International Journal of Community Medicine and Public Health
Kshirsagar V et al. Int J Community Med Public Health. 2020 Dec;7(12):4792-4798
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20204951

Original Research Article

The practice, attitude, and knowledge of complementary and alternative medicine in Mumbai, India

Viplav Kshirsagar[1]*, Sanish Tiwari[2], Chetan Thingore[1], Dnyanesh Limaye[3]

[1]Department of Pharmaceutical Sciences and Technology, Institute of Chemical Technology, Mumbai, Maharashtra, India
[2]Shobhaben Pratapbhai Patel School of Pharmacy and Technology Management, Mumbai, Maharashtra, India
[3]Department of Clinical Research and Epidemiology, Hochschule Hannover, Germany

Received: 20 October 2020
Revised: 28 October 2020
Accepted: 29 October 2020

***Correspondence:**
Viplav Kshirsagar,
E-mail: viplavkshirsagar@gmail.com

ABSTRACT

Background: In the recent times, there has been a resurging interest in the use of complementary and alternative medicine (CAM) in India. The present study was conducted to examine the prevalence of CAM use in Mumbai, the knowledge and attitude regarding CAM regarding its safety and efficacy and the reasons for the use of CAM.
Methods: A cross-sectional study was conducted among the general population of Mumbai and its adjoining regions during January-July 2020. 205 residents participated in the study and were asked to fill a pretested questionnaire. The collected data was analyzed using IBM SPSS version 23.
Results: Out of the 205 responses, 163 (79.51%) agreed to have used CAM at least once in their life. Of these, 108 (52.68%) respondents used Ayurveda and 105 (51.21%) used homeopathy. 60 (36.81%) of the respondents practicing CAM used it for common gastrointestinal (GIT)-related disorder with a 100% recovery rate, 125 (76.67%) for infectious diseases with a 93.6% recovery rate. 99 (60.74%) of the respondents preferring CAM for its safety profile, 68 (41.72%) believed that CAM is time tested and thus is efficacious. An integrative approach was suggested by 118 (57.56%) of all the respondents.
Conclusions: There is a disparity between the high prevalence in the use of CAM and its knowledge. However, a general consensus suggests that CAM is efficacious and is practiced for various indications.

Keywords: Mumbai, Complementary and alternative medicine, Knowledge, Self-medication

INTRODUCTION

The definition of complementary and alternative medicine (CAM) is inconclusive and different bodies have tried to define it over the years. The Institute of Medicine, USA has defined CAM as "complementary and alternative medicine is a broad domain of healing resources that encompasses all health systems, modalities, and practices and their accompanying theories and beliefs, other than those intrinsic to the politically dominant health system of a particular society or culture in a given historical period."[1] The National Institute of Health has defined CAM as "a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine."[2]

CAM has been practiced in India for thousands of years. In fact, India is the birthplace of Ayurveda, which is one of the oldest systems of medicines in the world. Ayurveda, yoga, siddha, unani, and homeopathy are recognized in India as the Indian systems of medicines. As a matter of fact, the practice of CAM is supported by the Indian government to the extent that it has released few sets of guidelines for the importance of CAM in the

management of COVID-19. "Ayurveda's immunity boosting measures for self-care during COVID-19 crisis" was declared by AYUSH (ayurveda, yoga, unani, siddha, homeopathy, and naturopathy) for developing immunity against COVID-19. These guidelines aim at improving immunity without making any specific reference to COVID-19. Such initiatives taken by the Indian government has seen an exponential rise in the already existing practice of CAM in India.

There is a widespread use of traditional medicine across developing countries (across Asia, Africa, and Latin America) with rapidly emerging markets in North America and Europe. It is estimated that nearly 50% of the population in developed nations use some form of CAM. It is estimated that 42% Americans, 49% French, 48% Australians, and 70% Canadians use CAM. This is nearly doubled in developing countries where CAM is still followed as the major form of practice for most of the rural areas.[3] The major reason for this is that CAM is believed to provide a holistic approach, which focuses on stimulating the body's ability to heal itself via energy alignment, herbal supplementation, and other balancing techniques.

