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Research Article

Quality of Life of Parents of Children with Type I Diabetes Mellitus, Baghdad 2017

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ABSTRACT

Background: Diabetes is defined by the World Health Organization as a metabolic disorder characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both. Families are co-regulating systems in which the stresses and strains of one family member affect the well-being of another member of the family. Caregivers of children with chronic illness report experiencing more parental stress than parents of healthy children.

Objective: A descriptive cross-sectional study had been conducted in four centers of endocrine diseases in Baghdad city and data was collected by using self-administered questionnaire regarding quality of life adapted from World Health Organization. The study was conducted on six hundred participants. Data analysis was done by using frequency, percentage and mean and analytical statistics using Chi Square test. P value less than 0.05 was considered statistically significant.

Results: The study showed that social domain had the highest mean score of (51.1) and that environmental domain had the lowest mean score of (38.9). The physical domain's mean score was (40.2), while mean score of psychological domain was (46.2). The study reported that mothers of children with type 1 diabetes mellitus were more affected than fathers in physical, psychological and environmental domains. There was no difference between mothers and fathers in social domain of quality of life.

Conclusion: It was concluded from the study that parents of diabetic children had generally poor quality of life that merits further investigations.

Introduction

Diabetes is now one of the most common non-communicable diseases globally. It is the fourth or fifth leading cause of death in most high-income countries and there is substantial evidence that it is epidemic in many low- and middle-income countries (1).

Diabetes is defined by the World Health Organization (WHO) as a metabolic disorder characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both (2).There is substantial evidence that diabetes is epidemic in many low- and middle-income countries (1).Concerning Iraq, the following data were obtained from the Annual Statistical Report 2016:

1. Total number of inpatients with diabetes was 26253(with a rate of 10.2 per 1000).

2. Total number of outpatients with diabetes in health care centers was 365606 (with a rate of 15.70 per 1000).

3. Total number of outpatients with diabetes in hospitals was 449365 (with a rate of 29 per 1000).

4. Percentage of people dying due to diabetes was 3.33(ranking 10 within top ten causes of death).

Diabetes in children and adolescents: The prevalence of diabetes mellitus is highly correlated with increasing age. Available data indicate a range of 1 case per 1430 children at 5 years of age to 1 case in 360 children at 16 years (3). Girls and boys are almost equally affected, but there is a modest female preponderance in some low-risk populations (e.g., the Japanese); there is no apparent correlation with socioeconomic status (4). Peaks of presentation occur in two age groups: at 5 to 7 years of age and at the time of puberty (3). In populations of European origin, nearly all children and adolescents with diabetes have T1D, but in other populations T2D (type 2 diabetes) is more common among children and adolescent. It is estimated that the incidence of T1D among children and adolescents is increasing in many countries particularly in children and adolescents under the age of 15 years, and the overall annual increase is estimated to be around 3% with strong indications of geographic differences (5).

Incidence varies widely between different countries, within countries and between different ethnic populations. Finland has an incidence of 64 per 100,000 children <15 years per year, with some others <1 per 100,000 children <15 years per year (6). "The United States, India and Brazil have the largest incidence and prevalence of children with T1D under the both age groups below 15 and 20 years " (7) There is evidence that T2D in children and adolescents is increasing in some countries.

Aims of the study

- To assess the overall QOL of the parents of children with T1D.
- To find out the association between socio-demographic and socioeconomic).

Methods

Study design and duration of data collection

The present study is a descriptive cross-sectional study. Data collection was carried out from 1st of April to 30th June 2017, during working hours of the study settings, on the basis of two - three days per week.

Study Setting

The study was conducted in Baghdad, in centers of endocrine diseases. These centers offer diagnostic and therapeutic services to people with endocrine diseases including T1D. Of the four centers, National Diabetes Center and Central Child Teaching Hospital serve AL-Karkh side. The other two centers namely; Diabetic Clinic/ Children welfare hospital/ Baghdad Medical Center and Specialized Center of Endocrine Diseases and Diabetes serve AL Rusafa side. These centers were chosen as they offer services to whole people of Baghdad.

Study population and sampling procedure

Convenient method of sampling of parents attending the mentioned four centers of endocrine diseases, the children of whom were previously diagnosed by specialist pediatrician, or by experts in these specialized centers. The questionnaires were distributed to the parents who agreed to be recruited in the study and met the inclusion criteria, then were recollected from them.

