

Lifestyle Education and Diabetes Mellitus Type 2: A Non-Randomized Control Trial

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Abstract

Background: Diabetes mellitus (type 2) is an important health problem throughout the world. This study aimed at evaluating the effect of a designed educational program on the lifestyle of the patients suffering from type 2 diabetes mellitus.

Methods: Ninety eligible diabetic patients aged 30-60 years old were recruited and then willingly assigned to two groups of clinic group (n= 45) who received only routine medication/ education underwent their leading physician in diabetes society and intervention group (n= 45) who received routine medication/education plus 2 two- hour educational sessions regarding healthy lifestyle to control and prevent diabetes. A five- part questionnaire was used for data collection at baseline and 1- month follow up. Collected data were analyzed by SPSS software.

Results: The educational program caused a significant increase in the knowledge ($P < 0.001$), attitude ($P < 0.01$) and practice ($P < 0.01$) of intervention group towards healthy behaviors regarding nutrition, physical activity and self care.

Conclusion: It was concluded that our designed educational program could improve the lifestyle of the patients suffering from type 2 diabetes mellitus.

Keywords: Type 2 diabetes mellitus, Lifestyle, Physical activity, Health education, Health behavior

Introduction

Diabetes mellitus type 2 is an important health problem throughout the world. In 1995, about 4% of adults aged 20 yr and over were suffering from this disease (1). It has been estimated that more than 70% of diabetic patients are living in developing countries (1). Improvement of diagnostic and therapeutic procedures regarding diabetes has been led to lengthening of diabetic patient's longevity and thus its' increased complications (2). On the other hand, any tardiness in preventing or controlling this problem resulted in many complications for increasingly population who are susceptible to this disease or suffering from it as well (2). It has been argued that life style change toward regular exercise and safe foods can reduce the burden of disease. Some

researchers have shown that educational programs with regards to improving life styles could drop the incidence of diabetes to two/ thirds as many as it has been before education (3).

James Brown pattern is one of the most common criterions for educating healthy behaviors and it can be applied in different positions (4). The purpose of this study is to examine whether this kind of education could improve knowledge, attitude, practice and self care of patients who suffering from this disease.

Materials and Methods

This was a non- randomized controlled trial with a one month follow up undertaken in the Iranian Diabetes Society, Tehran, Iran from July 20 to Sep 20, 2004. Eligible participants were adult

recruited from Iranian Diabetes Society. The selection criteria were: age (between 20 and 60 yr old), being satisfied to participate in the study (intervention or clinic group), suffering from diabetes mellitus type 2, being able to read and write, having a telephone number and living in Tehran. Patients were excluded from the study if they had any chronic disease or physical/ mental disabilities. Physicians confirmed the inclusion and exclusion criteria through a complete and exact clinical assessment before the participants were enrolled in the study. To participate in the study, the procedures of the research were explained to the patients and the written consent form was sought before any part of the study procedure was administered or any medication or intervention was dispensed.

The patients (n= 90) were willingly assigned at the outset to a clinic group (n= 45) who received medication under the supervision of a leading physician and also routine education program in the diabetes society, and intervention group (n= 45) who received both routine medication/ education and an additional education program based on James Brown pattern in which educational media like short film, brochure and booklet were used. Data from both groups were collected at admission and after 1 mo treatment period. Both group received an initial physician evaluation and subsequent treatment/education as determined by physician of the diabetes society, but intervention group received one additional 2 two-hour sessions educational intervention than the clinic group. This kind of educational program was based on James Brown criteria (4) regarding healthy behaviors like safe nutrition and proper exercise and also some self care skills e.g. urine and blood sugar measurement. Accordingly this educational regime designed to assess and enhance each patient's knowledge, attitude and their practice regarding general recommendations to use safe food and increase physical activity. In addition the intervention group subjects were contacted with a call on follow up system during the study.

After 1 mo the secondary data were collected from both two groups. The study measurement was a self structured questionnaire including 5 sections regarding basic demographic data, knowledge, attitude, practice on healthy behaviors and self care skills. The validity and reliability of this questionnaire was evaluated through content validity and test- retest method, respectively.

Of the 45 patients who willingly allocated to each clinic and intervention group, 42 subjects in clinic group and 40 subjects in intervention group completed the study. The principal outcome measures were knowledge, attitude, practice and self care skills of diabetic patients regarding educated items. For categorical and continuous data comparison was made using the chi-square and t- test respectively.

Results

Table 1 shows the basic demographic characteristics of the patients. There were no statistically significant differences between two groups in terms of these baseline data ($P > 0.05$).

