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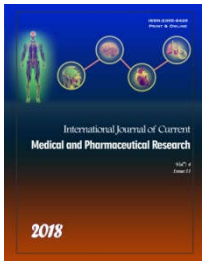

COMPLEMENTARY ALTERNATIVE MEDICINE USE AMONG PATIENTS WITH DIABETES COMING TO THE GERIATRIC CLINIC AT TERTIARY CARE HOSPITAL IN CHANDIGARH, INDIA

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ABSTRACT

Introduction: Complementary alternative medicine (CAM) is increasingly used throughout the world, especially among individuals with chronic illnesses such as Type 2 Diabetes Mellitus (T2DM). This study was done with an objective to findthe prevalence, types, and reasons for CAM use among patients with diabetes in northern India. **Methods:** The cross-sectional study was conducted over a period of six months (September 2016 to February 2017) among patients with diabetes coming to the geriatric clinic at a tertiary care hospital in Chandigarh, India. Data was collected from 444 participants on structured pre-tested questionnaire using interview technique. Data wasentered into SPSS version 20 and analysed.Chi-square test was used as a test of significance, considering the level of significance at $p<0.05$. **Results:** Mean age of the participants was 67.5 ± 5.7 years. More than half (60.4%) of participants were aware of CAM although 42.3% of participants were taking CAM. Biological type was most commonly used CAM (63.8%). All CAM users were found to be satisfied. Significant results were found according to education (p=0.03), type of family (p=0.00), status of diabetes (p=0.02) and attitude towards CAM (p=0.00) between CAM users and non- users. **Conclusion:** The prevalence of CAM use was found to be high (42.3%) among T2DM patients. CAM users had a positive attitude towards CAM in diabetes management.

INTRODUCTION

Type 2 Diabetes Mellitus (T2DM) is an important public health concern despite advancement in its management. It causes substantial morbidity, complications and mortality, thereby effects patients and their families. Mainstay management of diabetes remains insulin if not control with oral antidiabeticdrugs. Living with diabetes is a challenge as it requires considerable dedication to a life-long treatment imposed by its chronic nature[1]. In addition, many factors linked to management makes difficult to achieve control of diabetes. The factors include lifestyle changes *viz.* modifying eating habits, exercising regularly, maintaining optimal body weight, and self-monitoring of blood sugar[2]. Non-compliance with management of diabetes may adversely effects health systems in terms of compromised health benefits and serious economic consequences due to wasted time, money and uncured disease[3]. As a result of the complexities of treatment plans, the prolonged course of the disease, and the debilitation due to complications, many patients with diabetes start use of complementary and alternative medicine (CAM) therapies instead of allopathic treatment[2].Complementary alternative medicine (CAM) or Traditional medicine, refers to "health practices, approaches, knowledge, and beliefs incorporating plant, animal and mineral based medicines, spiritual therapies, manual techniques, and exercises, applied singularly or in combination to diagnose, treat and prevent illnesses or maintain well-being"[4]. The National Centre for Complementary and Alternative Medicine of the United States defines CAM as "a group of medical and health care systems, practices and products that are not presently considered to be part of conventional medicine". Complementary medicine is used along with conventional therapy, whereas Alternative medicine is used in place of conventional medicine. Complementary medicine therapies are increasingly used throughout the world, especially among individuals with chronic diseases such as T2DM[5-7]. Patients start use of CAM for various reasons including dissatisfaction with conventional treatment due to its adverse effects and the high[8-11]. Other reasons include patients' belief to have control over their disease, as well as the perceived compatibility of CAM therapies with patients' values[8,10-13].

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The prevalence of CAM use among patients with diabetes has a wide range (17.0%-72.8%)[2]. Studies reported that common CAM therapies pursued by patients with diabetes are herbal remedies, spirituality, and exercise. However, despite the growing popularity of CAM use, there is still insufficient evidence to draw conclusions about the efficiency of CAM therapies, including herbs and supplements for prevention and management of diabetes[14]. Many reviews have found evidence on the effective use of extracts of plants in the treatment of diabetes[15,16] few studies reported significant side effects of CAM use in diabetes management[17]. The present study was conducted with an objective to find the prevalence, types, and reasons for CAM use among patients with diabetes coming to the geriatric clinic in a tertiary care hospital in northern India.

MATERIAL AND METHODS

Study area

Chandigarh is a city and a Union Territory in the northern part of India. It also serves as the capital of the states of Punjab and Haryana. The present study was conducted in Geriatric Clinic run by Department of Community Medicine, Government Medical College & Hospital, Chandigarh.

