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Knowledge about complementary and alternative medicine among university students in Jordan

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ABSTRACT

Background: Complementary and alternative medicine (CAM) is an expanding practice worldwide. However, there are few studies conducted in Jordan about CAM. This study aimed to assess knowledge about CAM among university students in Jordan and whether it should be incorporated into the educational curricula.

Methods: This cross-sectional study took place at the University of Jordan in 2016. A semi-structured questionnaire was distributed to a convenience sample of 475 students from medicine, pharmacy, and engineering faculties and was completed and returned by 451 students. Descriptive and multivariate analysis were conducted.

Results: The majority of students (89%) knew what CAM was (n = 451), 70% have used it, 56% expressed interest in taking CAM classes, 70% believed that classes should be integrated into curricula for health faculties, and 77% thought that elective classes should be provided to students in other faculties. Most students learned about CAM from family and friends (55%), followed by social media (22%), TV commercials (9.2%), and lastly from medical practitioners (8.5%).

Conclusion: This study provides a well-placed proposal to universities to consider integrating CAM into their curricula and offering elective courses for students from non-health faculties.

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KEYWORDS

Complementary and alternative medicine; education; Jordan; knowledge; students

Introduction

Complementary and alternative medicine (CAM) is a rising phenomenon worldwide. The complementary and integrative health at the National Institute of Health of the United States defines complementary medicine as "a non-mainstream practice that is used together with conventional medicine," and defines alternative medicine as "a non-mainstream practice that is used in place of conventional medicine" [1]. CAM encompasses many methods and treatments including natural products, energy medicine, manipulative and body-based practices, mind–body medicine, and whole medical systems [2]. The use of CAM is increasing due to its accessibility, affordability, safety, and effectiveness supported by empirical evidence [3]. Furthermore, in certain situations, it might have fewer adverse effects than the conventional therapies [3], but the realization of that it can be harmful at times is vital.

CAM is heavily influenced by different societal cultures and traditions. Hence, around the world, people's knowledge, use, and attitude towards it vary significantly. Numerous national surveys performed in various countries suggest that the use of CAM therapies is rising throughout the industrialized world [4]. The use of CAM therapies has been estimated to be 36% in the United States (2005) [5], 16% in Canada (2002) [6], 21% in Denmark (2005)

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[7], 10.6% in Switzerland (2004) [8], and 23.3% in Australia (2006) [9]. The percentages of Arab populations remain obscure, although some studies were done regarding the use of CAM therapies in specific aspects. For example, a study conducted in Saudi Arabia in 2015 showed that CAM was used for dermatological purposes by 40% of the participants [10]. Furthermore, a study conducted in Jordan among oncology patients showed a positive correlation between chemotherapy as a treatment modality and the number of CAM therapies used [11].

CAM therapies are main players in the future development of medicine as they offer qualities that many patients desire but don't receive such qualities from conventional medical treatments. Because the future of medicine lies in the hands of its students, further studies were conducted among this cohort, showing that 91% of medical students (MS) in the United States believed that CAM includes ideas and methods from which western medicine could benefit [12]. A similar survey conducted in Singapore among MS revealed a percentage of 92% that believed so [13].

Although CAM is a popular practice within the socio-cultural context in Jordan, we did not find any scientific research that assessed CAM knowledge among the university students. Thus, this study aimed to address this gap of knowledge through exploring the awareness about CAM among university students in Jordan and whether it should be incorporated into the educational curricula.

Methods

Study setting

The Hashemite Kingdom of Jordan is a relatively small developing country, with an area of 89,213 km^2. It is made of 12 governorates and has a population of 9.7 million. The capital city, Amman, is the most populated city, with a population size of 4 million [14]. Eighty-four percent of the Jordanian population lives in urban areas [15].

There are 28 universities in Jordan. Engineering is taught in all of them, pharmacy in 18, and medicine in 6 [16].

