Quality of life in type II diabetic patients in primary health care

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ABSTRACT

INTRODUCTION: This study evaluated the quality of life of patients with type II diabetes in primary health care with the Turkish version of the Audit of Diabetes Dependent Quality of Life (ADDQoL) instrument.

MATERIAL AND METHODS: A total of 180 patients diagnosed with type II diabetes and registered at an urban primary health care unit in Turkey were included to this study.

RESULTS: The ADDQoL instrument showed good internal consistency and factor structure. Diabetes had the largest impact on "enjoyment of food" (mean impact rating –1.65) and the least impact on "others fussing" (–0.44). The duration of diabetes and insulin therapy had a significant impact on quality of life among diabetic patients.

CONCLUSION: Multidimensional assessments of quality of life including both generic and disease-specific measures are important for diabetic patients in primary health care.

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Diabetes is a chronic disease with considerable impact on health status and quality of life and it is considered an urgent public health issue because it has a pandemic potential [1]. Most of the increase observed in the number of adult diabetics has occurred in developing countries [2, 3]. According to a population-based study, the prevalence of type II diabetes in Turkey is 7.2% [4], which is moderately high by international standards [5] and in comparison to other Mediterranean countries [4]. This prevalence suggests the existence of a potential burden of poor quality of life among diabetic patients. Diabetes awareness is still considered poor in Turkey [4]. More importantly, only a limited number of studies have been conducted in Turkey to document the quality of life of diabetes patients [6-9].

The objective of this cross-sectional study was to assess the health-related quality of life among type II diabetic patients registered at a primary health care unit located in an urban area in Turkey.

MATERIAL AND METHODS

Participants and procedure

The participants of this study were recruited from a primary health care unit located in the city of Bursa, Turkey. The unit serves an urban population of 3,577 of whom 2,658 are 20 years of age or above. According to the medical registry of the unit, a total of 185 individuals aged 20 years and older had been diagnosed with type II diabetes for a minimum of six months and all of them were included into this study. All diabetic patients were interviewed by the family physician of the unit and 180 gave informed consent for participation in this study. Five diabetic patients who did not want to participate were excluded. Two questionnaires were completed during the interviews. The first covered socio-demographic characteristics and disease history; the second focused on the measure of perceived impact of diabetes on quality of life (Audit of Diabetes Dependent Quality of Life, ADDQoL). Approval for this study was given by the Ethics Committee of Uludag University, Bursa, Turkey. This study was initiated on November 2010 and concluded by May 2011.

Instruments

The ADDQoL questionnaire was originally designed in 1994 and has been widely applied in many countries, and is viewed as a particular and useful scale of useful diabetes-specific tool [10-12]. The ADDQoL is an individualized instrument aiming at measuring the individual's feelings about the impact of diabetes and it includes life domains that may be affected by diabetes for the better or, more likely, for the worse [10-12]. This study used the version of the ADDQoL which has 13 specific domains and two overview items; one for general and the other for diabetes-specific quality of life. For each of the 13 specific domains, respondents could provide both impact (range –3 to + 3) and importance (range 0-3) scores. These two scores were multiplied to provide a weighted impact score for each applicable domain (range –9 to +9). An average weighted impact score was derived by totalling the weighted impact scores for each domain and dividing by the number of applicable domains. A "not applicable" option is provided for domains that may not be applicable to a given individual and non-applicable domains make no contribution to an individual's score. Reported studies have shown that the ADDQoL instrument has satisfactory validity and reliability, with a Cronbach's α coefficent of 0.85-0.94 and an excellent performance in factor

analysis [11-15]. The utility of the ADDQoL instrument is gradually being recognized in many fields, such as diabetes treatment, intervention and evaluation, diabetes self-management education programmes and clinical research trials [16].

TABLE 1

Socio-demographic characteristics of the sample, %.

Characteristics	Diabetic participants (n = 180)
Gender	
Male	53.3
Female	46.7
Age groups, yrs	
< 50	16.1
50-59	36.7
60-69	33.9
70-79	13.3
Marital status	
Single	1.7
Married	81.1
Widowed/divorced	17.2
Occupation	
Housewife	31.7
Retired	55.0
Other	13.3
Monthly income, USD	
Below 450	30.0
450-900	42.8
> 900	27.2
Perceived economic status	
Poor	36.7
Moderate	47.8
Good	15.5

TABLE 2

Descriptive statistics of Audit of Diabetes Dependent Quality of Life.

