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Research Article

THE EFFECT OF HEALTH EDUCATION OF DIABETIC CHILDREN IN CONTROLLING DIABETES IN KHARTOUM STATE, SUDAN

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ABSTRACT

The objectives of this study is to assess the effect of the training programme on total knowledge and general skills about medication of diabetic children and their carers of diabetes in Khartoum State, 2011- 2013. This is an interventional study, pre and post study design to answer research questions. Convenience sampling technique was used to select 101 diabetic children from Khartoum state. The data was collected by using a pre – tested questionnaire by researcher. The data was analyzed by the use of Statistical Package of Social science (SPSS) version 20. The results obtained showed the training programme for diabetic children and their carers has improved the level of their knowledge about controlling diabetes from 15.3% to 93.7%. It is also effective in enhancing a wide range of diabetic children and their carers skills about insulin injection from 3.20% to 96.50%.

INTRODUCTION

The problems of diabetes care in Sudan include the lack of efficient diabetes care centers, lack of specially trained personnel, the high cost of anti-diabetic treatments, poor compliance with therapy or diet, ignorance and wrong beliefs, food and dietary factors and gender-related problems. In children, the problem is overwhelming and it needs more attention and interventions (Available at www.eatright.org/ search.aspx? search=Exchange%20lists.). Diabetes mellitus is caused by the low secretion and/or utilization of insulin. Hypoglycemia is seen in suboptimal treatment of diabetes and in other causes such as gastric surgery, some medications, and hormone and enzyme deficiencies. Diabetes Mellitus in children is a chronic medical problem, with many complications affecting the Growth and Development in early and late childhood. DM is a chronic disease of lifelong duration, and its management requires a fundamental change in the patient's lifestyle (Kamel *et al*., 1999).

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It is one of the most psychologically and behaviorally demanding of the chronic medical illnesses. The outcome of DM treatment is highly dependent on the self-care behavior of the patient. It is estimated that patients are expected to conduct 95% of their own DM management. They are expected to make multiple lifestyle changes simultaneously (Clarke, 2002). Children are now developing type 1 diabetes at an earlier age. The overall incidence of type 1 diabetes in 2010 is predicted to be approximately 40% higher than the incidence recorded in 1997. The incidence of type 2diabetes has also in children; before 1990, only 5% of diabetic youth were classified as having type 2 diabetes, but today, up to half of all diagnosed cases of diabetes in youth are classified as type 2 diabetes (Lever, 2006). Type 2 diabetes is frequently not diagnosed until complications occur. Approximately one-quarter of individuals who have diabetes may be undiagnosed (4).Nationally, diabetes is the seventh leading cause of death (http://www.cdc.gov/diabetes/pubs/pdf/ ndfs_2011.pdf.). Type 2 diabetes is frequently not diagnosed until complications occur. Approximately one-quarter of individuals who have diabetes may be undiagnosed (Kamel *et al*., 1999). The prevalence of diabetes mellitus in Sudan was dramatically increased from 3.4 % in 1996 to 8.05% in 2012 according to

(IDF international diabetic Middle East and North Africa (MENA). With the increasing of diabetes prevalence, the diabetes related- complications will also increase. The aspects of diabetes care in Sudan; health education is the most deficient among children. (International Diabetes Federation, diabetes at glance, 2012). The problems of diabetes care in Sudan include the lack of efficient diabetes care centers, lack of specially trained personnel, the high cost of anti-diabetic treatments, poor compliance with therapy or diet, ignorance and wrong beliefs, food and dietary factors and gender-related problems. In children, the problem is overwhelming and it needs more attention and interventions (Zhang, 2011). Diabetes may produce symptoms of excessive urine production, thirst, excessive hunger, blurred vision, and, in some cases, weight loss(www.cdc.gov/diabetes/pubs/factsheets/aian.htm.; cademy of Nutrition and Dietetics Position Paper, 2012). Diabetes is diagnosed and defined by laboratory analysis of the blood. This study was conducted to assess the effect of the training programme on total knowledge and general skills about medication of diabetic children and their carers of diabetesin Khartoum State.

MATERIALS AND METHODS

This is a interventional study, as pre and post intervention design. This study implemented, and evaluated diabetic children training programme for controlling the blood sugar.

Study area

This study was conducted in Omdurman Paediatric Hospital, its location in Omdurman locality.It involves a pediatric ward which provides a curative care for all inpatients including children with diabetes. There are 300 beds for all patients in Omdurman Pediatric Hospital. There are 478 registered diabetic patients treated in this hospital on the one day outpatients' diabetes clinic.

Study duration

The study was started in July 2011 to July 2013. The intervention conducted among the selected children, a health education approach had been used to, develop, and implement the diabetic children care training module.

