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A study based on use of Complementary and Alternative Medicine among Diabetic Patients in Karachi, Pakistan

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ABSTRACT

Objective: To determine frequency and factors leading to CAM use in diabetic patient visiting tertiary care hospitals in Karachi.

Methods: A cross-sectional study was conducted at diabetic clinics of Civil Hospital and National Institute of Diabetes (NIDE, OJHA campus) from March 2015 to April 2016. The sample size of 400 adult Type II diabetic patients above 18 years of age were included in the study by purposive sampling technique after taking the informed consent. Data were collected through predesigned and pre-tested questionnaire, consisted on socio-demographic variables and use of CAM. Data were entered and analyzed by using SPSS version 21. Frequencies and percentages were calculated; regression analysis was performed to determine the factors associated with CAM use.

Results: Mean age of study participants was 51.5±14.1 S.D. There were 30.5% males and 69.5% females' participants in the study. Half (53.5%) of diabetic patients were using CAM. Forty-eight percent (48%) of the diabetic patients were using herbal medicines. The odds of using CAM was more (AOR.=1.949, 95% C.I. 1.196-3.174) in diabetic patients who had total household income more than 10,000 rupees as compared to those who had monthly income less than 10,000 rupees. Similarly, the odds of using CAM was more (AOR.=1.802, 95% C.I. 1.13-2.87) in diabetic patients who had education level less than 10 years as compared to those who had educational level more than 10 years.

Conclusion: The CAM use was high among diabetic Patients. Educational status, income and chronic kidney disease were found to be associated with CAM use.
Keywords: Diabetes Mellitus, Complementary therapy, health care, cost, health care Utilization.

INTRODUCTION

According to World Health Organization (WHO) estimate 422 million people suffered from diabetes mellitus. The prevalence of diabetes mellitus type II was reported 8.5% in adult population worldwide and this prevalence has been increased over the past three decades with faster rate in low- and middle-income countries[1]. The greatest rise in prevalence 13.7% has been reported in WHO Eastern Mediterranean Region 13.7%.[1,2] Diabetes mellitus is considered as one of the important causes of morbidity, mortality and burden on health-system of countries worldwide.[3,4]

WHO defined the term "traditional and complementary medicine." Traditional medicine is defined as the total knowledge of health-related practices and skills based on indigenous beliefs and experiences.[5] The complementary medicine is defined as the various health-related practices which are not part of country's own tradition or conventional medicine. The use of Complementary and Alternative Medicine (CAM) was found popular among patients in

both developed and developing countries.[6-9] A study based on literature review reported prevalence of CAM use among diabetic patients was 18% to 72.8% from nine countries across the world.[10] Among the classified CAM therapies, herbal medicine, nutritional supplements, spiritual healing, modified diets and relaxation techniques were identified as frequently used therapies.[11] The reasons reported for CAM use were; dissatisfied doctor-patient relationship, affordable treatment, low cost, less side effects and family pressure.[6]

The use of CAM among diabetic patients in Pakistan was not evaluated extensively so there is a dire need that research should be conducted on diabetic patient's treatment preference and selection therapies. This study analyzes the frequent of use of CAM therapies among diabetic patients, their understanding about its safety, effectiveness, preventing complication and control of disease. This study is a step for prioritizing further research and programs for diabetic patients in Karachi, Pakistan.

METHODS

A cross-sectional study was conducted from March 2015 to April 2016 on CAM use among diabetic patients attending two major diabetic clinics from Karachi Pakistan.

Ethical approval of the study was obtained from Institutional Review Board of Dow University of Health Sciences prior to the conducting of the study (IRB-592/DUHS/2015/56). Type II diabetic patients of 18 years and above of either gender were enrolled in the study by using purposive sampling after taking informed consent. The patients who were diagnosed as Type II Diabetes Mellitus according to the criteria of World Health Organization (HbA1c >7.5; fasting blood glucose >8 mmol/L) were included in this study. Whereas, patients who were critically ill and unable to communicate, children, pregnant women, lactating mothers were excluded from the study.

The sample size of 400 was calculated by using WHO calculator, proportion of CAM use was taken 40%[9] with 95% CI and 5% of margin of error with 10% non-response rate. A semi-structured pretested questionnaire was administered to the patients. The information was collected on socio-demographic variables like age, gender, education, house hold income, marital status, CAM use, duration of diabetes, and number of visit to diabetic outpatient department visit, number of visits to other CAM therapists, cost of visits and cost of CAM use. The participants were informed about the purpose of the study and informed consent was taken from each participant of the study. The privacy of data collection and confidentiality was maintained throughout the study.

The data were entered and analyzed by using software SPSS license version 21. Descriptive statistics used for socio-demographic variables and results were reported as frequencies and percentages. The odds ratio and 95% CI were computed in Univariable analysis. Logistic regression model was used to examine the possible association between dependent variable and independent variables. In multiple logistic regression model CAM use among diabetic was entered as dependent variable and independent variables all exposure variables, p –value <0.05 was considered as significant.