Inclusion criteria

In order to be included in the study, the following criteria had been met by the participating subjects:

1. Being parents of children diagnosed with Type 1 Diabetes.
2. Willing to participate in the study.
3. Having not more than one child with diabetes or any other chronic disease.
4. Living with the child in the same house.
5. Had no prior history of or under treatment for psychological disorder or any chronic medical condition that could negatively impact the QOL, also to eliminate any possible bias in their QOL perceptions.

Exclusion criteria

Those who were known to have suffered a major traumatic event at least 6 months prior to data collection, such as separation or death of someone close.

Tools of data collection

Data was collected by using self-administered questionnaire which consists of two parts:

- Part one This part was designed by the researcher and approved by supervisor and panel of experts in Community and Family Medicine department in Al kindy College of Medicine. It consisted of the following questions:

1. The demographic information of parents: gender, age and education of the of parents.

2. Socio-economic status: marital status, residency, property of residency, occupation, income and family size. Participants were divided into two categories according to their age; ≤35 year and >35 year. Three levels education were assigned for the respondents; primary, secondary and university. Based on marital status of the parents, they were distributed into married and others (divorced and widows). According to occupation, they were divided into employed and unemployed parents. Three income levels were considered; less than 0.5, 0.5- 1 and more than 1 million Iraqi Dinars per month. Two areas of residence were chosen; urban and rural. Families were set into two groups; those who owned houses and those who did not. According to family size, parents either belonged to category of less than four members or the category of four and more members.

- Part Two This part consists of the Arabic version of WHOQOLBREF, a shorter version of WHOQOL 100 survey tool, which was developed by the WHO to capture the broad aspects of HRQOL. The WHOQOL-BREF questionnaire is composed two items from the overall QOL and general health (GH) in addition to twenty-four items which are subdivided into four domains: Physical health with 7 items (DOM1), psychological health with 6 items (DOM2), social relationships with 3 items (DOM3) and environmental health with 8 items (DOM4).

This instrument emphasizes the subjective responses of person rather than their objective life conditions, with assessment made

over the preceding two weeks. It was developed in a wide range of languages in different cultural settings and yields comparable stores across cultures (8). The four domains of WHOQOL-BREF questionnaire were considered as dependent variables. The scale of the instrument includes 5-point Likert response ranging from 1 (very dissatisfied/very poor) to 5 (very satisfied/very good). The scores for each domain are scaled in a positive direction, that is, a higher score indicates a higher QOL rating (9). The scale was prepared so as to be filled by the individual. The physical domain includes questions about performance of daily activities, dependence on the medications and treatment, alertness and exhaustion, dynamism, pain and discomfort, sleep and resting and power of working. Psychological domain includes questions about positive and negative feelings, personality esteem, body image and outer look, personal beliefs and attention; while the domain of social relationships implies questions concerning relationships with others, social support and sexual life. Questions about house conditions, physical security and safety, financial resources, chance to access health services, occupation of spare times, physical environment and transport are included in the environmental domain of the scale.

Ethical Approval and Permission
1. Permissions obtained from Ministry of Health by official letters directed to the authorities of each of the four centers to facilitate the researcher task.
2. The conduction of the study had been approved by the ethical committee at Iraqi Council of Medical Specialization.
3. The parents of patients gave informed consent to participate after the objectives of the study were explained to them.

Statistical analysis
The collected data was entered into Microsoft Excel. Then they were loaded into Statistical Package for Social Sciences (SPSS) software (version 23). For descriptive analysis categorical variables were presented as frequencies and percentages. Continuous variables were presented as (Means ± SD). Pearson Chi square test has been used to examine the effects of socio-demographic data on the domains of parents' QOL. P value level of < 0.05 was considered for significant association. Tables and figures were used to summarize the results. Scores were used for each question of the tool, then the median score calculated in the four domains, the scores of items within each domain were used to calculate domain scores. A score of mean ± 1 SD on each domain was graded 'fair', a score of < mean - 1 SD was 'poor', and a score of > mean + 1 SD was good (10, 11).