Study subjects

The population of this study consists of children with type 1 diabetes mellitus above age of six years and below18 years101 children who attended to Omdurman Paediatric Hospital in Khartoum State.

Inclusion and exclusion criteria

All of the Children with type 1 diabetes mellitus above age six and below 18 years and their carers who attended to Omdurman Paediatric Hospital diabetic clinic during the period from February 2013 to August 2013.

Exclusion criteria

It excludes children newly discovered diabetes or who refuse to participate in the study, or who have disabilities or handicaps.

Sampling technique and sample size

The sampling procedure of this study was convenience total coverage sampling for any diabetic child attended to Omdurman Paediatric Hospital during data collection period from February 2013 to August 2013. The total attended children were 101, the researcher collect data from 67 mothers of diabetic children and 34 from the children themself. The researcher excluded the children who previously attended and enrolled in the study in the previous visit.

Data collection Tools

Data was collected by the researcher and the assistance trained team by asking questions to assess level of total knowledge and general skills about insulin injection and stores.

Data analysis

The data was analysed by using Statistical Package for Social Sciences (SPSS) version 20 for quantitative data to find out Hb A1c- mothers' knowledge and practice. Total score of knowledge and behaviour were also calculated, from scores of each questions provided, and compared at pre-test and post-test. The significant differences at 95% confidence interval level was used due which were measured by paired sample t test, which usually used to measure the difference in one group at different times such as pre and post intervention scores.

RESULTS AND DISCUSSION

Descriptive analysis was also conducted to find out the percentages and frequencies of diabetic patients' age participated in the study. The age of subjects under study were distributed among three groups. Most of them (66.34%) are between 10-14 years.

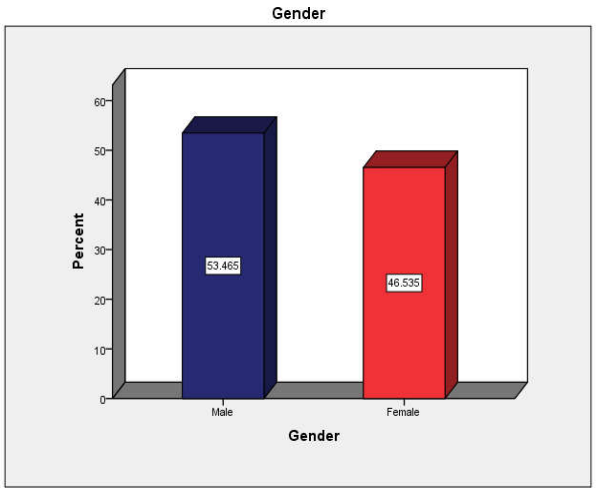

Figure 4.1. Gender of diabetic children in Omdurman Paediatric Hospital, 2011-2013

Descriptive analysis was conducted to find out the percentages and frequencies of diabetic patients' education. The education of children (six years or more) under study was satisfactory since 86.2% of them were educated. This table reflects the significant differences of detailed knowledge about diabetes before and after intervention. The results show that; participants who participated in the study have highly significant scores of knowledge at post-test than the scores at pre-test.

Table 1. Difference in knowledge of target groupabout diabetes at pre and post intervention in Omdurman Paediatric Hospital, 2011-2013

No.	Item	Correct answer Before intervention		Correct answer After intervention		p-value
		Freq.	%	Freq.	%	
1	Respondents know what the diabetes	24	23.8	98	97.0	0.01
2	Respondents know the management	9	8.9	101	100.0	0.00
3	Components of management	81	80.2	57	56.4	0.23
4	Respondents know what the symptoms of hypoglycemia	21	20.8	100	99.0	0.00
5	Symptoms of hypoglycemia	47	46.5	100	99.0	0.05
6	Respondents know the symptoms of hyperglycemia	25	24.8	97	96.0	0.03
7	Symptoms of hyperglycemia	39	38.6	73	72.3	0.04
Total knowledge about diabetes		34.8%		88.5%		0.01

Table 2. Difference in total knowledge about diabetes between pre-test and post-test in Omdurman Paediatric Hospital, 2011-2013

Items		Percent	P-value
Total knowledge about diabetes	Before Intervention	15.3%	0.00
	After Intervention	93.7%	

Table 3. Difference in skills of diabetic children about insulin injections between pre-test and post-test in Omdurman Paediatric Hospital, 2011-2013.

No.	Item	Skills done Before intervention		Skills done After intervention		p-value
		Freq.	%	Freq.	%	
1	Type of insulin	3	3.0	96	95.0	
2	Dosage	5	5.0	86	85.1	
3	Expire date of insulin	5	5.0	100	99.0	
4	Concentration	5	5.0	97	96.0	
5	Hand washing	3	3.0	86	85.1	
6	Clean top of the vial with alcohol swab	3	3.0	101	100.0	
7	wearing gloves	1	1.0	100	99.0	
8	Draw air in to syringe	2	2.0	101	100.0	
9	Select the site of injection	2	2.0	96	95.0	
10	pull the plunget to check for blood	3	3.0	101	100.0	
11	Pinch up a fold of skin	3	3.0	101	100.0	
Total skills about insulin injection		3.20%		96.50%		0.00

Table 4. Difference in total skills about diabetes between pre-test and post-test in Omdurman Paediatric Hospital, 2011-2013.

