USE OF COMPLEMENTARY AND ALTERNATIVE MEDICINE IN TYPE-2 DIABETICS

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ABSTRACT:

Objective: To determine the prevalence, types, and correlates of Complementary and Alternative Medicine (CAM) among patients with type-2 diabetes mellitus (Type-2 DM)

Methodology: This descriptive cross-sectional study was performed in the department of Endocrinology, Medical Teaching Institute Lady Reading Hospital (MTI-LRH) and Department of Medicine Hayatabad Medical Complex Peshawar, Pakistan, from January 2021 to September 2021. A total of 376 type-2 DM patients who met inclusion criteria were enrolled in the study. Data were collected after informed consent through a pre-piloted structured questionnaire along with the physical examination and laboratory tests wherever necessary; data was analyzed through SPSS version 23.

RESULTS: Out of 376 patients, male patients were 257(68.35%), and 119 were female (31.65%). Patients with Type-2 DM having a duration of illness of more than ten years were 38%, with 79.5% having HBA_{1C} of more than 7%. 51.3% of patients revealed CAM usage & 69.95% of them had other comorbidities like Hypertension, Obesity, IHD etc., and diabetes. Herbal medicine (24.2%) followed by spiritual healing (22.1%) were the most common types of CAM practiced, and dietary supplements were used by 14.9% & 11.4%, respectively. Female gender, associated comorbidities, diabetic complications& poor glycemic control (HBA1C > 7%) were the strongest predictors of CAM usage. Diabetic neuropathy (66.5%) & DFU (43.6%) were the most common diabetic complication in the studied population.

CONCLUSION: Complementary and Alternative Medicine usage is growing in our diabetic patients, with herbal medication & spiritual healing being the most common modalities. Unfortunately, complementary and Alternative Medicine practices are more common in those with poor glycemic control & high rate of diabetic complications, which is quite alarming and needs further research on CAM to allow for proper management & ensure the safety of patients.

KEYWORDS: Complementary and Alternative medicine, Diabetes Mellitus, Ischemic Heart Disease (IHD), Spiritual Healing.

INTRODUCTION

The world is witnessing a rise in the toll of Type-2 DM globally. Despite recent advances in care and management, Type-2 DM remains a significant public health concern, causing substantial morbidity, mortality, and long-term complications. (1)

The efficacy of conventional therapy for T2DM is challenging because it depends on compliance with the therapeutic instructions, access to pharmaceutical drugs, regular supervision of blood glucose levels, and counselling of the patient and their access to the services of the health care system. (2) Not all patients benefitted from conventional anti-diabetic therapy, and some patients of Type-2 DM were supplemented with complementary alternative medicines (CAM) in addition to conventional medicines. (3)

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".(4) Complementary and Alternative Medicine incorporates herbal remedies and other forms of therapy like

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acupuncture, faith healing, massage therapy, hypnosis and music therapy. (5)

There is an emerging trend worldwide for patients to use complementary and alternative medications (CAM), which has gained academic, industrial, and economic interest. (6) Research reports that the use of CAM has become increasingly popular in European countries, such that more than 98% of European citizens were involved in the use of CAM. (7) In Africa, CAM usage is 80%, and in China, all therapeutic health services incorporate 40% of CAM. (8)
A survey carried out among Pakistani migrants in England revealed that 21 out of 37 surveyed people used some form of CAM for diabetes mellitus. One of the knowledge attitudes and practice-based studies done in a tertiary care hospital in Karachi suggested a 57.8% prevalence of CAM usage in Pakistan. (9)
Several comprehensive reviews have addressed the efficacy of specific CAM therapies in managing T2DM; many commonly used treatments remain undiscovered or proven. (10) Finally, some of these CAM may worsen glycemic control or generate further complications such as toxicities for patients with T2DM.(11)
Despite the universal usage of CAM, there remains a gap regarding scientific evidence associated with CAM and its knowledge among health care providers. (12) The current study aims to find the prevalence, types and correlates of CAM use among T2DM patients. The study results will contribute to scientific evidence that would help the health Care Professionals in decision-making at the institutional and individual level regarding CAM use by patients with T2DM in our setup and provide an opportunity for future investigations on the effectiveness of these modalities in the management of diabetes.