Domain	Impact scores unweighted mean (SD)	range	Importance scores mean (SD)	range	Impact scores weighted by importance mean (SD)	range
Employment/career	−1.06 (1.13)	−3-1	1.32 (1.15)	0-3	−2.12 (2.89)	−9-4
Social life	−1.00 (1,12)	−3-0	1.56 (1.11)	0-3	−2.31 (2.90)	−9-0
Family relationships	−0.90 (1.08)	−3-1	1.64 (1.13)	0-3	−2.09 (2.87)	−9-2
Friends	−0.62 (1.02)	−3-1	1.37 (1.16)	0-3	−1.52 (2.72)	−9-1
Sex life	−0.80 (1.17)	−3-2	1.26 (1.18)	0-3	−1.76 (3.03)	−9-6
Sport/leisure	−0.93 (1.19)	−3-2	1.34 (1.14)	0-3	−2.07 (3.06)	−9-4
Travel	−1.03 (1.15)	−3-1	1.32 (1.14)	0-3	−2.16 (2.94)	−9-1
Future (own)	−0.98 (1.18)	−3-2	1.50 (1.16)	0-3	−2.24 (3.18)	−9-4
Future of family	−1.03 (1.20)	−3-1	1.58 (1.21)	0-3	−2.50 (3.32)	−9-2
Motivation	−1.22 (1.29)	−3-3	1.59 (1.18)	0-3	−2.89 (3.48)	−9-9
Physical activities	−1.44 (1.28)	−3-1	1.60 (1.14)	0-3	−3.36 (3.52)	−9-1
Others fussing	−0.44 (0.93)	−3-2	0.69 (1.04)	0-3	−0.93 (2.15)	−9-0
Enjoyment of food	−1.65 (1.31)	−3-3	1.82 (1.15)	0-3	−3.99 (3.88)	−9-9

SD = standard deviation

Questionnaires for socio-demographics, disease history and medical history. Information such as age, gender, marital status, occupation, social and health insurance, income, perceived economic status and information about diabetes such as date of diagnosis, insulin usage, complications of diabetes and existing comorbid diseases was collected from the diabetic patients.

Statistical analyses
All analyses were performed with SPSS for Windows, version 13.0. For descriptive statistics, means, standard deviations and frequencies were calculated. Cronbach's α coefficient was used to assess the reliability of the Turkish version of the ADDQoL We used the t-test for the comparison of mean score values between groups. p-values of less than 0.05 were considered statistically significant.

Trial registration: not relevant.

RESULTS
The internal consistency of the ADDQoL Turkish version was found to be high (Cronbach's α = 0.90-0.91), which indicates that the Turkish version of this instrument is reliable. Socio-demographic information of the study participants is presented in **Table 1**. All study participants had social security and health insurance coverage.

The duration since the diagnosis was 5-9 years for most diabetic participants (47.7%), 1-4 years for 38.9% and ten years or more for 13.4%. At the time of this study, 25.0% of the diabetic participants were receiving insulin treatment. Complications to diabetes were reported by 29.4% of participants, most of which were heart complications (50.9%) followed by retinopathy (28.3%), neuropathy (11.3%) and nephropathy (9.4%). Co-morbid diseases were reported by 83.3% of the diabetic participants and the most commonly reported disease was hypertension (46.1%) followed by hyperlipidemia (6.1%). In the control group, 54.4% of the participants reported existing diseases of which the most commonly reported was hypertension (31.1%).

The distribution of responses regarding ADDQoL items and the weights assigned to impact rating is shown in **Table 2**. All items had a negative mean value, indicating that diabetes negatively impacted their quality of life. On the other hand, 15 participants indicated benefits of having diabetes. Eleven items of the ADDQoL instrument elicited responses indicating some positive effects of diabetes on the items concerning employment/career, family relations, friendship, sex life, sport/leisure, travel, personal future, future of the family, motivation, physical activities and enjoyment of food. Weighted scores ranged from −9 to 0 for two of the 13 items, with wider response ranges for the 11 items

where a positive impact of diabetes was indicated. Diabetes has the largest impact on enjoyment of food (mean impact rating –1.65) and the least impact on others fussing (–0.44). Enjoyment of food and family relationships were rated as the most important items (mean importance rating 1.82 and 1.64, respectively) and others fussing (0.69) as the least important item. Enjoyment of food remained as the most and others fussing as the least affected quality of life items, respectively when the weighting was considered.

Table 3 shows the differences in rankings between unweighted and weighted means and percentage distribution of participants who assigned a zero value to the importance rating.

Seven items (enjoyment of food, physical activities, motivation, future of family, sex life, friendship and others fussing) had the same rankings for unweighted and weighted mean values. The most important item was enjoyment of food and the least important was others fussing. After weighting, the importance of three items were increased (social life, family relations and future (own), whereas the importance of three items (employment/career, sport/leisure and travel) was reduced.

The comparison of the average weighted impact scores of diabetic participants by sex, age, marital status, income, diabetes therapy type, duration of diabetes, presence of diabetic complications and co-morbid diseases is shown in **Table 4**. The duration of diabetes and insulin therapy had a significant impact on life quality among the diabetic patients.

