Experiences and Perceptions Toward Integrative, Complementary, and Alternative Medicine Among Conventional Medicine Practitioners of Mangalore, India

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Abstract

Objectives: The purpose of this study was to identify experiences and perception of conventional (Western, allopathic) medical practitioners toward integrative, complementary, and alternative medicine (ICAM).
Methods: There are approximately 1200 conventional medical doctors in Mangalore, India. In February 2017, semistructured self-administered questionnaires were distributed to 200 medical practitioners. The association between categorical variables was analyzed using a χ^2 test and those involving continuous variables using unpaired *t* test, analysis of variance, and Karl Pearson's coefficient of correlation. A *P* value ≤ .05 was considered statistically significant.
Results: Of the surveys, 163 were returned and 129 were satisfactorily completed, giving a response rate of 64.5%. Mean age was 39.9 ± 11.9 years, and most 94 (72.9%) were male. A majority, 96 (74.4%), recommended ICAM to their patients. Nine had some training in ICAM modalities, and 76 (58.9%) participants reported personal usage of ICAM. Regarding perception toward effectiveness of ICAM, 33 (25.6%) felt that it was effective or somewhat effective. However, 82 (63.6%) participants felt that lack of sufficient scientific evidence was a major drawback of ICAM. However, 39 (30.2%) participants felt that ICAM should be part of Bachelor of Medicine and Bachelor of Surgery curricula. Favorable perception toward ICAM ($P < .001$) and personal usage of ICAM ($P < .001$) was associated with participants recommending any ICAM for their patients. Elderly practitioners (aged above 65 years) ($P = .003$) and practitioners with favorable perception regarding effectiveness of ICAM ($P = .033$) recommended a higher number of types of ICAM to their patients. Favorable perception toward effectiveness of ICAM was associated with favorable perception toward inclusion of ICAM in medical curriculum among participants ($P = .002$).
Conclusion: Most participants recommended ICAM to their patients and also reported personal usage of the same. (J Manipulative Physiol Ther 2019;42:492-502)
Key Indexing Terms: *Medicine; Complementary Therapies; Integrative Medicine*

Introduction

Usage of integrative, complementary, and alternative medicine (ICAM) has increased in both developing and developed countries over the past decade.[1(p.xi)] Still, one-third of the world's population has no regular access to pharmaceuticals.[1(p.xi)]

Therefore, there is a need to further improve the acceptability, accessibility, and affordability of primary health care services. To achieve this, the World Health Organization recommends integration of alternative systems of medicine into the national health care system of all its member states.[2]

The Ministry of Health and Family Welfare, Government of India, launched the National AYUSH Mission during the 12th five-year plan. This was meant to promote Ayurveda, Unani, Siddha, and Homoeopathy (AYUSH) medical systems. Revitalization of these systems will transform them into prominent streams that would cater to the health care needs of the society.[3]

The AYUSH systems of medicine are well accepted, particularly in rural parts of India. These medicines are economical and easily available because they can be

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prepared from locally available resources. The Department of AYUSH, Ministry of Health and Family Welfare, Government of India, has been providing financial assistance to the states across India for starting AYUSH wings. These wings would be set up in various district hospitals, community health centers, and primary health centers.

Therefore, integration of various systems of medicine will help to minimize the problems of out-of-pocket expenditure among poor households. It will also solve the problem of inaccessibility of health care in certain rural areas of India.[4]

However, the future of integration of ICAM with conventional medicine also depends on the perception of these (eg, Western or allopathic) medical doctors toward ICAM. Their experiences regarding strengths and weaknesses of ICAM and perceptions about certain vital issues concerning ICAM need to be evaluated. This may influence the future course of an integrated health care model. A favorable perception may result in more recommendations to ICAM practitioners and use of ICAM treatment modalities to patients, thereby ensuring that the beneficiaries get the best possible holistic care.

A previous regional study by Kong et al[5] had assessed the perception of medical practitioners toward ICAM. However, it was not clear in their study which modality of ICAM was recommended by the participating doctors for specifically treating which type of morbidity. Their study stated the morbidities under the broad category of system-based disorders classification. Moreover, experiences of the patients treated with ICAM as told to these doctors were not captured.

