

Patient Perceptions and Utilization of Complementary and Alternative Medicine in Type 2 Diabetes Mellitus: A Knowledge, Attitude, And Practice Study

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ABSTRACT

Background: With the growing global burden of diabetes, complementary and alternative medicine (CAM) is increasingly used as an adjunct therapy, highlighting the need to assess patient's knowledge, attitude, and practice (KAP) regarding its use.

Methodology: A questionnaire-based, cross-sectional study of defined duration was conducted among patients with type 2 diabetes mellitus attending the Department of Endocrinology. A structured questionnaire was used to assess patient's knowledge, attitude, and practice (KAP) regarding CAM and responses were recorded in the study form.

Result: The majority of participants (92%) were aware of the term Complementary and Alternative Medicine (CAM). Only 29.9% of participants informed their doctors about CAM use, with the main reason for disclosure being to ensure proper relief (25.9%). The most commonly used type of CAM was biologically based therapies (40.8%), followed by mind-body interventions (37.4%). Among biological-based therapies, methi dana (25.8%), neem leaves juice (14.3%) were the most commonly used, followed by jamun (9.2%) and karela (7.5%).

Conclusion: Understanding patients' CAM-related knowledge, attitude, and practice can help clinicians thoughtfully integrate these therapies into routine diabetes care, supporting safer and more patient-centered management in the future.

Keywords: Complementary and Alternative Medicine; Type 2 Diabetes Mellitus; Knowledge; Attitude; Practice; CAM Utilization,

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INTRODUCTION

Diabetes mellitus is a group of chronic, heterogeneous metabolic disorders characterized by persistent hyperglycaemia due to defects in insulin secretion, insulin action, or both, leading to disturbances in carbohydrate, fat, and protein metabolism and an increased risk of microvascular and macrovascular complications.[1] Type 2 diabetes mellitus (T2DM) is the most prevalent form of diabetes, accounting for the vast majority of global diabetes cases. Recent estimates from the International Diabetes Federation and Global Burden of Disease analyses indicate that over 90% of people with diabetes have type 2 diabetes.[2] The chronic nature of diabetes mellitus, coupled with the need for sustained and comprehensive disease management, has contributed to the growing utilization of complementary and alternative medicine (CAM) among patients.

Complementary and Alternative Medicine (CAM) encompasses a broad spectrum of medical and health care

systems, practices, and products that are not presently regarded as part of conventional medicine. The term "complementary" refers to therapies used alongside conventional treatments, while "alternative" denotes therapies used instead of conventional ones. CAM includes diverse modalities such as biologically based practices (herbal remedies, dietary supplements), mind-body medicine (meditation, yoga), manipulation and body-based practices (massage, acupuncture), energy medicine, and whole medical systems (traditional Chinese medicine, Ayurveda).[3]

Several herbal preparations (e.g., bitter melon, fenugreek, cinnamon), mind-body practices like yoga and Tai Chi, and whole-system approaches like acupuncture and acupressure have shown potential beneficial effects on glycaemic control and diabetes-related complications.[4,5] The widespread and often unregulated use of complementary and alternative medicine (CAM), coupled with potential herb-drug interactions, variability in

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product quality, and inadequate communication with healthcare providers, raises significant concerns regarding its safety and effectiveness in diabetes management.

KAP studies help to quantify how much patients know about CAM, how they feel about its benefits and risks, and how they actually use these modalities alongside or instead of conventional treatment. Understanding KAP patterns can guide clinicians and policymakers in designing patient-centred education, integrating evidence-based CAM where appropriate, and addressing misconceptions and unsafe practices in diabetes management. The present study was done to evaluate the use of complementary and alternative medicine (CAM) among type II diabetes patients in Indian population.

MATERIAL AND METHODS

Type of Study

A questionnaire based cross sectional study was conducted from July 2022 to February 2023 in a tertiary care teaching hospital.