In India, out of the total 18 states surveyed, in about five states AYUSH services were reportedly utilized by over 60% households, in another six states about 30-60% households reported utilization and in another five states it was less than 30% households.[4] Similarly, based on a survey of 35 districts across 19 states, Singh et al found that about 14% patients were actually availing Ayurveda and homeopathy treatment whereas analysis of WHO-SAGE survey revealed that 11.7% respondents use traditional medicine as a frequent source of care.[5,6] A recent study demonstrated that majority of Asian-Americans are more likely to use CAM than other ethnical groups in the USA. Sociodemographic factors, educational qualifications, and age were the major predictors for the use of CAM in these individuals.[7] The majority of individuals (54.9%) used CAM in conjunction with conventional medicine. Most people use CAM to treat and/or prevent musculoskeletal conditions or other conditions associated with chronic or recurring pain. Women were more likely to use CAM than men.

CAM is generally used in combination with modern medicine as an integrative approach.[8] The data for the use of CAM as single therapy is inadequate. However, it is generally observed that CAM is used by the people for the conditions that are difficult to manage by modern medicine and the treatment for which is expensive. They use CAM to control the adverse effects caused by anti-cancer drugs. It is also widely used for the management of chronic disorders like diabetes, arthritis, chronic pain, hypertension and other cardiovascular disorders, etc.[9–11] Although the governments throughout the world have started to monitor the practice of CAM, a substantial amount of unofficial and unwarranted for healthcare still exists in most of the developing countries.

Alarmingly, most of the complementary medications are deemed to be safer than their conventional counterparts leading to their increased usage. However, many evidences suggest that the use of CAM is associated with a range of untoward adverse effects.[3] Notably, herbs used in the Indian system of Ayurveda are known to be hepatotoxic.[12] Of greater concern is the fact that concurrent use of CAM and conventional medicine can lead to possible life threatening herb-drug interactions.[13] Furthermore, there is limited clinical evidence highlighting the efficacy of CAM and an evidence-based approach should be followed to by all the CAM providers to strengthen their claim.

The general population is unaware of the issues related to CAM and this has led to an increased usage of CAM over the years. People's attitude and knowledge about CAM is limited and concerning. People in developing countries trust CAM and rely on it due its affordability, accessibility, apparent assurance of it being safe and effective. Thus, it is important to investigate the knowledge and attitude of the common masses towards its usage especially because most of the Indian population depends on the use of CAM.

No study has been done in the past to investigate people's attitude, knowledge, and practice of CAM in common settings. Thus, the aim of this study was to understand the reason of the use of CAM, the perceived efficacy and safety, and self-medication (SM) practice in the population of Mumbai and its adjoining regions.

METHODS

Questionnaire design

A community based descriptive cross-sectional study was carried out among people in Mumbai and its adjoining regions from January-July 2020 by preparing a questionnaire referring to previously published literatures.[14–18] Prior to the conduct of the study, ethical approval was granted by population health independent ethics committee. All the study participants were explained the aim of the study before their participation. We determined the sample size based on awareness of the use of CAM. Researchers have reported 78.6% awareness about CAM.[3] So, with a precision of 5%, awareness 78.6% and 90% Confidence interval estimated sample size was 183. We decided to use convenient sampling method to interview 205 participants i.e. 10% more participants to take care of possible low response rates, which resulted in estimated sample size of 201.3 which was rounded off to 205.

Total 267 participants were interviewed to participate in the study of which 205 accepted to participate in the study, reaching our estimated sample size. All the participant data was kept confidential and anonymous throughout the study and the participants were explained this before their participation.

The study questionnaire was prepared in English based on past references and comprised of both open-ended and closed-ended questions. To assess the validity of the questionnaire, a pilot study was performed prior to the start of this study. The questions were modified based on the understanding of the pilot study participants. The results of the pilot study were not included in the present data set.

Study population

The study population consisted of individuals living in Mumbai and the adjoining regions who were 18 or older.

Inclusion criteria

Anyone who could comprehend English was qualified to contribute to this study. Both males and females could participate based on their discernment.

Exclusion criteria

Psychologically compromised individuals and minors were excluded from the study.

Data collection

We conducted a pilot study consisting of 20 participants before the start of this study to evaluate if the participants understood the study questionnaire and to plan the study timelines. Data from the pilot study was included in the present study analysis. The participants were interviewed face-to-face and explained the aim and objectives of the study. However, due to COVID-19 pandemic, rest of the participants were contacted virtually and explained the study aim. The questionnaire was filled electronically through Google-forms in the latter case. All the participants were explicitly ensured that their information would be kept confidential and anonymous and would only be used for research purposes to publish the data.