The purpose of this study was to identify experiences and perception of conventional (Western, allopathic) medical practitioners of Mangalore, an urban area, toward ICAM.

Methods

This cross-sectional study was done in Mangalore, situated in the southern part of India, during February 2017. The investigators of this study were either employed or students of a private medical college in Mangalore. Therefore, the study area was restricted to Mangalore alone.

As per the census of India report of 2011, Mangalore has a population of 488 968. The number of conventional medicine practitioners in Mangalore until the end of 2016 was estimated to be around 1200 as per the records of the Indian Medical Association, Mangalore.

The ethics approval for this study was given from the institutional ethics committee of Kasturba Medical College. Conventional medicine practitioners located in various parts of Mangalore were approached at their clinics or nursing homes. They were provided information regarding the nature and purpose of the study by the investigators. The convenience sampling method, which is a nonprobability sampling method, was employed for recruiting these practitioners. They were enrolled in this study only if they gave written informed consent for participation.

Postgraduate students of any conventional medicine specialties were, however, excluded from this study. This was because they may not have sufficient experience in their clinical practice.

Sample size was calculated using the formula $Z_{\alpha}^{2}pq / d^{2}$, where p was taken as the proportion of medical practitioners with a favorable perception toward ICAM, reported as 66%, in the previously done regional study.[5] At 95% confidence intervals (CIs), 85% power and adding a nonresponse rate of 10%, a minimum sample size of 100 participants was calculated. However, a total of 200 participants were planned for enrollment in this study just in case the nonresponse rate would exceed the expected numbers. Practitioners with at least 1 year of clinical experience were included in this study.

Informed consent was taken in writing from the participants after explaining to them the nature and purpose of this study. Following this an anonymous, semistructured questionnaire, containing both open-ended and closed-ended questions, was handed over to each of the participant. The questionnaire was self-designed by the investigators. It was then pretested among 10 conventional medicine practitioners who were not part of the main study. Content validation of the questionnaire was done by members of the medical education unit of this institution.

Along with the pretested and validated questionnaire, the participants were given an information sheet stating the various modalities of ICAM such as AYUSH, acupuncture, naturopathy, chiropractic or osteopathic manipulation, mind–body medicine, meditation, and yoga.[6]

The first part of the questionnaire consisted of information regarding the demographic information, academic profile, field of practice, and years of clinical experience after graduation among participants.

In the second section of the questionnaire, various ICAM modalities recommended by medical doctors and experiences of their patients, as reported to them, were recorded. Perception of medical practitioners toward effectiveness of ICAM modalities in general, advantages and disadvantages of ICAM, referring patients to particular ICAM practitioners, and integration of ICAM into current Bachelor of Medicine and Bachelor of Surgery (MBBS) curriculum were inquired about. Additionally, questions on personal usage of ICAM among participants and whether they underwent any training on ICAM modalities were also asked. Perception toward effectiveness of ICAM among participants was assessed using a 5-item Likert scale.

The questionnaire was distributed among participants directly by the investigators. It was either collected instantly or, in case the practitioner was busy, on a later date. Participants failing to respond after 5 attempts were categorized as nonresponders.

A chronic condition was defined as any illness lasting more than 3 months.[7] The reliability analysis of questionnaire yielded the value of 0.7 for Cronbach's α, indicating good reliability. Collected data were entered in a Microsoft Excel spreadsheet (Microsoft, Redmond, Washington) and later analyzed using SPSS version 17 (SPSS Inc, Chicago, Illinois). Association between categorical variables was analyzed using a χ^2 test. Association between continuous variables and categorical variables in 2 groups was done using an unpaired *t* test. Association between continuous variables and categorical variables in more than 2 groups was done using analysis of variance. Correlation between 2 continuous variables was done using the Pearson coefficient of correlation. Association involving continuous variables was tested using parametric tests like unpaired *t* test, analysis of variance, and Pearson coefficient of correlation because these variables were found to be following normal probability distribution. A P value $\leq .05$ was considered statistically significant.

