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Research Article

IMPACT OF   REGULAR HEALTH EDUCATION MESSAGE ON PRACTICE OF PATIENTS WITH TYPE I DIABETES TOWARD HEALTHY LIFE STYLE

Nawal NS Binhashr

Department of Medicine, King Abdul-Aziz University Hospital

A B S T R A C T

Aim: To detect benefits of health education massage on diabetes mellitus patients' practice.
Method: This was a cross sectional study conducted among type I diabetes patients.
Result: The mean age were 26.71±5.2 and 28.92±3.2 years for cases and controls respectively. Body mass index (BMI) were 26.71±1.2 kg/m² and 24.2±0.6 for diabetes and controls respectively. There was no significant difference observed between cases and controls regarding gender, age, BMI, education, HbA1c, and lipid profile. While, total cholesterol, LDL-cholesterol and triglycerides were significantly higher in patients with diabetic than healthy group. There was a significant improvement in knowledge and attitudes of cases than control. Also, There was a significant improvement in knowledge attitudes, and practice of cases over times.
Conclusion: There was a significant improvement in the practice of type I DM patients due to the health education massage. Which in turn improve the control of the disease.

INTRODUCTION

Type 1 diabetes (T1D) is "an autoimmune disease with a strong genetic component". (Attia *et al*., 2018)It is a serious and a major health burden for the individual and society. (Attia *et al*., 2018; Christie *et al*., 2014) It occurs at any age, however, it tends to develop in childhood. (Attia *et al*., 2018; Christie *et al*., 2014; Noble *et al*., 2012) The International Diabetes Federation (2015) estimated that more than half a million children have T1D, and around 86 000developed the disease worldwide in 2015.(Attia *et al*., 2018; International Diabetes Federation, 2015) The incidence rate isincreasing by around 3% every year, with a particular increase in children aged < 5 years. (Attia *et al*., 2018; Christie *et al*., 2014)

Early onset in children is linked with a rising risk of developing complications in their 30-40s, and the estimated cost of care and lost earnings has been estimated to increase from teenage years to 60 years of age. (Christie *et al*., 2014)
The T1D patients requisite to follow certain self-carepractices to achieve ideal glycemic control and prevent complications. (Attia *et al*., 2018; Christie *et al*., 2014) Self-care in diabetes has been defined as "a set of behaviors practiced by people with or at risk of diabetes for successful management of the disease on their own". (Gopichandran *et al*., 2012) Where the well-established behaviors and Lifestyle management are; involving in regular physical activity, medical nutrition therapy (MNT), self-management education and support

Corresponding author: **Nawal N S Binhashr**
Department of Medicine, King Abdul-Aziz University Hospital

(DSMES), daily foot care, psychosocial care, and compliance with treatment. (American Diabetes Association. Lifestyle Management: Standards of Medical Care in Diabetes, 2019; Attia *et al*., 2018; Christie *et al*., 2014; Marques *et al*., 2013; American Diabetes Association , 2010)

There is a need for clinic-based pragmatic, feasible, practical, convenient and effective interventions that improve bothglycaemic control and quality of life (QoL). Where, the American Diabetes Association (ADA) recommends that all people with diabetes must participate in diabetes self-management education to ease the knowledge, skills, and ability necessary for diabetes self-care. Also, diabetes self-management support is recommended to help with applying and sustaining skills and behaviours required for ongoing self-management. (American Diabetes Association. Lifestyle Management: Standards of Medical Care in Diabetes 2019)

Subjects and methods

The study included 40 patients with type 1 diabetes aged 29.8±6.3years, BMI   duration of diabetes. Forty healthy male subjects matched for age, gender and BMI were selected as controls. All patients were selected from diabetes outpatient clinic and met the following criteria: a BMI of less than 27 kg/m², HbA 1c less than 8.5%, absence of kidney failure, liver and or thyroid disease. During the study period no patient was allowed to take anydrug known to influence plasma lipid concentrations, apart from insulin. All were treated with diet and insulin. Body weight and glycaemic control were stable in all. Two patients had background retinopathy and one hadmicroalbuminuria. No patients had a history or clinical manifestations of peripheral vascular disease or stroke.

Patients were subjected to:

- A questionnaire interview covering possible items about diabetes aetiology, symptoms, complications, treatment and follow up.
- Baseline measurements :

Resting blood pressure was measured after subjects had been in a setting position for a minimum of 15 minutes using a mercury sphygmomanometer and was read three times on the right arm by the same investigator. The mean of three measurements was used for this study. Height and weight were measured with the patient in light clothes without shoes on a standard physician's scale, and body mass index (BMI) was calculated.

