Impact of Juvenile Diabetes Long-Term Treatment upon Adolescents Physical Activities at Al Nasiriya Diabetic and Endocrinology Center

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Abstract

Introduction: Exercise has a positive effect on health, strength gain, weight control, social activity and self-development, contribute to the development of healthy habits in adults, but can also cause hypoglycemia. The variety, weight and duration of administration can cause various hormones (insulin, glucagon, catecholamine glucocorticoid), mediated metabolism. when the administration of insulin derived from insulin and / or an increase in anti-regulatory hormones increase glucose production in the liver and damage glucose in skeletal muscles. Although potential hyperglycemia can scare patients and their families, recipient fear of hypoglycemia can be a serious problem for clinical attention.

Objectives: To determine impact of juvenile diabetes long-term treatment upon adolescents' physical activity and to discovery out the relationship between impact of long-term treatment with adolescents specific demographic data.

Methodology: A descriptive study design was performed to determine the impact of juvenile diabetes long-treatment upon adolescent's physical activity in Al Nasiriya diabetic and endocrinology center. The study had started from February 6th, 2019 to June 7th, 2019. Non – probability (accidental) sample of (100) adolescents were selected.

Conclusion: The present study concludes that the greatest impact of long-term treatment of diabetes on the adolescents lifestyle was on physical activity; in addition the statistical test shows that the significant association between the adolescents' physical activity and their age, socio-economic status.

Key words: impact, juvenile diabetes, adolescents, physical activities.

Introduction

Diabetes Mellitus Type 1, present in 5 to 10% of the cases of diabetes, results from the destruction of pancreatic beta cells, consequently leading to insulin deficiency. The main immunological markers of pancreatic compromise are the anti-islet, anti-insulin and anti-glutamic acid decarboxylase (GAD) antibody levels present in 90% of patients at the time of diagnosis. Diabetes type 1 habitually occurs in children and adolescents, however, it may also manifest in adults, generally in a more insidious manner. Patients with this type of diabetes necessarily depend on insulin administration. The main goal of treatment is to prevent the appearance or progression of chronic complications, such as microvascular (diabetic retinopathy, nephropathy and neuropathy) and macrovascular (cerebral vascular accident and peripheral arterial disease) complications, simultaneously minimizing the risks of acute complications such as severe hypoglycemia [1].

Lifestyle is an important determinant of glycemic control in diabetic type 1 and 2 patients. The treatment of DM1 interferes in the lifestyle, is complicated, painful, depends on self-discipline and is essential to the patient's survival. The therapeutic approach involves various levels of action, such as insulin therapy, dietary guidance, acquisition of knowledge about the disease,

the ability to self-apply insulin, and self-monitoring of glycemia, maintenance of regular physical activity and psychosocial support. Due to the many beneficial effects, regular physical activity is indicated for patients with DM1, because it improves metabolic control and diminishes cardiovascular risk, in addition to adding an important effect on preventing the chronic complications of this pathology [2].

Methodology

Design of the Study:

A descriptive study design was performed to determine the impact of juvenile diabetes long-treatment upon adolescent's physical activities in Al Nasiriya diabetic and endocrinology center. The study had started from February 6th, 2019 to June 7th, 2019.

Setting of the Study:

The study was conducted in Al Nasiriya Diabetic and Endocrinology Center This study was conducted. on the adolescents who treated as a juvenile or type 1 diabetes mellitus.

Sample of the Study:

Non – probability (accidental) sample of (100) adolescents were selected. All patients diagnosed as having juvenile diabetes (DM type 1). They selection of patients was built on the following criteria:

Method Data Collection:

The data was collected through the use of a developed questionnaire (Arabic version), the researcher assumed full responsibility for interviewing the study sample after explaining and clarifying the objectives of the study for the adolescent, after obtaining the initial approval of each adolescent to participate in the study.

Data collection was carried out from February 6th, 2019 to June 7th, 2019.

Spend approximately (25-35) minutes with each adolescent to the interview and complete the questionnaire.

The Study Instrument:

The study tool is a questionnaire that was designed for the purpose of the study after extensive reviews of accessible literature and related studies. The study tool consists of three parts. The first part includes the demographic characteristics of the participants in the study, the second part includes physical activities.

Part I: Socio-demographic Characteristics of the Sample of the Study

This part deals with demographic characteristics of the sample consists of student's age, gender, parents educational level, parents occupation, and family economic status.

Part II: Physical Activities of Child

This part constitute the activity domain consisting of (8) elements.

Data Analysis

Data from this study were analyzed using SPSS version 20. The following statistical data analysis methods were used to analyze and evaluate the results of the study (Frequencies, percent Mean of score (MS), Relative sufficiency (R.S), Standard Deviation and Chi-square).

Results

Table (1) Distribution of the Study Sample by their Demographic Data

Demographic data	Rating and intervals	Frequency	Percent
Age/ years	11-13	48	48
	14-16	34	34
	17-19	18	18
Gender	Male	50	50
	Female	50	50
Child's Order	1	54	54
	2	38	38
	3	8	8
Residence	Rural	45	45
	Urban	55	55
Absence From School\Month	1 day	66	66
	2 days	30	30
	3 days	4	4
Failed in School	Yes	39	39
	No	61	61
	Total	100	100

This table shows that the majority of the study sample age is (11-13) years old (48%), and the gender distributed equally between female and male. Concerning child's order, the study results indicate that the majority of the study subjects are in first order (54%). In addition, the majority of the study subjects are urban residents (55%). In addition, (66%) of the study sample absent from the school for one time, and (61%) of them have times of no failed.