Study Participants

All patients of type 2 diabetes mellitus attending department of endocrinology during the study period were interviewed. All patients of type 2 diabetes mellitus ≥ 18 years of age were included. Patient with type 2 Diabetes mellitus with complications and those who refuse to participate in the study were excluded. Among the 193 CAM users enrolled in the study, 19 patients were lost to follow-up, while 174 patients completed the follow-up period and were included in the final study analysis.

Sample size

This was a duration-based study. All eligible patients with type 2 diabetes mellitus using complementary and alternative medicine (CAM) during the study period were interviewed and included.

Ethical Consideration

The study was conducted after approval from Institutional Human Ethics Committee 26th March 2022. A written informed consent for participation in the study was obtained from all the participants before commencement of the study. The participants were informed about purpose, procedure and their rights. They were also assured that information will be strictly confidential.

Data Collection

All details of patient was recorded in Case Record Form (CRF) which included CAM related information. Patients were asked about the various types of CAM practices they had used for diabetes management. The duration of CAM use was assessed by asking participants how long they had been using CAM. The reason for its use, the source of CAM information, type of CAM satisfaction/dissatisfaction related to its use. Patients were also asked about the source of their CAM awareness, who advised them to use CAM and whether they informed their doctor regarding CAM usage.

Statistical Analysis

Statistical analysis was performed using descriptive statistics. Categorical variables were expressed as frequencies and percentages, and the results were presented in tabular form. The Chi-square test was applied to assess the association between categorical variables. A p-value <0.05 was considered statistically significant.

RESULT

The majority of participants 160(92%) were aware of the term Complementary and Alternative Medicine (CAM), while the remaining 14(8%) were not aware of the term CAM. The majority 118(67.8%) reported using CAM as a means to contribute to their treatment. The primary source of information regarding CAM use was the participants themselves, who initiated its use independently 68(39.1%), followed by information obtained from relatives 58(33.3%). 91(52.3%) of participants were using free CAM options.

Table no. 1: Knowledge of Complementary and Alternative Medicine (CAM) among patients with diabetes mellitus(n=174)

	Questionnaire items	Number	Percentage	P Value
K1	Are you aware of term CAM	Yes	14	8
		No	160	92
K2	What was your primary reason for using complementary and alternative medicine (CAM)?	Contributing to treatment	118	67.8
		Dissatisfaction from conventional medicine	2	1.1
		Trying because of suggestion	55	31.6
K3	What was your source of information about CAM use?	Ayurvedic doctor	8	4.6
		Doctor	7	4.0
		Friends	15	8.6
		Media	15	8.6
		Neighbourhood	3	1.7
		Relatives	58	33.3
		Self	68	39.1
K4	How would you describe the cost of CAM treatment?	Free	91	52.3
		Cheap	60	34.5
		Expensive	23	13.2

Only 52(29.9%) participants informed their doctors about CAM use, with the main reason for disclosure being to ensure proper relief by 45(25.9%). Among participants who did not inform their doctors, 45(25.9%) cited reason was that they did not consider it necessary. Among the participants who practiced CAM, 155(89.0%) reported being satisfied with CAM therapy, whereas 5(2.8%) reported dissatisfaction with its use.

The majority of CAM users 129(74.1%) started using CAM after their diagnosis and after beginning conventional medication. Regarding the duration of CAM use, the highest proportion of participants 48 (27.6%) reported using CAM for 3–6 months, followed by 45(25.9%) who had been using CAM for more than 5 years.

Table no. 2: Attitude Towards Complementary and Alternative Medicine (CAM) among patients with Diabetes Mellitus (n=174)

	Questionnaire items	Number	Percentage	P value
A1	Have you informed your doctor about your use of CAM?			<0.001
		Yes	52	
		No	122	
A2	What was your main reason for disclosing your use of CAM to your physician?	To ensure proper relief	45	<0.001
		Feel CAM is safe	1	
		Physician enquired	6	
A3	What was your main reason for not disclosing your use of CAM to your physician?	Didn't find necessary to tell physician	45	<0.001
		Fear of disapproval by the physician	23	
		Not enquired by physician	14	
		They feel CAM is safe no need to discuss its use	40	
A4	Are you satisfied with the results of CAM?	Satisfied	155	<0.001
		Neutral	14	
		Dissatisfied	5	

Biologically based therapies were the most commonly used type of CAM, reported by 71 (40.8%) participants, followed by mind–body interventions used by 65 (37.4%) participants. Among the biologically based therapies, methi dana (fenugreek seeds) was the most frequently used 45(25.8%), followed by neem leaf juice 25(14.3%).

