



# Knowledge, Attitude, and Use of Complementary and Alternative Medicine among Final-Year Pharmacy and Medical Students in Benghazi, Libya

Seham Shaboun<sup>1</sup> Lina Salama<sup>2</sup> Rima Salama<sup>2</sup> Fatma Abdrabba<sup>2</sup> Fawzia Shabon<sup>3</sup>

<sup>1</sup>Department of Pharmaceutical Chemistry, University of Benghazi, Benghazi, Libya

<sup>2</sup>Department of Pharmaceutics, Faculty of Pharmacy, University of Benghazi, Benghazi, Libya

<sup>3</sup>Benghazi Children's Hospital, Faculty of Medicine, University of Benghazi, Benghazi, Libya

Address for correspondence Seham Shaboun, MSc, Department of Pharmaceutical Chemistry, Faculty of Pharmacy, University of Benghazi, Benghazi, Libya (e-mail: seham.shaboun@uob.edu.ly).

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## Abstract

**Introduction** Complementary and alternative medicine (CAM) is a growing branch of medicine that can improve the quality of life of many people. This study aimed to assess comparatively the knowledge, attitude, and use of CAM among graduation year pharmacy and medicine students at the University of Benghazi, Libya.

**Method** A cross-sectional survey was conducted among graduation year pharmacy and medicine students at the University of Benghazi for 4 months. The study tool was a self-administered online questionnaire and consisted of four main sections: demographic data, use, knowledge, and attitude toward CAM.

**Results** Most of the study respondents were females, and most were from Benghazi city. CAM use among pharmacy students was significantly higher ( $p$ -value= 0.001), with ruguia being the most commonly used modality (52.5%), followed by cupping-Al hijama and herbal medicine. Minor ailments and acute illnesses were the main medical conditions treated with CAM, and the unnecessary physician intervention was the top reason for practicing CAM among students. CAM knowledge and attitude were significantly higher among pharmacy students ( $p$ -value= 0.000 and 0.001, respectively).

**Conclusion** CAM was commonly practiced among the study participants. Their overall knowledge of CAM was limited, whereas their attitude toward it was positive, with pharmacy students having a better degree of both.

## Keywords

- ▶ complementary and alternative medicine
- ▶ students
- ▶ pharmacy
- ▶ medicine
- ▶ knowledge
- ▶ attitude
- ▶ use
- ▶ Libya

## Introduction

Complementary and alternative medicine (CAM) is a group of exceptional native health and medical structures, products, and practices that fall outside scientific medicine and

were developed by humans over many decades.<sup>1,2</sup> CAM is a context that goes beyond the health field to reach broader levels of religion, society, and culture.<sup>3</sup> The United States National Institute of Health (NIH) classifies CAM into five categories: natural products, ancient medical systems,

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mind-body medicine, manipulative and body-based practices, and other CAM practices.<sup>4-6</sup>

Various kinds of CAM modalities are available, and their use in different regions of the world is affected by personal, spiritual, and religious beliefs.<sup>7</sup> According to several pieces of literature, massage therapy, herbal medicine, spiritual healing/prayer, hypnosis, vitamins, homeopathy, acupuncture, and meditation are the most commonly practiced CAM modalities.<sup>7</sup> Recently, a significant increase in CAM use in developed and developing countries was noticed.<sup>8,9</sup> It has been reported that more than half of the world's population are CAM users.<sup>9</sup> CAM has been used to manage many diseases, including mild conditions (e.g., common cold, diarrhea, and headache) and chronic diseases (e.g., diabetes, chronic kidney impairment, and high blood pressure).<sup>6</sup>

Some researchers believe that healthcare professionals, even in developed countries, lack the adequate knowledge and ability to respond to various CAM-related queries from patients.<sup>10</sup> Hence, many countries started inserting CAM modules in undergraduate studies such as medicine, pharmacy, and nursing.<sup>11</sup> In Libya, some of these modules are already covered in the curriculum of pharmacy programs, but this is not the case for medicine students.

