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Mothers ' knowledge and Practices toward Their Children Suffering from Juvenile Diabetes: an Assessment Study

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Abstract

Background: Juvenile diabetes remains one of the most complex chronic diseases in childhood. Adolescents and those of lower socio-economic status are at higher risk for poorer metabolic control and difficulties with psychosocial well-being. Juvenile diabetes can be associated with adverse effects on cognition during childhood and adolescence. Caring for children with Juvenile diabetes is typically the role of the mother. Mother must pay special attention to the promotion of good eating habits, stimulate physical activity, monitor blood sugar levels, make frequent visits to physicians and provide emotional support to the child. **Aim of the study:** This study aimed to assess mothers' knowledge and practices toward their children suffering from juvenile diabetes. **Methods:** This study was a descriptive, performed on 77 mothers whose children suffering from juvenile diabetes and attends to the out-patient pediatric diabetic clinic at the pediatric hospital affiliated to Ain Shams University Hospitals. **Tools of data collection:** A predesigned questionnaire to assess characteristics of the studied children and mothers, mothers' knowledge about juvenile diabetes and checklists of mothers' reported practices regarding care of their children suffering from juvenile diabetes. **Results:** Nearly two thirds of the studied mothers had unsatisfactory knowledge about juvenile diabetes, more than half of the studied mothers had incorrect reported practices regarding care for their children suffering from juvenile diabetes. In addition, there was a positive correlation between total knowledge of the studied mothers and their total reported practice. **Conclusions:** Mothers under study had unsatisfactory knowledge and incorrect reported practices regarding care of their children suffering from juvenile diabetes. In addition, there was a positive correlation between total knowledge of the studied mothers and their total reported practices. **Recommendations:** Establishing educational programs to improve knowledge and practices of mothers regarding care of their children suffering from juvenile diabetes. Further researches are needed to measure knowledge about juvenile diabetes in Egypt and its effect on the child care. Encourage the use of updated methods for education about juvenile diabetes as mobile messages, available means of information technology, one to one diabetes education and care for children and their mothers.

Key words: Knowledge, Practice, Mothers, juvenile diabetes.

Introduction

Diabetes mellitus (DM) is the third most common chronic disease in childhood, it is a group of conditions characterized by in adequate insulin secretion, insulin resistance or both. These dynamics lead to defective metabolism of carbohydrate, fat and protein with subsequent hyperglycemia **(Burns et al., 2017).**

Juvenile diabetes is the most common form of diabetes in childhood, which is characterized by deficiency in insulin resulting from the autoimmune destruction of pancreatic β-cells. It is a serious chronic disease that requires daily attention to a complex management regimen including focus on the type, quantity and timing of food intake, physical activity, as well as, frequent checks of blood glucose and administration of insulin. Failure to regulate blood glucose level can has serious short and long term consequences **(Hunter, 2016).**

Juvenile diabetes i is characterized by few, if any, functional cells and extremely limited or non-existent insulin secretion **(Rubin& Reisner, 2014).** It remains one of the most complex chronic diseases in childhood. Although advances in knowledge and technology as the use of insulin pumps or glucose sensors have improved the quality of life of children with juvenile diabetes, long term treatment and diet are pitfalls for families and clinicians **(Lucaccioni& Iughetti, 2016).**

There are two main peaks of incidence of juvenile diabetes, at 5 to 9 years and at 10 to 14 years. At the older group, the peak occurs 2 to 3 years earlier in girls than in boys, suggesting an influence of puberty. Genetic factors are important in determining the susceptibility to juvenile diabetes. The life time risk for developing juvenile diabetes with no family history is about 0.3% but this rises to 4 to 6% in the offspring of juvenile diabetes patients **(Levy, 2016).**

An early onset of juvenile diabetes determines a longer exposure to metabolic derangements, compared to an onset during adulthood, vascular complications appear to be more aggressive, particularly in children with poor glycemic control. Recent data have shown a remarkable effect of age at juvenile diabetes diagnosis on CVD mortality (**Scaramuzza et al., 2017).**