Acupressure 4 (2.3%) and Reiki 1 (0.6%) were the reported energy-based therapies, while massage therapy 1 (0.6%) was the only body-based therapy reported. Among mind–body interventions and alternative medicine systems, walking 53(30.5%) and Ayurveda 49(28.2%) were the most commonly utilized approaches.

Table no. 3: Practice of Complementary and Alternative Medicine (CAM) Among Patients with Diabetes Mellitus

	Questionnaire items	Number	Percentage	P Value
P1	Which type(s) of complementary and alternative medicine (CAM) have you used for the management of diabetes?	Biological Based	71	<0.001
		Energy therapies	5	
		Body Based system	1	
		Mind body interventions	65	
		Alternative medical system	32	
P2	When did you start using complementary and alternative medicine (CAM)?	Before diagnosis, and before starting conventional medication	31	<0.001
		After diagnosis, and before starting conventional medication	14	
		After diagnosis, and after starting conventional medication	129	
P3	How long have you been using CAM?	<3 months	31	0.006
		3–6 months	48	
		6–12 months	22	
		>1 year	28	
		>5 year	45	

Table 2: Different type of CAM practices

Biological based therpaies	Number of Users	Percentage
Methi dana	45	25.8
Neem	25	14.3
Jamun	16	9.2
Karela	13	7.5
Ajwain (carom seeds)	7	4
Cheakpeas (chana)	5	2.9
Inderjyot powder	5	2.9
Dal chini (cinnamon)	4	2.3
Almond	4	2.3
Omega 3	4	2.3
Amla powder	4	2.3
Coriander(dhaniya)/ Green coriander+mint leaves	4	2.3
Amway medicine	3	1.7
Paneer phool/paneer doda/ withania coagulans	3	1.7
Guava leaves	2	2
Curry leaves	2	1.1
Aloevera	2	1.1
Chirata(Swertia chirayita)	2	1.1
Teminalia chebula/chebulic myrobalan(harad)	2	1.1
Kilonji	2	1.1
Kalijiri	2	1.1
Fennel seeds(Sauf)	2	1.1
Capsule eagle marmelos(bel patra fruit)	1	0.6
Capsule karela jamun (baidwell)	1	0.6
Jaun	1	0.6
Kudki chirayle	1	0.6
Gudmar	1	0.6
Methi +neem k patte	1	0.6
Mix aata roti	1	0.6
Neemgiloy, sheesham, karela, jamun powder	1	0.6
Sadabahar phool(Catharanthus roseus)	1	0.6
Jaun	1	0.6
Trifela	1	0.6
Energy therapies		
Reiki	1	0.6
Acupressure	4	2.3
Manipulative body based methods		
Massage therapy	1	0.6
Mind-body interventions		
Walking	53	30.5
Yoga	31	17.8
Meditation	2	1.1
Dance	1	0.6
Breathing exercise	2	1.1
Alternative medical system		
Ayurvedic	49	28.1
Homeopathy	1	0.6
Naturopathy	1	0.6

DISCUSSION

The present study provides insights into the knowledge, attitudes, and practices (KAP) related to complementary and alternative medicine (CAM) among patients with

diabetes and evaluates the patterns of CAM utilization in this patient population.