Results

A total of 200 forms were distributed of which 163 were returned and 129 were satisfactorily filled, giving a response rate of 64.5%. The demographic distribution is listed in Table 1. Of the medical specialists, 23 were internal medicine specialists, 10 were pediatricians, 8 were dermatologists, 4 each were psychiatrists, cardiologists, and pulmonologists; 3 were neurologists; 2 each were oncologists and neurologists; and 1 was an anesthetist. Among the surgical specialists, 13 were general surgeons, 10 were gynecologists, 7 were orthopaedicians, 7 were otorhinolaryngologists, and 6 were ophthalmologists. Among the 25 general practitioners, 1 had a diploma in industrial medicine.

The median age of clinical experience was 8 years (IQR 3, 20). It ranged from 1 year to 45 years.

Only 48 (37.2%) had asked their patients about history of ICAM usage before prescribing them conventional medications in the past.

Among the practitioners, 96 (74.4%) had recommended ICAM to their patients in the past. (Table 2). The average types of different ICAM modalities recommended by participants (n = 96) for their patients was 2.3 ± 1.3 with a median of 2 (interquartile range 1-3) ranging from 1 method to 7 methods.

The respondents reported a greater proportion of patients had a positive response for naturopathy followed by yoga and meditation, homeopathy, and Ayurveda (Table 3). Most participants had used ICAM themselves in the past (Table 4). The greatest number of participants felt that ICAM gives a general feeling of wellness among its users (Table 5). Favorable perception toward ICAM and personal usage of ICAM was significantly associated with participants recommending any of the ICAM modalities to their patients (Table 6).

Table 1. *Sociodemographic Distribution of Medical Practitioners*

Age Groups (y)	Number	Percentage
26-35	62	48.0
36-45	33	25.6
46-55	17	13.2
56-65	9	7.0
>65	8	6.2
Sex		
Male	94	72.9
Female	35	27.1
Qualification		
MBBS	25	19.4
MD/DNB	61	47.3
MS	43	33.3
Place of residence		
Urban	119	92.3
Semi-urban	4	3.1
Rural	6	4.6
Total	129	100.0

DNB, Diplomate of National Board; *MBBS*, Bachelor of Medicine and Bachelor of Surgery; *MD*, doctor of medicine; *MS*, master of surgery.

Nine of the total participants had some form of training in ICAM. Five had training in yoga, 3 in Ayurveda, 1 in homeopathy, 1 in chiropractic, and 1 in aromatherapy. However, certified training was stated by just 3 conventional medicine doctors. The certified training they underwent was for yoga. The remaining participants obtained information through workshops, conferences, or short courses in that discipline of ICAM. Five participants who underwent prior training in ICAM said that they were confident to practice ICAM on their patients.

Some of the observations and suggestions regarding ICAM stated by participants included the following: more research and evidence needs to be provided before these treatments can be advocated on a wider scale (n = 10), certain modalities of ICAM were very useful (n = 6), there should be a legislation or control authority to monitor ICAM practices (n = 5), and formulation identification of ICAM medications should be made very clear (n = 2 participants). Other suggestions, such as only qualified doctors should be allowed to prescribe ICAM, people should be made more aware of benefits and side effects of

Table 2. *Distribution of Morbidities for Which Integrative, Complementary, or Alternative Systems of Medicine Were Recommended by Conventional Medicine Doctors*

