

## Research Article



## Saudi Medical Students' Attitudes toward Complementary & Alternative Medicine (CAM) and Practicing Integrative Medicine (IM)

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### ABSTRACT

This study investigated medical students' attitudes towards complementary and alternative medicine (CAM) concepts and practices to determine their tendencies to integrate CAM treatments into conventional medicine (CM). Self-administered questionnaires, comprising closed-ended questions about CAM were distributed among years 3, 4 and 5 medical students at the College of Medicine of Al-Imam Mohammad Ibn Saud Islamic University (IMSIU) between January and April 2016. A total of 202 questionnaires yielded useable responses. Most students (82.3%) believed CM could benefit from CAM ideas and concepts. About 61% of the respondents agreed that herbal medicine and chiropractic are valid methods for treating various diseases. Additionally, 78% of students believed patients would benefit more from physicians who are familiar with CAM therapies than from those who are not. About 72% of students believed integrative medicine (IM) is more helpful than CAM or CM independently. The findings from the study showed that medical students' attitudes toward CAM concepts and ideas are highly positive. The findings also exhibited students' demand for including more CAM courses and training sessions in school curricula. The current study clearly emphasized on the need of a higher quality of CAM-related medical education and for more research to examine how CAM can be integrated into current healthcare systems.

**Keywords:** Complementary medicine, alternative medicine, integrative medicine, medical students, perceptions, Saudi Arabia.

### INTRODUCTION

In recent years, there has been a significant increase in the global use of complementary and alternative medicine (CAM). The World Health Organization (WHO) has reported that 70 to 80% of Asian and African populations have used some form of CAM<sup>1</sup>. A systematic review of 47 references containing 51 reports from 49 surveys investigating the prevalence of CAM in the general population found that the prevalence of all types of CAM ranged from 9.8 to 76% and that visits to CAM practitioners accounted for 1.8 to 48.7%<sup>2</sup>. The 2007 National Health Interview Survey (NHIS) found that approximately 38% of Americans use CAM, representing a market of about \$34 billion on CAM practitioner visits and purchase of CAM products<sup>3</sup>. The prevalence of CAM use in Saudi Arabia is inconsistent but remains high<sup>4</sup>. A study investigating CAM use in 2008 revealed that CAM prevalence was 73%<sup>5</sup>; however, in a recent study, CAM prevalence was found to be 85%<sup>6</sup>.

As CAM use is globally common; it has been argued that concepts of integrative medicine (IM) would be useful for patients. The term "integrative medicine" (IM) refers to "health care that uses all appropriate therapeutic approaches, conventional and alternative, within a framework that focuses on the therapeutic relationship and the whole person"<sup>1</sup>. The WHO now encourages and supports member states in implementing certain forms of CAM and ensuring their rational use in their national healthcare systems, wellness, and people-centered health care. Furthermore, WHO continuously recommends that member states improve the safety and effectiveness of

CAM usage through regulation, education, and research, and to integrate CAM practitioners into the health system, as appropriate<sup>1</sup>.

A unique advantage of a CAM intervention is its holistic approach, which is best suited to patients who have particular psychological and spiritual needs<sup>8,9</sup>. Holistic approaches pay attention to these needs, focus on the patient-doctor relationship, and understand the patient's perspective through multimodal concepts<sup>10</sup>. The rationale behind IM, then, is to include the best practices of both conventional and complementary therapy, uniting these practices into a holistic approach that offers the benefits of both approaches while considering the possibility they may occasionally interfere with each other<sup>7</sup>.

CAM was integrated into conventional healthcare systems in a number of countries. For instance, in China, traditional Chinese medicine (TCM) is practiced alongside the conventional health system and is covered by both public and private insurance. In Korea, CAM practitioners can provide traditional medicine (TM) in both public and private hospitals and clinics. The government in Vietnam fully covers herbal medicine, acupuncture, and TM. Further, Switzerland is the first European country to implement some CAM practices in to its healthcare system. These practices include homeopathy, neural therapy, anthroposophical medicine, phytotherapy, and traditional Chinese herbal medicine. Other countries integrated some form of CAM, including Australia, the United Kingdom, Italy, the United States, and Germany. However, there is no consensus about which CAM treatments should be integrated into healthcare systems.



In addition, it is difficult to find one model that can satisfy all the needs of different regulatory systems<sup>1,4</sup>.