RESULTS

Out of 400 diabetic patients 53.5% (214) were using complementary alternative medicine. About 54% of the study participants were males and 46% were females with the mean age of 51.1±11.0 S.D. About 73.5% attained education for more than ten years, 23% had total household income less than 10,000 rupees monthly. About 72.5% had positive family history of Diabetes Mellitus, 9% were smokers and 30% were addicted to other tobacco containing harmful substances. Among CAM users 71% (152) were females, 42% (90) were obese, 63% (135) were more than 45 years of age and 81% (174) had total household income more than 10,000 rupees per month. (Table 1)

About 65% of the patients were using complementary medicine due to long waiting in the out-patient clinics of the allopathic physicians and endocrinologist, 13.5% avoid using allopathic medicine due to their long-term

use. About 12% were not using allopathic medicines due to its cost and their non-affordability.

Among CAM users 46.7% were using herbal medicines, 24.3% were using spiritual treatment, 16.4% were using Unani medicines and 8.4% were using Homeopathic medicines.

About 54% of the CAM users were not informed about the side-effects of using CAM before starting the treatment. More than 70% of the CAM users did not know about risk of kidneyfailure, liver failure and weight gain due the side effects of Complementary Alternative Medicines.

The patients who attained education for less than ten years (COR=1.651, 95% C.I. 1.053-2.582), whose household income was more than ten thousand rupees per month (O.R=1.688, 95% C.I. 1.055-2.70) and who had kidney disease (COR=1.795, 95% C.I. 1.07-3.01) had higher odds of using CAM as compare to those who had educational attainment of more than 10 years, had household income of >10,000 Rupees per month and who did not have the kidney disease respectively. No significant association was observed for CAM usage with other socio-demographic characteristics. (Table 2)

The odds of using CAM was more (AOR.=1.949, 95% C.I. 1.196-3.174) in diabetic patients who had total household income more than 10,000 rupees as compared to those who had monthly income less than 10,000 rupees. Education level less than 10 years remained significant in multivariable stage (AOR.=1.802, 95% C.I. 1.13-2.87). The attribute of having kidney disease was not statistically associated with CAM usage after adjusting the covariates. (Table 3)

Table 1: Socio-demographic Characteristics among CAM users and Non-Users (N=400)

Characteristics	Total (n= 400)	CAM Users (n=214)	CAM Non –Users (n=186)
Age in years			
< 45	136	79	57
>45	264	135	129
Gender			
Male	216	62	154
Female	184	152	32
Marital status			
Married	338	184	154
Unmarried	62	30	32
Body Mass Index (kg/m²)			
Non-obese	259	158	101
Obese	138	90	48
Educational attainment			
< 10 years of education	294	167	127
>10 years of education	106	47	59
House hold income in PKR			
>10,000 Rupees	308	174	134
<10,000 Rupees	92	40	52
Family history of diabetes			
Yes	291	158	133
No	109	56	53
Smoker			
Yes	38	21	17
No	362	193	169
Addiction to other tobacco containing substance			
Yes	120	85	35
No	280	129	151

Table 2: Univariable Analysis showing association of CAM use with socio-demographic characteristics

Characteristics	Odds Ratio	95% Confidence interval	p-value
Age in years			
<45	0.755	0.497-1.146	0.187
>45	1		
Gender			
Male	1		
Female	1.167	0.762-1.788	0.477
Marital status			
Single	1.274	0.741-2.192	0.381
Married	1		
Education			
<10 years	1.651	1.053-2.582	0.028
>10 years	1		
Family history of Diabetes			
Yes	0.889	0.572-1.382	0.602
No	1		
House hold income in PKR			
> 10000 Rupees	1.688	1.055-2.70	0.029
<10000 Rupees	1		
Body Mass Index (BMI)			
Obese	1.034	0.993-1.077	0.222
Non-obese	1		
Kidney Disease			
Yes	1.795	1.071-3.009	0.026
No	1		

DISCUSSION

Complementary alternative medicine (CAM) use was found high among diabetic patients in this study which is consistent with findings of other studies conducted in Pakistan in which use of CAM among general population was ranged from 51% to 59%.[6,8,12] A study conducted in Pakistan reported 64% CAM use among patients suffering from chronic illnesses.[13] Another study from Pakistan reported 52.8% CAM use among diabetic patients visiting tertiary care hospitals of Punjab.[14] A research study carried in India reported 63% CAM use in diabetic patients.[15] Another study conducted in Sydney reported 28% CAM use among diabetic patients.[16] The research findings of these studies showed that CAM use is popular across the globe among diabetic patients and patients suffering from other chronic illnesses. This study reported that CAM use was more in diabetic patients who had high household income as compared to those who had low house hold income. The studies conducted in other countries like Kenya and Egypt revealed that CAM use is common in both high income and low-income groups.[17,18] The objective of diabetic treatment is to achieve good glycemic control so that complications can be prevented but unfortunately it has been observed that CAM treatment alone did not achieve good glycemic control. In this study majority of patients had poor glycemic control. The patients and physicians job is to monitor blood glucose level cautiously when using any form complimentary alternative medicines and regular check on complications associated with diabetes mellitus.