As CAM became an inevitable practice, evaluating its use, knowledge, and perception among people, especially healthcare professionals, is paramount. For instance, herb-drug interactions could have serious clinical consequences; hence, healthcare professionals should be equipped with the proper CAM knowledge. This should help avoid the possibility of any herb-drug interactions and advise their patients in the future.

To the best of our knowledge, there are no previous studies on CAM practice among students in Libya. Therefore, this study comparatively assesses the knowledge, attitude, and use of CAM among graduation year pharmacy and medicine students at the University of Benghazi, Libya.

## Methodology

### Design and Participants

This is a comparative cross-sectional study conducted among graduation year pharmacy and medicine students at the University of Benghazi, Libya, one of the leading universities in the country. It was done using an online self-administered questionnaire constructed using Google docs forms. The link was shared in students' Google classrooms for 4 months (Oct 2020–Jan 2021).

### Inclusion and Exclusion Criteria

All senior students, either in pharmacy or medicine faculties, at the University of Benghazi, irrespective of sex, age, or area of residency, were included in this study. Students from other departments or universities and those not willing to participate were excluded from the study.

### Study Questionnaire

The questionnaire was constructed by reviewing similar studies done previously in different countries.<sup>7,9,12</sup> To avoid

any bias that could result from misunderstanding the questions, the questionnaire was first designed in English and then made available for participants in Arabic. The goal of the study, as well as the related topic terms, was introduced at the beginning of the questionnaire to ensure enough understanding.

The questionnaire consisted of four main sections. The first part covered the demographic data, including age, gender, faculty, and area of residency. The second section was concerned with CAM practice and enquired about the use of CAM by respondents and their families, the type of CAM modality used, the medical conditions, and reasons for use. Only the commonly used CAM practices in Libya were mentioned, including ruguia, massage, nutritional supplements, cauterization, honey (homeopathy), cupping-Al hijama, aromatherapy-essential oil therapy, and herbal medicine. The third section assessed the CAM knowledge of respondents related to use and included ten questions scored as one point for each correct answer and zero point for each incorrect, and I do not know answers. The sources of CAM information on which students relied were also assessed in this section. The last part evaluated the attitude of respondents toward CAM through 10 statements and was scored using a 5-point Likert scale. A score of three, less than three, and more than three were considered neutral, negative, and positive respectively.

### Statistical Analysis

The collected data was entered, coded, treated, and analyzed using Microsoft Excel (version 13) and Statistical Package for Social Sciences (SPSS Statistic for Windows, Version 20. IBM Corporation, Armonk, New York). The data were tested for normality using the Shapiro–Wilk test that proved the non-normal distribution of data. Descriptive statistics such as frequencies and percentages were done using Microsoft Excel, whereas other tests were done using SPSS. The association between independent variables, including the study major, with demographic data and CAM practice, was tested using Pearson's chi-squared test. Additionally, the Mann–Whitney U-test was used for nonparametric data to compare the difference of the continuous variables, including knowledge and attitude. In contrast, the reliability of the questionnaire was tested using Cronbach's  $\alpha$  test.

## Results

### Respondents' Demographics

The demographic data of respondents are presented in **Table 1**. Of the 120 participants, 62 were pharmacy students, whereas 58 were medical students. The response rates were 41.3% and 40% for pharmacy and medicine students, respectively, while the reliability coefficient was 0.77. The majority of respondents were females (99, 82.5%) in total and nearly equally distributed in each respondent group representing 50 (50.5%) and 49 (49.5%) for pharmacy and medicine students, respectively. Respondents were mainly from Benghazi City (108, 90%), and pharmacy students were

