnaire were used for assessing HRQOL. Data were entered in SPSS 15 and p value less than 0.05 was considered to be significant.

Result: Difference of scores between patient and control group in scales of physical functioning, physical problems, body pain, general health perception, social functioning, emotional problems, p-value were less than 0.001 while for vitality p-value was 0.102 and 0.200 for mental health. HRQoL scores of two genders did not differ significantly in patients. There were significant linear correlation between age, educational state, duration of disease and some aspects of QOL. Difference of mean score of HRQOL in different marital status was statistically significant in some scales.

Discussion: Diabetic patients in our study had lower scores in all scales of HRQOL when compared with control group. Worst score in patient group was attributed to general health perception. Mental status was influenced in patients group in this study. Some patients indicated

they feel downhearted and blue and some mentioned they felt so down in the dumps that nothing could cheer them up.

Conclusion: lower HRQOL in diabetic patients needs to be addressed by special appropriate actions and interventions. These actions should be first studied regarding efficacy and cost effectiveness and if these interventions addressing individuals, requires mention to health literacy of population.

Keywords: Health Related Quality of Life; Diabetes; Shiraz

Introduction

Diabetes is one of the most important and prevalent metabolic disease around the world. Universal prevalence of diabetes is estimated to be 366 million till 2025 (1). The major increment of diabetes will occur in developing countries in which 170% increase, from 84 to 228 million, till 2025 (2).

Increased risk for diabetes will cause diabetes related complications. These complications significantly impose morbidity and mortality and thus heavy economic burden among people with diabetes. Total national cost of diagnosed Type II diabetes mellitus was estimated 3.78 billion USA dollars (USD) including 2.04 ± 0.28 billion direct (medical and non-medical) costs and 1.73 billion indirect costs in Iran (3). With improvement in treatment of diabetes and its associated complications, diabetic patients live longer. So associated diabetes morbidity and thus it's economic burden will increase (4).

Complications of diabetes widely affect quality of life of diabetic patients. Presence of co-morbidities like visual loss, nephropathy, neuropathy, depression, gastroparesis, cardiac disease, limb abnormalities significantly affect the QOL in diabetic patients (5).

By assessing quality of life of patients we could understand negative effects of disease or impact of treatment on patients' quality of life (6). There are different ways for assessing HRQOL which could assess different aspects of quality of life which is aimed to be studied.

In a Japanese study in which HRQOL was assessed by the Japanese version SF-36, the subscales of physical and emotional roles and general health were decreased significantly in diabetic patients with duration of disease. This study also showed that HRQOL was affected by treatment of diabetes, especially affecting physical rather than mental health (7).

A study on 37054 diabetic patients in United States revealed that diabetes is

independently associated with lower levels of HRQOL among older adults. Older adults with diabetes reported physical or mental unhealthier days in front of those without this condition (8).

In a study in Singapore effects of diabetes and co-existing chronic medical conditions on HRQoL was assessed by use of Short Form 36 Dimensions (SF36) and Short Form 6 Dimensions (SF6). Diabetic patients had lower quality of life and presence of chronic medical conditions additively reduced HRQoL (9).

In a study in Turkey, quality of life diabetic patients assessed by Audit of Diabetes Dependent Quality of Life (ADDQoL) which showed negative impact of diabetes on quality of life of participants. Enjoyment of food was most important impacted item and the least important item was fussing by others. Two most important associated factors with quality of life were insulin treatment and duration of diabetes (10).

Short form of the Diabetes Quality of Life for Youth (DQLQYSF) questionnaire was used in Jordanian adolescents with type I diabetes mellitus. This showed that perceived quality of life of participants was low regarding the impact of diabetes, worries about diabetes, and health perception. In this study scoring of separate

items showed that girls were more influenced and more worried about diabetes than boys (11).

