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Assessment of Self-Efficacy among Adolescents with Juvenile Diabetes

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Abstract

Background: Juvenile diabetes is the most common endocrine disease during infancy and adolescence causing serious coping problems so adolescents must adapt to and effectively manage their illness. **Aim:** this study aimed to assess the self-efficacy among adolescents with juvenile diabetes. The disease is characterized by extremely limited or nonexistent insulin secretion. Clinically apparent diabetes with hyperglycemia or ketoacidosis manifests only when at least 90% of the insulin-secreting cells have been eliminated and insulin deprivation becomes severe. Pediatric nurses play an important role in the early detection of diabetes and are able to intervene and manage the condition early on. The majority of nurses have a specialist qualification in providing diabetes special education and support for adolescents in treatment decisions regarding their illness **Design:** A descriptive research design was utilized in the current study. **Setting**: This study was conducted at outpatient pediatric endocrinology clinic at Beni Suef university Hospital. **Subjects**: A purposive sample of 84 adolescents with juvenile diabetes attending the previously mentioned study setting. **Tools of data collection**: Three tools were used to collect data: tool (1) interviewing questionnaire: (2) checklist of reported practices, tool (3) self-efficacy scale to assess self-efficacy among adolescents with juvenile diabetes. **Results**: more than half of the studied adolescents had unsatisfactory total knowledge level about juvenile diabetes, more than two thirds of them had incomplete reported practices and nearly two thirds of them had a low self-efficacy score. **Conclusion**: Adolescents with juvenile diabetes had unsatisfactory total knowledge score and incomplete total reported practices. In addition to, most of them had a low self-efficacy score. **Recommendation**: Establishing educational programs to improve self-efficacy of the adolescents with juvenile diabetes.

Keywords: *Adolescent, juvenile diabetes, self-efficacy*, Nurse care.

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Introduction

Juvenile diabetes is a lifelong disorder of glucose homeostasis that results from the autoimmune destruction of the beta cells located in the islets of Langerhans. The disease is characterized by extremely limited or nonexistent insulin secretion. Clinically apparent diabetes with hyperglycemia or ketoacidosis manifests only when at least 90% of the insulin-secreting cells have been eliminated and insulin deprivation becomes severe **(Fahmy et al., 2021).**

Self-efficacy plays an important role in disease management, adaptation and reducing anxiety and other psycho-mental complications of the disease. This parameter can potentially predict adherence to regular blood sugar tests, dietary patterns, insulin injections and exercise **(Chopoghlo et al., 2021).**

Aim of the study

This study aimed to assess adolescent s' knowledge, practice, and self-efficacy regarding juvenile diabetes.

Subjects and Methods

Research Design: A descriptive research design was utilized in the current study.

Setting: This study was conducted at outpatient pediatric endocrinology clinic at Beni Suef university Hospital. There was no study previously conducted at the same study setting to assess self-efficacy among adolescents with juvenile diabetes.

Subjects: A purposive sample of 84 adolescents with juvenile diabetes.

Criteria of selection

-Both gender (Male& Female).

-Adolescents age ranged from 12 ≤18 years, who were diagnosed with juvenile diabetes from a period of not less than 6 months.

-Adolescents with juvenile diabetes with no other physical or mental disorders.

Tools of data collection: Three tools were used:

1 st tool: Interviewing questionnaire:

It was designed by the researcher after reviewing the current literature and translated to simple Arabic language. It comprised from three parts:

Part I: characteristics of the studied adolescents with juvenile diabetes which include: age, gender, residence, education, adolescent ranking, family numbers, mothers' education and occupation, income,

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disease history, commitment to treatment plans, participation in treatment decisions, follow up and barriers).

Part II: adolescents' knowledge about juvenile diabetes which include: definition, risk factors, sign and symptoms, complications, control of juvenile diabetes, hypoglycemia crises, hyperglycemic crises, physical exercise, diet and laboratory measurements).

2 nd tool: Checklist of reported practices:): It was adopted from **Bahendeka et al., (2019), Dumouchel et al., (2019) and CDC, (2019**) to assess the reported practices of adolescents with juvenile diabetes regarding insulin administration and preparation by syringe, insulin administration by pen, blood glucose testing and foot care.

3 rd tool: Self efficacy scale: It was adapted from **Gastal, et al., (2007)** by the researcher to achieve the study aims and to assess the self-efficacy among adolescents with juvenile diabetes.

Ethical Consideration:

An approval to carry out the study from the ethical committee of the Faculty of Nursing, Helwan University, also, permission was obtained from the medical and nursing director of the pediatric endocrine out-patient clinic at Beni suef University Hospital. Verbal approval was obtained from adolescents with juvenile diabetes before inclusion in the study, a clear and simple explanation of the study aim was given according to their level of education. They secured that all the gathered data was confidential and used for the research purpose only. Adolescents 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.

Pilot Study:

A Pilot study was conducted to test the clearness and applicability of the study tools and to estimate the time needed for each tool, it was done on 10% of the total subjects, (8) adolescents which were excluded from the present study to avoid sample bias and contamination. In the light of pilot study analysis, modification was done and last form was developed.