**Table 1** Demographic data and CAM use among respondents

Variables	Response, n (%)			p-Value	
	Pharmacy students (62)	Medicine students (58)	Total (120)		
<b>Demographic data</b>					
<b>Gender</b>				0.580	
Male	12 (57)	9 (43)	21 (17.5)		
Female	50 (50.5)	49 (49.5)	99 (82.5)		
<b>Age (y)</b>				0.000	
23–26	58 (93.5)	4 (6.5)	62 (51.7)		
≥27	4 (6.9)	54 (93.1)	58 (48.3)		
<b>Area of residency</b>				0.180	
Benghazi	58 (53.7)	50 (46.3)	108 (90)		
Outside Benghazi	4 (33.3)	8 (66.7)	12 (10)		
<b>CAM use among respondents</b>	<b>Pharmacy students (62)</b>	<b>Medicine Students (58)</b>	<b>p-Value</b>	<b>Total (120)</b>	<b>p-Value</b>
Students who had a CAM user among their family	51 (82.3)	40 (69)	0.089	91 (75.8)	0.000
Students who used CAM therapies before	44 (69)	24 (41.4)	0.001	68 (56.7)	
<b>CAM modality used</b>					
					<b>p-Value</b>
Rugua	34 (54.8)	29 (50)	63 (52.5)		0.465
Massage	18 (29)	6 (10.3)	24 (20.2)		0.104
Nutritional supplements	29 (46.8)	20 (34.5)	49 (40.8)		0.592
Cauterization	6 (9.7)	2 (16.7)	8 (6.7)		0.399
Honey (homeopathy)	2 (3.2)	6 (10.3)	55 (45.8)		0.063
Cupping-Al Hijama	10 (16.1)	7 (12.1)	59 (49.2)		0.482
Aromatherapy-essential oil therapy	3 (4.8)	7 (12.1)	42 (35)		0.068
Herbal medicine	4 (6.5)	7 (12.1)	59 (49.2)		0.081
<b>Medical condition treated with CAM</b>					
Minor ailment	29 (51.8)	18 (51.4)	47 (51.6)		
Acute illness	31 (55.4)	15 (42.9)	46 (50.5)		
Nutrition	20 (35.7)	9 (25.7)	29 (31.9)		
Chronic illness	15 (26.8)	7 (20.0)	22 (24.2)		
<b>Reasons for using CAM</b>					
Minor ailments do not deserve a visit to the physician	44 (71)	32 (57.1)	76 (64.4)		
CAM therapies are natural and safe	29 (46.8)	17 (30.4)	46 (39)		
Because of the side effects of conventional therapy	8 (12.9)	5 (8.9)	13 (11)		
Conventional therapy is very expensive	7 (11.3)	4 (7.1)	11 (9.3)		
Treatment with conventional therapy is ineffective	8 (12.9)	16 (28.6)	24 (20.3)		

Abbreviation: CAM, complementary and alternative medicine.

Note: Bold values were statistically significant ( $p$ -value < 0.05), chi-squared test.

predominant in the age group (23–26 years), while medicine students in the age group ( $\geq 27$  years).

## The Practice of the Respondents

### CAM Use

The findings of CAM use among respondents are illustrated in **Table 1**. Overall, three-quarters of respondents (91, 75.8%) stated that their family had previously used CAM. In contrast, more than half of them (68, 56.7%) had personally used CAM therapies with a statistically significant difference ( $p$ -value= 0.000) between those students who had used CAM and having a CAM user among family. Moreover, family use of CAM was higher among pharmacy students (51, 82.3%) as compared with medical students (40, 69%), but this difference was statistically insignificant ( $p$ -value= 0.089). Furthermore, pharmacy students (44, 69%) practiced CAM more frequently than medicine students (24, 41.4%), with a statistically significant difference ( $p$ -value= 0.001) between the two groups.

Generally, ruguia was the most commonly used modality among participants (63, 52.5%), followed by cupping-Al hijama and herbal medicine in equal percentages (59, 49.2%) each. On the other hand, the least used modality was cauterization (8, 6.7%).

### Medical Conditions and Reasons for Using CAM

The respondents practiced CAM mainly for the management of minor ailments (47, 51.6%) and acute illnesses (46, 50.5%), and the least used it for chronic diseases (22, 24.2%). The nonseriousness of the medical condition was found to be the primary reason for students to use CAM, whereas only (11, 9.3%) of respondents justified their use due to the high cost of evidence-based treatments (**Table 1**).