Total skills about diabetes	Before Intervention	3.2%	0.00
	After Intervention	96.5%	

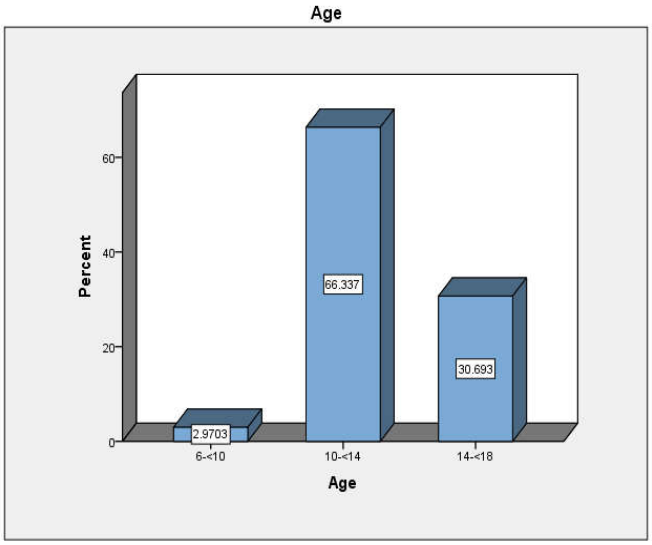

Figure 4.2.Age of diabetic children in Hospital

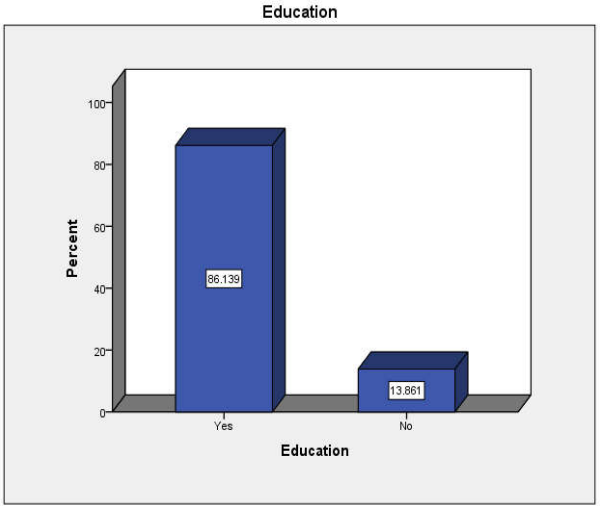

Figure 4.3.Education of diabetic children (six years or more) in Omdurman Paediatric Hospital

That means the intervention increases the level of knowledge significantly except for the components of management which is not significant. The table also reflects the total knowledge increased after intervention from 34.8% to 88.5%, the total knowledge has been calculated using likert scale described in questionnaire since each correct response scored one and then percent of overall correct was calculated. The calculation of total knowledge was taken place by summation of correct responses of all questions related to knowledge (correct response scored 1 and wrong response scored 0) and then overall score was divided by number of questions and multiplied by 100.This table reflects the differences in total score of knowledge at pre and post-test. The results show that; participants who participated in the study have highly significant scores of knowledge (93.7%) at post-test than the score at pre-test (15.3%). That means the intervention increases the level of knowledge significantly.The total knowledge about diabetes was calculated from all correct responses provided in the questionnaire.

The calculation of total skills was taken place by summation of correct practice of all skills related to practice (correct practice scored 1 and wrong practice scored 0) and then overall score was divided by number of skills and multiplied by 100. This table reflects the significant differences of detailed skills about insulin injection before and after intervention. The results show that; participants who participated in the study have highly significant scores of skills about insulin injection at post-test than the scores at pre-test. The calculation of total skills was taken place by summation of all items related to knowledge done (done scored 1 and not done scored 0) and then overall score was divided by number of items in the checklist and multiplied by 100.This table reflects the differences in total score of skills at pre and post-test. The results show that; participants who participated in the study have highly significant scores of skills (98.5%) at post-test than the score at pre-test (3.2%). That means the intervention increases the level of skills significantly.

Conclusion

From the result of this study, the researcher concludes that; The participants' knowledge about diabetic children care has increased after training programme for diabetic children. On the completion of this study training programme for diabetic children it was very clear that; the training programme is effective in enhancing a wide range of diabetic children and their carers' skills about insulin.

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