METHODOLOGY

This descriptive cross-sectional study was performed in the department of Endocrinology, Medical Teaching Institute Lady Reading Hospital (MTI-LRH) and Department of Medicine Hayatabad Medical Complex Peshawar, Pakistan, from January 2021 to September 2021. The study's target population were all Type-2 DM patients, male and female, older than 18 years. However, those who could not give consent due to physical or psychiatric illnesses were excluded from the study. After approval from the institutional ethical review board, participants coming to the diabetic clinic for follow-up were enrolled in the study after taking informed consent. All the participants were briefed about the research's objectives, purpose, and ethical considerations before taking informed consent.
Nonprobability consecutive sampling was used for the recruitment of participants. A pre-piloted structured questionnaire containing participant demographic information, duration of Type-2 DM, different types of CAM and the reason for CAM usage was used for data collection.

All the data was entered into SPSS version-23. Qualitative variables were presented with frequency & percentage; the main outcome variable in this study was CAM usage. Logistic regression was applied to see the associates for CAM usage. The odd ratio was calculated for respective variables with a 95% confidence interval. A Chi-square test was applied to see the association between CAM use & the respective variables. p-value < 0.05 was taken as significant.

RESULTS

A total of 376 patients were enrolled in the study, of which male patients were 257(68.35%) and 119 were female (31.65%). More than half of the participants (54.8%) were in the age group of 40-59 years, a majority (89.4%) were married, 39.4% were from urban areas, and 34.3% were from the rural area. Most of the study population was illiterate (62.2%), whereas only 18 % of participants had bachelor's & above qualifications. The duration of diabetes was more than ten years in 38% of cases, while 29% had less than five years of diabetes. A majority (79.5%) had $HBA_{1C;}$ more than 7% and 48% were using only oral anti-diabetic medications for glycemic control along with CAM. Associated comorbidities (hypertension, hyperlipidemia, ischemic heart disease, Obesity etc. were seen in 64.6%, with hypertension (39.1%) the most common, followed by Obesity 28.5%. More than 2/3rd of the patients had diabetic complications, with the most common being neuropathy (66.5%), followed by diabetic foot ulcer (43.6%), retinopathy (34.6%), nephropathy & ischemic heart disease (15.7%) (Table-1)

Table-1: Characteristics of Patient

51.3% of participants used CAM, the most used modality being herbal medicine (24.2%), followed by spiritual healers (22.1%). None of the participants used acupuncture & yoga. The most common reason behind CAM usage was the belief that modern treatment is not effective (23.14%), CAM is free from adverse effects (18.6%), low cost (14.36%), CAM is more user-friendly (12.23%) & easy availability (11.97%) (Table-2)

	Frequency	Per cent
Age		
<40	48	12.8%
40-59	206	54.8%
>60	122	32.4%
Gender		
Male	119	31.6%
Female	257	68.4%
Marital Status		
Married	336	89.4%
Unmarried	40	10.6%
Residence		
Urban	148	39.4%
Rural	129	34.3%
Peri-urban	99	26.3%
Education		
Illiterate	234	62.2%
Primary, Secondary and High	124	33%
Bachelor and above	18	4.8%
Socioeconomic Status		
Lower	130	34.6%
Middle	201	53.5%
Higher	45	12.0%
Duration of Diabetes		
<5 Years	109	29%
5-10 Years	124	33%
>10 Years	143	38%
Glycemic Control		
<7%-HbA1C	77	20.5%
>7%-HbA1C	299	79.5%
Medications for glycemic control		
OADs	184	48.9%
Insulin	50	13.3%
Both	142	37.8%
Comorbidities		
Present	243	64.6%
Absent	133	35.4%
Hypertension	147	39.1%
Hyperlipidemia	39	10.4%
IHD	54	14.4%
Obesity	107	28.5%
Complications of Diabetes Mellitus		
Neuropathy	250	66.5%
Nephropathy	59	15.7%
Retinopathy	130	34.6%
Diabetic Foot Ulcer	164	43.6%
CVD	59	15.7%

Logistic analysis was done to find the associates of CAM. (Table-4)

Among demographic characteristics, female gender (p-value 0.026), illiteracy (p-value 0.042, OR 3.73) & diabetes of more than ten years duration were strongly associated with CAM usage. CAM usage was seen more commonly in the middle age group (40-59 years) but statistically not significant, with a p-

value of 0.08. Poor glycemic status with HBA1C of more than 7 % was also associated with CAM usage (p-value of 0.001).