Table (2) Summery Statistics for Activity Domain According To Mean of Score, Stander Deviation, and Relative Sufficiency

Activity domain		M.S	S.D	R.S%	Assessment	
1	I feel difficult in walking	1.9	0.611	0.63	Moderate	
2	I feel difficult in running	1.79	0.671	0.59	Moderate	
3	I feel the difficulty of lifting heavy stuff	1.46	0.642	0.48	Bad	
4	I have difficulty when up to stairs	1.51	0.674	0.50	Bad	
5	I feel tired when you make an effort	1.2	0.492	0.40	Bad	
6	I have difficulty going to school	2.04	0.695	0.68	Moderate	
7	I need help when doing exercise	2.52	0.577	0.83	Good	
8	I feel physically weak	1.28	0.57	0.42	Bad	

Mean of score= 1-1.66 is bad, 1.67-2.32 is moderate, 2.33 and more is good

This table show that the study results for study sample response to the activity domain items are moderate in (1, 2, and 6) items, and good in seventh item, and bad in the other items.

Table (3) Summery Statistics of Physical Activities of Adolescent with Diabetes Mellitus

Overall Domains	Rating And Scoring	Frequency	Percent
Physical Activities	Good	8	8
	Fair	34	34
	Bad	58	58
	Total	100	100

This table show that the study results for responses by study samples that indicate for physical activity are bad.

Table (4) Association between the Study Subjects physical Activities and their Demographic Data

Demographic Data	Rating and Scoring	Overall for Lifestyle			Chi.sq	d.f	p. value
		Good	Fair	Bad			
Age/years	11-13	2	25	21	9.569	4	0.048
	14-16	0	24	10			
	17-19	0	16	2			
SES	Barely Sufficient	2	57	21	10.051	4	0.04
	Insufficient	0	8	12			
	2	2	4	4			
	3	0	14	10			
	4	0	45	19			
Total		2	65	33			

The study results indicate that there is a significant association between the adolescents' physical activities and their age and socio-economic status at p-value less than 0.05.

Discussion

Part I: Discussion of the Socio-Demographic Characteristics for the Study Sample

Finding results in (table 1) shows that the common of the study subject age is (11-13) years old (48%), these finding agree with Hapunda et al,. [3] that found the great age group representative his study was (12-15) years.

Anderson et al,. [4] supported present study by the gender is equally distributed by males and females who participant in their study.

With regard to the child order, the results indicate that the majority of subjects ranked first (54%). This conclusion is supported by et al,. Cardwell [5] who concluded that children who were second or highest in the birth order had a lower risk of Diabetes in children by 10% on average, the cause of any decreased risk of diabetes in children with a high birth order, but may reflect increased exposure to siblings at an early age.

As regards the school absence and performance, (66%) of the study sample absent from the school for one time, and (61%) of them have times of no failed

this findings match with Cooper et al,. [6] who declared the impact of type 1 diabetes on a child's ability to achieve it in school is a common concern for people with type 1 diabetes and their families. Low school attendance, cognitive deficits associated with diabetes, hypoglycemia, hyperglycemia and the psychosocial effects of chronic diseases are all possible factors that can lead to poor school performance for a child with diabetes compared to peers.

Part II: Discussion of the Physical Activities of Adolescents with Juvenile Diabetes

Regarding physical activity the present study found (58%) of total sample responses was bad that indicate affected, these finding agree with Jabbour et al,. [7] that concluded adolescent with type 1 diabetes, when exercising at high temperatures, dehydration develops more rapidly than non-diabetic couples and, therefore, suffers from poor performance and muscle cramps, which limits their physical activities.

Part III: Discussion of the Association between the Study Subjects Lifestyle and Their Demographic Data

Lawrence et al., [8] declared the age was to demonstrate statistically significant association with physical activities this finding support present study results as shown in (table 4) results indicate that there is a significant association between the adolescents' activities and their age.

Regarding the socio-economic status there is a significant association with adolescents' physical activities (P= 0.04) as a shown in (table 4) this finding agree with Cho et al., [9] that stated there was a significant relationship between physical activity and socio-economic status and increase changes on it in higher socio-economic status.

Conclusions

The present study concludes that the greatest impact of long-term treatment of diabetes on the adolescents (physical activity) in addition the statistical test shows that the significant association between the adolescents' physical activity and their age and socio-economic status.

Recommendation:

- Encourage adolescents with juvenile diabetes to regular exercise to reduce the risks of emerging complications in the long period, and monitor blood glucose regularly before and after exercise.

- Because much of a child's day is spent at school, communication with school staff is important for optimum diabetes control and school performance.

- Most health promotion programs are needed to be implemented at schools, to increase the awareness of students and their teachers and improve their healthy behaviors.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Nursing and all experiments were carried out in accordance with approved guidelines.

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