## Knowledge Related to CAM Use and Sources of Information

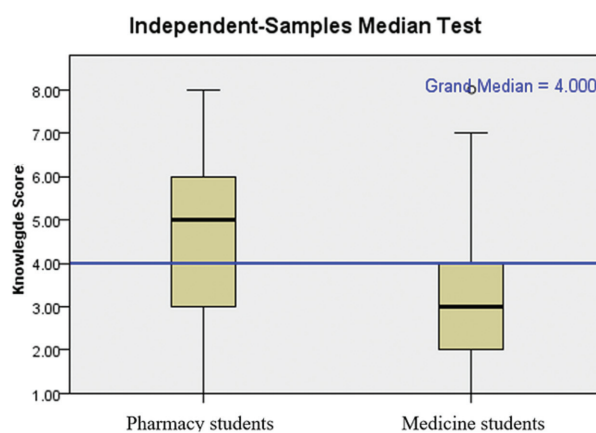
### Knowledge of Respondents

The median knowledge scores of pharmacy and medicine students were five and three out of ten, respectively. It was evident that pharmacy students had a better level of CAM knowledge with a statistically significant difference ( $p$ -value= 0.00) (**Fig. 1**).

**Table 2** shows the results of CAM knowledge related to using among respondents. Almost three-quarters of pharmacy (46, 74.2%) and medicine students (43, 74.1%) were aware of herbal medicine's possible unsafety and side effects. For the rest of the questions, pharmacy students had better knowledge, especially regarding the following information; blood lipid-lowering effect of garlic ( $p$ -value= 0.001), use of ginkgo Biloba in Alzheimer's disease ( $p$ -value= 0.000), and hypertensive effect of licorice ( $p$ -value= 0.000). However, medical students had a significantly better knowledge regarding the safety of ginseng in hypertensive patients ( $p$ -value= 0.001).

### Sources of CAM Information

Generally, the Internet was the most common source of information (66, 55.9%) for all participants of this study,



**Fig. 1** CAM knowledge score for pharmacy and medicine students. CAM: Complementary and alternative medicine.

followed by other medical practitioners (64, 54.2%). Other sources of information were nearly equally used by both groups, except for the friends/colleagues source, which was used by more than half of pharmacy students (32, 51.6%) but used only by 5 (8.9%) of medical students. Percentages for the use of each source are represented in **Table 2**.

## The Attitude of Respondents toward CAM

Considering 50 as the total score, the median score of pharmacy students' attitude toward CAM (42) was higher than that of medical students (39), and this difference was statistically significant ( $p$ -value= 0.001) (**Fig. 2**).

Several questions assessing the respondents' attitude toward CAM are represented in **Table 3**. Pharmacy respondents generally had a more positive attitude toward most of the surveyed statements; medical students showed a non-significant higher positivity toward the following two statements; the possible risks of CAM to the public ( $p$ -value= 0.279) and disapproval of using nonscientifically tested CAM therapies ( $p$ -value= 0.820).

## Discussion

Recently, the use of CAM to promote health and treat illnesses has gained increased global popularity.<sup>11</sup> Due to the insufficient data about this subject in Libya, the main objective of this study was to evaluate the knowledge, attitude, and use of CAM among senior year students of two faculties in one of the leading universities in the country. In this survey, more than half of the students reported using some CAM therapies previously, consistent with the findings of similar studies conducted in Kuwait and Ghana.<sup>13,14</sup> However, our finding was higher than that found among medical students in the United States (13%)<sup>15</sup> and pharmacy students in the United Kingdom (31.5%)<sup>10</sup> but lower than that observed among pharmacy students in Sierra Leone (72.7%)<sup>11</sup> and university students of various disciplines in Australia (81.1%)<sup>16</sup>