Results

The total study sample collected from the four centers of endocrine diseases in Baghdad was six hundred participants who were either fathers or mothers of children with T1D. Table (1) describes the demographic characters of the sample recruited in the study. Of the studied parents 58% were males and 42% were females. It shows that 51.6% of the mothers were > 35 years old,62.7% were unemployed and 63.5% of them had primary level of education. Regarding fathers, 58% were > 35 years old, 71.8% were employed and 46.6% had primary level of education. It was found that widow and divorced parents constituted 14.7% of parents

enrolled in the study. The vast majority (91%) of families lived in urban areas. For residence ownership, 61% of parents had personal property. Regarding monthly income, 56% of families had income range from (0.5 – 1) million Iraqi Dinars. Families which consisted of ≥4 members constituted 59.3% of the sample under study.

Table (1): Socio-demographic characters of the study sample.

|	N	%
Mothers: no. = 252		
Age group		
≤ 35	122	48.4
>35	130	51.6
Occupation		
Employed	94	37.3
Unemployed	158	62.7
Educational level		
Primary	160	63.5
Secondary	58	23.0
University	34	13.5
Fathers: no.= 348		
Age group		
≤ 35	146	42.0
>35	202	58.0
Occupation		
Employed	250	71.8
Unemployed	98	28.2
Educational level		
Primary	162	46.6
Secondary	132	37.9
University	54	15.5
Total sample: no. = 600		
Marital status		
Married	512	85.3
Widow/divorced	88	14.7
Residence ownership		
Own house	366	61.0
Not owning house	234	39.0
Monthly income of the family (Iraqi Dinars)		
< 500	242	40.3
500 – 1000	336	56.0
> 1000	22	3.7
Residence		
Urban	546	91.0
Rural	54	9.0
Family size		
< 4	244	40.7
≥ 4	356	59.3

Table 2 shows the distribution of studied subjects according to mean QoL domains. The highest mean score was for social domain (51.1 ± 16.1) and lowest for environmental domain (38.9 ± 10.1).

**Table (2)** Distribution of studied subjects according to mean quality of life domains.

| Quality of life dimensions	Mean (in %)	SD
Physical domain	40.2	13.2
Psychological domain	46.2	14.5
Social domain	51.1	16.1
Environmental domain	38.9	10.1
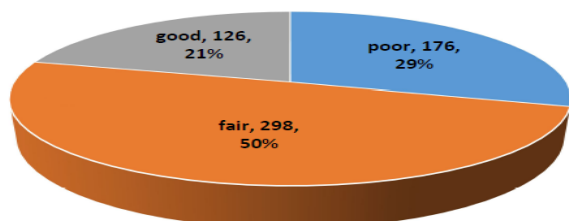
Figure 1: shows the distribution of studied sample according to their general QoL. The higher number of parents reported fair general QoL.
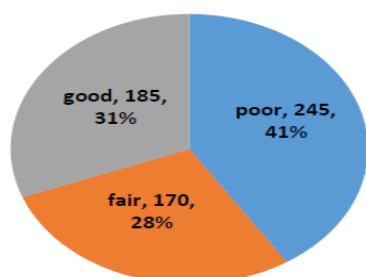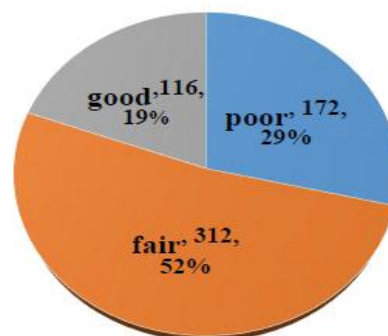

Figure 2: shows the distribution of studied sample according to their GH (general health). The higher number of parents reported poor GH.
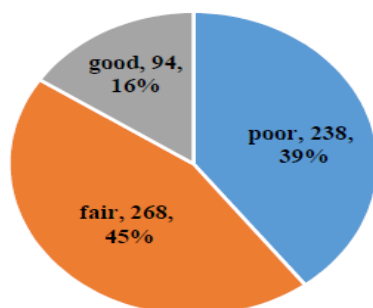
Figure 3: shows the distribution of studied sample according to physical health. The higher number of parents reported fair physical health.
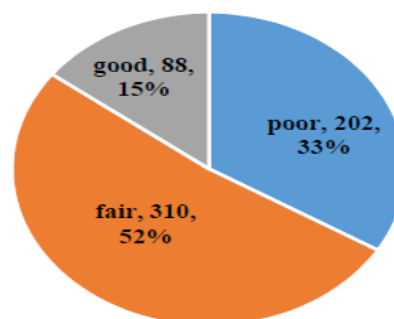
Figure 4: shows the distribution of studied sample according to social relationship. The higher number of parents reported fair social relationship.