Statistical analysis

Data was transcribed from Microsoft excel and analysed using IBM SPSS version 23. Data was evaluated using descriptive statistical methods and bivariate analysis was conducted with all relevant variable. The results were considered to be significant if $p<0.05$.

RESULTS

Sociodemographic characteristics of the participants

Total 33 (55.12%) of the respondents had educational qualification of bachelor's or lower. The other 72 (35.12%) had at least Master's level qualification or higher. 49 (23.9%) contributors referred to CAM practitioners as their go-to physicians or family doctors. The other 156 (76.09%) referred to MBBS or MD qualified physicians. 130 (63.41%) were professionally either working or studying in the healthcare sector. 134 (65.37%) respondents had health insurance before participating in the study. Of these, 14 (10.45%) emphasized that their health insurance providers also covered the cost of CAM treatments, if prescribed by physicians (Table 1).

Table 1: Sociodemographic characteristics of the participants.

Variable	Frequency	Percentage
Education		
Bachelor's or lower	133	55.12
Master's or higher	72	35.12
Occupation		
Healthcare	130	63.41
Others	75	36.59
Family physician's qualification		
CAM practitioners	43	23.9
MBBS/MD	156	76.09
Health insurance		
Yes	134	65.37
No	71	34.63
Covers CAM	14	10.45

Prevalence of CAM

Out of the 205 responses, 163 (79.51%) agreed to have used CAM at least once in their life. To identify the exact use of CAM, we divided the questionnaire into ayurveda, homeopathy, siddha, unani, tibetan, and chinese systems of medicine. 108 (52.68%) respondents practiced Ayurveda, 105 (51.21%) practiced Homeopathy and only 9 (4.39%) respondents practiced either Siddha, Unani, Tibetan, or Chinese systems of medicine.

According to this study, participants reported to have used CAM for treating different kinds of ailments. 60 (36.81%) of the respondents practicing CAM used it for common gastrointestinal (GIT)-related disorders such as diarrhea, constipation, hyperacidity, etc.

Notably, 125 (76.67%) respondents used CAM for the management of infectious diseases such as flu or bacterial infections, which showed a significant ($p=0.07$, $\chi 2$ Value of 7.287) usage of CAM for infectious diseases among the study participants. Only 3 (1.84%) practiced CAM for analgesic purpose and all the three respondents used homeopathy for analgesia. Also, 6 (3.68%) respondents used CAM for gynecological disorders. 29 (17.79%) respondents used CAM for the management of metabolic disorders such as thyroid (8), diabetes (12), and hypertension (9). Further, 19 (11.66%) used CAM for dermatological usage. A small number of respondents used CAM for the management of cancer, debility, cognitive irregularities, kidney stone, varicose veins, and asthma.

Knowledge towards CAM

To understand the attitude of people towards using CAM, we evaluated the reason for the practice of CAM. More than half, 99 (60.74%), used CAM for the perceived safety profile of these medications. They believed that the use of CAM is not associated with any side effects. Bivariate crosstabulation analysis showed that the use of CAM for its perceived safety was statistically significant ($p<0.001$, $\chi 2$ Value of 49.334). Only 6 (3.68%) respondents used CAM due to its affordability as compared to conventional medicine and also based on the claims made by these providers in their advertisements. 45 (27.61%) used CAM because it was prescribed to them by their healthcare providers. Interestingly, 68 (41.72%) believe that CAM is time tested and thus is efficacious. Bivariate crosstabulation showed that this perception was significant ($p<0.001$, $\chi 2$ Value of 29.838) among the study participants with a minimum expected count of 15.16 (Figure 1).