Practicing IM services through conventional healthcare systems remains risky and challenging; especially since most CAM practices are not evidence-based. Moreover, several difficulties make the situation more complicated. The most important difficulties include the attitudes of healthcare professionals toward CAM, lack of scientific resources of CAM data, health system adaptation issues, lack of CAM expertise within the conventional healthcare system, and utilization difficulties<sup>4</sup>.

The literature shows that attitudes toward CAM have been widely investigated among patients, healthcare providers, and medical students<sup>11</sup>. Perceptions of medical students towards CAM have shown to be generally positive<sup>12,14</sup>. Furthermore, students' beliefs and attitudes toward CAM may influence their practice of medicine<sup>15</sup>. Therefore, considering students' attitudes toward CAM will help in understanding the integration of CAM practices into conventional medicine and the nature of this integration<sup>8,16</sup>.

CAM-related education is a growing priority for medical schools<sup>17</sup>. More than two-thirds of U.S. and Canadian medical schools now offer either electives or core CAM courses in their curricula, and between 60 and 80% of their students have expressed a demand for further education and training in CAM practices<sup>18</sup>. In Australia, about 95% of 110 pharmacy students felt that pharmacists should be sufficiently qualified to advise patients on CAM treatments<sup>19</sup>.

Studies conducted in Saudi Arabia have shown that medical students have significantly positive perceptions toward CAM<sup>12</sup>; however, only 14 of the 90 medical schools in Saudi Arabia offer core CAM courses<sup>20</sup>. Thus, there remains a need to examine medical students' knowledge and perceptions toward CAM therapies, especially given the widespread use of CAM within the Saudi population. This study's main goal is to explore medical students' attitudes towards integrating CAM into CM. In addition, the study seeks to determine medical students' satisfaction with studying CAM and their attitudes towards CAM concepts and practices.

## Methods

### Study design and setting

This study was conducted by distributing cross-sectional (self-administered) questionnaires among medical students at the College of Medicine at Al-Imam Mohammad Ibn Saud Islamic University (IMSIU). The targeted population included students in year 3 (120 students), year 4 (106 students), and year 5 (98 students), who had taken at least one CAM course at the college. The college is newly established at IMSIU and it first received students in 2009. The college offers a core CAM course for semester five and a phyto therapy elective course.

The questionnaire comprised closed-ended questions organized into two main sections. The first section examined the participants' socio-demographic information and the second section investigated their attitudes towards certain CAM concepts and practices, using a five-point Likert scale (strongly agree, agree, neutral, disagree, strongly disagree) for each item. Three statements of the questionnaires' contents asked about students' satisfaction with studying CAM, eight statements were about students' attitudes toward CAM concepts and practices, and seven statements asked about students' attitude toward practicing IM. The questionnaire items were formulated based on previously published papers<sup>11, 16, 19, 21, 22</sup>. The questionnaire's validity is the degree to which the questions accurately determine what they are intended for, i.e. to efficiently acquire precise information about the attitudes of the students toward CAM and IM. Therefore, an academic clinician and two researchers in the field of CAM and public health from the College of Medicine at IMSIU reviewed the questionnaire. Furthermore, 35 students were recruited for a pilot study. Comments from students recruited for the pilot study did not alter the questionnaire structure or its items; however, some phrases needed rewording for clarity. This was done to ensure the reasonability and feasibility of the nature of the questionnaire items, the questions put to the participants, and the appropriateness of the proposed study methodologies. The questionnaire was structured for easy completion in an estimated timeframe of 10 to 15 minutes. The questionnaires were e-mailed to the students between January and April 2016. During the study period, to enhance the study's response rates, two reminder emails were sent to the students. In addition to the questionnaire, the e-mail sent to the students contained all the information necessary for taking part in the study. The students were also informed their participation was anonymous and voluntary. The students' responses to the email were considered consent to taking part in the study. Confidentiality was guaranteed to all participants. All questionnaires were stored securely in separate locked filing cabinets that were accessible only by the research team and staff at the College of Medicine in IMSIU, who were authorized to monitor the quality of the research.

### Data analysis

The Statistical Package for the Social Sciences (SPSS) software for Windows, version 19 (SPSS Inc., Chicago, IL, USA) was used for data analysis. The frequency distributions and Likert scale responses were obtained. A chi-square test was used to determine the associations between sociodemographic variables and the students' attitudes toward CAM. The level of  $P < 0.05$  was interpreted as statistically significant.