Figure 5: shows the distribution of studied sample according to environmental domain. The higher number of parents reported fair environment.

Table (3): represent the association between general QoL and different studied variables. Gender was the only variable that significantly associated with general QoL (Pv = 0.026).

Table 3: Association between general quality of life and different studied variables

Variables		Total 600		Poor		Fair		Good		Pv
		N	%	N	%	N	%	N	%	
Gender	Male	348	58.0	115	33.0	170	48.9	63	18.1	0.026
	Female	252	42.0	61	24.2	128	50.8	63	25.0	
Age	≤35	268	44.7	85	31.7	127	47.4	56	20.9	0.485
	>35	332	55.3	91	27.4	171	51.5	70	21.1	
Education	Primary	322	53.7	86	26.7	167	51.9	69	21.4	
	Secondary	190	31.7	62	32.6	82	43.2	46	24.2	0.084
	University	88	14.7	28	31.8	49	55.7	11	12.5	
Marital status	Married	512	85.3	154	30.1	250	48.8	108	21.1	0.557
	Other	88	14.7	22	25.0	48	54.5	18	20.5	
Residence	Urban	546	91.0	164	30.0	267	48.9	115	21.1	0.417
	Rural	54	9.0	12	22.2	31	57.4	11	20.4	
Property	Own house	366	61.0	100	27.3	194	53.0	72	19.7	0.123
	No	234	39.0	76	32.5	104	44.4	54	23.1	
Occupation	Employed	344	57.3	104	30.2	167	48.5	73	21.2	0.801
	Unemployed	256	42.7	72	28.1	131	51.2	53	20.7	
Income	<0.5 Million	242	40.3	64	26.4	129	53.	49	20.2	
	0.5-1 Million	336	56.0	106	31.5	155	46.1	75	22.3	0.243
	>1Million	22	3.7	6	27.3	14	63.6	2	9.1	
Family size	<4	244	40.7	71	29.1	120	49.2	53	21.7	0.987
	≥4	356	59.3	105	29.5	178	50.0	73	20.5	

In relation to GH, monthly income has been shown to have significant association with GH of the participating subjects (Pv = 0.024). More information is shown in table (4).

With regard to physical domain of QOL, highly significant association was found with gender (Pv = 0.002), age (Pv = 0.001), education (Pv = 0.001), occupation (Pv = 0.001) and monthly income (Pv = 0.005). Information are shown in detail in table (5).

Significant association of psychological domain was found with gender (Pv = 0.036), marital status (Pv = 0.013) and occupation (Pv = 0.029). A higher significant association was found with family income; (Pv = 0.002). More details of the results are shown in table (6).

Significant difference was found between divorced or widows and married parents in relation to their social relationships (Pv = 0.011). Higher association of parents' social relationships was found with gender (Pv = 0.001), age (Pv = 0.009) and family size (Pv = 0.001). Table (7) shows more information concerning social domain and its associated variables.

Table (8) demonstrates the relation of parental socio-demographic variables with environmental domain of QoL. Significant association was found between families' income and the environment they live in (Pv = 0.014). Higher association of environment was found with families' residence (Pv = 0.009) and their housing property (Pv = 0.001).

Table 5: Association between physical domain and different studied variables

		Total 600		Poor		Fair		Good		Pv
		N	%	N	%	N	%	N	%	
Gender	Male	348	58.0	84	24.1	198	56.9	66	19.0	0.002
	Female	252	42.0	94	37.3	114	45.2	44	17.5	
Age	≤35	268	44.7	92	34.3	146	54.5	30	11.2	0.001
	>35	332	55.3	86	25.9	166	50.0	80	24.1	
Education	Primary	322	53.7	114	35.4	176	54.7	32	9.9	
	Secondary	190	31.7	46	24.2	92	48.4	52	27.4	0.001
	University	88	14.7	18	20.5	44	50.0	26	29.5	
Marital status	Married	512	85.3	150	29.3	266	52.0	96	18.8	0.782
	Other	88	14.7	28	31.8	46	52.3	14	15.9	
Residence	Urban	546	91.0	156	28.6	286	52.4	104	19.0	0.116
	Rural	54	9.0	22	40.7	26	48.1	6	11.1	
Property	Own house	366	61.0	100	27.3	192	52.5	74	20.2	0.166
	No	234	39.0	78	33.3	120	51.3	36	15.4	
Occupation	Employed	344	57.3	90	26.2	174	50.6	80	23.3	0.001
	Unemployed	256	42.7	88	34.4	138	53.9	30	11.7	
Income	<0.5 Million	242	40.3	78	32.2	134	55.4	30	12.4	
	0.5-1 Million	336	56.0	98	29.2	166	49.4	72	21.4	0.005
	>1Million	22	3.7	2	9.1	12	54.5	8	36.4	
Family size	<4	244	40.7	66	27.0	130	53.3	48	19.7	0.477
	≥4	356	59.3	112	31.5	182	51.1	62	17.4	