This cross-sectional study was conducted at The University of Jordan (UJ) in 2016. UJ is the largest and oldest university in Jordan. It was built in 1962 and hosts around 40,000 undergraduate and postgraduate students annually. UJ provides 250 academic programs from 24 schools in different disciplines [17]. In this study, we recruited MS, pharmacy students (PS), and engineering students (ES). ES were included in this study to understand the differences in knowledge between them and the students in health faculties.

Measure instrument

A structured quantitative questionnaire consisting of 30 questions was prepared. The questionnaire was handed out to six students for pilot testing to assess the clarity and continuity of the questions. Feedback was received, and accordingly, the questionnaire was improved. The questionnaire comprised information about the candidates (age, gender, faculty, and year of study), socio-demographic characteristics, the candidates' knowledge, practice and attitude towards CAM, and their stance regarding integrating CAM classes into the curricula for health faculties, and providing elective courses for students from other faculties.

Study participants

The self-administered paper-based questionnaire was distributed to 475 students from the Faculties of Medicine (FoM), Pharmacy (FoP), and Engineering (FoE) of all academic years. The questionnaire was completed and returned by 451 students. The students were approached outside of class and their academic year was identified before they received the questionnaire, so that the distribution of the questionnaires was almost equal among the students from different years to avoid

Table 1. The students' sociodemographic characteristics.

Faculty of study		Medicine		Engineering		Pharmacy		*p*	Total	
		n	%	*n*	%	*n*	%		*n*	%
Gender	Male	74	44	63	48	30	20	≤0.001	167	37
	Female	93	58	68	52	123	80		284	63
Academic year	1st	31	19	23	18	9.0	5.9	≤0.001	63	14
	2nd	35	21	28	21	31	20		94	21
	3rd	31	19	32	24	43	28		106	24
	4th	18	11	31	24	46	30		95	21
	5th	25	15	17	13	17	11		59	13
	6th	27	16	0.0	0.0	7	4.6		34	7.5

bias. The completion of the questionnaire required 15–20 minutes.

Ethical issues

The study has received ethical approval (1541/2016/19) from The Jordan University Medical Research Ethical Review Board. Confidentiality of the data, voluntary participation, and full autonomy of the respondents were ensured. The participants were informed of the purpose of the study before they provided verbal consent.

Statistical methods

Data categorization, comparison, and association were conducted using descriptive statistics, Pearson's chi-square, Fisher–Freeman–Halton test, and post hoc Dunn test. Statistical significance level was accepted as 0.05 and if p value was less than 0.05, it was considered statistically significant. All calculations were done using SPSS (IBM Statistics ver. 20) program.

Results

Socio-demographic characteristics of students

The overall response rate was 95%. The number of students from the FoM, FoE, and FoP were 167, 131, and 153, respectively. The students' ages ranged from 17 to 30 years old. The mean ages in the FoM, FoE, and FoP were 20.9, 20.5, and 21.1, respectively.

General awareness and knowledge of CAM

The vast majority of the students knew what CAM was. However, a significantly lower percentage of ES knew what CAM was compared to MS and PS ($p < 0.043$).

The percentage of PS that took classes on CAM (46%) was significantly higher than the percentage of ES (15%) and MS (6.7%) ($p < 0.001$).

Sources of learning of CAM

Most students of the three faculties learned about CAM from family and friends (55%), followed by social media (22%), TV commercials (9.2%), and lastly from medical practitioners (8.5%). There were no significant differences between the three faculties.

Use of CAM

The percentage of students that have used CAM therapies was 70%. PS had a significantly highest percentage of 84% followed by ES with a percentage of 66% and lastly, MS with a percentage of 62% ($p < 0.001$).

The most commonly used form of CAM among the three faculties was herbal treatment, followed by supplements, and meditation with average percentages of 52%, 25%, and 8%, respectively. ES who used supplements and aromatherapy were significantly less than MS and PS, and they used acupuncture and cupping significantly more than the other two faculties. The proportion of students that used hypnosis was significantly lower for PS than the other two faculties ($p < 0.001$). The rest of the options (herbs, meditation, and homeopathy) did not vary significantly between the three faculties.

