Effects of Educational Interventions for Children and Adolescents with Type I Diabetes Mellitus

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Objectives:

Diabetes mellitus (DM) affects nearly 3.9 million individuals in Egypt; currently ranking the 10th worldwide in terms of diabetes prevalence. Egypt is expected to jump to 8th position by 2025***(IDF, 2010)***.
Structured diabetes self-management education (DSME) is the key to a successful outcome **(ISPAD, 2011).**
The Objective of this work is to evaluate the effectiveness of the current educational interventions for children and adolescents with type 1 diabetes applied at the Diabetes Endocrine Metabolic Pediatric Unit (DEMPU), Children's Hospital Cairo University. Specifically, it addresses the following research questions: Evaluation of the quality of education program and defining the points of strength and weakness of this program.

Methods:

Type of study: observational longitudinal study, Duration: during the period between October 2011 and April 2012.
Population of the study: 100 cases of T1D admitted in Diabetes Endocrine and metabolism pediatric unit (DEMPU) inpatient section, Cairo University , Egypt
Inclusion criteria: T1D who admitted to inpatient word of DEMPU with classic symptoms of hyperglycemia or DKA and had five sessions of educational program ,age range from 2 to 14 years with a male to female ratio 1:1.,**Exclusion criteria:** Cases that didn't complete the program.
Methodology:All patients were subjected Complete history taking , Full clinical and Anthropometric examination and Questionnaire conducted before the education program and after the completion of program
The program was conducted by diabetes specialist, nutritionist, practical trainer, psycho social worker and was conducted in 5 days. Patient and their parents attended this programme in group of (8 to 12 patient or their families). consists of 5 sessions (90-120 minute each). Session (1) General information about T1D, session (2) Diabetes nutrition, session (3) Insulin injection, sites, types of insulin and its actions, session (4) Diabetes complications including hypoglycemia and DKA, session (5) Awareness about follow up and psychological support.
Statistics: All statistical calculations were done using computer program's SPSS (Statistical Package for the Social Science; SPSS Inc., Chicago, IL, USA) version 15 for Microsoft Windows ***(Armitage and Berrys, 1994).***

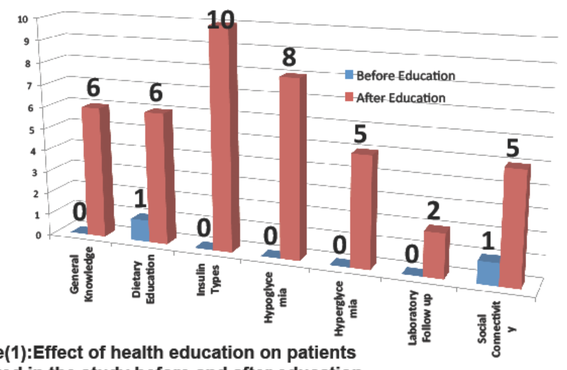
Results:

Mean age of the studied groups was 8.60 ± 3.64 years. The majority (84%) were newly diagnosed While only 16 patients (16%) were diagnosed more than 6 months before the onset of this study.
Evaluation the Quality of the Education Program: As regards the diabetes knowledge's, it was significantly improved after attending the education program as illustrated in table 1 and figure 1. Regarding the role of diet in management diabetes; there is marked increase (but not satisfactory) in knowledges about proper nutrition as shown in table 2 . There was a great defect in CHO counting as 52% couldn't count CHO after the education session and Comparison between two groups; the 1st who could calculate CHO and the 2nd group who couldn't calculate CHO after attending the session was illustrated in table 3, In this study there was highly statistically significant increase in diabetes hypoglycemic knowledge and management of diabetes during exercise as shown in table 4&5,There was significant improvement in mean HbA1c% after attending educational sessions (8.38 ± 1.77%) than before (9.08 ± 1.63%) in the old 16 diabetic children with p-value (<0.05), It was found increase awareness about role of family history in developing T1D, as before education session about 68% of interviewed family answered wrong (yes there's role, don't know) but after education session 97% knew that diabetic parents were not responsible for the affection of their children with diabetes, and 100% of interviewed parents gained the information that they couldn't adjust blood glucose without insulin after education.
There was increased school awareness about the nature of child disease (T1D) as; 94% of the studied children and their families reported that their schools were aware about the child disease and 92% of them allow their children to share in school activities.
Linear regression analysis showed that the only factor which has an effect on HbA1c was total post education score.

