

# Quality of Life for Children Suffering from Diabetes Mellitus

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**Abstract:** ***Introduction:** Diabetes mellitus is one of the most frequent metabolic distortions predisposing for various cutaneous infectious and noninfectious diseases. Common cutaneous manifestations in type I diabetes, among children were fungal and bacterial skin infections, insulin induced lipohypertrophy at injection sites, allergic and autoimmune skin diseases, trophic skin changes particularly in the extremities and localized anogenital pruritus. **Aims & Objective:** To assess the quality of life of children suffering from diabetes mellitus. **Materials & Methods:** A descriptive design was carried out at the Pediatric Emergency Medical Department/children's hospital affiliated to Ain Shams University Hospital. The study included 100 children suffering from diabetes mellitus at the previously mentioned settings. Tools of the study involved a pre-designed questionnaire to assess the characteristics of the children and their caregiver's knowledge about diabetes mellitus and quality of life. Quality of life inventory scale (Varni, 2003) to determine the level of quality of life for diabetic children. **Results:** It was clear that one third only of the studied children were partially satisfied in relation to both communication & social domains of quality of life. While the majority of them were unsatisfied in relation to physical & school functioning domains. **Conclusion:** The current study concluded that the majority of the studied children were having unsatisfactory domains of QOL.*

**Keywords:** diabetes, children, quality of life, pediatric, nursing.

## 1. Introduction

The concept of DM is a syndrome with disordered metabolism and inappropriate hyperglycemia due to either a deficiency of insulin secretion or to a combination of insulin resistance and inadequate insulin secretion [1]. Also, diabetes mellitus is known as a metabolic disorder of multiple etiologies, characterized by chronic hyperglycemia due to defective insulin secretion or insulin action or both [2].

In childhood and adolescence, diabetes is most often associated with a genetically determined predisposition, the presence of autoimmune markers, aggressive beta-cell destruction and severe insulin deficiency leading to the urgent need for insulin replacement therapy because of the risk of the diabetic ketoacidosis (DKA) [3]. The type I diabetes is the most common pediatric endocrine disorders, affecting approximately 1 in 300-500 children under the age of 18 years. Different ethnic population varies in their susceptibility to diabetes [4]. The newly recognized cases appear with greater frequency in the autumn and winter months than in summer [5]. There is a range of nearly 40 new cases annually in 100,000 populations in Finland to 1 in 100,000 populations in Japan [6]. The highest prevalence of type I diabetes is in Scandinavia, where it comprises as many as 20% of total number of patients with diabetes. This decreases in prevalence to 15% in Southern Europe and 10% in USA, while in Japan and China a less than 1% of patients with diabetes have type I diabetes [7].

## 2. Management of Diabetes Mellitus

Primary preventive measures are limited but measures can be taken to prevent and/or correct obesity. This is especially important for those with a family history of diabetes [8].

Primary prevention can be implemented through a population strategy; for changing the life style and the environmental determinants that are known to be risk factors for diabetes mellitus [9].

Primary prevention of type I diabetes is under active research in both science and clinical care. All type I diabetes prevention programs are experimental and focus on arresting the autoimmune process [10].

**Secondary prevention** of type I diabetes screening is recommended. From 85% to 90% of children with type I diabetes has autoantibodies at the time of initial fasting hyperglycemia. The ADA does not recommended screening for type I diabetes in either the general population or in higher risk children (siblings of type I diabetes individuals and their relatives until clinical trials demonstrate the efficacy and safety of treatment prevent or delay type I diabetes [11].

It means prevention of severe complications and mortality related to diabetes. The major emphasis on tertiary preventive education will be on the ability of the nurse to counsel the child about the intervention for the complications [12]. Tertiary prevention is the major focus of diabetes management. Both acute and chronic complications occur often, and nurses who work with children who have diabetes must be involved in tertiary prevention to reduce severe complications of diabetes. Cardiovascular disease is the leading cause of death among children with diabetes later on, CVD is accounting for more than half of all deaths. [13].

Quality of life (QOL) is defined as the extent to which a person's life experience is satisfying. The quality of life

consists of the possession of resource necessary to the satisfaction of individual needs, wants and desires [14]. Quality of life can be defined also the "product of the interplay of the social, health, economic and environmental condition which affect human and social development" [15]. Quality of life in children suffering from diabetes increasingly recognized as a clinically important health measure, reflecting the effect of disease from the children's perspective [16].