Type of Integrative, Complementary, or Alternative Systems of Medicine	Type of Morbidity	Number	Percentage
Yoga (n = 90)			
	Stress	23	25.6
	Anxiety	19	21.1
	Hypertension	16	17.8
	Mental illness/depression	12	13.3
	Body pain/back pain	10	11.1
	Migraine/headache	6	6.7
	Type II diabetes mellitus	5	5.5
	Asthma	4	4.4
	Others	4	4.4
Ayurveda (n = 36)			
	Chronic illness	9	25.0
	Body pain/back pain	5	13.9
	Arthritis	5	13.9
	Cold/rhinitis/sinusitis	4	11.1
	Gastritis	3	8.3
	Allergy/atopy	2	5.5
	Asthma	2	5.5
	Viral hepatitis	2	5.5
	Others	8	22.2
Chiropractic (n = 27)			
	Body pain/back pain	11	40.7
	Chronic illness	7	25.9
	Musculoskeletal disorders	3	11.1
	Arthritis	2	7.4
	Stress	2	7.4
	Others	2	7.4
Naturopathy (n = 27)			
	Weight loss	8	29.6
	Detoxification	3	11.1
	Chronic illness	3	11.1
	Body pain	2	7.4
	Gastritis	2	7.4
	Others	9	33.3
Homeopathy (n = 17)			
	Dermatosis/acne/hair loss	6	35.3
	Allergy/atopy	3	17.6
	Migraine/headache	2	11.8
	Asthma	2	11.8
	Others	6	35.3
Acupuncture (n = 11)			
	Body pain/back pain	3	27.3
	Migraine/headache	2	18.2
	Others	3	27.3

Yoga others (irritable bowel syndrome 1, insomnia 1, gastritis 1, cerebrovascular accident 1), Ayurveda others (diabetes mellitus 1, allergy 1, menstrual problems 1, lactation 1, infertility 1, cerebrovascular accident 1, gastritis 1, renal stones 1), chiropractic others (paralysis 1, spondylosis 1), naturopathy others (asthma 1, anxiety 1, mental illness/depression 1, polycystic ovary syndrome 1, migraine 1, allergy 1, sinusitis 1, menstrual problems 1, diabetes mellitus 1), homeopathy others (chronic illnesses 1, irritable bowel syndrome 1, cold/rhinitis/sinusitis 1, arthritis 1, gastritis 1, menstrual problems 1), acupuncture others (cerebrovascular accident 1, chronic illness 1, gastritis 1).

ICAM, and integrative management modality is more beneficial, were stated by 1 participant each. Few respondents in this study stated that they recommended or were willing to refer their patients for chiropractic care. Considering the rarity of chiropractors in India, it is not clear whether these respondents meant referral of their patients to chiropractors or to medical doctors who state that they practice chiropractic.

There were no associations among age, sex, specialty, and years of experience of participants with self-usage of ICAM. However, favorable perception toward effectiveness of ICAM was associated with self-usage of ICAM among participants ($X^2 = 24.7$, DF = 2, $P < .001$). Favorable perception toward effectiveness of ICAM ($X^2 = 24.9$, $P < .001$) and personal

Table 3. *Distribution of Patient Experiences Toward Integrative, Complementary, or Alternative Systems of Medicine as Reported by Their Medical Doctors*

Type of Integrative, Complementary, or Alternative Systems of Medicine	Positive Response (%)	Negative Response (%)	Not Sure (%)	Total
Yoga and meditation	63 (70)	0 (0)	27 (30)	90
Ayurveda	23 (63.9)	0 (0)	13 (36.1)	36
Chiropractic	14 (51.9)	1 (3.7)	12 (44.4)	27
Naturopathy	19 (70.4)	0 (0)	8 (29.6)	27
Homeopathy	11 (64.7)	0 (0)	6 (35.3)	17
Acupuncture	6 (54.5)	0 (0)	5 (45.5)	11
Aromatherapy	3 (42.9)	0 (0)	4 (57.1)	7
Unani	1 (50)	0 (0)	1 (50)	2
Tai chi	1 (100)	0 (0)	0 (0)	1

usage of ICAM ($X^2 = 8.76$, $P = 0.003$) were associated with willingness to refer patients to particular ICAM practitioners among participants. However, willingness for referral of patients to particular ICAM practitioners was not associated with age, sex, specialty, or years of clinical experience of participants.

Favorable perception toward effectiveness of ICAM and personal usage of ICAM in the past were associated with favorable perception toward inclusion of ICAM in medical curriculum among participants. There were, however, no associations among age, sex, specialty, and years of clinical experience with the same. Elderly practitioners (above 65 years of age) and practitioners with favorable perception toward effectiveness of ICAM significantly recommended a higher number of different ICAM modalities to their patients (Table 7). There was a significant correlation between years of clinical experience with total number of different modalities of ICAM recommended for their patients by the participants (n = 96) in this study (r = 0.273, $P = .007$).