Table 4: Association between general health and different studied variables

Variables		Total 600		Poor		Fair		Good		Pv
		N	%	N	%	N	%	N	%	
Gender	Male	348	58.0	154	44.3	96	27.6	98	28.2	0.108
	Female	252	42.0	91	36.1	74	29.4	87	34.5	
Age	≤35	268	44.7	111	41.4	67	25.0	90	33.6	0.209
	>35	332	55.3	134	40.4	103	31.0	95	28.6	
Education	Primary	322	53.7	122	37.9	90	28.0	110	34.2	
	Secondary	190	31.7	76	40.0	58	30.5	56	29.5	0.074
	University	88	14.7	47	53.4	22	25.0	19	21.6	
Marital status	Married	512	85.3	213	41.6	142	27.7	157	30.7	0.613
	Other	88	14.7	32	36.4	28	31.8	28	31.8	
Residence	Urban	546	91.0	225	41.2	154	28.2	167	30.6	0.833
	Rural	54	9.0	20	37.0	16	29.6	18	33.3	
Property	Own house	366	61.0	149	40.7	103	28.1	114	31.1	0.977
	No	234	39.0	96	41.0	67	28.6	71	30.3	
Occupation	Employed	344	57.3	142	41.3	99	28.8	103	29.9	0.859
	Unemployed	256	42.7	103	40.2	71	27.7	82	32.0	
Income	<0.5 Million	242	40.3	86	35.5	72	29.8	84	34.7	
	0.5-1 Million	336	56.0	144	42.9	93	27.7	99	29.5	0.024
	>1Million	22	3.7	15	68.2	5	22.7	2	9.1	
Family size	<4	244	40.7	98	40.2	66	27.0	80	32.8	0.673
	≥4	356	59.3	147	41.3	104	29.2	105	29.5	

Table 6: Association between psychological domain and different studied variables

Variables		Total 600		Poor		Fair		Good		Pv
		N	%	N	%	N	%	N	%	
Gender	Male	348	58.0	124	35.6	170	48.9	54	15.5	0.036
	Female	252	42.0	114	45.2	98	38.9	40	15.9	
Age	≤35	268	44.7	114	42.5	120	44.8	34	12.7	0.153
	>35	332	55.3	124	37.3	148	44.6	60	18.1	
Education	Primary	322	53.7	130	40.4	138	42.9	54	16.8	0.422
	Secondary	190	31.7	72	37.9	86	45.3	32	16.8	
	University	88	14.7	36	40.9	44	50.0	8	9.1	
Marital status	Married	512	85.3	212	41.4	216	42.2	84	16.4	0.013
	Other	88	14.7	26	29.5	52	59.1	10	11.4	
Residence	Urban	546	91.0	214	39.2	244	44.7	88	16.1	0.569
	Rural	54	9.0	24	44.4	24	44.4	6	11.1	
Property	Own house	366	61.0	148	40.4	164	44.8	54	14.8	0.725
	No	234	39.0	90	38.5	104	44.4	40	17.1	
Occupation	Employed	344	57.3	150	43.6	138	40.1	56	16.3	0.029
	Unemployed	256	42.7	88	34.4	130	50.8	38	14.8	
Income	<0.5 Million	242	40.3	88	36.4	100	41.3	54	22.3	
	0.5-1 Million	336	56.0	142	42.3	154	45.8	40	11.9	0.002
	>1Million	22	3.7	8	36.4	14	63.6	0	0.0	
Family size	<4	244	40.7	96	39.3	112	45.9	36	14.8	0.831
	≥4	356	59.3	142	39.9	156	43.8	58	16.3	

