Research Article

Health-related Quality of Life and Associated Factors among Type 1 Diabetic children in Minia governorate.

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Abstract

Introduction: Diabetes mellitus defines a group of metabolic disorders characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. **Aim of the work:** To asses health-related quality of life in a group of diabetic children using different assessment tools. **Patients and Methods:** This study included 50 children with Type 1 Diabetes Mellitus who had regular follow up in the pediatric Endocrinology outpatient's clinic, Minia University Children's Hospital. They were recruited during the period from July 2018 to December 2018. **They were classified into two groups**: **Group I**: included 50 children who had already been diagnosed as diabetic patients according to standard American Diabetes Association criteria. **Group II:** included 50 apparently healthy children, their ages and sex were matched to the diseased group. They were siblings of the diseased groups to be under the same familial circumstances of the patients' group. **Results:** Children with diabetes reported significant lower scores (HRQol) in compare with health children. **Discussion:** children with T1DM had lower total generic Qol than controls. **Recommendation: Based on the current study we recommend:** Quality of life for children with T1DM must be a priority in our treatment modalities in Egypt.
Keywords: HRQol: Health related quality of life.
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Introduction

Type 1 diabetes mellitus (T1D) is characterized by -cell destruction caused by an autoimmune process, usually leading to absolute insulin deficiency. This form of diabetes, which accounts for only 5–10% of all diabetes, is a juvenile-onset diabetes (Noble JA, Valdes AM, 2011). HbA1c is often used as an indicator of glucose control over the recent two to three months and is correlated with the development of long-term diabetic complications. It is a widely used method for assessing long term diabetic control (Kang et al., 2015).

Aim of the work

To asses health-related quality of life in a group of diabetic children using different assessment tools.

Patients and Methods

This study included 50 children with Type 1 Diabetes Mellitus who had regular follow up in the pediatric Endocrinology outpatient's clinic, Minia University Children's Hospital. They were recruited during the period from July 2018 to December 2018.
They were classified into two groups:

Group I: included 50 children who had already been diagnosed as diabetic patients according to standard American Diabetes Association criteria (ADA, 2012).
Group II: included 50 apparently healthy children, their ages and sex were matched to the diseased group.
They were siblings of the diseased groups to be under the same familial circumstances of the patients' group.

Inclusion criteria of the patients' group included:
1) Children of either sex were included.
2) Age range between 7 and 18years.
3) Duration of illness: at least 1 year.
4) Clear level of consciousness at time of the interview.
5) Cooperation to participate in the study.

Exclusion criteria of the patients group included:
1) Refusal to participate in the study or high level of uncooperativeness of patient or his parents.
2) Presence of chronic illness other than diabetes mellitus.
3) Age less than 7 years or> 18.

4) Anemic patient.
5) M.R.

A written informed consent was taken from all patients' parents for approval of the entry of the study, after explaining the study aim and procedures to them.

The studied groups were subjected to the following: -
i. Thorough history taking.
ii. General and systemic examinations.
iii. Laboratory investigations.

Assessment of HbA1c:
It was assessed by using resin column chromatography. Kit content was supplied by TECO DIAGNOSTICS, California, USA (Nathan et al., 1984).
HbA1c% reflects level of glycemia over the preceding 4-12 weeks and according to its level we can classify the diabetic patients into (Dwain and Abbas, 2011): Good controlled patients: HbA1c% up to 7%. Poor controlled patients: HbA1c% >7%.

1-**Measure health related quality of life (HRQL):** PedsQL generic core 0.4 for assessing HRQL.

2- Procedures of the study: After obtaining permissions of use of questionnaires in this study from the manufacturers and obtaining approval of Minia University Children Hospital Committee about application of the study tools on the study subjects, regular visits to the pediatric endocrinology outpatient clinic were carried out; starting on July 2018 from 9:00am to 2:00 pm aiming at fulfilling of patient data sheet and questionnaire from patients and their parents at working time.