The morbidity and mortality related to diabetes have been reduced significantly with modern medical treatment. The QOL should be considered as an important index of effective health care for diabetic children and their caregivers. An assessment of QOL differs from other forms of medical assessment in that it focuses on the individuals' own views of their well-being, assesses other aspects of life and giving a more holistic view of well-being [17].

Both the physiological and psychological variables affect the individual functional status including daily life activities. Therefore, diabetic children require not only strong attention for complication, but also require chronic long – term care where there is consideration of the psychological, emotional, socioeconomic and physical disabilities influencing the children daily function [18].

### 3. Significance of the problem

Diabetes Mellitus is accounting for more hospitalizations in children than any other chronic illness. Moreover, diabetes causes children and adolescents to miss school and causes parents to miss days at work. So, it's crucial to study the quality of life for children suffering from diabetes and to assess factors affecting their quality of life, to improve and maintain QOL of children with diabetes mellitus [19].

#### Aims & Objectives

This study aims to assess quality of life for children suffering from diabetes mellitus and assess the factors affecting on quality of life for children suffering from diabetes mellitus.

### 4. Materials and Methods

**Research design:** A descriptive design was used in the conduction of this study.

**Setting:** The study was carried out at Pediatric Emergency; Medical Department at children's hospital affiliated to Ain Shams University Hospital

**Sampling:** The study involved 100 children suffering from diabetes Mellitus and attending the previously mentioned settings over a period of 6 months. The criteria of the study inclusion; children from both gender, aged from 7 to 17 years and confirmed diagnosis of diabetes mellitus. The studied children and their caregivers were given a short orientation by the researcher to explain the aim and nature of the study. The studied children and their care givers were informed that the study is harmless; all the gathered data were treated confidentially and used for research purpose only.

#### Data collection Methods

1) **A pre-designed questionnaire sheet** that was developed by the researcher after reviewing relevant literature. It was written in simple Arabic language to suit level of understanding of the studied sample to collect data regarding the following:

- Demographic characteristics of the studied children including, age, gender, child rank in the family, education, the child present health status, duration of illness, frequency of hospital admission.....etc.
- Demographic characteristics of the children's caregivers including, age, gender, marital status, level of education, occupation, residence.....et Knowledge about diabetes (definition, risk factors, types, clinical manifestations, treatment.....), and quality of life (definition of quality of life and the factors affecting on quality of life for children with diabetes)

#### Scoring system:

Regarding the knowledge of the studied sample, 100 scores were allocated to all items of the questionnaire. Children's answers were checked with a key answer and accordingly were categorized into three levels: good (75), Average (50>75) and poor (<5).

#### 2) Quality of life inventory scale

Quality of life inventory scale (Varni et al., 2003) [20] was used to determine the level of quality of life for diabetic children. Quality of life scale consists of five items (physical, social, psychological, school functioning and general well-being). The scores was ranged from (0-4) with zero representing never has a problem, where (1) representing almost never has a problem, where (2) representing sometimes has a problem, where (3) representing often has a problem, where (4) representing almost always has a problem.

The items of the four scales (Physical functioning, Emotional functioning, Social functioning, and School functioning) on the peds QL Generic Scales, for ease of interpretability, items are reversed scored and linearly transformed to a 0-100 scale. So that higher scores indicate better QOL. To reverse score, transform the 0-4 scale item to 0-100 as follows: 0 = 100, 1 = 75, 2 = 50, 3 = 25, and 4 = 0. The QOL for children with diabetes Mellitus will be classified according to their responses into satisfactory (75) partial satisfactory (50>75) and unsatisfactory (<50).

#### Administrative design:

An official permission was obtained from the director of each study setting. An oral approval to carry out the study was obtained from each child and his/her accompanying caregiver as well.

#### Data Analysis

The collected data were revised, coded, tabulated and statistically analyzed by using number and percentage distribution. Chi-square test, mean and standard deviation were used to estimate the statistical significance difference between variables of the study.

**Results**

**Table (1)** shows that, number and percentage distribution of the studied children according to their characteristics. It was found that, almost more than half (57%) of the studied children were females. Children's mean age was 11.5±2.3years. As regards the level of education of the studied children, it was found that less than half (39 %) were studying in primary school, 42% of them were ranked as the second child in the family and 59% of them were from rural residence.

