Original Article

Assessment of the Quality of Life and Factors Effecting in Patients with Diabetes Type 2

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Abstract

Background: It is known that disease burden of the diabetes is heavy and it affects quality of life related to the health.
Objective: This study was conducted to determine quality of life level and factors effecting in with type 2 diabetes individuals.
Methodology: 121 individuals with type 2 diabetes participated in this descriptive research. Data was collected with patient identification form and SF-36 Quality of Life Scale. In statistical evaluation, percentage, average, student t test, Mann-Whitney U test, Kruskal-Wallis test and Pearson correlation analysis were used.
Results: Age average of patients with diabetes was 45.61 ± 10.05 and average duration of the disease was 5.62 ± 5.25. It was determined that point average of physical function sub-dimension of participants was the highest and point average of energy/ liveliness sub-dimension was the lowest according to SF-36 Quality of Life Scale. In the study, statistically significant difference was determined between age and pain; gender and physical role difficulty, general health perception; marital status and physical role difficult, energy/ liveliness, pain and general health perception; educational level and mental health, general health perception; situation of smoking and emotional role difficulty; fasting glucose level, physical function, physical role difficulty, energy/ liveliness, general health perception; treatment method and physical role difficulty, energy/liveness sub-dimension point averages ($p<0.05$).
Conclusions: It was determined that quality of life dimensions in individuals with diabetes were medium level and variables such as age, gender, marital status, educational, smoking habit, fasting glucose level and treatment method were related with the quality of life.

Key words: Diabetes, quality of life, nurse.

Introduction

Diabetes is a serious chronic disease which is related with many complications potentially preventable such as retinopathy, neuropathy, amputation, nephropathy and cardiovascular diseases (Akinci et al. 2008; Nejhad et al. 2013). Prevalence of diabetes are increasing quickly across the world; 171 millions of patients with diabetes were reported in 2000 and it is predicted that this number will reach 366 million until 2030 (Wild et al. 2004). Prevalence of diabetes in Turkey population was reported as 7.2% (Satman et al. 2002) and increasing age, diabetes history in the family and obesity are accepted as significant risk factors increasing diabetes risk in our society (Onat et al. 2006). It was reported that diabetes frequency reached 13.7% according to TURDEP-II in Turk adult population and diabetes frequency showed an increase at the rate

of 90% in the last 12 years (Satman et al. 2013). Adoption of modern life style is considered to be responsible for the fact that diabetes reached at high rates in many regions of the world (IDF).

With the serious increase in diabetes prevalence, this also increases the number of the patients who have to live due to the complications related to the diabetes significantly (Nejhad et al. 2013). Given this realities, it is known that disease burden of the diabetes is heavy and it affects quality of life related to the health. In addition to being effected from many factors, quality of life is basically related with socio- demographic characteristics (Citil et al. 2010; Jonsson et al. 2001), existence of complication based on the diabetes and social support satisfaction (Bourdel-Marchasson et al. 2013) and socio- economic situation (Jayasinghe et al. 2009). It was shown that effective treatment plan which were planned to improve glycemic control (Nimsgern and Camponeschi 2005); high social support, self-effectiveness, regular physical activity and complications wasn't available (Mensing et al. 2000); good glycemic control, leisure time activities and flexibility (Hahl et al. 2002) perceived in diet therapy were related with higher quality of life.

In recent clinical studies, quality of life related to the health in the individuals with the diabetes has been seen as one of the most important treatment aims and treatment follow-up evaluation criteria (Nejhad et al. 2013). Besides, perception of the patient with the diabetes about his/her own quality of life can be accepted as key determinant in order to provide metabolic control and determine treatment plan aims. For this reason, it is necessary to improve effective interventions in order to determine impact of the diabetes on quality of life and lessen its negative effects.

Methodology

Aim and design: The descriptive study was conducted in order to determine quality of life level and factors effecting in with type 2 diabetes individuals. Research questions;

-         How is the quality of life level of individuals with type 2 diabetes?
-         Do personal and disease characteristics of individuals with type 2 diabetes effect quality of life?

Sample: Target population of the research was 208 adult individuals who applied endocrinology clinic in a public hospital between the dates of 2

January – 30 June 2017 and were diagnosed with type 2 diabetes by the doctor. 121 individuals participated in the study who applied internal disease clinic at a particular time, were diagnosed with type 2 diabetes for at least 6 months, didn't have any verbal communication disability and accepted to participate in the study.