In south Iran, Bandar Abbas, HRQOL was assessed by using World Health Organization Quality of Life instrument, short form (WHOQOL-BREF) questionnaire. HRQOL among the patients was generally low. Mean scales for health-related quality of life varied between 55.67 and 63.75(maximum score: 100) and highest and the lowest rated mean score were attributed to physical and psychological health respectively (12).

In other study in south-east of Iran, Kerman, SF-36 questionnaire used for assessing HRQoL, physical function, was showed to be lower in patients with diabetes with foot ulcers (complication of diabetes) compared with diabetes patients without foot ulcers (13).

Because using SF-36 for assessment of HRQoL would help us understand physical and mental health status of diabetic patients altogether (14), and with our best knowledge there was no HRQOL study on diabetic patients in Shiraz, so we decided to assess the most influenced dimensions of HRQOL using SF-36 questionnaire in our area Shiraz, as a way of adequate future interventions.

Material and Method

This cross sectional study has been performed in Shiraz, the center of Fars province in south Iran.

We enrolled 300 diabetic patients who referred to the two specified diabetic healthcare setting for receiving service, conveniently. Two hundred concomitants of the patients were selected as control group. Included control individuals were healthy people with negative history of diabetes or acute illness. Age and sex distribution of control group was very approximate to patients.

Data collection was performed by a questioner who referred to these two medical care facilities during random days of week. Reliable and valid Persian SF-36 questionnaire (15) were filled by questioner through interview with clients in the study.

SF36 questionnaire yields 36 items, these questions collectively build up an eight-scale profile of scores, these 8 scales were: 10 items for physical functioning, 2 items for social functioning, 4 items for role limitation (physical problems), 3 items for role limitation (emotional problems), 5 items for mental health, 4 items for vitality, 2 items for body pain and 6 for general health perception.

We also used a data collecting form which contained questions about demographic factors.

Inclusion criteria for patient group were: documented cases of both types of diabetes mellitus (type I, II) by internist, given oral Informed consent for participation in study. Compare group were enrolled among healthy concomitants of the patients which had given their oral informed consent.

Each one of 36 items was scored then summed up and converted to scale of 0(worst health status)-100(best health status) and then standardized using SF-36 protocol. Data were entered in SPSS program version 15 and one way ANOVA and pearson correlation and independent sample T-test were used for data analysis. P-value < 0.05 was considered as significant level.

Result

Clients' characteristics are described in table 1. Comparison of 8 scales of HRQOL between diabetic patients and control group showed that in all scales, patient group had lower scores than compare group. In patient group worst scores were related to general health perception and best scores was related to physical functioning, while in compare group the best score were related to physical functioning and the worst score was vitality. Despite mental health and vitality scales, in

other scales there were statistically significant difference among mean scores of 6 other HRQOL scales.

Mean scores of the 8 scales are described in table 2. There was negative linear correlation between age and physical functioning, general health perception, body pain, vitality, mental health (with increase of age, each of the scales decreases).

Even though in patient group, in all scales despite emotional problems, physical problems, male sex had more scores than female; there were no statistically significant differences between male and female in 8 scales of SF-36.

Increase of the scores in all scales of HRQOL could be seen in patient group with increase of education level; however there were only statistically significant different mean scores for 5 scales (physical functioning, body pain, general health perception, vitality, mental health) of HRQOL in different education groups (Table 3).

Single patients had more scores in most of the scales of HRQOL than married and divorced or widow (er). The difference of mean score of HRQOL in different marital status was statistically significant in 5 scales (physical functioning, body pain, mental health, vitality, general health perception).

In this study there was statistically significant negative linear correlation between duration of disease and mean scores of all scales of HRQOL except physical functioning. So with increase of duration of disease in patients, all scales of HRQOL except physical functioning would be decrease (table 4).

Patient with type I diabetes had more scores in all scales of HRQOL than type II and this higher score was statistically significant in scales of physical and emotional problems (table 5).