## RESULTS

Of the 324 distributed questionnaires, 205 questionnaires were returned (response rate = 63.3%). Of these, 202



(98.5%) were usable and 3 (1.5%) were returned blank. Table 1 represents participants' sociodemographic characteristics and personal CAM education and use. About (90%) of the participants were between 20 and 25 years of age, 12 (6.4%) students were between 26 and 30 years of age, and only 8 (3.9%) were older than 30 years. Most of the participants were third-year students 106 (52.5%), 46 (22.8%) were year four, and 50 (24.8%) were year five.

**Table 1:** Students' demographic characteristics and their personal CAM education and use

Characteristic	No. of respondents (%)
<b>Age</b>	
20–25	180 (90.1)
26–30	12 (6.4)
Above 30	8 (3.9)
<b>Student medical year</b>	
Year 3	106 (52.5)
Year 4	46 (22.8)
Year 5	50 (24.8)
<b>CAM study method</b>	
Core course only in the school	202 (100)
Core and elective courses in the school	10 (4.9)
Outside the school	2 (0.9)
<b>CAM study sufficiency</b>	
Sufficient	136 (67.3)
Insufficient	66 (32.7)
<b>Need for more CAM courses</b>	
Yes	108 (53.5)
No	94 (46.5)
<b>CAM use</b>	
CAM user	142 (70.3)
CAM non-user	60 (29.7)
<b>Would you recommend CAM for others</b>	
Yes	111 (54.9)
No	91 (45.1)

All students had studied CAM as a core course, but only 10 (4.9%) had also studied CAM as an elective course, and 2 (0.9%) reported they had taken CAM courses outside the school. Most of the students (67.3%) felt the CAM courses offered by the school were sufficient, while 66 (32.7) reported the CAM courses were insufficient. However, more than half of the participants 108 (53.5%) preferred having more CAM courses in their school curriculum while 94 (46.5%) did not wish to study more CAM courses. About (70%) of the students had tried CAM

treatments, while the remaining (30%) had never used CAM. More than half of the participants (54.9%) had advised others to use CAM treatments (Table 1).

The results showed no significant differences in CAM use, recommending others to use CAM, and CAM study sufficiency among students in different academic years. The *P* values were 0.744, 0.519, and 0.266, respectively. Fifth-year students, however, were significantly more likely to study more CAM courses (66.1%), whereas 55.6% of third-year students and (32.6%) of fourth-year students had preferred to have more CAM courses; (*P*= 0.003) (Table 2).

The participants' attitudes toward CAM concepts and practices were generally positive. About 94% of the participants believed treatment methods should consider patients' needs in their entirety, including mental, physical, and spiritual demands. Of the students, 86% believed that promoting health, rather than treating disease, should be a priority for primary care physicians. Most students (92.4%) agreed that a patients' mental status affected their physical health. In the same context, about 80% of the students believed that patients' spiritual beliefs play a key role in their healing. About 61% of the participants agreed that herbal medicines and chiropractic are valid methods for treating various diseases.

About 72% of students believed that practicing IM is more helpful than practicing either CAM or CM independently. Most students (82.3%) also believed that CM could benefit from CAM ideas and concepts. In addition, 78% of the students believed patients would benefit more from physicians who are familiar with CAM therapies than from those who are not. However, nearly half of the students (46.2%) believed that CAM therapies are not usually safe and are less invasive than CAM treatments. Furthermore, 53% of students agreed that some non-evidence-based CAM treatments might remain valuable to physicians. More than a third of the participants (38%) reported that physicians should recommend effective CAM therapies even when the mechanisms of action of these therapies remain unexplained. Only 46.3% of the students agreed that doctors should be more cooperative when referring patients who could not be treated by conventional medicine to CAM practitioners. Given all these attitudes toward CAM among students, however, there was no statistically significant association between students' attitudes toward CAM and IM and their academic year level (Table 3).

**Table 2:** Association between students' academic year and their attitude toward CAM

	Student's academic year			P=<0.05
	Year 3 No. (%)	Year 4 No. (%)	Year 5 No. (%)	
<b>CAM study sufficiency</b>				
Sufficient	75 (70.8)	32 (69.6)	29 (58.1)	0.266
Insufficient	31 (29.2)	14 (30.4)	21 (41.9)	
<b>Need for more CAM courses</b>				
Yes	60 (56.6)	15 (32.6)	33 (66.1)	0.003
No	46 (43.4)	31 (67.4)	17 (33.9)	
<b>CAM use</b>				
CAM user	77 (72.6)	31 (67.4)	34 (86)	0.744
CAM non-user	29 (27.4)	15 (32.6)	16 (32)	
<b>Would you recommend CAM for others</b>				
Yes	61 (57.5)	26 (56.5)	24 (48)	0.519
No	45 (42.5)	20 (43.5)	26 (52)	

## DISCUSSION

This study sheds some light on the experience of teaching CAM courses at the College of Medicine at IMSIU. An important goal for the College is to allow students to explore CAM schools and treatments and to help them to appropriately benefit from its therapies. This will help students learn how to make decisions among several treatment choices and to integrate CAM therapies into their practice of medicine. The study sought students' perceptions of various CAM concepts and ideas and explored the extent to which they were keen to use CAM therapies in their real medical practice.

