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The effect of an educational program on the 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 of the study: this study aimed to evaluate the effect of an educational program on the self-efficacy among adolescents with juvenile diabetes. Research design: A quasi-experimental 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. Tools of data collection: Three tools were used: *tool (1)* interviewing questionnaire, *tool (2)* checklist of reported practices, *tool (3)* self-efficacy scale. Results: this study noted there was a high statistically significant positive correlation between the studied adolescents' total knowledge and their self- efficacy post program implementation. As well as, there was a statistically significant correlation between the studied adolescents' total practice and their self- efficacy post program implementation. Conclusion: The current study concluded that, implementation of an educational program has a positive effect on improving self-efficacy among adolescents with juvenile diabetes. Recommendation: Continuous educational programs to improve knowledge and self-efficacy among adolescents with juvenile diabetes.

Keywords---Adolescent, Juvenile diabetes, Knowledge, Practices, Self-efficacy.

Introduction

Diabetes mellitus (DM) is a complex endocrine disorder with altered metabolism of blood glucose. It is a long-standing disease with both short term and long term complications. The most intense acute complication of diabetes include: hyperosmolar hyperglycemic state and diabetic ketoacidosis (**Ahuja et al., 2019**).

Juvenile diabetes is the most common endocrine disease during infancy and adolescence causing serious coping problems during adolescence due to the need for continuous observation and diabetes related complications. Thus, adolescents must adapt to and effectively manage their diabetes (**Gurkanand Bahar, 2020**).

Adolescents with juvenile diabetes have greater responsibility for their lives than their healthy peers. Symptoms of depression and anxiety may potentially compromise diabetes management and metabolic control. Adolescents may have problems with self-care and adherence to diabetes regimens (**Jasera et al., 2019**).

Poor glycemic control during adolescence increases risk for long term micro vascular and macro vascular complications, including retinopathy, neuropathy and cardiovascular disease. Adolescents with juvenile diabetes are also at risk for poor psychosocial outcomes, including increased depressive symptoms and poor quality of life (**Survonnen et al., 2019**).

Self-efficacy also plays an important role in disease management, adaptation and reducing anxiety and other psychomental complications of the disease. This parameter can potentially predict adherence to regular blood sugar tests, dietary patterns, insulin injections and exercise. Therefore, educationing adolescents potentiate their self-care behaviors and ultimately lead to an improvement in their life quality (**Chopoghlo et al., 2021**).

Diabetes education and counseling are among the main duties of nurses. The goal of diabetes education is increasing adolescents' knowledge and experience, protecting them from side effects by controlling the disease, helping them to use the new technology, reducing the treatment expenses and changing their behaviors. Studies show that there is a direct link between education and metabolic control. The metabolic control of patients receiving education is better (**Eroglu and Sabuncu, 2021**).

Methods

This study aimed to evaluate the effect of an educational program on the self-efficacy among adolescents with juvenile diabetes. A quasi experimental research design was used to conduct this study. A purposive sample of (84) adolescents who have juvenile diabetes and attend the study setting over the study period .This study was conducted at the pediatric endocrinology out -patient clinic at Beni-suef University Hospital. Interviewing questionnaire to assess the characteristics of the studied adolescents and their knowledge about juvenile diabetes included 20 items. Checklist of reported practices to assess the reported practices of adolescents with juvenile diabetes regarding insulin administration by

syringe, insulin administration by pen, blood glucose testing and foot care included 41 items. Self-efficacy scale to assess the self-efficacy among adolescents with juvenile diabetes included 21 items.

Results

Table (1): Number and percentage distribution of the studied adolescent according to their demographic 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
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

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 a quarter (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): Percentage distribution of the studied adolescents according to their gender (n=84).