Data collection tools: Data was collected by using Patient Identification Form and Short Form 36 (SF-36) Quality of Life Scale.

Patient Identification Form; This form includes 15 questions about personal information (age, gender, marital status, educational level, working situation, economic situation, situation of smoking and using alcohol), disease information (disease duration, treatment method and existence of any other chronic disease) and metabolic parameters (fasting glucose level and glycated hemoglobin (HbA_1C)) prepared by the researchers in line with literature review. Values about metabolic parameters of the individuals were obtained from laboratory result paper and the latest measurements were used. Weight and height of the individuals were measured by researchers. Weighting device and rigid tape were used for height and weight measurements. Height of the individuals was recorded as cm and weight as kilogram (kg) and body mass index (BMI) was calculated with formula of kg/m^2.

Short Form- 36 (SF-36) Quality of Life Scale: It is a scale developed by Ware (1987) in order to examine health condition and quality of life in individuals. Adaptation of the scale into Turkish and validity and reliability study were done by Pınar (1995). Scale includes 36 items and these provide measurement of eight dimensions; physical function (10 items), physical role difficulty (4 items), emotional role difficulty (3 items), energy/liveliness (4 items), mental health (5 items), social function (2 items), pain (2 items) and general health perception (5 items). The expression starting with "my current health condition compared to last year" questioning change in the health in the last year in the scale isn't taken into consideration while scoring. The scale gives different total scores for each sub-scale instead of giving only one total score. Sub-scales assess the health between 0-100 and while 0 means bad health condition, 100 means good health condition. Cronbach's alpha value of the scale was found as 0.85 in the study.

Procedure: Data was collected by interviewing face to face in a room by researchers. Filling data

forms, measurement of blood pressure, height, weight took nearly 25-30 minutes.

Ethical Considerations: Before collecting data, written permission was taken from ethics committee of a hospital and institution in which research was done. Besides, each individual participating in the study was informed about content of the study and the fact that participation in the study was based on voluntariness and their oral consents were taken.

Analysis of the data: Data was interpreted in SPSS 22.0 package program. Socio-demographic and disease characteristics of the individuals with the diabetes were assessed with percentage and average test; the relation between personal characteristics, disease characteristics, BMI, metabolic parameters and SF-36 Quality of Life Scale point average was assessed with student t test, Mann-Whitney U test, Kruskal-Wallis test and Pearson correlation analysis. Significance was assessed as $p < 0.05$ in statistical evaluation.

Limitations of the Study: The fact that its results were generalizable for its own target population because the research was conducted with the individuals with the diabetes who applied only one public hospital at a certain time and accepted to participate in the study constitutes important limitations for the research. Besides, information about the quality of life was based on self- reporting of the individuals.

Results

Among the individuals included in the study, 63.6% were female, 88.4% of them were married and 70.2% them graduated from primary school. 57.9% of the participants weren't working in any job and incomes of 53.7% of them were equal to their expenses. 29.8% of the individuals with the diabetes were still smoking and 1.7% of them were using alcohol. More than half of the participants were obese (58.7%) and 41.3% of them were using both oral antidiabetic and insulin treatment for diabetes treatment. 26.4% of the individuals didn't have any other chronic disease except the diabetes (Table 1).

Age average of the individuals with the diabetes was 45.61 ± 10.05 and average disease duration was 5.62 ± 5.25 years. Average fasting glucose level of the individuals was 229.30 ± 89.97 mg/dl and HbA_1C value average was %9.75 ± 2.29 (Table 2). Distribution of sub-dimension point averages of SF-36 Quality of Life Scale of the individuals with diabetes was given in Table 3. According to this, physical function sub-dimension point average of the participants was the highest (71.28 ± 27.89) and energy/liveliness sub-dimension point average was the lowest (48.22 ± 20.40).