Reasons for use of CAM

The most common cause for use of CAM therapies among the three faculties was to improve general health (38%), followed by respiratory tract infections (RTIs) (14%), dermatological causes (9.7%), to improve physical strength (9.7%), due to deficiency (9.5%), to improve mental health (7.8%), and lastly, urinary tract infections (UTIs) (2.2%). 9.4% answered 'Other'. The percentage of ES that used CAM to treat deficiency and RTIs was significantly lower than the other two faculties, and significantly higher for dermatological problems ($p < 0.001$). The percentage of MS that used CAM therapies for general health was significantly less than the other two faculties ($p < 0.001$). The proportion of students that used CAM therapies to treat UTIs, to improve mental health, and physical strength, and for other purposes did not vary significantly between the faculties ($p < 0.001$).

Attitudes towards integrating CAM education into curricula

The percentage of MS that believed that combining CAM therapies with modern medicine would

Table 2. The students' knowledge of CAM.

Faculty of study		Medicine		Engineering		Pharmacy		*P*	Total	
		n	%	*n*	%	*n*	%		*n*	%
Do you know what CAM is?	Yes	154	92	109	83	138	90	≤0.043	401	89
	No	13	8	22	17	15	10		50	11

Table 3. The students' attitudes towards taking CAM classes.

Faculty of study		Medicine		Engineering		Pharmacy		*p*	Total	
		n	%	*n*	%	*n*	%		*n*	%
Do you want to take a class on CAM?	Yes	87	53	66	50	97	63	≤0.050	250	56
	No	77	47	65	50	56	37		198	44

Table 4. The students' attitudes towards incorporating CAM into educational curricula.

Faculty of study		Medicine		Engineering		Pharmacy		*p*	Total	
		n	%	*n*	%	*n*	%		*n*	%
Should there be more CAM classes in the curricula for students of all health faculties?	Yes	101	62	83	63	127	83	≤0.001	311	70
	No	63	38	48	37	26	17		137	31
Should elective courses related to CAM be provided for students who don't belong to health faculties?	Yes	120	74	94	72	128	84	≤0.037	342	77
	No	43	26	37	28	25	16		105	24

increase the quality of treatment was 74%, which is significantly lower than the percentages of ES and PS that thought so, at 84% and 90%, respectively ($p < 0.001$).

Sixty-three percent of PS expressed interest in taking classes in CAM, which is a proportion significantly greater than the percentage of MS (53%) and ES (50%) ($p < 0.05$).

The percentage of PS that believed that classes on CAM should be integrated into the curriculum for health faculties and that courses on CAM should be available as elective courses for all students was significantly higher than the percentage of MS and ES that thought so ($p < 0.001$).

Discussion

General awareness and knowledge of CAM

The majority of students in this study knew what CAM was, and the students who belonged to health faculties more so than ES. This is consistent with the findings of a study conducted among undergraduate PS in Sierra Leone, in which all the students who were questioned knew what CAM was (100%). However, that study was small with only 90 students, while three times that many students were involved in the study we conducted [18].

The percentage of PS with knowledge of CAM was higher than MS and ES. Perhaps the fact that PS are the most educated about CAM explains why they are also the most supportive for further use. Surprisingly, ES were more likely to have taken a class or course related to CAM than MS. The percentage of MS that have taken CAM classes was the lowest indicating that MS are the least interested in CAM among the three groups. This is in contrast to other Asian countries where over 80% of MS wished to know more about CAM [13].

Sources of learning of CAM

There was no significant difference between the faculties regarding how they learned about CAM. In the Sierra Leone study on PS, the common source of information about CAM among PS was the media such as radio, television, newspapers (59%) followed by CAM practitioners (43%), and books (36%) [8]. This is considerably different from our results, which indicated that students learned about CAM from family and friends (55%). This might be explained by the fact that CAM among Jordanian students is more of a cultural or traditional habit, rather than scientifically or medically-based.