Results

Table (1): Sociodemographic and laboratory data of participants:

	Total (n=100)	Children with T1DM (n=50)	Normal control group (n=50)	p value
Sex male Female	47 (47%) 53 (53%)	20 (40%) 30 (60%)	27 (54%) 23 (46%)	0.161
Age (yr)	11.1±2.4 (6-15)	10.7±2.6 (6-15)	11.5±2.2 (6±15)	0.09
SE Low Medium	76 (76%) 24 (24%)	36 (72%) 14 (28%)	40 (80%) 10(20%)	0.349
Education Low Medium	76 (76%) 24 (24%)	36 (72%) 14 (28%)	40 (80%) 10(20%)	0.349
BMI	18.3±2.2 (13.5-26)	16.7±1.7 (13.5-22)	19.9±1.4 (18-26)	**<0.001***
HbA1c	7.4±3.1 (3-14.5)	9.7±2.7 (5-14.5)	5±0.9 (3-6.5)	**<0.001***
Family history +ve -ve	42 (42%) 58 (58%)	39 (78%) 11 (22%)	3 (6%) 47 (94%)	**<0.001***
Disease duration (yr)		2.9±1.4 (1-6.5)	–	
DKA frequency		1.4±0.7 (0-3)	–	
0		4 (8%)	–	
1		24 (48%)	–	
2		20(40%)	–	
3		2 (4%)	–	

Table (2): Quality of life for diabetic and healthy children.

PedsQL domains	Total (n=100)	Children with DM1 (n=50)	Normal control group (n=50)	p value
Physical health	76.1±23.1	55.2±13.3	96.9±4.1	**<0.001***
Emotional function	92.7±11.4	89.9±14.5	95.5±6.2	**0.014***
Social function	84.4±18.9	69.8±16.6	99±3.5	**<0.001***
School function	89.3±10.4	86.2±12.8	92.3±6.2	**0.003***
Total score	85.6±11.6	75.3±6.6	95.9±3.5	**<0.001***

Discussion

As regards description of the Sociodemographic and laboratory data of the diabetic group, table (1) showed that diabetic group consisted of 50 children with a mean age of 10.7±2.6 years. There were 30 (60%) female and 20 (40%) male individuals who have had T1DM for a time of 2.9±1.4 years, their mean value for HbA1c was 9.7±2.7. About half of diabetic children (48%) presented with one DKA attack, 40% with two DKA attacks and 4% with three DKA attacks, while 8% had no previous DKA attacks, while the control group consisted of 23 (46%) female and 27 (54%) male children with a mean age of 11.5±2.2 years. The percent of diabetic children with low socioeconomic status and low education was 72%, while 28% had medium socioeconomic status and medium education. In healthy children 80% had low socioeconomic status and low education, 20% had medium socioeconomic status and medium education. There was no significant difference between the two groups. BMI was lower among diabetic children (16.7±1.7) compared with non-diabetic children (19.9±1.4) and this difference was statistically significant (p <0.001). The majority of diabetic children (78%) showed positive family history compared to 6% in health children (P <0.001).

Concerning the BMI, it was significant in relation with diabetes. These results were similar to a Saudi study performed by Al-Hayek et al., (2014) but against the Swedish study carried out by Jönsson et al. (2015) who found no such positive correlation. Concerning the positive family history, it was significant in relation with T1DM. This result was approximately in agreement with **Khardori** et al., (2017) who found that children whose mother has T1DM have a 2-3% risk of developing the disease, whereas those whose father has the disease have a 5-6% risk. When both parents are diabetic, the risk rises to almost 30% **Khardori** et al., (2017). Moreover, Weires et al. (2007) and Moussa et al. (2005) showed that there was a significant association between occurrence of T1DM in children and positive family history of T1DM.

As regards PedsQL items scores of diabetic and normal healthy children, table (2) showed Diabetic children had lower scores on the eight items of physical health subscale relative to healthy children (p <0.001). Diabetic children had lower scores on the five items of emotional functioning subscale relative to healthy children (p value significant). Diabetic children had lower scores on the five items of social functioning subscale relative to healthy children (p<0.001). Diabetic children had lower scores on the five items of school functioning subscale relative to healthy children (p value significant). Our study has shown that children with T1DM had lower physical, emotional, social and school scores than controls, which is consistent with previous findings of other researchers like Nansel T et al., (2008) and Kalyva E et al., (2011). This is probably due to the depend on both parents and children to maintain good glycemic control.

We conclude that pediatric patients with T1DM consistently reported lower HRQoL scores compared to healthy controls, metabolic control measured by HbA1c value was significantly associated with QoL in patients with diabetes.

Recommendation
Based on the current study we recommend:
1) Quality of life for children with T1DM must be a priority in our treatment modalities in Egypt.

2) HRQL should be assessed in regular basis in children with T1DM.

3) Physical and psychosocial domains in HRQL must be put in consideration while treating children with T1DM.

4) Further studies are needed on a larger population on HbA1c as a parameter for assessing glycemic control in children with T1DM.

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