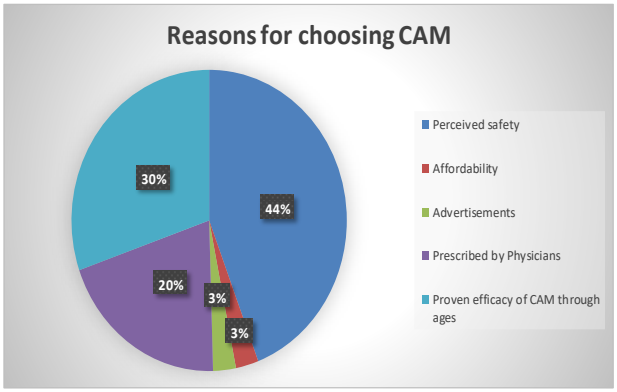

Figure 1: Reasons to prefer CAM over conventional medicine.

Figure 1 represents the reasons to prefer CAM over conventional medicine. The pie chart illustrates the reason for CAM preference over allopathy. 44% of the respondents preferred CAM for its perceived safety, 3% for its affordability, and 3% based on claims made on advertisements. 20% respondents used CAM as it was prescribed to them by their physicians. 30% believed that CAM is efficacious as it is time tested. This pie chart extrapolates the values found in this study to a total of 100%.

An integrative approach of CAM along with conventional medicine is widely being propagated by CAM providers claiming that CAM may increase the efficacy of or decrease the adverse effects of conventional medications. Our study further highlighted this behavior of CAM users with 118 (57.56%) of all the respondents agreeing that an integrative approach enhances the chances to cure an ailment while improving the adverse effects profile. Interestingly, respondents who only practiced conventional therapies also agreed that an integrative approach is better when considering the safety and efficacy profile. This was found to be statistically significant ($p<0.001$, $\chi 2$ Value of 15.310) with a minimum expected count of 17.82.

This study demonstrated different perceptions of participants of the potential of CAM in treating various diseases. Nearly three fourth (119, 73.01%) of the participants responded that CAM was efficacious in curing the diseases that it was taken for. 117 (71.78%) of the respondents noted that infectious diseases such as flu and other bacterial infections were cured by following CAM therapy. Remarkably, 93.6% (117 out of 125) of the respondents who had taken CAM in the past attributed its usage for treating infectious diseases. It is important to note that all the 60 (100%) respondents who used CAM for managing GIT-related disorders responded that CAM cured the condition for which it was taken. Of the 29 respondents who used CAM for managing metabolic disorders, 14 (48.27%) noted that their condition was cured by CAM usage. 10 (52.63%) observed that CAM treated dermatological conditions for which it was followed. 36 (22.09%) of the respondents contended that CAM proved inefficacious in curing the ailments, and the rest were on CAM for a short time for them to give any opinion. Different variables of CAM practice are described in (Table 2).

Table 2: CAM practice variables.

Variable	Category	N (%)
Systems of CAM	Ayurveda	108 (52.68)
	Homeopathy	105 (51.21)
	Siddha, Unani, Tibetan, or Chinese	9 (4.39)
Indication of CAM	GIT-related disorders	60 (36.81)
	Infectious diseases	125 (76.67)
	Analgesia	3 (1.84)
	Gynecological disorders	6 (3.68)
	Metabolic disorders	29 (17.79)
	Dermatological disorders	19 (11.66)
Reason for CAM	Perceived safety	99 (60.74)
	Affordability as compared to conventional therapy	6 (3.68)
	Based on prescription	45 (27.61)
	CAM is time tested	68 (41.72)

Continued.

Variable	Category	N (%)
Integrative approach	Safe and better efficacy profile	118 (57.56)
Perceived efficacy of CAM	Yes	119 (73.01)
	No	36 (22.09)
	Infectious diseases	117 (71.78)
	GIT-related disorders	60 (100)
	Metabolic disorders	14 (48.27)
	Dermatological conditions	10 (52.63)
Discontinuation of CAM	No signs of improvement/ time required	52 (85.25)
	Diet restrictions	17 (27.87)
SM of CAM	Discontinued without informing physician	61 (37.42)
	Physicians unaware of SM	91 (55.83)

Self-medication practice of CAM

Total 38 (23.31%) respondents were on CAM remedies at the time of filling the study questionnaire. 21 (55.26%) of these were on CAM medication for less than a year and the other 17 (44.72%) had been taking CAM for more than a year before they filled the study questionnaire. 61 (37.42%) of the respondents abruptly stopped taking CAM without informing their physicians before the therapy was completed. Of these, 52 (85.25%) stopped CAM therapy because of the associated time required to cure the ailment as there were no signs of improvement of the condition, and 17 (27.87%) reported that there were too many diet restrictions for the therapy to be completed. Bivariate analysis showed that significant number of ($p=0.02$, $\chi 2$ Value 5.411) participants stopped taking CAM because the ailment was cured.