Use of CAM

In a study conducted on Australian PS, 94% of students have used CAM therapies [19]. This is higher than the results obtained from PS at The UJ, at 84%. However, in a study done on MS in a university in Ireland, only 43% of MS reported personal use of CAM therapies compared to the 62% of MS at The UJ that used CAM [20]. Hence, we are inclined to believe that Jordanian MS owe their higher percentage of use of CAM due to cultural reasons, as CAM might be a more prominent practice in Jordan than in Ireland.

The most commonly used form of CAM among the three faculties was herbal treatment, followed by supplements, meditation, cupping, aromatherapy,

and lastly, acupuncture. On the other hand, a similar study conducted on university students in the neighboring country of Saudi Arabia showed that the most common CAM therapies included cupping, acupuncture, and aromatherapy. This indicates that culture is heavily influential on preferential use of different types of CAM therapies. An important point to mention is that supplements were not asked about in the Saudi Arabia study, so that could explain the difference in results [21].

Reasons for use of CAM

According to our results, CAM was barely used to treat any serious, chronic, or life-threatening conditions, suggesting that for such conditions modern conventional medicine was the favored treatment, with CAM being more of a temporary and supportive mode of therapy. However, in previous study in Jordan that recruited older participants who were aged 50 years and above, the use of CAM was mostly associated with having chronic diseases [22]. Another study showed that 45% of Jordanian patients who suffered from infertility used at least one type of CAM therapy in attempts to alleviate the issue [23].

Attitudes towards CAM and integrating CAM education into the curriculum

PS are the only students questioned who were taught about CAM therapies at the university, and unsurprisingly, significantly more PS wanted to take even more classes on CAM than MS and ES. Furthermore, a higher percentage of PS believe that CAM should be integrated into modern medicine and be taught at universities, provided as mandatory courses integrated into the curricula of health faculties or elective courses for students who don't belong to health faculties. MS and ES were significantly less supportive of the notion. Moreover, MS were the most skeptical about the effectiveness of combining CAM with modern medicine. They were also the least likely to have taken CAM classes. The previous points further support the idea that more knowledge of CAM generates a better understanding of its importance.

The social cognitive theory

The results of this study are consistent with the social cognitive theory (SCT). SCT states that behavior is shaped by the dynamic interaction between three determinants: behavioral, personal, and environmental influences [24]. The predominance of students (89%) who knew what CAM was could be explained by CAM being used within the social norms in Jordan. Seventy percent of the students indicated that they use CAM. The use of CAM was significantly greater among PS who has received more education on CAM. This is consistent with the self-efficacy construct of the SCT [24]. According to Bandura, self-efficacy "refers to beliefs in one's capabilities to organize and execute the courses of action required to manage prospective situations" [25].

Strengths and limitations

The limitations of this study mostly surround the study design. This was a quantitative study with a semi-structured questionnaire and the participants were incapable of freely expressing their views and providing in-depth explanations behind their use of CAM. Moreover, not all therapies considered as CAM were included in the questionnaire. Furthermore, at the beginning of the questionnaire, CAM was defined, and then in a proceeding question, the students were asked if they knew what the CAM was. This may have limited the study design, as a clarification of CAM was provided, and so the students' knowledge of CAM may have been overestimated. Additionally, the selection of the participants was not randomized; thus, we cannot generalize our findings. However, although the selection of subjects was not randomized, an almost equal number of students from each faculty were selected to ensure that the results were as unbiased as possible.

The strengths of the study include the large sample size, the fast, simple, and inexpensive data collection by students which made the participants feel at ease. Finally, this is the first study in Jordan that explored the awareness of university students towards CAM.