Field Work:

Data was collected in two days/ week from 10:00 AM and extended to 2:00 PM. At the beginning of interview; the researcher welcomed adolescents, explained the purpose, duration, activity of the study and take their consent to participate in the study prior to data collection. The time spent to fill the questionnaire is 60 minutes for each adolescent to assess their knowledge, reported practices and their self-efficacy toward having juvenile diabetes in the presence of the researcher to ensure maximum homogeneity response and to provide clarifications. Each adolescent completed his/ her copy and handed it back to the researcher

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Statistical analysis:

Statistical presentation and analysis of the present study was conducted, using Pearson correlation test, ANOVA test and Chi-square tests. A significant level value was considered when P value < 0.05.

Results

Table (1) shows that, nearly half (45.2%) of the studied adolescents were aged 14 < 16 years old, nearly half (42.9%) of them were at preparatory school, more than one third (34.5%) of them were ranked as the second child, more than half (58.3%) of them were living in families composed of 4 to 8 members. Also, more than half of the studied adolescents' mothers were housewives and had completed middle education (58.3%) and (63.1%), respectively. In addition to, more than two thirds (69.0%) of them had no enough family income.

Figure (1): clarify that, more than half (63%) of the studied adolescents were males.

Figure (2) demonstrates that, 71.4% of the studied adolescents were living in rural areas, while 28.6% were living in urban areas.

Table (2): reveals that, regarding the total knowledge score 84.5% of the studied adolescents had a unsatisfactory total knowledge level regarding juvenile diabetes.

Table (3): shows that, (72.6%) of the studied adolescents had incomplete total reported practices regarding juvenile diabetes.

Table (4) illustrates that, (60.7%) of the studied adolescents had a low self-efficacy score.

Table (1): Number and percentage distribution of the studied adolescent according to their characteristics (n=84).

Characteristics of the studied adolescent	Studied sample (n=84)	
	N	%
Age (years)		
12< 14 yrs.	26	31.0
14<16 yrs.	**38**	**45.2**
16< 18 yrs.	20	23.8
Mean ±SD	**14.6±10.6**	
Educational level		
Illiterate	2	2.4
Primary school	27	32.1
Preparatory school	**36**	**42.9**
Secondary school	19	22.6
Child ranking in the family		
First	22	26.2
second	**29**	**34.5**
third	28	33.3
fourth	5	6.0
Family numbers		
less than 4 members	27	32.1
4: < 8 members	**49**	**58.3**

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9: < 12 members	8	9.5
Mother education		
Illiterate	1	1.2
Read and write	22	26.2
middle education	**53**	**63.1**
high education	8	9.5
Mother job		
Housewife	**49**	**58.3**
working	35	41.7
Family income		
Not enough	**58**	**69.0**
Enough	26	31.0

Figure (1): Number and percentage distribution of the studied adolescents according to their gender (n=84).

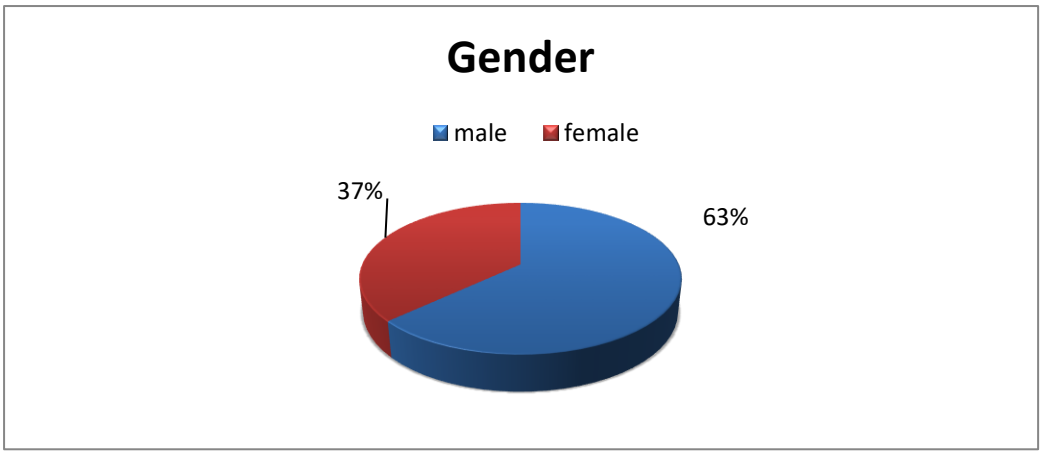

Figure (2): Number and percentage distribution of the studied adolescents according to their residence (n=84).