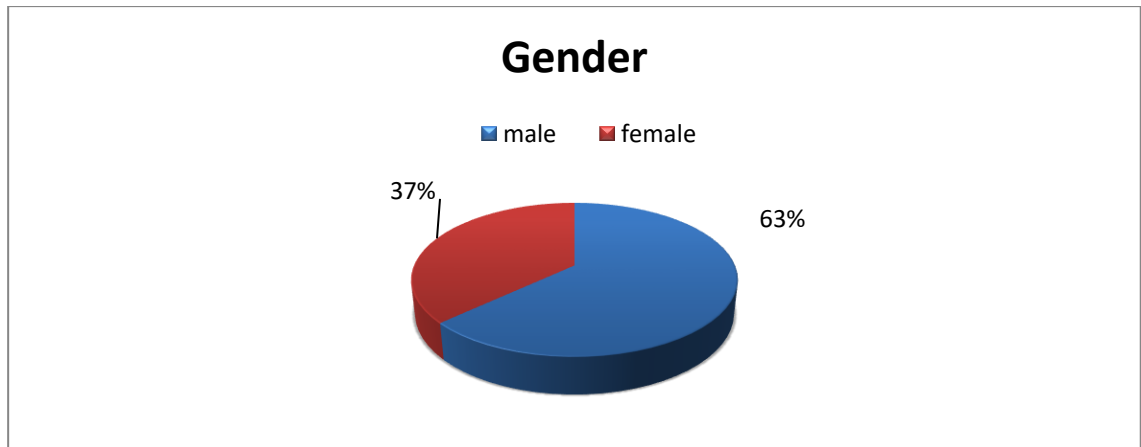


Figure (1): clarify that, more than half (63%) of the studied adolescents were males.

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

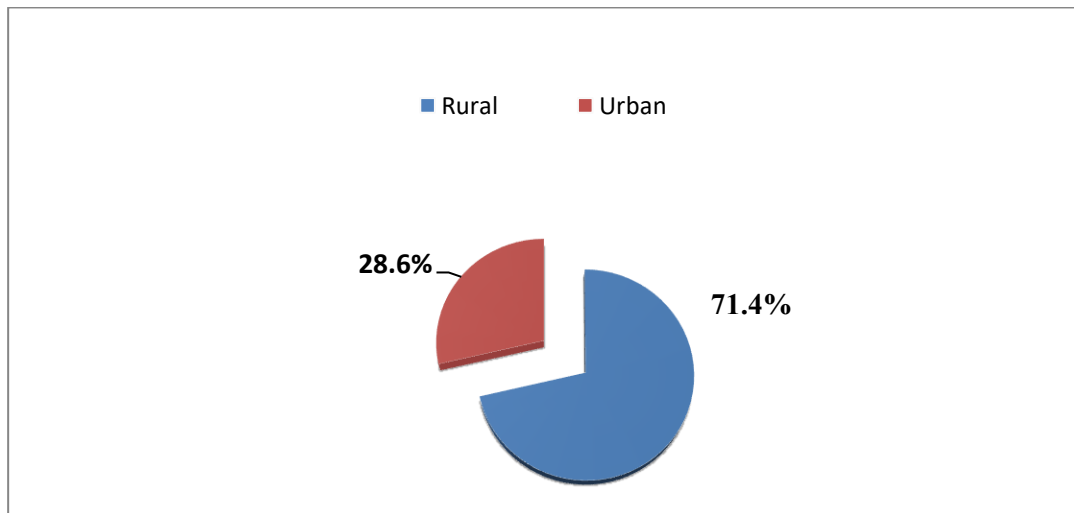


Figure (2) demonstrates that, 71.4% of the studied adolescents were living in rural areas, while 28.6% were living in urban areas.

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

Total knowledge about juvenile diabetes	Studied sample (n=84)						Test of Sig. (p ₁)	Test of Sig. (p ₂)	Test of Sig. (p ₃)
	Pre program		Post program		Follow-up				
	N	%	N	%	N	%			
Satisfactory	13	15.5	60	71.4	54	64.3	X ² =16.30	X ² =1.684	F=26.70
Unsatisfactory	71	84.5	24	28.6	30	35.7	P=.001**	P=.237	P=.000**

As shown in **Table (2)**, statistical significant difference between pre and post program implementation in adolescents' total knowledge score. (15.5%) of the studied adolescents had a satisfactory total knowledge score about juvenile diabetes pre program, which improved to (71.4%) of them had satisfactory total knowledge score at post program and declined to (64.3%) at follow up compare to post program implementation with (p value=.000**).

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

Total adolescent' practice towards juvenile diabetes	Studied sample (n=84)												Test of Sig. (p ₁)	Test of Sig. (p ₂)	Test of Sig. (p ₃)
	Pre program				Post program				Follow-up						
	complete		In complete		complet e		In complet e		complete		In complete				
	N	%	N	%	N	%	N	%	N	%	N	%			
Total practice	23	27.4	61	72.6	70	83.3	14	16.7	65	77.4	19	22.6	X ² =19.90	X ² =1.24	F=44.59
													P=.004*	p=.541	P=.000**

Table (3) indicates that, (27.4%) of the studied adolescents had complete total reported practices score at pre-program, which improved to (83.3%) of them had complete total reported practices at post-program which declined to (77.4%) at follow up with statistically significant differences between pre, post and follow up of the educational program implementation with (P value=.000**).