Table 4. *Distribution of Morbidities for Which Integrative, Complementary, or Alternative Systems of Medicine Was Experienced by Conventional Medical Doctors and Their Experiences With Treatment (N = 76)*

Type of Morbidity	Number	Percentage
Musculoskeletal disorder	15	19.7
Arthritis	12	15.8
Cold/rhinitis/sinusitis	9	11.8
Asthma	7	9.2
Stress	7	9.2
Allergy	6	7.9
Gastritis	6	7.9
Anxiety	5	6.6
Hair loss	3	3.9
Acne	3	3.9
Spondylitis	3	3.9
Diabetes mellitus	2	2.6
Hypertension	2	2.6
Others [a]	4	5.3
Response to treatment (n = 55)		
Positive	40	72.7
Negative	4	7.3
Not sure	11	20.0
Mode of consultation [b] (n = 45)		
Prescribed by ICAM practitioner	32	71.1
Self-medicated	15	33.3

ICAM, integrative, complementary, and alternative medicine.
[a] Infertility 1, migraine 1, weight loss 1, insomnia 1.
[b] Multiple responses.

Discussion

This study observed that conventional medicine practitioners in Mangalore had a favorable perception toward ICAM. Only a few had some training in various ICAM modalities. A favorable perception toward ICAM and having tried ICAM themselves were key factors associated with participants recommending ICAM to their patients and supporting the inclusion of ICAM in the medical curriculum.

Approximately one-third of the practitioners inquired about treatment history of ICAM medications among their patients during consultations. This was similar to the 37% reported in a New Delhi, India-based study [8] and less than the 71.5% reported in a study done in Kolar, India. [9]

To decide the best possible treatment for the patients, devoid of interaction between drugs, all practitioners need to obtain detailed treatment history such as history of ICAM usage. Previous studies have reported that patients usually do not reveal usage of ICAM to their medical practitioners. [10-14] This has been attributed to various reasons; 1 reason was that patients feel that clinicians are the ones who should be initiating

Table 5. *Perception Toward Integrative, Complementary, or Alternative Systems of Medicine Systems Among Conventional Medical Practitioners (N = 129)*

Perception	Number	Percentage
Benefits of ICAM [a]		
General feeling of wellness	36	27.9
Fewer side effects	29	22.5
Prevention of chronic illnesses	24	18.6
Cost-effective treatment	19	14.7
Favorable response to treatment	15	11.6
Placebo-like effect	7	5.4
Drawbacks of ICAM [a]		
Lack of sufficient scientific evidence	82	63.6
Limited usage in medical emergencies	64	49.6
Slow in action	44	34.1
Has mostly placebo-like effect	25	19.4
Side effects	23	17.8
Poor acceptability among patients	21	16.3
Unpalatability of certain preparations	13	10.1
Difficulty involved in its preparation	12	9.3
ICAM effectiveness improves when used with conventional medical pharmaceuticals		
Yes	44	34.1
No	21	16.3
Not sure	64	49.6
Willingness to refer patients to particular ICAM practitioners		
Yes	59	45.7
No	70	54.3
Willingness for referral for specific type of ICAM (n = 59)		
Yoga	24	40.6
Ayurveda	18	30.5
Homeopathy	7	11.9
Chiropractic	4	6.8
Naturopathy	3	5.1
Acupuncture	2	3.4
Unani	1	1.7
Stage of the disease at which ICAM should be recommended [a]		
Early stage	31	24.0
Intermediate stage	10	7.7
Late stage	6	4.6
Post-treatment stage	8	6.2
During palliative care	37	28.7
Preventive care	24	18.6
Not recommended	46	35.7
Whether modalities used by ICAM practitioners should be part of conventional medical curricula		
Yes	39	30.2
No	48	37.2
Not sure	42	32.6

ICAM, integrative, complementary, and alternative medicine.
[a] Multiple responses.