Greenfield et al<sup>17</sup> suggested that students practice CAM more if another family member had already used it, which is consistent with the findings of this study. Moreover, the

**Table 2** CAM knowledge related to use among respondents and source of information

I. CAM knowledge related to use among respondents				
Statements	Response, n (%)			p-Value
	Pharmacy students (62)	Medicine students (58)	Total (120)	
Herbal medicine is natural and therefore is safe, without side effects				0.025 <sup>a</sup>
<b>Incorrect</b>	<b>46 (74.2)</b>	<b>43 (74.1)</b>	<b>89 (74.2)</b>	
Correct	15 (24.2)	8 (13.8)	23 (19.2)	
I do not know	1 (1.6)	7 (12.1)	8 (6.7)	
Garlic can lower blood lipid level				0.001 <sup>a</sup>
<b>Incorrect</b>	<b>4 (6.5)</b>	<b>3 (5.2)</b>	<b>7 (5.8)</b>	
<b>Correct</b>	<b>44 (71)</b>	<b>24 (41.4)</b>	<b>68 (56.7)</b>	
I do not know	14 (22.6)	31 (53.4)	45 (37.5)	
Ginseng can be used safely in people with high blood pressure				0.001 <sup>b</sup>
<b>Incorrect</b>	<b>7 (11.3)</b>	<b>9 (15.5)</b>	<b>16 (13.3)</b>	
Correct	21 (33.9)	3 (5.2)	24 (20)	
I do not know	34 (54.8)	46 (79.3)	80 (66.7)	
Ginkgo biloba is commonly used in people with Alzheimer's disease				0.000 <sup>b</sup>
<b>Incorrect</b>	<b>2 (3.2)</b>	<b>6 (10.3)</b>	<b>8 (6.7)</b>	
<b>Correct</b>	<b>34 (54.8)</b>	<b>6 (10.3)</b>	<b>40 (33.3)</b>	
I do not know	26 (41.9)	46 (79.3)	72 (60)	
Aloe vera juice is not good for acidity				0.030 <sup>b</sup>
<b>Incorrect</b>	<b>13 (21)</b>	<b>5 (8.6)</b>	<b>18 (15)</b>	
<b>Correct</b>	<b>7 (11.3)</b>	<b>4 (6.9)</b>	<b>11 (9.2)</b>	
I do not know	42 (67.7)	49 (84.5)	75 (62.8)	
Licorice increases blood pressure				0.000 <sup>b</sup>
<b>Incorrect</b>	<b>4 (6.5)</b>	<b>4 (6.9)</b>	<b>8 (6.7)</b>	
<b>Correct</b>	<b>43 (69.4)</b>	<b>15 (25.9)</b>	<b>58 (48.3)</b>	
I do not know	15 (24.2)	39 (67.2)	54 (45)	
Cinnamon reduces blood sugar and cholesterol by acting as an insulin sensitizer				0.008 <sup>b</sup>
<b>Incorrect</b>	<b>2 (3.2)</b>	<b>0(0)</b>	<b>2 (1.7)</b>	
<b>Correct</b>	<b>49 (79)</b>	<b>36(62.1)</b>	<b>85 (70.8)</b>	
I do not know	11 (17.7)	22(37.9)	33 (27.5)	
Fenugreek seeds have no effect on cholesterol levels				0.000
<b>Incorrect</b>	<b>32 (51.6)</b>	<b>4 (24.1)</b>	<b>46 (38.3)</b>	
<b>Correct</b>	<b>11 (17.7)</b>	<b>7 (12.1)</b>	<b>18 (15)</b>	
I do not know	19 (30.6)	37 (63.8)	56 (46.7)	
Artichoke is useful in dyslipidemia and dyspepsia				0.137 <sup>b</sup>
<b>Incorrect</b>	<b>2 (3.2)</b>	<b>4 (6.9)</b>	<b>6 (5)</b>	
<b>Correct</b>	<b>27 (43.5)</b>	<b>14 (24.1)</b>	<b>41 (34.2)</b>	
I do not know	33 (53.2)	40 (69.0)	73 (60)	
Black seeds have no effect on blood pressure and diabetes				0.010 <sup>b</sup>