Our findings are consistent with most studies investigating medical students' perceptions towards CAM, including, in particular, other Saudi papers, which revealed that their perceptions were generally positive<sup>4, 11, 12</sup>. Almost all (95%) of our respondents held positive feelings towards some CAM concepts, such as the holistic approach to treatment. A considerable proportion of the respondents (61%) believed herbal medicine and chiropractic are efficient treatment methods. This finding was consistent with other recent studies<sup>23</sup>.

Our findings showed that most students (82.3%) agreed that conventional medicine could benefit from CAM and that patients would benefit more from physicians who are familiar with CAM therapies. Furthermore, most students (72%) were enthused about the idea of integrating evidence-based CAM therapies with conventional medicine and nearly half of the students would cooperate with CAM practitioners to help patients who could not be treated by conventional medicine. Overall, the questionnaire responses indicated that CAM is well accepted by medical students<sup>24, 25, 26</sup>. Our students' perceptions were also similar to those in a local study<sup>12</sup>, and to those of other medical students in different countries<sup>16, 23</sup>.

Unlike other studies<sup>12, 22</sup>, the present study showed that approximately 65% of students felt that CAM courses offered at the school are sufficient; however, in response to another question, more than half of the students preferred to have more CAM courses. This discrepancy may suggest that students are happy with the teaching methods of the current CAM courses but also feel they have not acquired essential knowledge about CAM and are not certain about what content should be included in their school curriculum.

Although the study revealed that about (70%) of the students had tried CAM methods, (50%) of the students had not recommended CAM treatments to others. This suggests the students favored CAM but were not confident enough to practice it on others. This may be explained by the students' lack of knowledge and training on CAM therapies<sup>27</sup>. The medical students may also have different standards for personal CAM use than for recommending CAM to patients<sup>28</sup>. Regardless, these observations illustrate the critical demand for proper knowledge and training courses to be included in school curricula<sup>22</sup>.

Unexpectedly, a considerable proportion of students (38%) stated they would use unexplained CAM practices that have been effective in treatment. This shows that, though evidence-based practice should be of concern to healthcare professionals, the students were not concerned about evidence-based therapies<sup>29</sup>. This finding was consistent with those of a local study on pharmacy students<sup>11</sup>, other Pakistani<sup>22</sup> and Australian studies<sup>19</sup>.

Several recommendations for further research can be made based on this and other studies. It would be useful in CAM education for students to consider the real-life practice of CAM by patients in their communities. Through CAM education, students should also be made aware of the most commonly used herbs and dietary supplements in CAM practice. Students, then, could learn

how to advise against dangerous herbal combinations and to recognize and manage any complications caused by CAM misuse. Most importantly, medical students should learn to report any CAM misuse or potential herb-drug

interactions (HDIs) appropriately. This will greatly help them accurately assess the risk-benefit of these practices and increase patients' awareness and safety during their real medical practice<sup>30, 31</sup>.

