

ORIGINAL RESEARCH

**Knowledge, Perception, and Attitude of Universitas Indonesia Medical Students toward
Complementary and Alternative Medicine**

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Abstract

Introduction. Rate of Complementary and Alternative Medicine (CAM) use, including the Indonesian jamu, has increased in the last decade. This paper aims to identify the factors contributing to jamu development and to measure medical students' knowledge, perception, and attitude toward CAM and jamu. **Method.** This is a cross-sectional study using questionnaire administered to Year 1-3 students of Faculty of Medicine, Universitas Indonesia. **Results.** Students generally show positive attitude towards CAM and jamu, but their knowledge is not complete. The majority (68,4%) of respondents had known about CAM and 90,4% believe CAM can be integrated into conventional medicine; 91,6% wants materials on CAM in the curricula. Almost half (48,4%) of the respondents are also users of CAM. **Conclusion.** Students are open to the development of CAM and the government has issued policies supporting jamu, including Jamu Scientification Program. However, more evidence is needed, including clinical trials, before jamu can integrate into mainstream medicine.

Keywords: *alternative medicine, complementary medicine, herbals, jamu*

Introduction

Complementary and Alternative Medicine (CAM) is defined as a group of diverse medical and health care systems, practices, and products that are not generally considered part of conventional medicine¹; whereas conventional medicine is any medical practice conducted by holders of medical doctor degrees or their allied professionals. For some cases, however, there is no precise distinction between conventional medicine and CAM.¹

This decade saw a rise in CAM use. A 2007 United States survey reported that almost 4 out of 10 adults had used CAM in the past 12 months.² Compared to a 2002 survey, use of acupuncture, breathing exercises, massage, meditation, naturopathy, and yoga have increased. In 2007 Indonesian National Socioeconomic Survey also reported that 38,3% of Indonesian population had used traditional medicine especially in older group, an increase from 15,2% in 2000.³

Indonesia possesses a vast amount of traditional knowledge in using plants to treat various health conditions.⁴ Stone reliefs in Borobudur and Prambanan temples show that Indonesians have using herbal medicine for centuries. A 1831 Javanese text from the Palace of Surakarta, systematically documented 1.734

<http://i-amca.amca-international.org/>

concoctions made from natural ingredients.^{4,5} Furthermore, the Indonesian Ministry of Health and other researchers have identified thousands of herbal medicine traditionally used in every region in the country.^{4,6} *Jamu* itself is Javanese word referring to traditional medicine from herbal materials such as leaves, bark, roots, and flowers.⁷ Despite originating in Java, *jamu* is now commonly used to refer to most of Indonesia's herbal medicine.⁵

To anticipate the growth of *jamu* also to protect both producers and consumers, the government has issued regulations regarding *jamu* standardization and how it may be used with conventional medicine. Research on *jamu* is also intensifying, involving government ministries, agencies, universities, research centers, and NGOs.⁶ As a result, many *jamu* ingredients are now proven to have potent biological activities and been produced modernly.

The Indonesian Agency of Drug and Food Control (BPOM) in 2004 classified Indonesian herbal medicines into *jamu*, standardized herbal medicine (SHM), and phytopharmacy⁸ - all of which must satisfy safety and quality regulations set by BPOM. The difference is in the level of evidence and standardization. Efficacy of *jamu* is proven only by empirical evidence from traditional use; while SHM must

be proven through pre-clinical research and have standardized ingredients. Last, phytopharmacy must undergo clinical trial and is practically a drug physicians can prescribe. As of 2006, although there are thousands of licensed *jamu*, there are only 18 SHM and 5 phytopharmacy.⁴ However, to reflect the common meaning of the word *jamu*, this study will refer to *jamu*, SHM, and phytopharmacy as *jamu*.

All these trends show that *jamu* remains an interesting field to discover. Therefore, this paper aims to identify factors contributing to the scientific development of *jamu*. We also conducted primary research on perception, knowledge, and attitude of medical students toward CAM because it is essential to know how medical students, as future doctors, see CAM especially *jamu* in relation to conventional medicine. That information is important since, if the current trend continues, they will encounter more CAM users in their clinical practice and it is imperative that they are prepared to respond to such situation.