The primary concern was the use of readily available CAM by the common masses without informing their healthcare providers. 91 (55.83%) reported that their family physicians were unaware of their CAM SM practice. Different variables of CAM practice are described in (Table 2).

DISCUSSION

The present community-based cross-sectional study aimed to investigate various factors of the prevalence of CAM. This study studied the attitude, knowledge, SM, and general practice of CAM among the common masses of Mumbai, India.

This study is the first to highlight the practice of CAM in this region. As expected, a significant number of participants practiced at least one of ayurveda, homeopathy, unani, chinese, tibetan, or siddha systems of medicine. Extremely limited data is available at present, which highlights the reasons for use of CAM and its perceived efficacy. Studies suggest a steep rise in the use of CAM even in developed countries. Data from America suggests that there is a widespread use of CAM approaches like acupuncture and chiropractic.[1] Another study showed that 38% adults and 12% children used some form of CAM in their lifetime in 2007.[2] To monitor the use of CAM and develop a roadmap to notice the potential research areas of CAM, some European countries started a project named CAMbrella, which focuses on evidence-based development of CAM therapies both for healthcare providers and the general public.[19]

In the present study, 52.68% of the total respondents used Ayurveda for various ailments and 51.21% used homeopathy of the total sample size. This was in agreement with another study done to understand the use of ayurveda and home remedies in younger adults from rural areas of north India.[20] Participants' educational qualification had no significant difference in the practice of CAM. However, in earlier studies, it was found that the use of CAM is associated with socio-economic status as the use was higher in middle- and low-income households.[21] Interestingly, ayurveda is seeing a solid spurt in Kerala in recent years in spite of well-developed allopathic system and higher education rate in this state.[22] Higher use of CAM was also observed in other states of Chhattisgarh and West Bengal.[21] Also, North-Eastern states of India such as Mizoram, Arunachal Pradesh, and Meghalaya have higher prevalence of CAM.[21] Here, only 10.45% of the respondents agreed that their health insurance providers covered CAM therapies. From a policy perspective, we believe that insurance companies can take a note of the increased use of CAM over the years and start covering these medications based on proper prescriptions from healthcare providers.

The study suggests that CAM is practiced for various ailments ranging from cancer and diabetes to varicose veins and dermatological disorders. 36.81% used CAM for GIT-related disorders and 76.67% used CAM for infectious diseases. It is important to note that CAM is most widely used for the management of infectious diseases as there is a discrepancy between the consumers and physicians regarding its usage. This gap was further emphasized in a recent study showing a lack of concordance in the perceived efficacy of CAM for cancer management between patients and oncologists.[23] Further, 17.79% participants agreed to have used CAM for the management of metabolic disorders. A study conducted to identify the use of CAM for diabetes in Kerala demonstrated that 9% of the respondents used CAM

therapy alone for diabetes management and 30% followed an integrative approach.[24] In the present study, 11.66% used CAM for dermatological disorders.

We next addressed the reason for preferring CAM over conventional therapy. 60.74% of CAM users responded they preferred CAM over allopathy because of its safety profile as it is highly propagated that CAM usage is not associated with any adverse effects. Interestingly, another study has underlined the perception that CAM is more efficacious than allopathy.[20] An appropriate parallel was established in this study as 41.72% believed that CAM is highly efficacious as these systems have withstood the test of time and thus are better. As this study was carried in an urban area, affordability was not a major concern for choosing CAM over allopathy.[21]

Notably, 57.56% of the total study participants responded that an integrative approach of CAM along with allopathy would be better to achieve faster results and to improve the safety profile of the allopathic medications. This is of prime concern as drug-herb interactions are not unheard of and if left unchecked, can lead to serious problems.[25] Counter-intuitively, an integrative approach has in fact been illustrated for the management of TB control in Mumbai.[26] An integrative approach of CAM and allopathy has also been promoted for gynecological disorders and maternity services, however, medical pluralism is associated with conflicts of professional status, ideologies of different systems, resource provisions, efficacy and ethics.[27] Therefore, to establish the use of integrative medicine, a more pragmatic support is warranted.