Although most of the studied population used only oral anti-diabetic medications, CAM usage was more common in those using both Insulin & oral medications (45.08%). Comorbidities were common in CAM users (69.95%, p-value 0.027, OR 1.61) as compared to non-CAM users (59.02%). Diabetic complications were seen more commonly in CAM users than non-users; for example neuropathy,y was seen in 71.5% of CAM users & 61.2% of non-users.

Table-2: Use of complementary and alternative medicine in diabetics

	Frequency	Per cent
Use of CAM		
Yes	193	51.3%
No	183	48.7%
Types of CAM		
Spiritual Healers	83	22.1%
Dietary Supplements	56	14.9%
Herbal Medicine	91	24.2%
Homoeopathy	43	11.4%
Reasons for using CAM		
Low cost	54	14.36%
Modern treatment is not effective	**87**	23.14%
Too toxic	4.5	1.20%
CAM is more user friendly	46	12.23%
CAM free from adverse effects	70	18.62%
Easy availability	45	11.97%

Table-3: Use of CAM about reasons for using CAM

		Use of CAM				p-value
		Yes (n=193)		No (n=183)		
Low Cost	Yes	52	26.9%	0	0%	**<0.001**
	No	141	73.1%	183	100%	
Modern treatment is not effective	Yes	85	44.0%	2	1%	**<0.001**
	No	108	56.0%	181	99%	
Too Toxic	Yes	17	8.8%	0	0%	**<0.001**
	No	176	91.2%	183	100%	
CAM user friendly	Yes	46	23.8%	0	0%	**<0.001**
	No	147	76.2%	183	100%	
Free of Side Effects	Yes	70	36.3%	0	0%	**<0.001**
	No	123	63.7%	183	100%	
CAM easily available	Yes	41	21.2%	4	2%	**<0.001**
	No	152	78.8%	179	98%	

Table-4: Association of patients' Characteristics with the usage of complementary alternate medicines

	Use of CAM				p-value	OR	CI (95%)
	Yes (n=193)		No (n=183)				
Age							
<40	22	11.40%	26	14.21%	0.994	1.003	0.51-1.96
40-59	115	59.59%		49.73%	0.083	0.671	0.42-1.05
>60	56	29.02%	9166	36.07%	Ref	-	-
Gender							
Male	51	26.4%	68	37.16%	0.026*	0.607	0.392-0.942
Female	142	73.6%	115	62.84%			
Marital Status							

Married	181	93.78%	155	84.70%	0.006*	2.72	1.34-5.53
Unmarried	12	6.22%	28	15.30%			
Residence							
Urban	63	32.64%	85	46.45%	0.284	1.322	0.79-2.20
Rural	81	41.97%	48	26.23%	0.045*	0.581	0.34-0.98
Peri-urban	49	25.39%	50	27.32%	Ref	-	-
Education							
Illiterate	134	69.4%	100	54.6%	0.042*	3.73	1.05-13.23
Prim-Sec-High School	44	22.8%	80	43.7%	0.001*	9.09	2.49-33.12
Bachelor and above	15	7.8%	3	1.6%	Ref	-	-
Socioeconomic Status							
Lowe	68	35.23%	62	33.88%	0.707	1.140	0.57-2.25
Middle	100	51.81%	101	55.19%	0.482	1.262	0.65-2.41
Higher	25	12.95%	20	10.93%	Ref	-	-
Duration of Diabetes							
<5 Years	50	25.91%	59	32.24%	0.019*	1.83	1.10-3.03
5-10 Years	56	29.02%	68	37.16%	0.011*	1.88	1.15-3.07
>10 Years	87	45.08%	56	30.60%	Ref	-	-
Glycemic Control							
<7%-HbA1C	24	12.44%	53	28.96%	<0.001*	0.348	0.20-0.59
>7%-HbA1C	169	87.56%	130	71.04%			
Medications for glycemic control							
OADs	79	40.93%	105	57.38%	0.001*	2.10	1.34-3.28
Insulin	27	13.99%	23	12.57%	0.369	1.34	0.70-2.58
Both	87	45.08%	55	30.05%	Ref	-	-
Comorbidities							
Present	135	69.95%	108	59.02%	0.027*	1.61	1.05-2.47
Absent	58	30.05%	75	40.98%			
Neuropathy							
Yes	138	71.5%	112	61.2%	0.034*	1.59	1.03-2.44
No	55	28.5%	71	38.8%			
Diabetic Foot Ulcer							
Yes	96	49.7%	68	37.2%	0.014*	1.67	1.10-2.52
No	97	50.3%	115	62.8%			
Retinopathy							
Yes	63	32.6%	67	36.6%	0.419	0.839	0.54-1.28
No	130	67.4%	116	63.4%			
Nephropathy							
Yes	33	17.1%	26	14.2%	0.442	1.24	0.71-2.17
No	160	82.9%	157	85.8%			