Table 7: Association between social domain and different studied variables

Variables		Total 600		Poor		Fair		Good		Pv
		N	%	N	%	N	%	N	%	
Gender	Male	348	58.0	100	28.7	176	50.6	72	20.7	0.001
	Female	252	42.0	102	40.5	134	53.2	16	6.3	
Age	≤35	268	44.7	76	28.4	142	53.0	50	18.7	0.009
	>35	332	55.3	126	38.0	168	50.6	38	11.4	
Education	Primary	322	53.7	116	36.0	156	48.4	50	15.5	0.441
	Secondary	190	31.7	62	32.6	102	53.7	26	13.7	
	University	88	14.7	24	27.3	52	59.1	12	13.6	
Marital status	Married	512	85.3	178	34.8	268	52.3	66	12.9	0.011
	Other	88	14.7	24	27.3	42	47.7	22	25.0	
Residence	Urban	546	91.0	178	32.6	286	52.4	82	15.0	0.206
	Rural	54	9.0	24	44.4	24	44.4	6	11.1	
Property	Own house	366	61.0	134	36.6	186	50.8	46	12.6	0.068
	No	234	39.0	68	29.1	124	53.0	42	17.9	
Occupation	Employed	344	57.3	128	37.2	172	50.0	44	12.8	0.068
	Unemployed	256	42.7	74	28.9	138	53.9	44	17.2	
Income	<0.5 Million	242	40.3	84	34.7	118	48.8	40	16.5	
	0.5-1 Million	336	56.0	110	32.7	180	53.6	46	13.7	0.711
	>1Million	22	3.7	8	36.4	12	54.5	2	9.1	
Family size	<4	244	40.7	80	32.8	112	45.9	52	21.3	0.001
	≥4	356	59.3	122	34.3	198	55.6	36	10.1	

Table 8: Association between environmental domain and different studied variables

Variables		Total 600		Poor		Fair		Good		Pv
		N	%	N	%	N	%	N	%	
Gender	Male	348	58.0	104	29.9	184	52.9	60	17.2	0.297
	Female	252	42.0	68	27.0	128	50.8	56	22.2	
Age	≤35	268	44.7	70	26.1	138	51.5	60	22.4	0.177
	>35	332	55.3	102	30.7	174	52.4	56	16.9	
Education	Primary	322	53.7	90	28.0	164	50.9	68	21.1	0.337
	Secondary	190	31.7	52	27.4	108	56.8	30	15.8	
	University	88	14.7	30	34.1	40	45.5	18	20.5	
Marital status	Married	512	85.3	152	29.7	260	50.8	100	19.5	0.311
	Other	88	14.7	20	22.7	52	59.1	16	18.2	
Residence	Urban	546	91.0	148	27.1	294	53.8	104	19.0	0.009
	Rural	54	9.0	24	44.4	18	33.3	12	22.2	
Property	Own house	366	61.0	126	34.4	176	48.1	64	17.5	0.001
	No	234	39.0	46	19.7	136	58.1	52	22.2	
Occupation	Employed	344	57.3	106	30.8	174	50.6	64	18.6	0.4
	Unemployed	256	42.7	66	25.8	138	53.9	52	20.3	
Income	<0.5 Million	242	40.3	68	28.1	118	48.8	56	23.1	
	0.5-1 Million	336	56.0	92	27.4	188	56.0	56	16.7	0.014
	>1Million	22	3.7	12	54.5	6	27.3	4	18.2	
Family size	<4	244	40.7	72	29.5	120	49.2	52	21.3	0.458
	≥4	356	59.3	100	28.1	192	53.9	64	18.0	

Discussion

With a growing population suffering from T1D and its associated serious short- and long-term consequences, it is important to assess how this chronic disease influences child caregiver's perceived QoL. To our knowledge, this study is one of the first of its kind to address the issue of QoL of parents of children with T1D in Iraq.

The highest mean satisfaction rating was for social domain and the lowest for environmental domain. In a study on QoL related factors for parents of children with hearing loss which was done in Brazil, the best results reported were related to physical domain and the lowest average score was for the environmental domain (12). The majority of participants in the current study reported fair general QoL. This was inconsistent with the study that was done in Sudan which found that T1D caregivers had significantly lower QoL scores than T2D caregivers and the general population (13). Lower QoL was also found in a study conducted in Taiwan which discovered that caregivers of people with diabetes had scored significantly lower on QoL measurements compared to the general population. Regarding GH, the highest percentage of parents reported poor GH. This goes with the Taiwanese study which discovered caregivers of people with diabetes had more health problems compared to the general population (14). Poor health of parents may be due to high demand and strain imposed by the disease as reported by Klassen et al., 2011(15).