**Table 2** (Continued)

I. CAM knowledge related to use among respondents				
Statements	Response, n (%)			p-Value
	Pharmacy students (62)	Medicine students (58)	Total (120)	
Incorrect	24 (38.7)	13 (22.4)	37 (30.8)	
Correct	10 (16.1)	5 (8.6)	15 (12.5)	
I do not know	28 (45.2)	40 (69)	68 (56.7)	
II. Sources of CAM information used by participants				
Books and journals	15 (24.2)	10 (17.9)	25 (21.2)	
Media (TV and radio)	16 (25.8)	16 (28.6)	32 (27.1)	
Internet	36 (58.1)	30 (53.6)	66 (55.9)	
CAM practitioners	11 (17.7)	14 (24)	25 (21.2)	
Other medical practitioners	33 (53.2)	31 (55.4)	64 (54.2)	
Family/relatives	7 (11.3)	8 (14.3)	15 (12.7)	
Friends/ colleagues	32 (51.6)	5 (8.9)	37 (31.4)	

Abbreviation: CAM, complementary and alternative medicine.

<sup>a</sup>Bold values were statistically significant ( $p$ -value < 0.05).

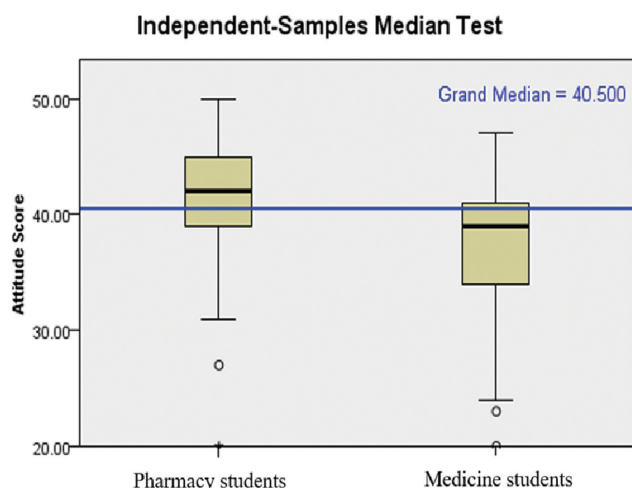
<sup>b</sup>Mann-Whitney U-test.

significant difference in CAM use between pharmacy and medical students could be attributed to the fact that pharmacy students have undertaken some CAM modules such as herbal therapy during their studies, rendering them more liable to apply their knowledge into practice. CAM has been used in various diseases such as rheumatology problems, gastroenterological diseases, attention and hyperactivity problems, rhinosinusitis, psychiatric and neurological problems, asthma, and gynecology problems.<sup>18</sup> In this study, students mostly used CAM to treat minor ailments (e.g., skin problems) and acute illnesses (e.g., the common cold), which concurs with previous groups' findings.<sup>2,10</sup>

A systematic review of the potential factors influencing the usage of CAM worldwide revealed that the top three reasons were an expectation of CAM benefits, dissatisfaction

with standard medicine, and the perceived CAM safety.<sup>19</sup> The study respondents gave various reasons to practice CAM; of those, the simplicity of their medical condition came first, followed by their belief in the safety of CAM therapies and the ineffectiveness of standard therapy, consecutively. *Rugvia* spiritual healing headed the list of the most commonly used CAM modalities in this study, agreeing with previous studies conducted in Oman and Saudi Arabia.<sup>20,21</sup> In contrast, an Australian study revealed that spiritual healing such as prayers and meditation were not as common as other practices such as relaxation techniques, massage therapy, and herbal medicine.<sup>16</sup> Additionally, aromatherapy and homeopathy were the most commonly used therapies in a study conducted in the United Kingdom,<sup>17</sup> whereas herbal medicine, which came second in this study, was the most prevalent in other studies.<sup>10,11</sup>