Discussion

Our analysis suggests that the magnitude of CAM usage in T2DM in our society is not different from the rest of the world. CAM usage varies worldwide, with a prevalence of 85% in Iran, 39% in Kerala, India and 73% in the United Arab Emirates. (13)(14)(15) One qualitative survey in Pakistan showed almost similar prevalence of 53% & 57.8%, respectively. (16) (9)

Herbal medicine & spiritual healing are the most practiced CAM in our part of the world. Similar results were confirmed by Kamran et al. in a Karachi survey. (9) Reasons being easy availability of herbal medicine & solid religious beliefs. Interestingly these herbal medications were used alongside conventional medical treatment, which raises concern for possible drug interactions and related toxicities. A similar trend was seen in studies done in Sharjah and a survey of Hispanic immigrants in the USA. (15)(17) None of the participants used acupuncture & cupping, contrary to some international surveys. (18) The female gender & middle age group were more prone to indulge in CAM practices comparable to a survey of

Thai diabetics .(19) Worldwide, CAM usage is seen in the wealthy & educated class. Still, our study reveals an increased prevalence among low socioeconomic & illiterate populations because most of the CAM modalities in our setup are freely available at a low cost.

Another exciting but alarming finding of the study was that there were more diabetic complications in CAM users compared to non-users, the most common being diabetic neuropathy followed by a diabetic foot ulcer. This may provide indirect evidence regarding the effectiveness of these CAM modalities. Similarly, associated comorbidities like Obesity and IHD Hypertension were more common in CAM users, which may be another factor compelling them to use CAM. In addition, poor glycemic control & prolong duration of diabetes were strong predictors of CAM use, a fact confirmed in other international surveys. (20) Finally, people with diabetes were using CAM because of the belief that modern treatment is ineffective. In contrast, CAM is more user-friendly & free of side effects, a fact seen in other local surveys. (9)

Few studies have been done in the Khyber Pakhtunkhwa province of Pakistan regarding CAM practices. Our study has the edge because the sample size is much bigger than all the local surveys. Moreover, it was done in a unit specifically dedicated to diabetes management, so the chances of any bias or errors regarding laboratory evidence and diagnosis of diabetic complications are less. On the other hand, the study's results in a tertiary care hospital might not apply to the population at large. Yet, it gives an insight into the burden of CAM & its familiar associates, which might be the tip of an iceberg.

CAM has become a growing industry but lacks scientific proof regarding the safety, efficacy & possible potential toxicities of these various CAM practices. They might make the management of diabetes more complex, which is already a significant health challenge even in developed countries. We need to adopt a research-oriented approach to these practices to bridge the gap between physician & patient perception.

Conclusion

More than half of our T2DM population uses CAM and conventional medical treatment. Herbal medicine & spiritual healing are the most common CAM practiced in our setup. Poor glycemic control, illiteracy, diabetic complications & associated comorbidities are the most substantial associates of CAM usage. Whether these associates are the cause of CAM usage or they are the effects needs further workup. A physician needs to develop insight into & a research-oriented approach towards CAM to provide the best pharmaceutical care to the diabetic population & ensure safe medical practice.

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