The mean scores of the four sections of questionnaire including knowledge, attitude, practice, and self care of the patients of two groups at the commencement and 1 mo follow up of the trial are shown in Table 2. Moreover Table 3 shows the duration that the patients of two groups were examined periodically for their blood and urine sugar measurements. Independent *t*- test showed significant differences between the two groups at 1 mo follow up ($P < 0.05$).

Discussion

The spread of risk factors of diabetes disease due to the expansion of urban and industrial lifestyle will extend the prevalence of this disease in world. In addition, in Iran the majority of population youth who are aging and these people are at risk of contracting this problem in near future. Therefore, life style behaviors changes through health education approaches should be in health priorities in order to prevent the burden of the disease.

The majority of the patients who participated in this study were women. This indicates that this problem might be more prevalent among women rather than men. On the other hand the results showed the majority of type 2 diabetic patients in present study were overweight or in the pre obese stage based .This result has been shown somewhere else (5, 6).

It is also argued that the two main risk factors of lifestyle which impact on diabetes incidence are nutrition and physical activity (7, 8). Therefore in this study we focused on educating healthy behaviors regarding these two factors and the results showed the designed and applied educational program could improve and enhance the diabetic patients' knowledge, attitude, practice and self care skills with regards to healthy nutrition and proper physical activity. In other words, this kind of educational pro-

gram based on Jams Brown criteria was able to reduce unhealthy behaviors rate in the field of unsafe nutrition and immobile life style through knowledge, attitude and practice enhancement. These results are the same as others' (9-13).

Another strong point of this study is that the patients in intervention group tested their blood and urine sugar more frequently than clinic group. It means that intervention group patients were more sensitive to care themselves than other group. Therefore it seems that this educational program could improve self care in patients suffering from diabetes. Other studies confirm these results (14, 15).

Conclusively, since this study conducted on patients who referred to diabetes society, the authors suggest that future researchers do more studies on patients who refer to different centers to which these patients refer.

Table 1: The characteristics of the intervention and control group at baseline.* *P* value < 0.05 accounts for non significant

Characteristics	Intervention (n = 40)		Clinic (n = 42)		P Value*
	Mean (SD)	No. (%)	Mean (SD)	No. (%)	
Sex					0.8
Female		28 (70)		30(71.4)	
Male		12(30)		12(68.9)	
Age (year)	47.69 (7.63)		49.27 (7.06)		0.3
BMI	27.7 (3.93)		26.6(3.09)		0.1
Marital situation					
Single		2(5)		1(2.38)	
Married		31(77.5)		31(73.81)	0.3
Divorced		4(10)		9(21.43)	
Widow/Widower		3(7.5)		1(2.38)	
Education Situation					
Primary		3(16.67)		7(7.5)	
Secondary		9(23.81)		10(22.5)	0.5
Diploma		18(33.33)		14(25)	
College/higher		10(26.19)		11(37.5)	
Occupation situation					
Employed		10(26.57)		12(37.5)	
Unemployed		4(11.90)		5(10)	0.6
Housewife		21(59.53)		25(52.5)	

Table 2: Comparison of the mean scores between the two groups at baseline and one-month follow up

Items	Baseline		P value	One month follow up		P value
	Intervention	Clinic		Intervention	Clinic	
	n=45 Mean ± S.D	n=45 Mean ± S.D		n= 40 Mean ± S.D	n=42 Mean ± S.D	
Knowledge	10.45±2.85	10.50±2.62	0.93	12.80±1.95	10.69±2.71	0.000
Attitude	54.5±5.7	53.6±6.9	0.5	58.80±4.50	55.78±6.85	0.02
Practice	86.07±11.06	86.64±12.45	0.82	94.52±11.33	86.59±14.03	0.006
Self care	6.40±2.22	6.85±2.53	0.38	6.90±2.80	8.20±2.56	0.03

* P value < 0.05 accounts for non significant

Table 3: The duration in which the patients of two groups were examined periodically for their blood and urine sugar measurements

Times	Baseline		One-month follow up	
	Intervention(n =40) n (%)	Clinic (n =42) n (%)	Intervention(n =40) n (%)	Clinic(n =42) n (%)
Daily	25(62.5)	15(35.72)	27(67.5)	15(35.72)
Weekly	6(15)	11(26.19)	7(17.5)	13(30.95)
Monthly	7(17.5)	11(26.19)	5(12.5)	11(26.19)
Yearly	2(5)	5(11.90)	1(2.5)	3(7.14)
Total	40(100)	42(100)	40(100)	42(100)
	X ² =6.1	P=0.1	X ² =0.84	P=0.03

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