Metabolic parameters

Blood glucose concentrations were determined by the glucose oxidase method (Sclavo, Siena, Italy). Total cholesterol (Total-C) and triglycerides (TGs) levels were measured with enzymatic assays (Boehringer, Mannhein, Germany). HDL-C was measured after precipitation of VLDL and LDL-C with phosphotungstic acid. LDL-C was measured from the equation: LDL-C (mg/dl) = total cholesterol – [HDL-C + triglycerids/5]. (Friedwald, 1972). Serum insulin concentrations were measured by radio-immunoassay using a commercially available kits (Behring, Scopitto, Italy). HbA 1c was measured by the high performance liquid chromatography method (Bio-Rad, Muenchen, Germany) to determine TM, blood samples were collected in evacuated tubes containing 0.129 mol/L trisodium citrate. Platelet-poor plasma was harvested by centrifugation and stored at 40ºC until analysis.

Health education program

Health education session was done for diabetic patients to give them ideaabout diabetes aetiology, symptoms, diagnosis, values of follow up, treatment and management including diet control, blood glucose monitoring, insulin administration and self adjustment, etc. Health education sessions were done 4 times, each time, it took about 20-25 minutes.

Statistical analysis

Statistical analysis was done by using SPSS (Statistical Package for SocialScience). The data were paramedic by using Kolmogrov-Smirnov test. The quantitative data were presented in the form of mean and standard deviation. Student t- test was used to compare between each two groups. Paired t-test was used to compare between quantitative data before exercise, after 4 months of exercise and 8 months after cessation of exercise. Level of significance was considered at $P<0.05$.

RESULT

Table 1 Some demographic characters of the studied groups

	Group I Healthy Group N=40	Group II Type I Diabetes N =40	Test of Sig
Gender Male/female	18/22	20/20	P=0.76
Age(years) Mean ±SD range	28.92±3.2 (24-44)	26.71±5.2 (25-46)	P=0.13
BMI (kg/m²) Mean ±SD range	25.41±1.6 (22.5-26.5)	26.71±1.2 (23-27)	P=0.53
Disease (years) duration		15.3±4.2 (5-10)	

Education Read , writeand primary			
primary	-	-	
Preparatory	2	6	
Secondary and university	38	34	

Qualitative data were presented in the form of number , chi-square test was used.

Quantitative data were presented in the form of mean and standard deviation, Student t test was used.

Table (1) represents distribution of the studied patients and controls according to basic parameters. This study included 40 patients and 40 controls. The mean age for cases was 26.71±5.2 but for controls was 28.92±3.2 years. Body mass index (BMI) were 26.71±1.2 kg/m² and 24.2±0.6 for diabetes and controls respectively. Regarding gender age, BMI, and education, no significant difference was observed between cases and controls

Table 2 Dose of insulin HA1c and lipid profile of the studied groups

Data	Group I Healthy group N=40 Mean ±SD	Group II Type I Diabetes N =40 Mean ±SD	Test of sig
Insulin dose u/dl		50.3±2.9	
HA1c	6.3±1.4	8.2±2.01	0.32
Total cholesterol	199.12±12.5	201.3±11.5	0.43
LDL cholesterol	125.2±6.1	132±8.1	0.092
HDL cholesterol	61.5±3.9	59.3±3.7	0.49
Triglycerides	82.1±7.2	92.3±5.7	0.012*

Quantitative data were presented in the form of mean and standard deviation, Student t test was used.

Table (2) represents no significant difference was detected in comparing cases and controls regarding HbA1c, and lipid profile. Total cholesterol, LDL-cholesterol and triglycerides were significantly higher in patient s with diabetic than healthy group.

Table 3 Impact of health education message on practice of diabetes toward healthy life style

Data	Control Number Percentage	Base line Number Percentage	Four months Number Percentage	Eight months Number Percentage	Test of significance
Knowledge					
Cause of diabetes	2 (5)	10 (25)	34 (85)	34 (85)	P1=0.015 P2=0.015 P3<0.001
Clinical presentation	4 (10)	12 (30)	36 (90)	38 (95)	P1<0.001 P2<0.001 P3<0.001
Sequelae of diabetes	4 (16)	14 (35)	36 (90)	36 (90)	P1<0.001 P2<0.001 P3<0.001
Therapy	2 (5)	10 (25)	34 (85)	34 (85)	P1<0.001 P2<0.001 P3<0.001
Regular check up	2 (5)	10 (25)	34 (85)	36 (90)	P1<0.001 P2<0.001 P3<0.001
Attitudes					
Medical care	4 (16)	14 (35)	36 (90)	36 (90)	P1<0.001 P2<0.001 P3<0.001
Regular check up	2 (5)	10 (25)	34 (85)	34 (85)	P1<0.001 P2<0.001 P3<0.001

P1 (comparison of control versus four months)
P2 (comparison of control versus eight months)
P3 (comparison of control versus eight months)

Table (3) Impact of health education message on knowledge and attitudes of diabetes toward healthy life style. There are significant improvement in knowledge and attitudes of cases than control. There are significant improvement in knowledge and attitudes of cases over times.