any discussion on alternative therapies.[15] Another reason was fear among patients that their medical doctors may not approve continuation of ICAM.[16,17] Reasons for disapproval by physicians as identified in previous surveys were due to uncertainty about the safety and efficacy of ICAM[18] or adverse drug interaction with conventional medications.[11]

The various benefits of ICAM reported by practitioners in previous studies were cost-effectiveness,[5,9] easy accessibility of medications,[9] fewer side effects,[5,19] and its effectiveness in management of chronic diseases,[20,21] few of which were similar to that reported in the present study. Favorable perception toward effectiveness of ICAM in this study was reported by 25.6% of participants and also by 5.3%,[22] 25%,[14] 51%,[23] and 66%[5] in other studies.

Neither sex nor age influenced the participants' perception toward ICAM as observed in a study done in Germany, which was similar to our observations.[23]

The main drawback of ICAM, as reported by participants, was lack of sufficient scientific evidence followed by limited usage in medical emergencies and slow in action. Similarly previous studies stated uncertainty about the efficacy of ICAM therapies,[9,18,20] ICAM not being subjected to clinical trials,[20,24] variability in training and credentialing among practitioners in some disciplines of ICAM leading to greater risk of misapplication,[24] unqualified ICAM medicine practitioners,[9] side effects,[9,20,22] lack of dose calculation schedule,[9] unreliable diagnostic techniques,[9,24,25] slow action,[26]

Table 6. *Associations Among Age, Sex, Clinical Experience, and Perception of Effectiveness of ICAM With Recommendation for Any ICAM Modality Among Participants*

Characteristics	Recommended Their Patients to ICAM Practitioners	Did Not Recommend Their Patients to ICAM Practitioners	Total
Age group (y)			
26-35	46 (74.2)	16 (25.8)	62
36-45	26 (78.8)	7 (21.2)	33
46-55	13 (76.5)	4 (23.5)	17
56-65	5 (55.6)	4 (44.4)	9
>65	6 (75.0)	2 (25.0)	8
			X^2 = 2.05, P = .726 [a]
Sex			
Male	68 (72.3)	26 (27.7)	94
Female	28 (80)	7 (20)	35
			X^2 = 0.786, P = 0.325 [a]
Specialty			
General practitioners	20 (80)	5 (20)	25
Medical specialties	46 (75.4)	15 (24.6)	61
Surgical specialties	30 (69.8)	13 (30.2)	43
			X^2 = 0.929, P = 0.628 [a]
Years of clinical experience			
1-5	35 (68.6)	16 (31.4)	51
6-10	17 (77.3)	5 (22.7)	22
11-20	22 (81.5)	5 (18.5)	27
>20	22 (75.9)	7 (24.1)	29
			X^2 = 1.836, P = 0.766 [a]
Perception of effectiveness of ICAM			
Effective/somewhat effective	32 (97.0)	1 (3.0)	33
Neutral	52 (76.5)	16 (23.5)	68
Less effective	9 (90.0)	1 (10.0)	10
Not effective	3 (16.7)	15 (83.3)	18
			X^2 = 41.8, P < .001 [a]
Self-use of ICAM			
Yes	66 (86.8)	10 (13.2)	76
No	30 (56.6)	23 (43.4)	53
			X^2 = 15.0, P< .001 [a]
Total	96	33	129

ICAM, integrative, complementary, and alternative medicine.
[a] χ^2 test.

interaction with conventional medicines,[27] and lack of any organized state or national system for reporting adverse effects of ICAM as the various drawbacks of ICAM.

In this study, about three-fourths of practitioners had recommended ICAM to their patients in the past. In comparison, the proportion of conventional medicine practitioners who recommended ICAM to their patients in previous studies done in India and other parts of the world ranged from 27.1%,[22] 32%,[19] and 33.8%[9] to 39%,[5] 52%,[8] to 58%.[28] In another study done in Australia,[29] 93% of participants surveyed, had treated with ICAM or had recommended its use to patients. This indicates that ICAM continues to be universally recommended by practitioners worldwide.