Family involvement is a vital component for optimal diabetes management throughout childhood and adolescence. Health care providers who care for children and adolescents with juvenile diabetes must be capable of evaluating the educational, behavioral, emotional and psychosocial factors that impact implementation of the treatment plan, also, must work with the child and family to overcome barriers or redefine goals as appropriate. It is necessary to assess the educational needs and skills of day care providers, school nurses or other school personnel who participate in the care of the young child with diabetes **(Riddle, 2018).**

Nurses are the main contributors in the care of the diabetic children and their caregivers. Pediatric nurse must be thoroughly aware with the several recent advances in the treatment of juvenile diabetes, its related complications and the technologic advancement. Pediatric nurse should adopt the appropriate approaches in the care of the diabetic child to improve his adherence to the treatment recommendations of the health care professionals, also, prepare children to make informed decisions about their own diabetes care **(Kyle& Carman, 2013).**

The responsibility of nurses is to provide primary, secondary and tertiary prevention with the aim of modifying the lifestyle and preventing possible complications in children diagnosed with juvenile diabetes, as well as, teaching how to manage diabetes in different age groups **(Peimani et al., 2010).**

Significance of the study

Among the eastern Mediterranean countries, the largest contribution to the total number of estimated juvenile diabetes cases comes from Egypt, which accounts for a quarter of the region's total childhood cases

(El-Ziny et al., 2014). The incidence of T1DM in the Egyptian children is one per1000 (**Abdel Karim & Abo Elyazed, 2016).**

In juvenile diabetes, the primary caregiver is mostly the mother. If the mother is the person that is most intimately bound to the details of the illness, any problem she faces in coping with the child's illness management, affects the entire family **(Al-Odayani et al., 2013).** So that, from the researcher point of view it was important to conduct this study to assess mothers' knowledge and practices toward their children suffering from juvenile diabetes.

Aim of this study

The aim of the study is to assess mothers' knowledge and practices toward their children suffering from juvenile diabetes.

Research Questions

This study is based on answering the following question:

1- Are the mothers have adequate knowledge about juvenile diabetes?

2- Are the mothers provide the needed care to their children with juvenile diabetes?

3- Is there a relation between mothers' knowledge about juvenile diabetes and care that they provided to their children?

Subject and Methods

Research Design:

A descriptive design was used in this study.

Setting of the Study:

This study was conducted at the out-patient pediatric diabetic clinic at the pediatric hospital affiliated to Ain Shams University Hospitals.

Subject: Subjects of this study was purposive sample of 77 mothers whose children suffering from juvenile diabetes who attend the previously mentioned study setting during the study period (6 months).

Under the following inclusion criteria:

- Mothers who had children with confirmed diagnosis of juvenile diabetes from period not less than 6 months period.
- Mothers of children with juvenile diabetes at age less than 18 years old and free from any other disease.

Data Collection tools

Data were collected using the following tools:

Tool I: A predesigned questionnaire Sheet: This tool was designed by the researcher and written in simple Arabic language based on scientific literature review to gather and it is comprised from three parts:

I. Characteristic of the studied children as age, gender, ranking, educational level and disease history.

II. Characteristic of mothers as age, residence, educational level, occupation, family numbers, family income, family history for diabetes and received training about diabetes.

III. Mothers' knowledge about juvenile diabetes as (definition, risk factors,

sign& symptoms, complications, controlling juvenile diabetes, hypoglycemia (causes, symptoms, treatment), hyperglycemia (causes, symptoms, signs of ketonemia, prevention), laboratory measurements, commitment to treatments, protection precautions, barriers).

Second tool: Checklist of mothers' reported practices: adopted from **(Ward, (2016)& Goodwin, (2016)& Orzechowska, (2016) and Cefalu, (2013))** to assess the actual practices of mothers regarding care of their children suffering from juvenile diabetes. It included the following: insulin injection, foot care, blood testing for glucose and urine testing for ketones.

Ethical considerations

An approval to carry out the study from the ethical committee of the faculty of nursing, Helwan University and permission was obtained from the medical and nursing director of the out-patient pediatric diabetic clinic in the pediatric hospital affiliated to Ain Shams University. Verbal approval was obtained from the mothers before inclusion in the study, a clear and simple explanation was given according to their level of understanding. They secured that all the gathered data was confidential and used for the research purpose only. The researcher was clarifying the objectives and the aim of the study to mothers included in the study before starting. The researcher was assuring maintaining anonymity and confidentiality of mothers' data included in the study. The mothers were informed that they are allowed to choose to participate or not in the study and they have the right to withdraw from the study at any time.