Study design, study period and sampling technique

The present cross-sectional study among geriatric patients (age 60 years and above) with diabetes was conducted over a period of six months (September 2016 to February 2017). All the patients who had been diagnosed with T2DM for at least one year were included in the study. The patients excluded from the study include those who were not willing to participate because of time constraint or referred to some other out-patient departments and those who were very sick.

Sample size and data collection

Sample size was calculated as minimum 271 participants by assuming the prevalence of CAM use as 17.0%, absolute precision as 5%, confidence level as 95% and non-response rate as 20%. Four hundred forty-four participants were found to be eligible during study period.

The permission for study was taken from the competent authority. Informed consent was taken from participants prior to data collection and assuring confidentiality of data. A face to face interview was conducted by using a structured pre-tested questionnaire comprising of three sections: socio-demographic, diabetes types and characteristics, and modes of CAM use along with their attitude and belief regarding CAM use.

Statistical analysis

Data was entered and analysed in SPSS version 20. Discrete data was analyzed using frequency and percentages. Chi-square test was used as test of significance, considering the level of significance at $p<0.05$.

RESULTS

Table 1 shows the socio-demographic profile of patients. Three-fourth of the participants (74.5%) were in agegroup of 60-70 years with mean age 67.5 ±5.7 years. Females (52.5%) outnumbered males (47.5%). One-fourth of the participants were illiterate (27.3%).Among literate participants, 24.1% were graduate and above followed by 20.0% educated up to high school. Nine out of ten participants (91.2%) were unemployed including 43.9% retired and 41.0% homemakers. Majority of the participants (41.0%) had income >15000 per month. Sixty-one participants (13.7%) were either not aware or not willing to tell their income. Majority of participants were married (84.0%), and rest were single either as widow(er) or unmarried. Majority of participants were residing in Chandigarh (48.4%) followed by Punjab (29.5%) and Haryana (16.2%). Seven out of ten participants were belonging to urban (71.4%) area.

More than half (68.9%) of participants had their diabetes under control. Mean duration of diabetes was 12.8 ±6.1years. Most common co-morbidity was found to be hypertension (61.5%) followed by coronary artery disease (5.4%), osteoarthritis (2.3%), and asthma (1.4%). Most common complication found among participants was neuropathy (13.5%) followed by retinopathy (4.7%), nephropathy (1.8%) and diabetic foot (1.4%).

Table 1 Socio-demographic characteristics of participants (N=444)

Variables	Number (%)
Age-group (in years)	
60-70	331 (74.5)
70-80	103 (23.2)
80 & above	10 (02.3)
Gender	
Male	211 (47.5)
Female	233 (52.5)
Education	
Illiterate	121 (27.3)
Literate	323 (72.7)
Occupation	
Employed	39 (08.8)
Unemployed	405 (91.2)
Income	
Don't know/ not willing to divulge	61 (13.7)
<5000	60 (13.5)
6000-10000	96 (21.6)
11000-15000	45 (10.1)
>15000	182 (41.0)
Marital Status	
Married	373 (84.0)
Unmarried/ Widow/ Widower	71 (16.0)
Type of family	
Joint	231 (52.0)
Nuclear	213 (48.0)
Area of residence	
Rural	127 (28.6)
Urban	317 (71.4)

It was observed that more than half (60.4%) were aware of CAM although42.3% of participants were taking CAM. Biological type was most commonly used CAM by participants (120/188, 63.8%) including bittergourd (Momordica charantia) (44.7%) followed by *methi* (Trigonellafoenum, fenugreek) and *jamun* (Syzygiumcumini) (5.8% and 5.3% respectively). More than half of the participants (53.2%) were doing exercise and walk. One of the participants (19.1%) were also taking alternative medicine (ayurvedic/ acupuncture) and 12.2% participants were doing yoga. None of the participants was using energy therapies (massage bed/Reiki). Among CAM users, all were satisfied with it. Majority (77.1%) participants thought CAM to be effective and three-fourths (74.5%) participants believed that it can control diabetes in complementary to allopathic therapy. Few participants (14.9%) were dissatisfied with allopathy (Table 2). Most participants learned about CAM primarily from family members (45.7%) followed by health

professionals (39.4%), friends (27.6%) and media (17.0%). Majority of participants (61.2%) were taking CAM daily.