Most participants in this study recommended yoga therapy, similar to that reported by 85% practitioners in the study done in Bangalore, India.[22] In this study, 45.7% of practitioners were willing to refer patients to particular ICAM practitioners, which was much more than the 8.9%,[22] 25%,[26] and 44%[8] reported in previous studies. However, unlike a study done in the United States that reported a greater proportion of general practitioners referring cases to ICAM practitioners compared to specialists, no such association was seen in this study.[30]

In this study, more than half of participants has used ICAM themselves in the past in comparison to 13%,[28] 32%,[5] 34.4%,[26] 53%,[20] 58%,[8] 59%,[19] and 91%[29] reported by other studies. These observations reveal that there is a high proportion of personal usage of ICAM among medical doctors in the present study.

Also, favorable perception toward effectiveness of ICAM was associated with self-usage of ICAM among participants. Self-usage was, in turn, associated with their

Table 7. *Association Among Age, Sex, Clinical Experience, and Perception of Effectiveness of ICAM With Number of Different Modalities of ICAM Recommended for Patients Among Participants (n = 96)*

Characteristics	Number	Mean Number of Different Modalities of ICAM Recommended	Standard Deviation	95% CIs	
				Lower Limit	Upper Limit
Age group					
26-35	46	2.196	1.222	1.8327	2.5587
36-45	26	1.8846	0.9519	1.5001	2.2691
46-55	13	2.6923	1.3775	1.8599	3.5247
56-65	5	2.0	0.7071	1.22	2.878
>65	6	4.0	1.8974	2.0088	5.9912
				$F = 4.243$, $P = .003$ [a]	
Sex					
Male	68	2.4412	1.3536	-0.0176	1.1142
Female	28	1.8929	1.0306	0.0397	1.0569
				$t = 1.924$, $P = .057$ [b]	
Specialty					
General practitioners	20	2.65	1.5985	1.9019	3.3981
Medical specialties	46	2.2174	1.1138	1.8866	2.5482
Surgical specialties	30	2.1333	1.306	1.6456	2.621
				$F = 1.077$, $P = .345$ [a]	
Years of clinical experience					
1-5	35	2.0286	1.2482	1.5998	2.4573
6-10	17	2.3529	1.2217	1.7248	2.9811
11-20	22	2.0909	1.0193	1.639	2.5428
>20	22	2.8182	1.5318	2.139	3.4973
				$F = 1.961$, $P = .125$ [a]	
Perception of effectiveness of ICAM					
Effective/somewhat effective	32	2.625	1.314	2.1514	3.0986
Neutral	52	2.25	1.235	1.9063	2.5937
Less effective/not effective	12	1.5	1.168	0.758	2.242
				$F = 3.547$, $P = .033$ [a]	

ICAM, integrative, complementary, and alternative medicine.

[a] Analysis of variance.

[b] Unpaired *t* test.

decision of recommending ICAM to their patients and also willingness for referral of patients to particular ICAM practitioners, as also supported by the findings of previous studies.[5,8,19,30,31]

However, no other sociodemographic factor was found to influence personal usage of ICAM in this study, unlike the findings of a study done in New Delhi, India where women and consultants reported significantly greater proportion of usage.[8] The most common ICAM method used by participants in this study, in the Manipal, India[5] and the Bangalore, India[20]- based study was Ayurveda, while in a Pakistan[26] and New Delhi, India[8]- based study it was homeopathy.

The satisfaction rate with treatment was 50%[8,26] and 88%[5] of participants in previous studies in comparison to 72.7% reported among participants of this study. The common morbidity for which ICAM was experienced by the participants in the present study was musculoskeletal disorders. In other studies it was used by participants for respiratory tract infections,[5,20] allergic conditions,[5] chronic painful conditions,[20] low back ache,[8] arthritis,[8] and bronchial asthma.[8]

Regarding integration of ICAM with conventional medicines, favorable response was given by 34.1% of participants in the present study and by 50%,[32] 55.6%,[9] and 71%[5] of participants in previous studies.