Content Validity and Reliability:

To achieve the criteria of trust-worthiness of the tools of data collection in the study, the tools were tested and evaluated for their face and content validity by panel of three experts in the field of pediatric nursing and pediatric medicine. To ascertain relevance, clarity and completeness of the tool, experts' elicited responses that were either agree or disagree for the face and content validity. The items in which 85% or more of the experts had agreed were included in the proposed tool. The required corrections and modifications were done. Reliability was tested by Cronbach Alpha Coefficient test and its value was (0.84).

Pilot study

Pilot study was carried out on 10% of total mothers whose children suffering from juvenile diabetes at the out-patient pediatric diabetic clinic at the pediatric hospital affiliated to Ain Shams University Hospital in order to test the applicability of the constructed tools and the clarity of the included questions related to knowledge and reported practices of mothers regarding care of their children suffering from juvenile diabetes. The pilot has also served to estimate the time needed for each subject to fill in the questions. According to the results of the pilot, some corrections and omissions of items were performed as needed. The pilot participants were not included in the main study sample.

Result

Table (1): Distribution of the studied children according to their characteristics (n =77)

Variables	Number	Percentage
Age in years		
<6	18	23.4
6 <12	34	**44.2**
12<18	25	32.4
Mean ±SD	8.6±0.4	
Ranking		
First	18	23.4
Second	22	**28.6**
Third	21	27.3
Last one	16	20.7
Level of education		
Nursery school	14	18.2
Primary school	32	**41.6**
Preparatory school	12	15.5
Secondary school	19	24.7

Table (2): showed that, 55.8 % of the studied children were discovered through symptoms of diabetes, 51.9% of them were following up treatment regularly, 63.6% of them were not hospitalized due to diabetes, 57.1% of them were not having complication due to diabetes and 70.1% of them knew last measurement of blood glucose level.

Figure (1): Distribution of the studied children according to Gender (n =77).

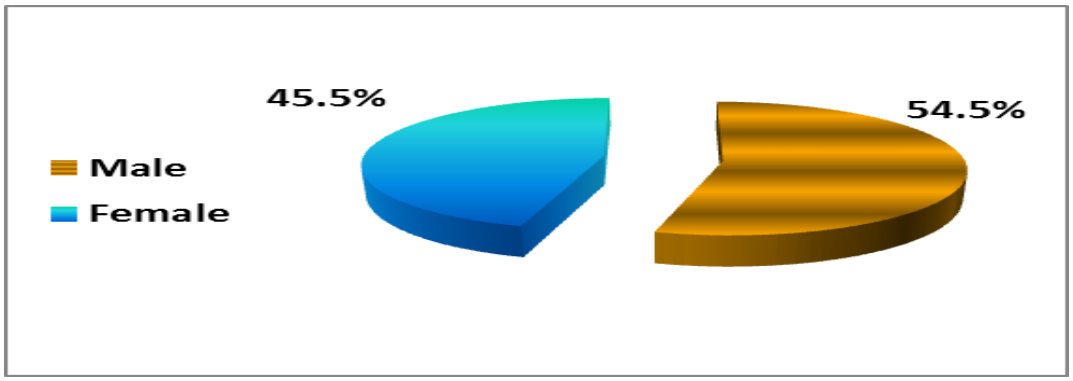

Table (2): Distribution of the studied children according to their history of the disease (n =77)

Variables	Number	Percentage
Discovery of diabetes through		
Symptoms	43	**55.8**
Complication	18	23.4
During check up	16	20.8
Follow up treatment regularly		
Yes	40	**51.9**
No	37	48.1
Hospitalized due to diabetes		
Yes	28	36.4
No	49	**63.6**
Complication due to diabetes		
Yes	33	42.9
No	44	**57.1**
Knowing last blood glucose measurement test		
Yes	54	**70.1**
No	23	29.9

Table (2): showed that, 55.8 % of the studied children were discovered through symptoms of diabetes, 51.9% of them were following up treatment regularly, 63.6% of them were not hospitalized due to diabetes, 57.1% of them were not having complication due to diabetes and 70.1% of them knew last measurement of blood glucose level.