Table 2 CAM related characteristics among CAM users (N=188)

Characteristics	Number (%)
Type of CAM	
Biological	120 (63.8)
Alternative Medicine	36 (19.1)
Exercise/ Walk	100 (53.2)
Yoga	23 (12.2)
Attitude, belief and perceptions	
CAM is effective	145 (77.1)
CAM can control Diabetes	140 (74.5)
CAM is easily available	152 (80.8)
Dissatisfied with allopathy	28 (14.9)
CAM has few side-effects	61 (32.4)

Table 3 & Table 4 summarize the association of CAM use with socio-demographic characteristics and diabetes relatedcharacteristic, respectively. Significant results were found according to education (p=0.03),type of family (p=0.00), status of DM (p=0.02)and attitude towards CAM (p=0.00) between CAM users and non- users.

Table 3 Association of sociodemographic characteristics and CAM use

Characteristics	CAM use N= 188 (%)	No CAM use N=256 (%)	Chi Square; p
Age group (in years)			
60-70	136 (72.3)	195 (76.2)	1.99; 0.37
70-80	49 (26.1)	54 (21.1)	
80 & above	03 (01.6)	07 (02.7)	
Gender			
Male	87 (46.3)	124 (48.4)	0.20; 0.65
Female	101 (53.7)	132 (51.6)	
Education			
Illiterate	41 (21.8)	80 (31.2)	4.87; 0.03*
Literate	147 (78.2)	176 (68.8)	
Occupation			
Employed	12 (06.4)	27 (10.5)	2.35; 0.13
Unemployed	176 (93.6)	229 (89.5)	
Marital Status			
Married	159 (84.6)	214 (83.6)	0.08; 0.78
Unmarried/widow/widower	29 (15.4)	42 (16.4)	
Type of family			
Joint	122 (64.9)	109 (42.6)	21.6; 0.00*
Nuclear	66 (35.1)	147 (57.4)	
City of residence			
Chandigarh	95 (50.5)	120 (46.9)	0.58; 0.45
Others	93 (49.5)	136 (53.1)	
Area of residence			
Urban	137 (72.9)	180 (70.3)	0.35; 0.55
Rural	51 (27.1)	76 (29.7)	

*Significant

Table 4 Association of Diabetes related characteristics and CAM use

Characteristics	CAM use N= 188 (%)	No CAM use N=256 (%)	Chi Square; p
Status of Diabetes			
Controlled	118 (62.8)	188 (73.4)	5.76; 0.02*
Uncontrolled	70 (37.2)	68 (26.6)	
CAM is effective			
Yes	145 (77.1)	26 (10.2)	205.3; 0.00*
No	43 (22.9)	230 (89.8)	
Dissatisfied with allopathy			
Yes	28 (14.9)	24 (09.4)	3.19; 0.07
No	160 (85.1)	232 (90.6)	
Comorbidities			
Present	144 (76.6)	186 (72.7)	0.88; 0.35
Absent	44 (23.4)	70 (27.3)	
Complications			
Present	42 (22.3)	59 (23.0)	0.03; 0.86
Absent	146 (77.7)	197 (77.0)	

*Significant

DISCUSSION

The present cross-sectional study was done among patients with diabetes coming to the geriatric clinic at tertiary care hospital in Chandigarh, India. Majority (74.5%) of the participants were in age-group of 60-70 years with mean age as67.5 ± 5.7 years, and females (52.5%) outnumbered males. Similarly, Kindi *et al.* in Oman[18]on study of CAM use among adults with diabetes found that more than half of the patients were in the agegroup of 46 to 65 years (56.0%) and were women (58.0%).Naja *et al.* on study of CAM use among diabetic patients in Lebanon[19]found that mean age of participants was 60.3 ± 11.9 years. Ching *et al.* in Malaysia[20]on study of CAM use among diabetic patients found predominantly female respondents (60.4%) with a mean age of 55.1 ± 10.0 years. We found that maximum participants were illiterate (27.3%),followed by 24.1% were graduate and above and 20.0% were educated up to high school whereas Naja *et al.*[19]found that participants were from all levels of education ranging from illiterate (11.8%) to university level (26.0%).