CAM is generally perceived to be efficacious as noted earlier. Proportionally, 73.01% respondents asserted that CAM had proven efficacy in treating the ailments that the therapy was taken for. 71.78% said that it cured infectious diseases, all 60 (100%) said that it cured GIT-related disorders, 52.63% said it cured dermatological disorders, and 48.27 said it cured metabolic disorders. When the therapy was stopped, 85.25% of the participants who discontinued argued that they stopped CAM therapy for the time required to get results and 27.87% discontinued due to the dietary restrictions associated with CAM.

CAM also includes home remedies and since its usage is strongly coupled with no side effects, it is generally taken without informing the healthcare providers. 37.42% of the respondents in the present study discontinued CAM without informing their physicians about this even if the medications were prescribed by them. 55.83% of the participants said that their family physicians were unaware of their practice of CAM. SM is a general trend seen with the use of CAM throughout the world.[3]

Limitations

Limitation of the study was the small sample and similarity in the cultural background between the participants as they were from the same city. Therefore, a longitudinal study with larger sample size across India is recommended.

CONCLUSION

The present study contributes an unambiguous understanding of the relationship between the use of CAM and the knowledge thereof. Through the findings of our research it can be said that there is prevalent use of CAM in the progressive and urban population on Mumbai, mainly, Ayurveda and Homeopathy. It can be speculated that the numbers would be even higher in the rural population of India. The study provided insight on what the stance of the general public is towards CAM. From the results it can be concluded that the knowledge of CAM is low and the high usage is due to preconceived notions that Ayurveda and Homeopathy have no side effects and are therefore safer to use and that the efficacy has been proven through time. CAM is being used for varied diseases, mainly for long term management of infectious diseases and GIT diseases. What is alarming is that a high number of people have not informed their general physicians about the usage of CAM which can lead of interactions between CAM and conventional medicine, leading to unwanted side effects. The generalizability of the results is limited to the city of Mumbai but considering older tests it can be concluded that the belief of public is similar throughout the urban and rural population of India. This can be concerning as most herbal medicines used either do not have proven efficacy or do not have strict quality control measures and herb-drug interactions can prove to be measure concerns if not addressed by healthcare providers. This study is important to review and recognize the increased and somewhat uninformed use of CAM in modern times by the general public and therefore, it is recommended that more attention should be given towards the regulation of its use and towards educating the masses about the issues regarding uninformed use of CAM. More attention needs to be given in research of efficacy, side effects and interactions with other CAM or conventional drugs.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Sherman KJ.Complementary and Alternative Medicine in the United States. In: Institute of Medicine of the National Academies, The National Academies Press. N.W. Washington DC; 2005:1-337.
2. National Institutes of Health, National Center for Complementary and Alternative Medicine. The use of Complementary and Alternative Medicine in the United States: Cost Data, 2008. Available at