The knowledge of diabetic group is significantly increase by time over 4, and eight months

Table 4 impact of health education message on practice of diabetes toward healthy life style

	Base line Number percent	Four months Number percent	Eight months Number percent	Test of significance
Diet monitoring	14 (35)	30 (75)	15(75)	P1=0.015 P2=0.015
Reduction of weight	6 (15)	34 (85)	36(90)	P1<0.001 P2<0.001
Compliance to therapy	6 (15)	34 (85)	36(90)	P1<0.001 P2<0.001
Regular check of blood glucose	8 (20)	36 (90)	36(90)	P1<0.001 P2<0.001
Regular check of blood pressure	12 (30)	34 (85)	34(85)	P1<0.001 P2<0.001
Regular check of lipid profile	10 (25)	24 (60)	26(65)	P1<0.001 P2<0.001
Regular funds examination	0 (0)	30 (75)	30(75)	P1<0.001 P2<0.001
Regular diabetic foot care	2 (10)	32 (80)	32(80)	P1<0.001 P2<0.001

Qualitative data were presented in the form of number , chi-square test was used.

Table (4) represented the practice of patients with diabetic towards disease at base line, 4 months and 8 months of health education program. A significant improvement was found in practices of patients after 4 and 8 months of health education regarding diet control (35%,75% and 75%, P<0.11); weight reduction (15%, 85% and 90%, P<0.001); adherence to medicine (20%, 90% and 90%, P<0.001); regular blood pressure check up (30%,85% and 85%, P<0.001); regular glucose check up (30%, 90% and 95%, P<0.001); regular lipid profile (25%,60% and 65%, P<0.025);regular funds examination (0%,30% and 75%, P<0.001; foot care (10%,80% and 80%, P<0.001).

DISCUSSION

Chronic non communicable diseases (NCDs) become a major predominant health problem in around the world, due to the aging of the world population and the changes in morbidity and mortalitypattern. They have a considerableshare of total disease burden attributedto the occurrence of chronic diseases among people who are 60 years old or older. (Szwarcwald *et al*., 2015;Prince *et al*., 2015)During the last three decades, the deaths by infectious diseases and infant mortality decreased significantly, while the deaths by NCDs increased, and, in 2010, they corresponded to two of every threedeaths worldwide. (Szwarcwald *et al*., 2015; Lozano *et al*., 2012)

Diabetes mellitus (DM) as a noncommunicable diseases (NCDs) becomes a major public healthproblem due to its high incidence and to the chronic nature ofthe disease and its complications. (Grillo Mde *et al*., 2013) The global prevalence of DMin adults is estimated to be 9%.(Grillo Mde *et al*.,2013 ; Danaei *et al*.,2011)In 2002, there were approximately171.2 million diabetics around the world and in 2017 there are 451 million (age 18-99 years) people with diabetes worldwide. These figures were expected to increase to 693 million) by

2045.(Cho *et al*., 2018;Ünsal-Avdal *et al*., 2014; International Diabetes Federation Diabetes Atlas,2011) In the current study, a significant difference was found between diabetic patients and the controls in the knowledge about diabetes and positive attitude towards the disease, which can be explained by the fact that patients are more interest to know all information about their disease. However, the patients knowledge in the present study was poor regarding the disease cause (25%),clinical presentation (30%) treatment (25%) and complications (30%). The knowledge of patients in the present study was significantly improved 4 and 8 months afterhealth education program (p< 0.05). Similar results were reported in Egypt study, where patients' knowledge was poor regarding the disease etiology (25%),symptoms (30%) and treatment (50%). Also, it was poor about the complications. Where, knowledge level improved after 4 months and 8 months. (Eldeek *et al*., 2003) Which showed that patient education program significantly improved their knowledge about the disease.

In the current study, there was a significant statistical improvement after health education program in the patients' practice towards healthful practices as diet control, weight reduction, commitment to medicine, regular glucose checkup, periodic blood pressure checkup, regular fundus examination, foot care and proper control of infection.

Overall, patient education is a main corner stone of diabetes management as the success of diabetes control depends largely upon adherence to approved management plan. The initial and the main step to reach control and prevention of diabetes mellitus is to encourage and improve public education and increase public awareness about the disease. Where, the careful dietary management and adherence to insulin therapy are fundamental to achieve better metabolic control in diabetes.

CONCLUSION

The current study sidelight on the benefits of health education of diabetic Patients, where their knowledge about diabetes mellitus, positive attitude towards the disease and their practice for most of the healthful practices significantly improved which in turn improve the control of the disease.

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