Comparison of personal and disease characteristics and SF-36 Quality of Life Scale sub-dimension point averages of the individuals with diabetes was given Table 4. According to this, it was determined that there was a weak and positive relation between age and SF-36 Quality of Life Scale pain sub-dimension point average ($p < 0.01$). It was determined that physical role difficulty and general health perception point averages of male patients with diabetes were higher than females'; physical role difficulty, energy/liveliness, pain and general health perception point averages of married patients were lower than single ones'; mental health and general health perception of the individuals who graduated from higher education were higher than the individuals' who graduated from primary and secondary school ($p < 0.05$). It was confirmed that emotional role difficulty point average was higher in individuals who were smoking than not smoking ($p < 0.05$). It was confirmed that there was a weak but positive relation between fasting glucose level and physical function, physical role difficulty point averages and there was a weak and negative significant relation between energy/liveliness and general health perception point averages ($p < 0.05$). It was found that physical role difficulty and energy/liveliness sub-dimension point averages of the individuals who managed their diseases by only doing diet therapy were higher than the individuals' using oral antidiabetic and insulin ($p < 0.05$). Any statistically significant difference wasn't confirmed between SF-36 Quality of Life Scale sub-dimension point averages and gender, disease duration, working situation, body structure according to BMI value, HbA_1C level and existence of any other chronic disease rather than diabetes in the study ($p > 0.05$).

Table 1. Personal and Disease-Related Characteristics of Individuals with Diabetes

Characteristics	N	%
Gender		
Female	77	63.6
Male	44	36.4
Marrital status		
Married	107	88.4
Unmarried	14	11.6
Education status		
Primary school	85	70.2
Secondary school	22	18.2
Highy school	14	11.6
Working status		
Yes	51	42.1
No	70	57.9
Economic status		
More than income	16	13.2
Income to spouse	65	53.7
Less than income	40	33.1
Smoking status		
Current smoker	36	29.8
Ex-smoker	12	9.9
Never smoker	73	60.3
Alcohol drinking status		
Current drinking	2	1.7
Stop drinking	4	3.3
Never drink	115	95.0
Body Mass Index (kg/m^2)		
18.5 - 24.9	12	9.9
25 - 29.9	38	31.4
$\geq$30	71	58.7
Diabetes treatment		
Only diet	10	8.3
Oral antidiabetic	22	18.2
Insulin	39	32.2
Oral antidiabetic and insulin	50	41.3
The presence of other chronic diseases		
Yes	32	26.4
No	89	73.6

Table 2. Distribution of averages about age, disease duration and metabolic parameters of the individuals with the diabetes

Variables	Min - Max	Mean ± SS
Age (year)	28 - 67	45.61±10.05
Disease duration (year)	1 - 25	5.62 ± 5.25
Fasting glucose level (mg/dl)	93 - 489	229.30 ± 89.97
HbA$_1$C (%)	5.30 – 14.40	9.75 ± 2.29

Table 3. Distribution of SF-36 Quality of Life Scale sub-dimension point averages of the individuals with diabetes

SF-36 Quality of Life Scale sub-dimension	Marked Min-Max Score	Mean ± SS
Physical function	0-100	71.28±27.89
Physical role difficulty	0-100	58.72±43.12
Emotional role difficulty	0-100	62.62±44.11
Energy/liveliness	5-90	48.22±20.40
Mental health	8-100	55.43±21.62
Social function	12.50-100	64.40±23.91
Pain	0-100	66.13±23.06
General health perception	20-95	50.61±18.52

Discussion

Although that glycemic control and complications don't develop in the individuals with type 2 diabetes represents treatment success, perceived quality of life results are also important, too (Ali et al. 2010). Quality of life level is not only one of the indicators of treatment success or satisfaction of the individual's own health. Besides, it is also accepted as an important determinant because perceived low quality of life facilitates occurring of negative results such as bad glycemic control, weak response to the treatment, progress of the complications based on the diabetes in the individuals with type 2 diabetes (Kleefstra et al. 2008). It is known that the quality of life decreases significantly with symptomatic complications in the patients with type 2 diabetes like in many chronic diseases (Wexler et al. 2006; Dogan et al. 2016; Panisch et al. 2018).

In our descriptive study, it was confirmed that perceived quality of life in the patients with type 2 diabetes was medium level. It is also seen in many studies done in our country and in the world about the subject that quality of life is effected negatively and deteriorate in patients with diabetes (Gulseren et al. 2001; Paschalides et al. 2004; Davis et al. 2005; Wexler et al. 2006; Akinci et al. 2008; Ozdemir et al. 2011). Research results reveal that quality of life in the patients with diabetes is effected and quality of life should be improved by defining risk factors in terms of protection.