**Table 1:** Number and percentage distribution of the studied children according to their characteristics

Items	N (100)	% (100%)
<b>Gender:</b>		
Male	43	43.0
Female	57	57.0
<b>Age in years:</b>		
< 6	3	3.0
6 < 12	87	87.0
12 ≤ 18	10	30.0
Mean ±SD	11.5±2.3	
<b>Education Level</b>		
Illiterate	5	5.0
Read and Write	12	12.0
Primary School	39	39.0
Preparatory School	23	23.0
Secondary School	21	21.0
<b>Ranking:</b>		
First	22	22.0
Second	42	42.0
Third	16	16.0
Fourth	18	18.0
Fifth	2	2.0
<b>Residence:</b>		
Urban	41	41.0
Rural	59	59.0

Table (2) shows that, number and percentage distribution of the studied sample according to their quality of life domains, It was clear that 34% & 30% of the studied children were partially satisfied in relation to both communication & social domains of quality of life. While 94% & 90% were unsatisfied in relation to physical & school functioning domains.

**Table 2:** Number and percentage distribution of the studied sample according to their quality of life domains n=100.

Items	Partial satisfactory		Unsatisfactory		Chi-square	
	N	%	N	%	X <sup>2</sup>	P-value
Physical domain	6	6	94	94	90.2	<0.001*
Psychological domain	12	12	88	88	60.1	<0.001*
Social domain	30	30	70	70	3.6	>0.13
School functioning domain	10	10	90	90	64.000	<0.001*
Communication domain	34	34	66	66	0.18	>0.766

Non sig.>0.05 Sig.<0.05\* High sig.<0.001\*

Table (3) shows that, number and percentage distribution of the studied children according to their total QOL. It was clear that 73% of them were unsatisfied.

**Table 3:** Number and percentage distribution of the studied children according to their total QOL n=100.

Total QOL	N	%
Partial satisfactory	27	27.0
Unsatisfactory	73	73.0
Total	100	100.0

**5. Discussion**

There are three main types of diabetes. The most common are type 1 diabetes and type gestational diabetes, occurs during some pregnancies. All types of diabetes result in high level of glucose in the blood. The key to dealing with emotions is to understand feelings and not try to suppress or deny them. Learning to understand how the children are feeling and feelings of influence the child actions is the first step in dealing with child's emotions.

Quality of life in diabetes is increasingly recognized as a clinically important health measure, reflecting the effect of disease from the children' perspective [10].

Quality of life (QOL) is considered as an important indicator of the outcome of treatments that refers to child's well-being and functioning. It can be used to describe the impact of the health condition on the child as well as the effects of single treatment strategies [6].

The present study aims to assess QOL for children with diabetes and assess the factors affecting on quality of life for children suffering from diabetes.

Regarding to characteristics of the studied children suffering from diabetes as observed in table (1), the present study showed that, more than half of the studied children were females. This finding in accordance with the data of [15] who stated that more than half 56.5% of diabetic children were girls while therest of them were boys [11] reported also that, diabetes was common among females than males.

Regarding to the studied children's age, the finding of the present study showed that the majority of age of the studied children was between 7 < 12 years with mean and stander deviation 11.5±2.3. This finding is correspondent with [16] who reported that, the highest rate of diabetes in children between the ages of 6 to 11 years.

Regarding to the child's residence, the finding of the study revealed that more than half of them were living in an urban area and. This finding is not in an accordance with [17] who reported that, a great majority of diabetic children were live in rural areas, who study The Incidence and Prevalence of Type I Diabetes. Regarding to birth order of the studied children, the finding of the study showed that, the incidence of diabetes had increased among the second child of the study. Also the present study revealed that, more than half of the studied children belonging to middle family size as their family members were from three to less than five members, this findings is not in an accordance with [19] who reported that, in their case-control study reported that over-crowding places young children at a risk of diabetes. This is consistent with the hygiene hypothesis. Similar results were obtained in the study of [21], who reported that

children living in small households ( $\leq 3$  members) were more vulnerable to diabetes.

Regarding to their quality of life domains of the studied children, the finding of the study showed that, as observed in table (2), it was clear that almost less than half of the studied children were partially satisfied in relation to both communication & social domains of quality of life. While almost more than three quarters were unsatisfied in relation to physical & school functioning domains and significance differences were found. This finding in an accordance with [22] who reported that, diabetes affects the child's performance and general activities. Children feel restricted socially, are embarrassed about taking medication, perceive themselves to be different from others children and fearful about attacks and death. Most of diabetic children had lack communication with others and have poor achievement with decrease interest in school because of continuous school absents [21].

## 6. Conclusion

The current study concluded that the majority of the studied children were having unsatisfactory domains of QOL.

## 7. Recommendations

This study recommended that emphasize the importance of assessing the quality of life of the chronic illness specially the diabetic children and their care givers & provide appropriate intervention to enhance quality of life of the diabetic children & their care givers according to their actual needs & problems.

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