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

Total self-efficacy	Studied sample (n=84)						Test of Sig. (p1)	Test of Sig. (p2)	Test of Sig. (p3)
	Pre program		Post program		Follow-up				
	N	%	N	%	N	%			
High	9	10.7	44	52.4	42	50	X ² =17.41 P=.000**	X ² =2.250 p=.174	F=30.25 P=.000**
Moderate	24	28.6	26	30.9	22	26.2			
Low	51	60.7	14	16.7	20	23.8			
Mean SD	30.3±10.8		52.9±14.1		47.5±9.58		T=18.02 P=.000**	T=1.957 p=.185	F=32.58 P=.000**

Table (4) Reveals that, (10.7%) of the studied adolescents had a high total self-efficacy score preprogram implementation, compared to (52.4%) of them had high total self-efficacy score post program implementation and (50%) of them had high total self-efficacy score at follow up. Also, there were a statistically significant differences between pre, post and follow up of the educational program implementation (P=.000**).

Table (5): Correlation between total adolescents' knowledge, practice and their self-efficacy towards juvenile diabetes at pre, post and Follow-up of the program.

Table (16) Reveals that, there were statically significant positive correlation

Variables		Total adolescent' practice			Total adolescent' self-efficacy		
		Pre	Post	Follow-up	Pre	Post	Follow-up
Total adolescent' knowledge	R P	0.371 .000**	0.496 .000**	0.513 .000**	0.377 .000**	0.501 .000**	0.510 .000**
Total adolescent' self-efficacy	R P	0.215 .049*	0.244 .023*	0.231 .027*			

between the studied adolescents' total knowledge, practice and total self-efficacy score at pre, post and follow up of the educational program for adolescents with juvenile diabetes.

Discussion

Regarding the characteristics of the studied adolescents, the current study showed that nearly half of the studied adolescents aged 14-16 years old. This

study finding was in accordance 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 present study findings reported that, more than half of the studied adolescents were males. This was in agreement with **Andes et al., (2019)**, whose study was about "Prevalence of Pre diabetes among Adolescents and Young Adults in the United States, 2005-2016", found that, the prevalence of pre diabetes in male individuals was almost twice that in female individuals

The present study illustrated that, nearly half of the studied adolescents were at preparatory school. This was supported by 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 Children and Adolescents", reported that, most of the studied adolescents were in intermediate school education.

Also, the present study showed that, less than one third of the studied adolescents had a satisfactory total level of knowledge about juvenile diabetes before conducting the program which significantly improved to more than two thirds of them with a satisfactory total level of knowledge and declined at follow up to less than two thirds of them with satisfactory total level of knowledge than post program implementation. This finding was in harmony with the study of **Abolwafa et al., (2017)**, who studied "The Effect Of Educational Program On Improving Knowledge And Practice For 50 Adolescents With Type 1 Diabetes" reported that, low mean score of overall knowledge among diabetic adolescents at the pre-test phase which improved at post test. From the researcher point of view, this result could be attributed to the effect of provided education of program. Also, most of the studied adolescents did not attend any previous educational program and lack of educational progr

Moreover, this was supported by **Sabaq et al., (2022)** whose study was about "Effect of Transition Care Educational Program on Transitional Readiness, Self-Efficacy and Quality of Life among Adolescents with Type 1 Diabetes Mellitus", who found that, more than three quarters and more than two thirds of the studied adolescents had an improved knowledge at post program and follow up.

Regarding adolescents' total reported practices regarding juvenile diabetes, the current study clarified that, less than one third of the studied adolescents had complete total reported practices which improved to more than three quarters of them had complete total reported practices regarding juvenile diabetes after program implementation and declined at follow up than post program implementation with statistically significant difference between pre, post and follow up of the educational program. it was in the same line with the study of **Lertbannaphong et al., (2021)**, which was about "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 significant increase in knowledge and self-care behavioral scores after implementation of diabetes self-management education for adolescents with juvenile diabetes. From the

researcher point of view, this might be due to the use of demonstration, re-demonstration through practical sessions, motivations through adolescents' observation of each other's performing the procedures related to diabetes care and shared support between them.

Regarding total self-efficacy score, the current study pointed out that, less than one third of the studied adolescents had high total self-efficacy score, which significantly improved to more than half of them having high total self-efficacy post program implementation and at follow up, respectively. This study was in agreement 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", concluded that, there was an improvement in self-efficacy score of the studied sample after providing training for adolescents with juvenile diabetes.