Although it is known that preferred medication type, complexity of the treatment or limitations can affect quality of life in patients with diabetes in treatment approach aiming a better glycemic control, the relation between HbA$_1$C level and quality of life is not obvious (Dogan et al. 2016). It was found in our study that fasting glucose HbA$_1$C value average of the patients was much higher than targeted rate, increasing fasting glucose value effected some sub-dimensions of quality of life negatively and quality of life was not effected from HbA$_1$C value. It was shown in many studies that metabolic control effected quality of life positively in the individuals with diabetes and there was a negative relation between HbA$_1$C value and quality of life (Citil et al, 2010; Dogan et al. 2016; Jonsson et al. 2001;

Akinci et al, 2008). In addition to this, there were also studies in which any significant relation wasn't shown between HbA$_1$C and quality of life in the literature (Pala et al. 2004; Petterson et al. 1998).

When assessing the relation between treatment method and quality of life in our study, it was confirmed that treatment method effected some sub-dimensions. When reviewing the studies about the subject, it is reported that treatment alternatives unique to the diabetes support our findings and especially use of insulin is one of the determinants of perceived quality of life level (Akinci et al. 2008; Redekop 2002; Wexler et al. 2006; Bourdel-Marchasson et al. 2013; Redekop et al. 2002). It is known that hypoglycemia is seen considerably in the individuals with diabetes treated with insulin (Yale 2004; Henderson et al. 2003) and it is reported that hypoglycemia attacks also effect quality of life to a considerable extent (Davis et al. 2005). That treatment method is invasive, frequency of usage and implementation during the day and perceived limitation level by the individual such as diet adaptation can be variables effecting quality of life based on the treatment. For this reason, that the patient is supported about minimizing negative approaches by questioning the meaning which the patient attribute to the treatment method will benefit in terms of improving quality of life.

It was determined in the study that gender, age, marital status, working situation, disease duration and educational level deteriorated some of the sub-dimensions of the quality of life. When reviewing similar studies, it was determined that quality of life deteriorated by being effected in women patients (Nejhad et al. 2013; Gulseren et al. 2001; Eren, Erdi & Civi 2004; Eljedi et al. 2006; Goldney et al. 2004), older patients (Nejhad et al. 2013; Bourdel-Marchasson et al. 2013; Wexler et al. 2006) and patients with low educational level (Nejhad et al. 2013) and socio-economic level (Goldney et al. 2004). It is seen in study results that some or all of the sub-dimensions of quality of life in women are effected more than men. It is stated that this situation can be related with the fact that depression- anxiety levels are higher in female patients than males (Gulseren et al. 2001; Paschalides et al. 2004; Ali et al. 2010) and social position, social role and expectations of women (Gulseren et al. 2001). It shouldn't be forgotten that being a woman in implementation

stages of quality of life assessments or initiatives about the quality of life is an independent risk factor.

It was found in our study that existence of any other chronic diseases except the body structure, disease duration and diabetes didn't effect quality of life sub-dimensions. When reviewing similar studies, it is seen in many studies that situations such as disease duration (HosseiniNejhad et al. 2013), obesity (Brown et al. 2000; Bourdel-Marchasson et al. 2013; Redekop et al. 2002; Wexler et al. 2006), complications induced by diabetes (Bourdel-Marchasson et al. 2013; Redekop et al. 2002; Wexler et al. 2006; 13) and existence of accompanying any other chronic diseases (Wexler et al. 2006; Brown et al. 2000; Redekop et al. 2002) are important determinants for the quality of life and it decreases quality of life in the individuals with type diabetes contrary to our findings. We consider that these results differing from our findings might stem from the number of participants in the study, socio-demographic characteristics of the cases and study type. Although our study findings don't support it, it is obvious that obesity, existence of complications and existence of accompanying any other chronic diseases decrease the quality of life. In this sense, it should not be forgotten that these factors also decrease the quality of life.

Conclusions

In line with the obtained findings, it was confirmed that type 2 diabetes effected quality of life of the patients negatively and variables such as age, gender, marital status, educational level, smoking habit, fasting glucose level and treatment method were related with the quality of life. It is very important to determine perceived quality of life level and effecting independent factors in the individuals with diabetes and evaluate efficiency of initiatives towards improving quality of life. Studies with extensive sampling and control groups and long observation periods which will be done in this direction will benefit improvement of the quality of life.