In the current research, a significant majority of CAM users (74.1%) began utilizing CAM after their diagnosis and the commencement of conventional medication. This

observation is in line with earlier study by Thilakarathna et al. which indicated that a notable number of patients incorporate CAM alongside standard treatments, primarily to alleviate side effects or improve treatment effectiveness.[6] Most common reason of using CAM by majority of participants (67.8%) was to support and enhance their conventional treatment, consistent with the observations of Tindle et al. and Bishop et al., who reported that CAM is frequently used as a supplementary approach to conventional medical care.[7,8] This study reinforces the existing evidence that CAM is predominantly utilized as a complementary approach rather than a substitute, particularly following the initiation of conventional medical treatment. Overall, these findings suggest that CAM is predominantly used to augment rather than replace conventional treatments.

Only 29.9% of participants communicated their CAM usage to their healthcare providers, a trend similar to that reported by Robinson and McGrail.[9] The reluctance to disclose this information was primarily attributed to the perception that CAM is either safe or not necessary to mention, which is consistent with the findings of Ben Arye et al.[10] These results highlight the critical need for improved communication between doctors and patients regarding the use of CAM. The findings reveal a substantial lack of disclosure regarding CAM use to treating physicians. This lack of disclosure creates a potentially dangerous blind spot for physicians, who remain unaware of the full scope of treatments their patients are pursuing. Other studies revealed a similar or even lower pattern of reporting.[11,12] This highlights the need to improve patient-provider communication and encourage routine inquiry about CAM use during clinical consultations.

In this research, biologically based therapies (40.8%) and mind-body interventions (37.4%) emerged as the most frequently utilized types of CAM, corroborating the findings of Naja et al.[13] Herbal products and other biologically based remedies are often regarded by patients as natural and relatively safe, which may encourage their use alongside conventional treatment. Their widespread availability and familiarity within families and communities may further contribute to their utilization.

Biologically based treatments, particularly traditional Indian herbs, were the most commonly used for glycemic management, with methi dana (fenugreek seeds) used by 25.8% and neem juice by 14.3% of participants. These findings align with previous studies that have highlighted the growing trend of incorporating herbal remedies into diabetes management strategies.[14-20] Fenugreek (*Trigonella foenum graecum*) has emerged as a beneficial herb for diabetic patients, primarily due to its active components that enhance glucose metabolism. Its bioactive constituents, including trigonelline, fenugrecin, and 4-hydroxyisoleucine, enhance insulin secretion, improve insulin sensitivity, and promote glucose uptake by peripheral tissues.[21]

Additionally, mind-body practices, particularly walking (30.5%) and yoga (17.8%), were extensively practiced, aligning with the observations made by Raveendran et al. which highlighted their beneficial role in diabetes management.[22] Numerous studies aligning with our study have demonstrated significant improvements in glycemic parameters when yoga is integrated into diabetes management programs highlighting the positive impact of this holistic approach.[23-26] Yoga presents a beneficial intervention by mitigating oxidative by reducing the overactivity of the HPA axis and the sympathoadrenal medullary axis, thereby lowering stress hormone levels. Second, the practice emphasizes long exhalations and controlled breathing, which reactivates the parasympathetic nervous system and fosters relaxation. This dual approach helps alleviate stress on the islets of Langerhans, ultimately reducing insulin resistance and promoting metabolic health.

The alternative medical approach, predominantly Ayurveda (28.2%), featured commonly utilized formulations like Madhumeh Hari and BGR-34, consistent with the trends identified by Naja et al. and Patel et al. [13,27] Ayurveda is part of the broader AYUSH framework, which includes Yoga & Naturopathy, Unani, Siddha, and Homoeopathy, all of which emphasize holistic healing and preventive care. Although there is a growing interest in these alternative methods, further research is warranted to explore the efficacy of integrating conventional medicine with AYUSH approaches for diabetes management.

CONCLUSION

This KAP study highlights the importance of understanding patients' perceptions and utilization of CAM in the management of type 2 diabetes mellitus. The findings may assist clinicians in identifying educational needs, addressing misconceptions, and encouraging patients to disclose CAM use during routine consultations. Improved awareness among patients and healthcare professionals can facilitate evidence-based and patient-centred diabetes care. Considering the increasing prevalence of diabetes worldwide, further rigorous clinical and epidemiological studies are warranted to determine the efficacy, safety, and appropriate integration of CAM into conventional diabetes management.

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