Also, this finding was in the same line with the study of **Hejazi, et al., (2019)** who assessed "the impact of education based on self-efficacy theory on health literacy, self-efficacy and self-care behaviors in 70 patients with diabetes" found that, the experimental group showed a higher total mean scores of self-efficacy after implementation of the educational intervention. From the researcher point of view, this result may be due to that adolescents were eager to learn more about their illness and how to manage it properly, in addition to the educational program sessions and the use of different approaches of active learning during the implementation of the program such as group discussion.

Conclusion

The current study concluded that, implementation of an educational program has a positive effect on improving self-efficacy among adolescents with juvenile diabetes.

Recommendation

Continuous educational programs to improve knowledge, practice and self-efficacy among adolescents with juvenile diabetes.

Encourage using the updated methods for education about juvenile diabetes as available means of information technology for children and their parents.

References

- Ahuja, W., Kumar, S., Kumar, N. and Rizwan, A. (2019):** Precipitating Risk Factors, Clinical Presentation, and Outcome of Diabetic Ketoacidosis in Patients with Type 1 Diabetes, Research Gate: 11 (5): 1-2.
- Gurkan, K. and Bahar, Z. (2020):** Living With Diabetes: Perceived Barriers of Adolescents, The Journal of Nursing Research: 28 (2): 1- 5
- Jasera, S., Hamburger, E., Pagotob, S., Williams, R., Meyna, A., Jones, A. and Simmons, J. (2019):** Communication and coping intervention for mothers of adolescents with type 1 diabetes: Rationale and trial design, science Direct Journal, 85(2019): 6.

- Survonen, A., Salanterä, S., Näntö-Salonen, K., Sigurdardottir, A. and Suhonen, R. (2019):** The psychosocial self-efficacy in adolescents with type 1 diabetes, *Nursing Open Access*, 6 (2): 520.
- Chopoghlo, S., Hosseinkhani, A. Khedmat, L., Nejad, M. and Puraghoob, M. (2021):** The Self-Efficacy Improvement In Adolescent Girls With Type 1 Diabetes Mellitus With Self Care Education Through Mobile Based Social Networking, *International Journal Of Diabetes In Developing Countries*: 21 (1): 4-6.
- Eroglu, N and Sabuncu, N. (2021):** The effect of education given to type 2 diabetic individuals on diabetes self-management and self-efficacy: Randomized controlled trial, *Primary Care Diabetes*: 15 (1): 452.
- Elhabashya, S., Sherif, E., Salaha, N., AbdElkaderb, M. and Youssef, D. (2022):** Uncontrolled type 1 diabetes among Egyptian adolescents; risk determinants and clinical outcomes: *Diabetes Epidemiology and Management* : 6(22):2.
- Andes, L., Cheng, Y., Rolka, D., Gregg, E. and Imperatore, G. (2019):** Prevalence of Prediabetes Among Adolescents and Young Adults in the United States, 2005-2016, *Journal of American Medical Association*, 174 (2): 6.
- Al dossary, L., Snelgrove., S., Condon, L. and Davies, A., (2020):** Knowledge and Understanding of Type 1 Diabetes and Its Management among Saudi Children and Adolescents. *Journal of diabetes Mellitus*: 10 (01): 3.
- Abolwafa, N., Ahmed, S. and Aly, S. (2017):** Effect of educational program on improving knowledge and practice for adolescences with type 1 diabetes, *International Journal of Advanced Nursing Studies*: 6 (1): 36-44.
- Sabaq, A., Bassam , s. and Said, K. (2022):** Effect of Transition Care Educational Program on Transitional Readiness, Self-Efficacy and Quality of Life among Adolescents with Type 1 Diabetes Mellitus, *Tanta Scientific Nursing Journal*: 24(1): 86-88.
- Lertbannaphong, O., Hantanasiriskul, P., Kiattisakthavee, P., Ruangson, S., Sitdhiraksa, N. and Santiprabhob, J. (2021):** 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, *Siriraj Medical Journal*:73 (10): 8-10.
- Hejazi S, Peyman N, Tajfard M, Esmaily H. (2019):** The impact of education based on selfefficacy theory on health literacy, selfefficacy and self-care behaviors in patients with type 2 diabetes. *Iranian Journal of Health Education and Health Promotion*: 5(4): 296-303.
- Yosefi, Z., Afshar, M., Ajorpaz, N. and Sadat, Z. (2021):** The Effect of Training Based on James Brown Model on Self-efficacy in Adolescents with Type 1 Diabetes Mellitus, *Journal of Holistic Nursing and midwifery*: 31 (2): 76.