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Table 4. Comparison of personal and disease characteristics and SF-36 Quality of Life Scale sub-dimension point averages of the individuals with diabetes

Variables	Physical function	Physical role difficulty	Emotional role difficulty	Energy/liveliness	Mental health	Social function	Pain	General health perception
Age								
r/p	0.012/0.900	0.003/0.974	0.031/0.736	0.006/0.944	0.000/0.991	0.081/0.375	0.273/**0.002***	0.130/0.155
Gender								
Female	66.11±28.95	51.33±44.55	64.52±42.30	48.76±22.50	56.05±22.14	63.47±23.09	66.33±25.50	47.72±18.80
Male	76.83±25.30	71.65±37.59	59.28±47.43	47.27±16.26	54.36±20.90	66.04±25.47	65.79±18.30	55.68±17.07
t/p	-1.666/0.098	-2.550/**0.012***	0.627/0.532	0.386/0.700	0.412/0.681	-0.567/0.572	0.122/0.903	-2.313/**0.022***
Marrital status								
Married	66.96±28.47	54.72±43.30	60.22±44.62	45.65±19.79	54.76±21.55	64.42±23.46	63.76±22.17	48.92±17.60
Unmarried	81.42±21.07	89.28±27.23	80.95±36.31	67.85±13.25	60.57±22.34	64.28±28.10	84.28±22.39	63.57±20.88
Z/p	-1.394/0.163	-0.250/**0.001****	-1.593/0.111	-3.917/**0.000****	-0.796/0.426	-0.221/0.825	-2.920/**0.004****	-2.410/**0.016***
Education status								
Primary school	68.77±28.62	59.46±44.45	61.69±44.28	46.64±20.44	54.72±20.85	62.79±23.77	62.32±23.81	47.47±16.73
Secondary school	76.81±27.88	50.06±42.30	60.60±47.84	46.81±20.84	47.27±22.20	62.77±25.90	76.13±20.76	54.09±20.21
Highy school	77.85±22.16	67.85±35.93	71.42±38.91	60.00±16.40	72.57±16.66	76.78±18.89	73.57±15.05	64.28±20.27
KW/p	2.897/0.235	1.660/0.436	0.474/0.789	4.786/0.091	11.213/**0.004****	4.239/0.120	7.206/**0.027***	7.096/**0.029***
Smoking status								
Yes	67.52±27.99	48.69±43.53	81.59±35.87	46.38±16.10	56.66±18.74	65.44±22.38	64.58±18.05	51.11±15.81
No	72.88±27.86	62.97±42.49	54.58±44.99	49.00±22.13	54.91±22.82	63.97±24.65	66.79±24.95	50.41±19.64
t/p	-0.966/0.336	-1.678/0.096	3.194/**0.002****	-0.642/0.522	0.405/0.686	0.309/0.758	-0.480/0.632	0.189/0.850
Fasting glucose level								
r/p	0.316/**0.004****	0.358/**0.001****	-0.023/0.835	-0.251/**0.024***	-0.156/0.165	0.183/0.101	-0.057/0.613	-0.221/**0.047***
Diabetes treatment								
Only diet	73.00±24.63	75.00±40.82	73.33±40.97	63.00±8.56	52.00±21.82	70.00±13.43	66.00±15.68	52.00±22.26
OAD***	65.00±24.78	38.63±39.88	45.45±46.42	50.00±26.90	58.18±28.11	68.18±19.94	64.77±27.67	50.00±22.86
İnsulin	71.68±29.33	61.65±44.29	64.10±46.12	37.82±18.16	54.05±19.97	67.62±24.95	64.67±22.68	46.53±17.01
OAD and insulin	73.40±28.98	62.03±42.33	66.88±41.23	52.60±16.97	56.00±20.05	59.12±25.78	67.90±22.90	53.80±16.61
KW/p	3.266/0.352	8.157/**0.043***	4.366/0.225	21.086/**0.000****	1.297/0.730	3.885/0.274	1.459/0.692	4.457/0.216
*p<0.05; **p<0.01; ***Oral antidiabetic								