Integrative medicine has the potential to improve health care delivery in the less developed countries.[33] However, for this to be achieved, practitioners' understanding of ICAM must be improved, with focus on issues related to safety, regulation, and evidence-based practice of ICAM products.[33]

For better understanding about ICAM measures, inclusion of ICAM information into medical curricula becomes necessary. Favorable response on this aspect was given by 30.2% of participants in this study and by 25.1% in a study in Bangalore, India,[22] 51% in Mexico,[19] and 73% in Manipal, India.[5] Inclusion of ICAM in medical curriculum has already been implemented in certain medical schools and pharmacy schools in the United States and Europe.[34-36]

In this study, only 7% of participants had some sort of prior training in ICAM, which is the same as that reported in a study done in Mexico.[19] In the latter study, 67% participants wanted more information about these therapies.[19] Personal usage of ICAM in the past was associated with favorable perception toward inclusion of ICAM in medical curriculum among participants in this study and in the New Delhi, India-based study.[8]

In a developing country like India where the government is promoting AYUSH treatment under the National Health Mission, it is important to introduce medical students to information about alternative systems of health care. Increased education may help to increase their awareness about the efficacy and safety of ICAM. However, this does not imply that such training will enable medical students to perform or prescribe ICAM therapies. Instead, it would help them to refer patients with certain morbidities to seek the appropriate ICAM therapies depending on the needs of each patient. Such exposure during training would help them to analyze possible drug interactions with conventional medicines.[8] Hence for optimization of holistic health care for patients, including ICAM information in medical curricula becomes essential.[37,38]

Favorable perception toward ICAM effectiveness was reported by only one-fourth of respondents in this study. This could be due to concerns like lack of sufficient scientific evidence, which was stated by 63.6% of participants as a drawback of ICAM. Nearly one-third favored integration of ICAM into medical curriculum, which was suggested by a greater proportion of participants having a favorable perception toward ICAM. This study identified issues that facilitate and hinder integration of ICAM with the conventional system of medicine. We suggest that these issues need to be addressed before ICAM is integrated at a wider scale for provision of holistic care to all the beneficiaries in accordance to the vision of the National AYUSH Mission.

Limitations

There is a possibility of underreporting of information by participants due to recall bias. The participants were enrolled by convenience sampling method, which limits the generalizability of findings to the study's settings. Moreover, the perception of medical practitioners toward ICAM from this setting may not be generalizable to practitioners from other geographical areas.

Conclusion

More than half of the doctors in this study reported personal usage of ICAM. Most medical doctors reported a positive response with ICAM treatment, and a majority had also recommended ICAM to their patients in the past.

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No funding sources or conflicts of interest were reported for this study.

Contributorship Information

Concept development (provided idea for the research): N.J.
Design (planned the methods to generate the results): N.J.
Supervision (provided oversight, responsible for organization and implementation, writing of the manuscript): N.J.
Data collection/processing (responsible for experiments, patient management, organization, or reporting data): C.T., I.S., M.S., D.A.S., I.M.
Analysis/interpretation (responsible for statistical analysis, evaluation, and presentation of the results): N.J., C.T.
Literature search (performed the literature search): N.J., I.S.
Writing (responsible for writing a substantive part of the manuscript): N.J., I.S., M.S.

Critical review (revised manuscript for intellectual content, this does not relate to spelling and grammar checking): N.J.

Practical Applications

- Thirty-three (25.6%) conventional medicine practitioners felt that ICAM was effective or somewhat effective.
- Eighty-two (63.6%) of them felt that lack of sufficient scientific evidence was a major drawback of ICAM.
- Favorable perception toward ICAM ($P < .001$) and personal usage of ICAM ($P < .001$) was associated with participants recommending any of the ICAM modalities for their patients.
- Elderly practitioners (aged above 65 years) ($P = .003$) and practitioners with favorable perception regarding the effectiveness of ICAM ($P = .033$) recommended a higher number of ICAM modalities to their patients.
- Thirty-nine (30.2%) participants felt that ICAM should be part of Bachelor of Medicine and Bachelor of Surgery curriculum. Favorable perception toward effectiveness of ICAM was associated with favorable perception toward inclusion of ICAM in medical curriculum among participants ($P = .002$).

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