The use of herbal medicine was the commonest types of CAM used by diabetic patients in this study. Similar findings have been reported by other studies conducted in Lebanon and Jordan.[19,20] This could be due to attractive publicity and marketing of herbal medicine all over the world along with the promotion that these medicines are free of side effects.

Table 3: Multivariable Analysis showing association of variables with CAM use

Characteristics	Adjusted Odds Ratio	95% Confidence Interval	p-value
Education			
<10 years	1.802	1.130-2.872	0.013
>10 years	1		
House hold income in PKR			
> 10000 Rupees	1.949	1.196-3.174	0.007
<10000 Rupees	1		
Kidney Disease			
Yes	1.688	0.997-2.856	0.051
No	1		

The risk and side effect of CAM use was not known to most of the patients in this study. They were not aware of exact mechanism of action and dosage of CAM. They did not possess adequate knowledge that how herbal medicine were purchased, cleaned, sterilized, stored and dispensed. Most of the herbal medicines did not label expiry date. The monitoring system was found unreliable and herbalists have adopted their own methods inherited by their forefathers or seniors in the field.[12] Hence the CAM users were not provided evidence based treatment.[7]

In Uni-variate analysis of this study chronic kidney disease was found to be associated with CAM use. The herbal treatment of diabetes required larger doses for very small reduction in blood glucose level and leaving burden on kidneys to excrete large doses of CAM which could lead towards chronic kidney disease, a major complication of uncontrolled diabetes mellitus and chronic renal failure. The patients did not aware of possible drug reaction associated with CAM use. This revealed that adequate knowledge was not provided to the patients by CAM therapists. Similar findings have been reported by a study conducted in Iran.[21] Studies from Malaysia and Ajman reported that majority of the CAM therapists did not monitor blood sugar levels, routine follow ups, manage emergency care, and manage hypoglycemia and hyperglycemia of diabetic patients using CAM.[22,23] The patients with serious complications rushed to the hospitals in emergencies and the health care providers in emergency have to manage mishandled and mismanaged cases. This situation leads to serious complications of diabetes due to uncontrolled blood sugar, eye diseases, foot ulcer, kidney diseases and depression. The cost of treating such emergencies increased on family and health system of the country rather than decreased cost of treatment which is believed to be associated with CAM use.

Majority of CAM users in this study had strong family history of diabetes mellitus and they were influenced by their family members' advice, ideas and beliefs for diabetes treatment. Media is a major source of creating mass awareness but in our study media came out as a very limited source of creating health awareness regarding selection of harmful methods of treatment. Similar findings have been reported from other studies.[2,3]

In this study the CAM use is underreported by the patients and which is consistent with the findings of a research study conducted in Bahrain showed patients did not report that they are using CAM to their doctors.[20] Majority of patients in our study reported that doctor did not ask about CAM use and it is consistent with the findings of another study conducted in Pakistan that doctors did not inquire about use of CAM therapy.[2] If physician knew about the CAM use of their patients, they can better counsel at right time so that complications can be prevented and diabetic patients did face any emergency

situation. In this study patients were aware about preventive measures; healthy nutritious balanced diet, regular exercise and harmful effects of smoking.

A study from Jeddah Saudi Arabia reported that patients after developing diabetic complications like kidney and eye diseases were found more interested in using CAM.[24] This could lead to uncontrolled diabetes and worst complications. Majority of patients in this study were not having adequate control on blood sugar levels. This showed that there was limited role of CAM in management and control of diabetes. In contrast to conventional therapy the patients had blind faith on CAM use and believed that there were no complications of CAM use reported by a research study from Jeddah.[25] It is considered that health care providers should spend more time in history taking and especially enquire about drug history; including CAM and any form traditional and alternative medicines because CAM use were not found beneficial in controlling blood sugar levels among diabetics. This makes patients aware and they would be able to choose better treatment options for blood sugar control and prevent serious complications of diabetes mellitus. On the basis of study findings, it is also suggested that health care authorities pay attention in provision of cost effective and affordable treatment facilities to improve quality of life in diabetic patients.

CONCLUSION

This study concluded that CAM use among diabetic patients was found high. The use of herbal medicine was found most preferred among alternate medicines. Low educational status, high income and chronic kidney disease were the factors leading to CAM use diabetic patients.

AUTHORS' CONTRIBUTION: KJ, NN substantially contributed to the conception and design of the study. MH, FN worked in the acquisition, analysis, and interpretation of data. KJ drafted the manuscript. MH revised it carefully for important intellectual content. NN gave the final approval of the manuscript.

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