Conclusion

Worldwide, the use of CAM is expanding. The less enthusiastic attitude towards CAM by our future medical practitioners may result in the regression of the country's considerably advanced health care due to several reasons: doctors ignorant about CAM therapies may fail to address questions posed by patients about it, they may be oblivious to interactions between drugs and herbal treatments used by the patients and may fail to advise patients against CAM therapies which might be exacerbating their symptoms or may be harmful, and they may miss the

chance to provide patients with information about CAM when there is a need for that. Furthermore, considering how the Jordanian society favorably regards CAM, medical practitioners with cultural competence and sufficient knowledge of CAM therapies will better understand the patients' health behaviors and communicate with the patients effectively about the benefits and risks associated with CAM therapies. That is why we recommend adding CAM courses to university curricula.

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Copy of the Questionnaire

Complementary and alternative medicine (CAM) is a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine. Examples include; herbs (بالاعشاب التداوي), supplements (الغذائية المكملات), homeopathy (المعالجة المثلية), meditation (التأمل), and acupuncture (بالإبر الوخز).

1. Age

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2. Gender
Male
Female

3. Faculty
Medicine
Engineering
Pharmacy

4. Year of Study
First
Second
Third
Fourth
Fifth
Sixth

5. Do you know what CAM (البديل الطب) is?
Yes
No

6. Have you ever used any type of CAM?
Yes
No

7. Has a family member ever used CAM?
Yes
No
If you have ever used any type of CAM
Answer questions 8–11

8. How did you hear about CAM?
Family and Friends
Social Media
TV commercial
Medical Practitioner
Other

9. What did you use?
Herbs
Supplements
Acupuncture
Cupping
Aromatherapy
Hypnosis
Homeopathy
Meditation
Other

10. Why did you use this type of CAM?
Deficiency
General Health and/or wellness
Respiratory Tract Infection
Dermatological (جلدية) problems
Urinary Tract Infection
Mental Health
Physical Strength
Other

11. Would you recommend CAM to other people?
Yes
No
If you have never tried any type of CAM
Answer questions 12–14

12. Why not?
I don't believe in it
I've never heard of it
I've never had the chance
I've had a bad experience with it
It's not available to me
Other

13. Would you try any type of CAM?
Yes
No

14. Would you want to try CAM for spiritual purposes?
Yes
No

15. Would you try CAM if a family member recommended it to you?
Yes
No

16. Which of the following supplements would you use?
Omega-3
Weight loss supplements
Vitamins
Minerals, such as Iron
Protein supplements
Other

17. What is your opinion on CAM?
No opinion
It doesn't seem helpful
It could be helpful
It should be used more often along with modern medicine
Other

18. Have you ever taken a class or course on CAM?
Yes
No

19. Do you want to take a class on CAM?
Yes
No

20. Should there be more CAM classes in the curricula for students of all Health Faculties?
Yes
No

21. Should elective courses related to CAM be provided for students who don't belong to Health Faculties?
Yes
No

22. Do you generally take the advice of medical professionals who recommend CAM? (Doctors/Nurses)
Yes
No

23. Would you take the advice of a CAM practitioner who recommended the same treatment?
Yes
No

24. Do you believe that combining CAM with modern medicine would increase the quality of treatment?
Yes
No

25. Do you believe that combining CAM with modern medicine would decrease the quality of treatment?
Yes
No

26. If you get the flu or a cold, which of the following treatments would you rather use?
Antibiotics
Cold/Cough syrups to reduce symptoms
Pain medication
Drink hot drinks and hot soups
Drink lemon juice
Doctor's Visit

27. If you get back pain, which of the following treatments would you rather use?
Rest
Cold Compress
Hot Packs
Pain medication
Doctor's Visit
Massage

28. Were you born in an urban (مدينة) or rural area (قرية)?
Urban
Rural

29. Mother's education level
Primary School
Secondary School
Tawjeehi (High School Diploma)
Bachelor's Degree
Master's degree or PhD

30. Father's education level
Primary School
Secondary School
Tawjeehi (High School Diploma)
Bachelor's Degree
Master's degree or PhD