The significantly better degree of CAM knowledge shown by pharmacy students in this study compared with medical students is consistent with a similar study done among Kuwaiti students.<sup>13</sup> This foreseen difference might be because the faculty of medicine's curriculum is focused on significantly proven medicine only. On the contrary, in the pharmacy faculty, the department of pharmacognosy curriculum introduces modules covering a few aspects of CAM during which students are frequently introduced to medicinal plants and their uses throughout the first 3 years of study. This might be worthy of recommending introducing CAM to medical students and integrating them with modern medicine. CAM products are frequently handled, and this might represent a potential risk if not having the adequate amount of knowledge regarding the subject. Another reason why medical students showed less knowledge might be that even though both groups of respondents depended on the Internet, a less credible source of information, medical students



**Fig. 2** CAM attitude score for pharmacy and medicine students. CAM: Complementary and alternative medicine.



**Table 3** Attitude of respondents toward CAM

Statements	Scores (mean $\pm$ SD)		p-Value
	Pharmacy students (62)	Medicine students (58)	
Most alternative medicine therapies are efficacious	3.71 $\pm$ 1.08	2.85 $\pm$ 0.91	<b>0.000</b>
There should be a scientific basis for CAM therapies	4.61 $\pm$ 0.73	4.35 $\pm$ 0.95	0.108
CAM can be harmful to the public health	3.6 $\pm$ 1.23	3.86 $\pm$ 1.05	0.279
Healthcare professionals should be able to advise their patients about commonly used CAM methods	4.24 $\pm$ 0.99	3.74 $\pm$ 1.07	<b>0.004</b>
Patients should inform/consult their doctors about their use of CAM	4.65 $\pm$ 0.7	4.41 $\pm$ 0.8	<b>0.048</b>
The use of CAM as an adjuvant to conventional therapy is of benefit to the patient	3.94 $\pm$ 1.07	3.31 $\pm$ 1	<b>0.001</b>
Pharmacists and physicians should be aware of CAM types in their countries	4.44 $\pm$ 0.86	3.88 $\pm$ 0.98	<b>0.000</b>
CAM therapies not tested in a scientific manner should be discouraged	3.95 $\pm$ 1.09	4 $\pm$ 1.06	0.820
CAM should be taught as a separate course in the curriculum	4 $\pm$ 1.07	3.36 $\pm$ 1.18	<b>0.002</b>
CAM should be taught as a training course after graduation	4 $\pm$ 0.96	3.6 $\pm$ 1.01	<b>0.017</b>

Abbreviations: CAM, complementary and alternative medicine; SD, standard deviation. Mann–Whitney U-test, bold values were statistically significant ( $p$ -value  $<$  0.05).

do not have a solid background on the subject, as discussed earlier.

An almost equal and considerable percentage (74.2%) of respondents from both groups were aware of the possible occurrence of side effects by CAM products and therefore can be considered more knowledgeable than other students in comparable studies.<sup>7,22</sup> This somehow complies with the second most common reason for using CAM mentioned by 39% of respondents who stated that they use CAM products because they are natural and safe. On the other hand, this is more consistent with the positive attitude that the respondents expressed toward the danger of CAM toward patients. Students showed the best knowledge regarding the effect of cinnamon on blood sugar and cholesterol (70.8%), which is not a surprising response as cinnamon is a ubiquitous and frequently used herb in the Libyan culture. However, the poor knowledge of the participants regarding fenugreek seeds (15%) was somehow unexpected as it is also a well-known and highly consumed herb in Libya.

On the one hand, this study revealed that more than half of both pharmacy and medicine students considered the Internet and other medical practitioners as their familiar sources of information regarding CAM. This was inconsistent with other related studies done in Saudi Arabia, Pakistan, and Sierra Leone.<sup>9,12,13</sup> Students stated that they depend on more reliable and formal sources such as university curricula and journals.