DISCUSSION
The prevalence of type II diabetes was 6.96% in our study group (for the part of the population aged 20 years or above), and this rate was in line with the prevalence of type II diabetes in Turkey in general, which is about 7.2% [4]. The use of the ADDQoL among diabetics has generally shown an almost universally negative impact of diabetes on all domains [11-12]. The largest negative impact observed in the present study was on enjoyment of food, which is consistent with previous studies [11, 12, 16]. However, individual variations in response to ADDQoL items were considerable and the impact of diabetes on quality of life cannot simply be assumed to be negative, as some items showed positive effects of diabetes on quality of life and 15 participants pointed out these positive effects for 11 items of the ADDQoL instrument. Similar results have been obtained from previous studies [11, 13, 16, 17]. Cronbach's α coefficient and corrected item-total correlations were satisfactory and in line with those reported in previous studies [11, 13, 16, 17].

If the average weighted impact score is taken into account, socio-demographic characteristics such as gender, age, marital status, income, and disease-related characteristics such as presence or absence of complications and co-morbidity were not found to be significantly associated with quality of life, although these characteristics had a significant impact on some of the

TABLE 3

Domain	Ranks of unweighted means	Ranks of weighted means	Participants assigned 0 value to importance, %
Employment/career	6	8	37.2
Social life	7	5	26.7
Family relationships	10	9	25.6
Friends	12	12	36.1
Sex life	11	11	40.8
Sport/leisure	9	10	36.1
Travel	5	7	35.0
Future (own)	8	6	31.7
Future of family	4	4	32.2
Motivation	3	3	30.0
Physical activities	2	2	26.7
Others fussing	13	13	66.1
Enjoyment of food	1	1	22.2

SD = standard deviation

Differences in ranks between unweighted and weighted mean Audit of Diabetes Dependent Quality of Life scores and % distribution of participants assigned zero value importance rating.

TABLE 4

Average weighted impact scores by socio-economic and disease-related characteristics of diabetic participants (t-test).

	Average weighted impact score			
	mean	SD	p-value	Items with significant difference
Gender				
Male	–2.34	2.42	0.957	Sex life
Female	–2.33	1.87		
Age, yrs				
20-50	–1.91	1.99	0.181	Social life
≥ 51	–2.46	2.23		
Marital status				
Married	–2.37	2.18	0.643	Social life
Other	–2.15	2.27		
Monthly income, USD				
≤ 1,500	–2.48	2.23	0.185	None
> 1,500	–1.99	2.07		
Therapy				
Insulin (–)	–2.07	1.99	0.009	Family relationships; sex life; travel; future own; future of family
Insulin (+)	–3.04	2.50		
Diabetes duration, yrs				
≤ 10	–2.01	1.91	0.000	All items except social life and others fussing
> 10	–3.57	2.69		
Complication				
Absent	–2.15	2.12	0.085	Family relationships; sex life; sport/leisure; travel
Present	–2.78	2.29		
Co-morbidity				
Absent	–1.85	1.85	0.208	None
Present	–2.43	2.24		

quality of life items. For example, female participants reported a better sex life than did males; younger participants' social life was better than that of older participants (≥ 51 years); divorced, widowed and single participants' social life was better than that of those who were married; and participants without complications had better family relationships, sex life, sport/ leisure, and travel opportunities than those with complications. A number of researchers have reported that quality of life is better among diabetic men than among diabetic women, among persons who are younger, among married people and among those with a higher income [18], but in our study none of these socio-demographic factors were found to be significant. In a study by Halmanová & Ziaková [16], it was found that below the age of 50 years, the absence of complications or comorbdity were significantly associated with a better quality of life. A recent study found a significant influence of age on the average weighted impact score, but no difference between participants with and without complications or between males and females [13].

In the present study, it was found that insulin treatment and duration of diabetes were the two most important factors associated with quality of life. Insulin treatment reduced the quality of life especially for the following domains: family relationships, sex life, travel, own and family future. Similar results have been obtained in previous studies [11-13, 16]. In the present study, diabetes patients with a duration of disease exceeding ten years reported lower average weighted impact scores than those with a shorter duration of diabetes. This finding is contrary to the results of a previous study which found no significant difference between patients with longer or shorter duration of diabetes in terms of quality of life scores [16].

In the present study, the Turkish version of the ADDQoL instrument was determined to have a good reliability and, with its individualised nature with items weighted according to the importance of the item to the respondent, the ADDQoL was suggested to provide a more accurate estimate of the impact of diabetes on quality of life than unweighted measures. In general, diabetes had the most severe impact among those who received insulin treatment and who had a longer history with the disease.

Diabetes is one of the most psychologically demanding of the chronic diseases and psycho-social factors are pertinent to nearly every aspect of the disease and its treatment including diabetes self-management education and patient-directed self-management behaviour. Educational interventions for patients with diabetes should therefore be tailored to the social, emotional, cultural and psychological aspects of patients' lives to help them adjust to their condition. From this perspective, instruments such as the ADDQoL, which is designed to measure individuals' perceptions of the impact of diabetes on their quality of life, may be instrumental in identifying preferences, motivational deficits in diabetes management and in tailoring more appropriate treatment strategies.

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