In present study mean duration of diabetes was found to be 12.8 ±6.1years. While Kindi *et al.*[18]and Ching *et al.*[20]found the mean duration of diabetes as 8.48 ± 6.5 years and 6.5 ± 5.7 years, respectively. It could be attributed to relatively higher age group in present study as it was done among geriatric patients. More than half (68.9%) of participants had their diabetes under control in the present study while on contrary to our findings Kindi *et al.*[18] found that 75.0% of the patients had uncontrolled blood glucose levels. Most common complication reported by participants in the present study was neuropathy (13.5%) followed by retinopathy (4.7%), nephropathy (1.8%) and diabetic foot (1.4%). Kindi *et al.*[18] found that nearly a third of the patients (38%) reported one or more complications including retinopathy (14.0%), ischaemic heart diseases (12.0%), nephropathy (12.0%), neuropathy (8.0%), and transient ischaemic attacks and strokes (3.0%). Co-morbidities observed in present study include hypertension (61.5%) followed by coronary artery disease (5.4%), osteoarthritis (2.3%), and asthma (1.4%). Kindi *et al.*[18] found co-morbidities as hypertension (52.0%), dyslipidaemia (12.0%), gastrointestinal diseases (10.0%), joint diseases (9.0%) and mood disorders (30.0%).

The prevalence of CAM usage among T2DM patients in present study was found to be high (42.3%). Similar findings were observed by studies conducted in Turkey[11] (41.0%) and Thailand[21] (47.0%). The prevalence was found to be much higher in previous studies in India[22] (67.7%), Mexico[23] (62%), Korea[13] (65%) and United States[24] (72.8%) whereas lower prevalence was found in studies conducted in United Kingdom[25] (17%) and Australia[26] (23.6%). In earlier studies[27,28] the reasons found for CAM use by patients were positive views about CAM, its organic nature with no side effects and its easy availability.

In present study although knowledge regarding CAM was found to be high (60.5%), practice of using CAM was observed in four out of ten participants (42.7%). Biological type (63.8%) was most commonly consumed by participants including bittergourd (Momordica charantia) (44.7%) followed by *methi* (Trigonellafoenum, fenugreek) and *jamun* (Syzygiumcumini) (5.8% and 5.3% respectively). Kindi *et al.*[18] found that the main types of CAM used were herbal remedies (79.0%) and/or food supplements (11.0%). Most herbal remedies were in mixed/compounded forms and more than

half of the patients (58.0%) had used several types of herbal remedies*viz.* "Harmel" (Rhazyastricta) (10.0%), fenugreek (Trigonellafoenum, Arabic "helba") (8.0%) and black seeds (Nigella sativa) (6.0%). Naja *et al.*[19]found that the most common type of CAM used among study participants were folk food and herbal remedies (81.0%) followed by natural health products (28.0%) and spiritual healing (11.8%). In presentstudy, more than half of participants (53.2%) were doing physical activity, 19.1% were taking alternative medicine like ayurvedic/ acupuncture and 12.2% participants were doing yoga as CAM therapy.

In the present study, majority of participants learned about CAM from family members (45.7%) followed by health professionals (39.4%), friends (27.6%) and media (17.0%). While Naja *et al.*[19] found that majority of CAM users (66.1%) mentioned their choice of CAM therapy was influenced by their friends while only 7.1% were guided by health practitioners.

In the present study, most of the CAM users believed that CAM is effective (77.1%) and it can control diabetes (74.5%) and it has fewer side effects (32.4%) while Ching *et al.*[20] in Malaysia found respondents believed that CAM can help them achieve better control in diabetes (58.0%). Naja *et al.*[19] found that the most commonly cited reasons for CAM use were trying for the sake of experimentation and believing in the advantages of CAM practices (63.8% and 41.7% respectively). In the present study it was found that all CAM users were satisfied with it. Naja *et al.*[19] found that 35.4%of CAM users did not find it useful and 10.2% reported experiencing side effects due to CAM. Despite the positive beliefsand attitude towards CAM by CAM users, the proportion of participants with controlled DM was found to be significantly higher among non-CAM users (73.4%) than CAM users (62.8%) (p=0.02). It could be the reason that non-CAM users were satisfied with their allopathic treatment whereas participants with uncontrolled DM started using CAM for better control of their DM. However, due to the cross-sectional nature of presentstudy, this temporal association could not be established.

The study has several limitations. The real percentage of CAM use in the treatment of diabetes might be found to be different than that reported if studywas done at the community level. This is particularly important as patients in the community may be using clinical services less frequently and the way they use CAM may be different. In addition, this study did not investigate the objective effectiveness of CAM on diabetes, such as finding that patients' uncontrolled diabetes with conventional therapy became controlled when CAM was used. Nevertheless, findings of the present study may be helpful in management of diabetes.

CONCLUSION

This study showed that the prevalence of CAM use was high (42.3%) among patients with diabetes. Biological type was most commonly used CAM.CAM users had a positive attitude towards the role of CAM in diabetes management.

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