**Table 3:** Students' attitudes toward certain CAM concepts and practices and IM

Statement	Number of student responses (%)					Students' academic year <i>P</i> < 0.05
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	
Treatment methods should consider a patient's mental, physical, and spiritual needs	122 (61)	65 (32.5)	11 (5.5)	1 (0.5)	1 (0.5)	0.963
Primary care physicians should focus more on promoting their patients' health than on simply treating their diseases	103 (51.5)	69 (34.5)	21 (10.5)	4 (2)	3 (1.5)	0.999
Patients' mental status affects their physical health	133 (66.8)	51 (25.6)	11 (5.5)	2 (1)	2 (1)	0.947
Patients' spiritual beliefs play a key role in their healing	93 (46.7)	65 (32.7)	36 (18.1)	2 (1)	3 (1.5)	0.994
Herbal medicine (the use of herbal/dietary products) is considered an effective treatment method	41 (20.6)	80 (40.2)	52 (26.1)	21 (10.6)	5 (2.5)	0.825
Chiropractic (non-invasive, hands-on care that focuses on the musculoskeletal system) can be beneficial for treating some musculoskeletal disorders	45 (22.6)	76 (38.2)	50 (25.1)	14 (7)	14 (7)	0.876
Patients will benefit more from physicians who are familiar with complementary and alternative therapies than from those who are only familiar with conventional medicinal treatments	79 (39.3)	78 (38.8)	34 (16.9)	7 (3.5)	3 (1.5)	0.088
Physicians should recommend any safe and effective complementary and alternative medicinal treatments, even if the therapeutic actions of these treatments are not scientifically understood	28 (14)	48 (24)	51 (25.5)	41 (20.5)	32 (16)	0.566
Treatments lacking solid evidence-based support (e.g. randomised controlled trials) may still be valuable to physicians	33 (16.5)	73 (36.5)	65 (32.5)	18 (9)	11 (5.5)	0.940
Integrative medicine (i.e. integrating complementary and alternative medicine and conventional medicine) is more effective and helpful for patients than conventional medicine or complementary and alternative medicine separately	66 (33.2)	77 (38.7)	34 (17.1)	9 (4.5)	13 (6.5)	0.679
Conventional medicine could benefit from the treatments, beliefs, and ideas of complementary and alternative medicine	66 (33.3)	97 (49)	26 (13.1)	6 (3)	3 (1.5)	0.988
Complementary and alternative therapies are usually less harmful and have fewer side effects than those used in conventional medicine	23 (11.6)	51 (25.6)	33 (16.6)	53 (26.6)	39 (19.6)	0.716
For cases that cannot be treated with conventional medicine, physicians should be cooperative in referring their patients to complementary and alternative medicine practitioners, such as herbal medicine practitioners	25 (12.6)	67 (33.7)	60 (30.2)	28 (14.1)	19 (9.5)	0.952

It is argued that some patients use CAM treatments enthusiastically and, in some cases, truly believe in their benefits despite a lack of evidence<sup>32</sup>. It is essential, therefore, to understand patients' perceptions and appreciate their experiences in order to support them in choosing appropriate CAM treatments and avoiding harm because of a lack of knowledge or erroneous notions about such treatments. To accomplish this, medical students should learn how to engage in appropriate dialogues about CAM use with patients by asking why CAM treatments are meaningful to them and discussing their right to contribute to decisions about treatment options<sup>10</sup>.

There are concerns related to the fact that some CAM users deal with their diseases in their own ways and that healthcare professionals know little about CAM<sup>17, 33</sup>. Enhancing medical students' perceptions towards CAM before they begin practicing medicine may help reduce the gulf between patients and physicians in this respect. This will also help to educate patients about the benefits and harm of CAM, especially their use in conjunction with other CM. In other words, exploring medical students' attitudes towards CAM will not only endorse the need to provide CAM-related education but will also help to develop novel approaches to integrated health care<sup>10</sup>.

There are several strengths and limitations in this study. As the medical school at IMSIU is newly established, the study came to give an early opportunity for further development of CAM courses in the school curriculum to meet students' needs in this field. In addition, the positive students' attitudes about CAM obtained from the study make the cause for optimism in the stability of these attitudes toward CAM in their real medical practice. In terms of limitations, the sample size of patients included in the study could affect the generalize ability of the study. The study may also be subject to recall bias as it relies on self-reported questionnaires. Thus, the reliability of obtained answers cannot be substantiated. The lack of a widely-accepted questionnaire to assess medical students' attitudes toward CAM and IM may limit the comparability of the study's findings with others. Consequently, it is difficult to draw conclusions about the medical students' attitudes toward CAM.

In conclusion, the study revealed that the students had a positive attitude toward CAM and most students had tried CAM treatments. Our findings exhibit students' reasonable acceptance level for IM practice. In addition, most of the students preferred to have more CAM-education and training sessions in their school curriculum. This necessitates teaching CAM in a separate course and including its various components in the curriculum. Further, there should be reputable CAM information sources to develop students' knowledge about CAM therapies.

The current study proposed several ideas and attitudes surrounding CAM and IM among medical students. Further explorations are needed to confirm our findings and identify any factors influencing medical students' attitudes regarding CAM. In addition, a nationwide work investigating medical students' attitudes towards CAM in Saudi universities and colleges remains needed. One thing appears certain: the use of CAM therapies is widespread. Therefore, qualified individuals in this field should be available to advise patients about the safe use of CAM.

### Ethical Approval

The ethical approval required for this study was obtained from the ethics committee of the College of Medicine at IMSIU (Reference: 00104/04/2016).

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