Discussion

Diabetic patients in our study had lower scores in all scales of HRQOL, and in summary measures of physical and mental status than compare group. This lower quality of life in type II and also type I diabetic patients have been mentioned in other studies (9, 11, 16, 17). Worst score in patient group was attributed to general health perception as this is indicated in some other studies too (18, 19) and best score was attributed to physical functioning. Probably higher prevalence of married women which feel more responsibility to do their housework by themselves despite they are physically affected by disease, may justify higher score of physical functioning in this group.

Table 1. Characteristics of Patients

Characters		Patient group		Control group		P value
		N	%	N	%	
Sex	Male	78	26%	124	62%	0.130
	Female	222	74%	76	38%	0.152
	Total	300	100%	200	100%	0.180
Age	Maximum	83		80		
	Minimum	9		15		
	Average	50.98		46.58		0.050
Education	Less than high school	198	66%	42	21%	0.060
	High school educated	72	24%	70	35%	0.070
	University	30	10%	88	44%	0.106
	Total	300	100%	200	100%	0.080
Type of diabetes	Type I	83	27.7%			
	Type II	217	72.3%			
	Total	300	100%			
Marital Status	Single	27	9%	60	30%	0.170
	Married	252	84%	66	33%	0.090
	Divorced or Death of couples	21	7%	74	37%	0.078
	Total	300	100%	200	100%	0.140

Table 2. Compare of HRQOL between Patient and Compare Group

Scales of quality of life	Patient group	Control group	P value
	Mean \pm SD	Mean \pm SD	
Physical functioning	63.83 \pm 25.15	93.8 \pm 11.91	< 0.001
Physical problems	53.08 \pm 44.10	84.12 \pm 36.42	< 0.001
Body pain	46.15 \pm 16.52	80.08 \pm 21.08	< 0.001
General health perception	44.95 \pm 18.92	69.93 \pm 28.03	< 0.001
Vitality	53.40 \pm 16.47	75.25 \pm 20.60	0.102
Social functioning	59.00 \pm 31.18	79.50 \pm 26.25	< 0.001
Emotional problems	52.55 \pm 45.25	89.00 \pm 31.00	< 0.001
Mental health	59.94 \pm 15.09	73.00 \pm 15.00	0.200

Table 3. Compare of HRQOL between Different Educational Groups of Patients

Scales of quality of life	Education	Patient group	
		Mean \pm SD	P value
Physical functioning	Less than high school	62.90 \pm 24.03	< 0.001
	High school educated	62.88 \pm 25.63	
	University	77.33 \pm 18.74	
Physical problems	Less than high school	54.80 \pm 43.89	0.337
	High school educated	47.22 \pm 40.80	
	University	63.33 \pm 44.88	
Body pain	Less than high school	44.53 \pm 15.61	< 0.001
	High school educated	49.54 \pm 17.07	
	University	55.03 \pm 16.21	
General health perception	Less than high school	43.06 \pm 18.30	0.006
	High school educated	53.86 \pm 20.28	
	University	74.98 \pm 20.04	
Vitality	Less than high school	51.79 \pm 15.86	< 0.001
	High school educated	56.66 \pm 16.80	
	University	62.83 \pm 16.43	
Social functioning	Less than high school	61.31 \pm 30.46	0.470
	High school educated	54.51 \pm 32.31	
	University	56.66 \pm 27.01	
Emotional problems	Less than high school	54.94 \pm 44.53	0.308
	High school educated	47.22 \pm 43.24	
	University	62.22 \pm 46.09	
Mental health	Less than high school	58.60 \pm 14.63	< 0.001
	High school educated	62.83 \pm 15.00	
	University	67.86 \pm 13.95	

Table 4. Correlation of Duration of Diabetes and HRQOL

Scales of quality of life	Pearson correlation	P value
Physical functioning	-0.140	0.001
Physical problems	-0.030	0.062
Body pain	-0.120	0.011
General health perception	-0.055	0.008
Vitality	-0.170	0.001
Social functioning	-0.057	0.021
Emotional problems	-0.026	0.047
Mental health	0.131	0.008