Regarding physical health, higher percentage of parents reported fair perception in contrast to a Taiwanese study on caregivers of asthmatic children where low physical strength levels was due to sleep interruption, loss of energy and somatic complaints which had influenced the physical health perception (16). With regard to psychological domain, higher number of parents reported fair perception. This does not go with the study that was done in German–speaking part of Switzerland which showed that nearly one fourth of mothers and fathers of newly diagnosed children with diabetes suffered from post-traumatic stress disorder six weeks post diagnosis (17). The higher percentage of parents reported fair perception of social domain of QoL. In contrast to this study, other studies reported disturbed social health, one of them which was done in New York discovered disturbed social health from the facts that parents described isolation in caring for their child's T1D, family and friends had minimal understanding of T1D care and that support groups lessened mothers' isolation (18). Impairment in social domain was also found in a study that was done in Norway indicated by respondents' feelings of isolation, difficulties coping, decrement in their social life and their feeling of being avoided and hurt (19). Regarding demographic factors and their association with life domains, the present study found that fathers had shown lower scores than mothers in general QoL while mothers had scored lower than fathers in physical, psychological and social domains of QoL. This difference was statistically significant. Similar finding was noticed in a study on mothers caring for children with leukemia in Japan and in a study on mothers of children with mental and neurological disorders in the United Kingdom (20,21). The reason for the observed difference between mothers and fathers is probably the fact that more mothers than fathers take care of their children/adolescents with T1D (22). In contrast to the present study, a study in USA revealed that fathers were worry more about diabetes affecting their children than do mothers, and therefore, could be at higher risk for depression (23). Parents older than 35 years had better physical health but worse psychological wellbeing than parents who were 35 years old and younger. A similar finding was found in a previous study in which the family caregivers who were

older, highly educated, had no religious belief, suffered from a higher level of emotional distress (24). Significant association was found between level of education and physical domain since it tended to be better with educated than non-educated parents. This goes with the findings of the study that was done in Sudan where educational level was positively associated with GH and physical domain. Families living in urban areas reported better perception of environmental health. This finding goes with a study that was done in China (25).

Numerous studies have attributed urban-rural health disparities to the unbalanced economic development that has occurred between urban and rural areas (26,27).

In respect to residence ownership of the family, this study had shown a better QoL in parents of diabetic children who had no personal property. This was not in line with the study of Garrett 2014 which found that parents of autistic children who had high socioeconomic level tended to report a better QoL (28). Regarding marital status, a significant difference was found in relation to the psychological and social domains of QoL, as married parents had worse QoL than widows and divorced. This result disagreed with the studies that were done in USA which found that caregivers' marital status had positively associated with their QoL, and that frequency of parenting stress was higher in single-parents (29,30). Employed respondents had better physical health but worse psychological wellbeing than unemployed respondents. This goes with findings of the studies that were done in USA and Brazil (30). The study revealed a negative relationship between parents' finances and their GH, psychological wellbeing and the environment they live in, as higher scores were more rated by poorer subjects than richer ones. This does not go with the studies that were done in China which found a positive correlation between household income and the QoL of families caring for a child with leukemia particularly in physical and psychological functioning (31). In the present study, the increase in family size was associated with decrease in scoring in social relationship. The negative effect of increased number of siblings on the QoL of diabetic children and their parents is evident in the study that was done in Turkey, as the rise in the number of children lowered the QoL of both children and parents (32).

Limitations of the study

The study was done in the centers which serve residents living in Baghdad making it deficient in information regarding residents of other governorates. Other limitation was the lack of a specific tool to assess the QOL among parents of children with diabetes.

Conclusion

The general QoL of parents was fair while their GH was poor. Fathers had lower general QoL than mothers while mothers had lower physical, psychological and social domains of QoL than fathers.

Physical domain was lower among mothers and parents who were 35 years old and younger, with lower education, unemployed and among families with low income.

Psychological domain was lower among mothers and parents who were widow or divorced, employed and among families with high income.

Social domain was lower among mothers and parents who were older than 35 years, married and among families with four and higher members.

Environmental domain was lower among families who were living in rural areas, owned houses and among families with higher income.

Conflict of Interest

No conflict of interest.

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