https://files.nccih.nih.gov/s3fs-public/NHIS_cost-data.pdf. Accessed on 19 October 2020.
3. Belachew N, Tadesse T, Gube AA. Knowledge, attitude, and practice of complementary and alternative medicine among residents of Wayu Town, Western Ethiopia. J Evid Based Complemen Altern Med. 2017;22:929-35.
4. Priya R, Saxena S. Status and Role of AYUSH and Local Health Traditions Under the National Rural Health Mission. In: National Health Systems Resource Centre. Ansari Road, New Delhi; 2010: 1-308.
5. Singh P, Yadav RJ, Pandey A. Utilization of indigenous systems of medicine & homoeopathy in India. Indian J Med Res. 2005;122:137-42.
6. Oyebode O, Kandala N-B, Chilton PJ, Lilford RJ. Use of traditional medicine in middle-income countries: a WHO-SAGE study. Health Policy Plan 2016;31:984-91.
7. Felicilda-Reynaldo RFD, Choi SY, Driscoll SD, Albright CL. A national survey of complementary and alternative medicine use for treatment among Asian-Americans. J Immigr Minor Heal. 2020;22:762-70.
8. Murat-Ringot A, Preau M, Piriou V. Complementary and alternative medicine in cancer patients and randomized controlled trials. Bull Canc. 2020; S0007-4551(20)30376-3.
9. Fetz K. Comparative analysis of resource utilization in integrative anthroposophic and all German pediatric inpatient departments. Brit Med Centr Health Serv Res. 2020;20:939.
10. Misra P, Nayak C, Chattopadhyay A, Palit TK, Gupta B, Sadhukhan S, et al. Individualized Homeopathic Medicines in Chronic Rhinosinusitis: Randomized, Double-Blind, Placebo-Controlled Trial. Homeopat. 2020.
11. Frass M, Lechleitner P, Gründling C, Pirker C, Grasmuk-Siegl E, Domayer J, et al. Homeopathic Treatment as an 'Add on'Therapy May Improve Quality of Life and Prolong Survival in Patients with Non-Small Cell Lung Cancer: A Prospective, Randomized, Placebo-Controlled, Double-Blind, Three-Arm, Multicenter Study. Oncolo. 2020.
12. Philips CA, Ahamed R, Rajesh S, George T, Mohanan M, Augustine P. Comprehensive review of hepatotoxicity associated with traditional Indian Ayurvedic herbs. World J Hepatol. 2020;12:574-95.
13. Arora G, Arora A, Chaudary V, Kamlija M, Kamlija H. Possible herbal-drug interactions an evidenced base review. Altern Ther Health Med. 2020;AT6470.
14. Thingore C, Joshi R, Kshirsagar V, Limaye D. A study to assess the knowledge and attitude towards HIV of pharmacy students from Mumbai university. Int J Commun Med Pub Heal. 2020;7:3867-71.
15. Limaye D, Limaye V, Fortwengel G, Krause G. Self-medication practices in urban and rural areas of western India : a cross sectional study. Int J Commun Med Pub Heal. 2018;5:2672-85.
16. Limaye D, Ahmad M. Self-medication practices among university students from Karachi, Pakistan. Int J Commun Med Pub Heal. 2017;4:3076-81.
17. Limaye D, Fortwengel G, Limaye V, Bhasi A, Dhule A, Dugane R, et al. A study to assess knowledge and attitude towards HIV among students from Mumbai university.
18. Limaye D. Oral cancer awareness among students from Mumbai University. Int J Basic Clin Pharmacol. 2018;7:1215-9.
19. Fischer FH, Lewith G, Witt CM, Linde K, von Ammon K, Cardini F, et al. High prevalence but limited evidence in complementary and alternative medicine: guidelines for future research. Brit Med Centr Complemen Alternat Medic. 2014;14(1):46.
20. Imran M, Amir M, Naqvi H, Naaz S. The prevalence and patterns of usage of Ayurveda, Unani and home remedies in younger adults of rural North India. Int J Green Pharm. 2017;11:108-13.
21. Rudra S, Kalra A, Kumar A, Joe W. Utilization of alternative systems of medicine as health care services in India: Evidence on AYUSH care from NSS 2014. PLo One. 2017;12:e0176916.
22. Harilal MS. 'Commercialising traditional medicine': Ayurvedic manufacturing in Kerala. Econ Polit Wkly. 2009;44:44-51.
23. Kim SH, Shin DW, Nam YS, Kim SY, Yang HK, Cho BL, et al. Expected and perceived efficacy of complementary and alternative medicine: a comparison views of patients with cancer and oncologists. Complement Therap Medic. 2016;28:29-36.
24. Vishnu N, Mini GK, Thankappan KR. Complementary and alternative medicine use by diabetes patients in Kerala, India. Glob Heal Epidemiol Genomics. 2017;2:e6.
25. Tesfaye Gobena EAS. Aspects of common traditional medical practices applied for under-five children in Ethiopia, Oromia region, Eastern-Harargie district, Dadar Woreda, 2011 G.C. J Commun Med Heal Edu. 2016;22:929-35.
26. Powell-Jackson T. A pragmatic way forward?. Sci. 2016;354:34-5.
27. Guha Mazumdar P, Gupta K. Indian system of medicine and women's health: a clients' perspective. J Biosoc Sci. 2007;39:819-41.

Cite this article as: Kshirsagar V, Tiwari S, Thingore C, Limaye D. The practice, attitude, and knowledge of complementary and alternative medicine in Mumbai, India. Int J Community Med Public Health 2020;7:4792-8.