Table (3): Distribution of the studied mothers according to their characteristics (n =77)

Variables	Number	Percentage
Age in years		
20< 30	18	23.4
30< 40	12	15.5
40< 50	37	**48.1**
≥ 50	10	13.0
Mean ±	42.3±3.1	
Level of education		
Illiterate	15	19.5
Primary school	10	13.0
Preparatory school	12	15.6
Secondary school	27	**35.1**
Bachelors degree	13	16.9
Family numbers		
< 4 members	20	26.0
4< 8 members	33	**42.9**
8<12 members	24	31.2
Family income		
Enough	42	**54.5**
Not enough	35	45.5
Family history of diabetes		
Yes	55	**71.4**
No	22	28.6
Received training about diabetes		
Yes	40	**51.9**
No	37	48.1

Table (3) showed that, 48.1 % of the studied mothers were aged of 40-50 years old with mean 42.3±3.1 years old, 35.1 % of them were secondary school degree, 42.9% of them were living in a family consist of 4-8 members, 54.5% of them had enough monthly income, 71.4% of them had a positive family history of diabetes and 51.9% of them received training about diabetes.

Figure (2): Distribution of the studied mothers according to their residence (n =77)

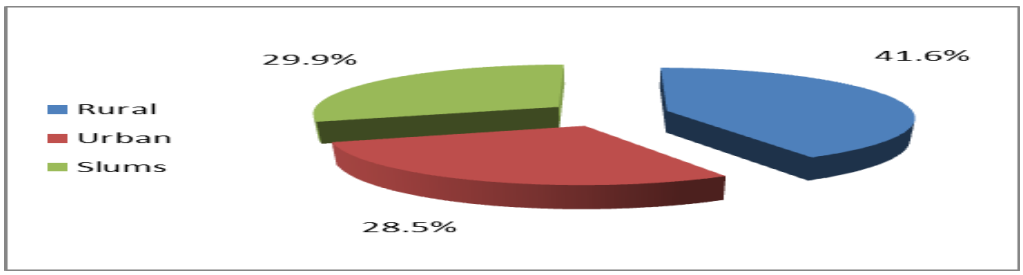

Figure (2): clarified that, 41.6 % of the studied mothers were living in rural area.

Figure (3): Distribution of the studied mothers according to their occupation (n =77)

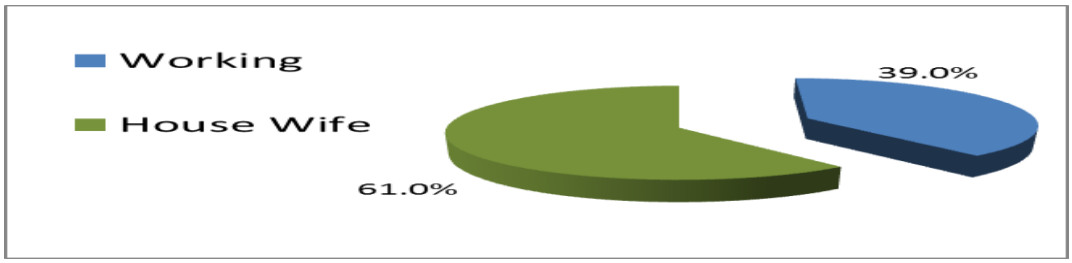

Figure (3): clarified that, 61.0 % of the studied mothers were housewives.

Table (4): Distribution of the studied mothers according to their total knowledge score (n =77)

Variables	Number	Percentage
Satisfactory	27	35.1
Unsatisfactory	50	**64.9**

Table (4): revealed that, 64.9% had unsatisfactory total knowledge, while 35.1% of them had satisfactory total knowledge.

Table (5): Distribution of the studied mothers according to their total reported practices (n =77)

Variables	Number	Percentage
Correct	29	37.7
Incorrect	48	62.3

Table (5): revealed that, 62.3% of the studied mothers had incorrect total reported practices, while 37.7% of them had correct total reported practices regarding care of their children suffering from juvenile diabetes.

Table (6): Correlation between total knowledge of the studied mothers and their total reported practices (n=77)

Variables	Total mothers' knowledge	
	R	P Value
Total mothers' practices	0. 73	*0.02

Table (6): clarified that, there was a positive correlation between the total knowledge of the studied mothers about juvenile diabetes and their total reported practices .