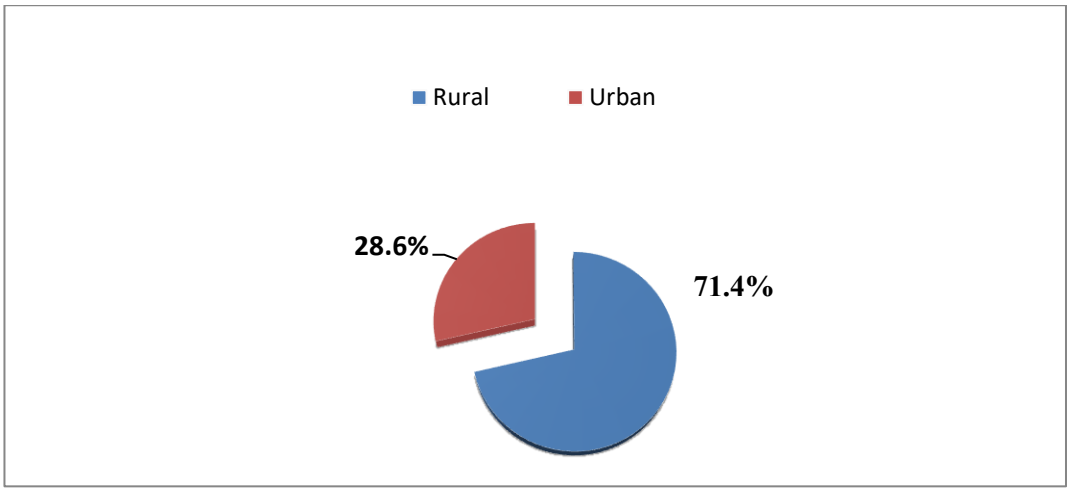

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Table (2): distribution of the studied adolescents according to their total knowledge score

Total knowledge score	N	%
satisfactory	15.5	13
unsatisfactory	84.5	71

Table (3): distribution of the studied adolescents according to their total reported practice score

Total practice score	N	**%**
Complete	**23**	**27.4**
Incomplete	**61**	**72**.6

Table (4): distribution of the studied adolescents according to their total self-efficacy score

Total self-efficacy score	N	**%**
High	10.7	9
Moderate	28.6	24
Low	60.7	51

Discussion

Findings from current study showed that, nearly half of the studied adolescents aged 14-16years old. This study finding is congruent with the study of **Elhabashy et al., (2022),** who studied "Uncontrolled type 1 diabetes among Egyptian adolescents; risk determinants and clinical outcomes" in Egypt and reported that, the mean age of the studied adolescents was 14.78 ± 1.89 years.

The current study findings reported that, more than half of the studied children were males. This finding was agreed with **Andes et al., (2019),** who carried out a study entitled as "Prevalence of Prediabetes Among Adolescents and Young Adults in the United States, 2005-2016", found that the prevalence of prediabetes in male individuals was almost twice that in female individuals, which was driven by a 2-fold difference in male individuals compared with female individuals. The underlying mechanism for explaining the difference in incidence between males and females is still unclear.

Findings from present study illustrated that nearly half of the studied adolescents were at preparatory school. This study finding was in line with the study of **Al dossary et al., (2020),** who conducted a study entitled "Knowledge and Understanding of Type 1 Diabetes and Its Management among Saudi

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Children and Adolescents" reported that most of the studied adolescents were in intermediate school education.

Findings from the current study showed that, more than half of the studied adolescents had unsatisfactory knowledge score. This finding is in harmony with the study of **Abolwafa et al., (2017)** who studied the effect of educational program on improving knowledge and practice for 50 adolescences with type 1 diabetes and reported low mean score of overall knowledge among diabetic adolescents at the pre-test phase was low. From the researcher point of view, this result could be attributed to most of the studied adolescents did not attend any previous educational program and lack of administrative support to conduct this program in the outpatient clinic.

From current study finding, nearly three quarters of the studied adolescents had incomplete reported practice regarding juvenile diabetes. This finding is congruent with the study of **Lertbannaphong et al., (2021),** who studied **" Effect of Diabetes Self-Management Education (DSME) with and without Motivational Interviewing (MI) on Glycemic Control among Children and Adolescents with Type 1 Diabetes Mellitus: A Randomized Controlled Trial",** found a defect in knowledge and self-care behavioral scores and recommended providing education and motivation to children and adolescents suffering from juvenile diabetes. From the researcher point of view this might be due to lack of training programs provided to them.

More than half of the studied adolescents had a low self-efficacy score. This study finding was in accordance with the study of **Yosefi et al., 2021,** who studied " The Effect of Training Based on James Brown Model on Self-efficacy in Adolescents with Type 1 Diabetes Mellitus", who found that, most studied adolescents' with juvenile diabetes had a low self-efficacy score, while this finding was disagreed with **Survonen et al., (2019)**, who conducted a study entitled " **The psychosocial self-efficacy in adolescents with type 1 diabetes** "reported that, the self-efficacy among the studied sample was quiet good and high scores in psychosocial aspects of diabetes management.

Conclusion

The studied adolescents with juvenile diabetes had unsatisfactory total knowledge score and incomplete total reported practices. In addition to, most of them had a low total self-efficacy score.

Recommendations

Establishing educational programs to improve knowledge, practice and self-efficacy of the adolescents with juvenile diabetes**.**

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