Overall, the two study groups demonstrated a positive attitude toward CAM, and there was a statistical difference between them according to their mean scores ( $p$ -value = 0.001). Similarly, another study in Sierra Leone among

medicine, pharmacy, and nursing students reported a positive attitude, and there was a significant difference between medicine and pharmacy students.<sup>11</sup> Furthermore, a recent study in China found that medical students had a more positive attitude than nonmedical students, and the difference was significant.<sup>23</sup> However, a study in Pakistan showed no significant differences among pharmacy and nonpharmacy students in their attitudes toward CAM.<sup>7</sup>

In the current study, students exhibited an agreement toward the necessity of pharmacists and physicians being aware of CAM methods that are common in their societies, and this was also shown by previous studies in Turkey, Kuwait, and Sierra Leone.<sup>11,13,24</sup> Moreover, the majority of students agreed that patients should inform or consult their doctors about their use of CAM and this finding is also supported by other studies from Kuwait, Oman, and Ireland.<sup>25</sup> Additionally, a large proportion of participants stated that pharmacists physicians should advise and provide evidence-based information to patients about CAM methods that are commonly used. A similar finding was also shown by a study conducted in the United Kingdom.<sup>10</sup> A further study reported that more than half of the students stated they are not well qualified to provide the proper advice on common CAM methods.<sup>11</sup> Theoretically, it is difficult for healthcare professionals to know what advice to provide without evidence and practice guidance available to support their decisions.<sup>10</sup>

Regarding the need to include CAM courses in the school's curriculum, previous comparative studies have supported this view from studies involving pharmacy and nursing students in Oman<sup>20</sup> and pharmacy and nonpharmacy

students in Pakistan<sup>7</sup> Furthermore, the current students encouraged that clinical care should integrate the best of evidence-based and CAM practices, consistent with other investigations in Saudi Arabia, Kuwait, and Sierra Leone.<sup>11-13</sup> Students' increasing interest in learning CAM courses suggests the need to integrate the theory and practice in CAM training in the faculties of pharmacy and medicine's curriculum.

Although pharmacy students exhibited a higher positive attitude than medical students in their beliefs that CAM usage should be discouraged due to the nonscientific basis of CAM, there was no statistical difference among them. This observation was in contrast to a previous study in Pakistan.<sup>7</sup> On the other hand, medical students had a more positive attitude than pharmacy students toward the following two statements; CAM can be harmful, and CAM not tested clinically should be discouraged for use. These findings are also shown by other students in Saudi Arabia and Pakistan.<sup>7,12</sup> However, many students in Sierra Leone and China disagreed that CAM can harm public health.<sup>11,23</sup>

This study is subject to some limitations. The first is the relatively small sample size, and thereby, data were insufficient for a perfectly accurate statistical measurement. Furthermore, this survey was conducted at the University of Benghazi only; hence, these results cannot be generalized to other universities in Libya. Moreover, the current findings were based on students' opinions, but CAM practitioners, who might have different views, were omitted. Additionally, the variables affecting students' responses cannot be determined over time as this survey was a cross-sectional study. Finally, an online self-administered questionnaire was used. Thus, the results might not represent the exact targeted sample.

## Conclusion

This study showed that CAM was common among senior pharmacy and medical students, especially with ruquia, cupping, and herbal medicine. Overall, the student's knowledge of CAM was considered limited, and their attitude toward it was positive, with pharmacy students displaying a better degree of both. These results suggest that CAM should be included as an introductory module in the syllabus of medicine and other health-based science colleges and further improved for those students who already receive it. Moreover, educational programs to increase awareness about the possible uses, risks, and limitations of CAM should be implemented at different public and private healthcare facilities for both patients and healthcare practitioners.

### Authors' Contributions

All authors have contributed to the study and article to fulfill the ICMJE authorship criteria.

### Compliance with Ethical Principles

The study was formally approved by the Faculty of Pharmacy- University of Benghazi. All responses remained anonymous and confidential; no personal identifiers were present in the questionnaire.

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None.

### Conflict of Interest

None declared.

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