Graphs and tables

Table(1):Diabetes knowledge before and after attending the education program

Information about:	Score before Median (Min-Max)	Score after Median (Min-Max)	P Value
General information	0 (0-6)	6 (3-6)	0.001 (HS)
Dietary education	1 (0-6)	6 (0-6)	0.001 (HS)
Insulin and methods of injection	0 (0-10)	10 (5-10)	0.001 (HS)
Explanation of hypoglycemia	0 (0-8)	8 (2-8)	0.001 (HS)
Explanation of hyperglycemia	0 (0-5)	5 (1-6)	0.001 (HS)
Follow up knowledge	0 (0-2)	2 (0-2)	0.00 (HS)



Figure(1):Effect of health education on patients involved in the study before and after education

Table (2): Diabetes Knowledge before and after Education in Session 2 (diabetes nutrition).

	Before session		After session		P- value
	Yes	Don't know	Yes	Don't know	
CHO point counting	7%	93%	48%	52%	Sig

Table (3): Comparison between two groups; the 1st who could calculate CHO and the 2nd group who couldn't calculate CHO after attending Education program

		Can count CHO	Can't count CHO	P-value
Mean age		8.7 ± 3.6	7.8 ±3.6	NS
sex	Male	26	24	NS
	female	22	28	
Onset of T1D	new	41	43	NS
	old	7	9	
Social level	Low	25	25	NS
	mid	20	22	
	high	3	5	
Previous attendance	yes	24	13	Sig
	no	24	39	
Mean HbA1c		7.6 ± 1.4%	7.5 ±1.9%	NS

Table (4):hypoglycemic knowledge before and after the Education programsions)

	Before sessions			After sessions			P value
	Yes	No	Don't know	Yes	No	Don't know	
Symptom of hypoglycemia are the same in diabetic child	12%	17%	71%	24%	75%	1%	HS
Injection at site of movement cause hypoglycemia	8%	9%	83%	81%	7%	81%	HS
How to prevent hypoglycemia at night	19%	0%	81%	95%	0%	5%	HS
How to mange hypoglycemia	14%	-	86%	100%	-	-	HS

Table (5) Knowledge about Sport Importance and its Management before and after the Education programme

	Before sessions			After session			P value
	Yes	No	Don't know	Yes	No	Don't know	
Avoid sport for fear of hypoglycemia	2%	25%	73%	2%	95%	3%	HS
Extra CHO point for every half an hour	7%	8%	85%	89%	11%	-	HS

Conclusions:

The present work showed the efficient points of the education program at DEMPU were identified as:
1.Knowledge about the nature of T1D.
2.Management of hypo and hyperglycemic symptoms.
3.The importance of regular attendance to the follow up clinics and HbA1c regular assessment.
4.Management of diabetes during sport.
The non efficient point detected in the education program was defective CHO counting.
RECOMMENDATIONS:Change the way to explain CHO counting as this was the non efficient point identified in this study.
CHO counting session has to attend several times to refresh the knowledge about diabetes nutrition.
Another study to discus different methods that may be used to enhance knowledge about CHO counting and how to evaluate them.
Media alert to T1D to decrease DKA as first presentation; this should include high index of suspicion for the physicians as well as the general population.

References:

•***Armitage and Berrys, 1994,.*** **Armitage** P, **Berry** G. Statistical Methods in Medical Research (3rd edition). Blackwell ... Social Science and Medicine **1994**;38(9):1243-1256. Brown LD, Cai TT
•***IDF, 2010,*** The **International Diabetes Federation's** Annual Report **2010**
•**ISPAD, 2011** International Society for Pediatric and Adolescent Diabetes **ispad**.org/.../idf**ispad**-**2011**-global-guideline-diabetes-childhood-and-adoles.

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Diabetes 2
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