Table 5. HRQOL in Type I and II Diabetes

Scales of quality of life	Type of diabetes	Mean \pm SD	P value
Physical functioning	I	70.24 \pm 23.91	0.475
	II	61.38 \pm 25.24	
Physical problems	I	58.73 \pm 41.21	0.012
	II	50.92 \pm 45.05	
Body pain	I	48.48 \pm 15.89	0.920
	II	45.26 \pm 16.71	
General health perception	I	47.85 \pm 17.72	0.129
	II	43.83 \pm 19.29	
Vitality	I	55.00 \pm 16.41	0.748
	II	52.78 \pm 16.49	
Social functioning	I	59.33 \pm 31.64	0.767
	II	58.87 \pm 31.07	
Emotional problems	I	60.24 \pm 42.75	0.007
	II	49.61 \pm 45.93	
Mental health	I	62.21 \pm 14.12	0.745
	II	59.07 \pm 15.38	

Lower physical status of patients may be due to complications of diabetes or recurrent admissions in hospital (9, 20, 21). Affected physical status may also influence mental status.

Influenced mental status in patients group was seen in this study. Some patients indicated they feel downhearted and blue and some mentioned they felt so down in the dumps that nothing could cheer them up. Diabetic patients have more probability for higher prevalence of depression, and this have showed in several studies (22-24). Quality of life of diabetic patients decreases with presence of mental problems such as depression (5) so prevention and early detection of depression and other mental

problems seems to be important in diabetic patient for prevention of excess decrease in quality of life in these patients (25). Close interaction between physician and psychiatrist is an important factor regarding this issue.

Decrease in 5 scales of HRQOL was seen with increasing age in our study. Correlation between age and HRQOL in diabetes have pointed in other studies (8, 26) while some studies found no correlation between age and quality of life in diabetes (5, 27). However, elderly process affects on physical health, and if these process concomitants with a chronic disease such as diabetes may decrease quality of life. Older patients with diabetes face some difficulties regarding

adaptation maybe due to decreased ability to function in their roles. There are some ways to help them like coping skills, social relationships that can alleviate or prevent excess stress which is often concomitant with diabetes. So for this issue well designed intervention could be helpful (27).

There were no statistically significant differences between male and female in scales of HRQOL. This is mentioned by other studies (5, 28) while some studies found correlation between gender and HRQOL (26, 29, 30). This variation in findings may be due to different measure tool for quality of life or adequacy of sample size of studies.

Higher scores of HRQOL in single patients probably are due to younger age of singles.

In our study as duration of diabetes increases, all scores of quality of life of patients decreases, except physical functioning. This scale didn't change with increasing the duration of disease, probably because patients try to keep themselves physically functional and try to cope with this condition through life time.

As the educational level increasing, the quality of life increased in our study. This may be due to improvement of health literacy of educated patients, better understanding of the disease, self

management and tracing disease follow up in disease course, and consequently less effect of disease' complications on HRQOL would be gained. Better educational level also has impact on better lifestyle and probably better employment and financial status of patient and treatment seeking (29, 31). So it's obvious that quality of life of patients is affected by other factors outside of health care system in a way that needs governmental policies that provides infrastructures for education and also contemplates other social determinants of health. In the present study, type 1 diabetes reported better HRQoL than type 2 and this may be explained by the younger age of type 1 diabetes (20).

It is important to be aware that because the SF-36 questionnaire is not diabetes specific instrument, it may reflect problems related to other conditions rather than diabetes disease. Furthermore, it is recommended studies with more sample size for type 1 diabetes. Qualitative studies are also suggested for better understanding the details and the disease phenomenon in patients view.

Conclusion

Lower HRQOL in diabetic patients needs to be addressed by special appropriate actions and interventions. These actions should be

first studied regarding efficacy and cost effectiveness and if these interventions addressing individuals, requires mention to health literacy of population.

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Conflict of Interest

None of the authors has declared any conflict of interest within the time this survey has been performed.

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