Discussion

Concerning the characteristics of the studied children, the current study findings illustrated that nearly half of the studied children were in the age group 6< 12 years old. This study findings was supported by the study **of El-Ziny et al., (2014),** who assessed "Epidemiology of childhood type 1 diabetes mellitus in Nile

Delta, Egypt, a retrospective study" reported that, the frequency of T1DM diagnosis significantly increase with age, reaching a peak at age group 6-10 years, before falling to a much lower rate at the age group 11-18 years.

The current study findings identified that more than half of the studied children were males. This study finding was agreed with the study of **El-Abbassy (2015),** who evaluated "The use of high definition video technology on diabetes management, Menoufia, Egypt" found that, most of the studied sample was males.

The current study finding (table 2) demonstrated that, more than half of the studied children were discovered through symptoms of diabetes. this finding was similar with a study by **Alanani and Alsulaimani, (2013),** which entitled "Epidemiological pattern of newly diagnosed children with type I diabetes mellitus, Taif", in Saudi Arabia, who indicated that most of the studied sample were discovered through the symptoms of diabetes.

Regarding the characteristics of the studied mothers, it was noticed that, more than one third of them had a secondary school degree and nearly two thirds of them were housewives. This study finding was supported by **Al-Odayani et al., (2013),** who carried out a study entitled as, "Children's glycemic control: mother's knowledge and socioeconomic status", in Egypt, who found that, most of the studied mothers were housewives and had secondary school education.

Finding of the current study indicated that, nearly half of the studied mothers were living in a family consists of 4 to 8 members. This finding agreed with a study by **Abdel Megeid and El-Sayed (2012)**, that entitled "Health education intervention improves knowledge, attitude and practices of mothers of insulin dependent diabetes mellitus", in Saudi Arabia, who reported that, the studied sample gave a history of large number of family members and the majority had from four to five persons living per room.

It was clear from the current study finding that, most of the studied mothers had unsatisfactory knowledge. This study finding was supported by the study of **Feleke et al., (2013),** who studied "Assessment of the level and associated factors with knowledge and practice of diabetes mellitus among diabetic patients attending at felegehiwot hospital, Northwest Ethiopia" found that, knowledge and practice among the diabetes patients were at a low level.

Correct management of juvenile diabetes is crucial for the prevention of its complications. It was clear from the current study finding that, more than half of the studied mothers had incorrect total reported practices as regarding insulin administration, urine analysis for ketones, blood glucose testing and foot care toward care of their children suffering from juvenile diabetes. This study finding was similar with a study by **Kheir et al., (2011)**, that entitled "Knowledge, attitude and practices of Qatari patients with type II diabetes mellitus", in Qatar, who found that most of the studied participant had poor practices regarding juvenile diabetes management.

Regarding correlation between the total knowledge of the studied mothers about juvenile diabetes and their total reported practices score regarding care of their children with juvenile diabetes, the current study finding indicated that there was a positive correlation between total knowledge of the studied mothers and their total reported practices. This result

was in agreement with a study done by **Othman et al., (2018)**, that entitled " Knowledge and awareness of mothers about diabetic ketoacidosis among type 1 diabetic children, their action and response in emergency conditions in Aseer region of Saudi Arabia", who reported presence of significant positive correlation between knowledge and practice of the participants.

Conclusion

The current study findings concluded that, nearly two-thirds of the studied mothers had unsatisfactory knowledge about juvenile diabetes and more than half of the studied mothers had incorrect reported practices regarding care for their children suffering from juvenile diabetes. In addition, there was a positive correlation between total knowledge of the studied mothers of children with juvenile diabetes and their total reported practices.

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Recommendation

1. Establishing educational programs to improve knowledge and practices of mothers regarding care of their children suffering from juvenile diabetes.
2. Encourage using the updated methods for education about juvenile diabetes as available means of information technology and one to one diabetes education for children and their mothers.
3. Emphazing the importance of periodic and constant follow up to discuss and facilitate any difficulties that may face the children suffering from juvenile diabetes and their mothers.
4. Further studies should be conducted to measure knowledge about juvenile diabetes in Egypt and its effect on the child care, moreover, studies on the social stigmatization, quality of life and health problems among children suffering from juvenile diabetes.

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