Material and Methods

A cross-sectional research was conducted to study medical students' perception, knowledge, and attitude towards CAM in general and *jamu* using developed questionnaire. The pilot testing

was done to 20 students to validate questions.

Later, the questionnaire was administered to 250 Year 1-3 (pre-clinical) students of the Faculty of Medicine, Universitas Indonesia in March 2011 using cluster random sampling methods. Data was analyzed using SPSS 11.5.

Results

All forms distributed were collected and analyzed. The respondents are mostly from third year (40,8%) with age range of 16-22 years; 83,6% of them are 18-20 years old (Table 1). Females make up 61,6% of respondents. Approximately 58,4% of respondents came from Jakarta and 24% from the rest of Java island.

Perception, knowledge, and attitude towards CAM and jamu (Tables 2-4)

The majority (68,4%) of respondents had previously known CAM. Modalities most frequently identified as CAM are herbal therapies including *jamu* (79,5%), acupuncture (55,6%), massage (18,1%), and *bekam*/fire cupping (12,9%). Most students hold a neutral (76,8%) or positive (18,8%) perception about CAM. Almost all (90,4%) believe that CAM can be integrated into conventional medicine in the future; 91,6% wants CAM materials to be

taught in medical faculties, either as an elective (76,8%) or compulsory (14,8%).

Most (88,0%) students support the goals of Jamu Scientification Program, but only 72,4% will prescribe jamu in the future, even if it is supported by strong evidence and safety records. Even less (57,6%) students express their interest in jamu research. Regarding the future role of jamu, 46,0% of students believe that jamu will play a mostly complementary role to conventional medicine. When specifically asked whether they want knowledge about jamu to be taught in medical faculties, 91,2% agrees: 80,0% as an elective and 11,2% compulsory.

Significantly more third year students know about CAM compared to Year 1-2 students ($p=0,011$), and they are more likely to identify jamu and massage as examples of CAM (both $p=0,001$).

Knowledge about jamu regulations

Only 70,8% of respondent knew that either the Ministry of Health or BPOM has issued regulations on jamu. However, almost all (95,6%) says that only standardized jamu is safe for consumption. Considerably more students have known the term “standardized herbal medicine” compared to “phytopharmacy” (71,2% vs. 29,6%). Yet, when asked to choose

the difference between the two, 40% could answer correctly. Only 20,8% have previously known about Jamu Scientification Program.

Compared to Year 1-2 students, significantly more Year 3 students knew about the existence of jamu regulation from BPOM and/or Ministry of Health ($p=0,013$) and about phytopharmacy ($p=0,006$).

CAM and jamu usage among respondents (Table 8)

Out of all respondents, 48,4% has used any CAM modalities. During the previous year, 93 respondents (37,2%) consumed jamu, split between traditional jamu (54,8%) and mass-manufactured (45,2%). Half (51,6%) reports no consistent consumption pattern, while 43,0% consumes jamu for specific purposes only. For the 5 respondents with regular jamu consumption, four consumes jamu monthly and one weekly. Suggestion or experience from family is the most common motivation (55,9%).

Significantly more female has used CAM ($p=0,006$) and consumed jamu ($p=0,038$), compared to male. More Year 3 students also used CAM ($p=0,026$).

Discussion

Knowledge of CAM modalities

A majority of respondents have previously known about CAM, which can be attributed to the fact that Indonesia has long been home to a wide variety of traditional practices.^{4,5} In fact, the most common example of CAM by respondents is jamu and its variations. Accupuncture and massage were also well known, and many other studies confirm this. For comparison, accupuncture is the best known CAM therapy in studies conducted on Singaporean⁹, Pakistani¹⁰, Turkish¹¹, and American¹² medical students. Last, cupping has gained popularity partly because the Middle Eastern therapy appeals to Indonesia's large Muslim population: the therapy is said to be approved by Islam's Prophet Muhammad and religious beliefs do contribute to reasons for seeking CAM.¹⁰ In contrast to Western studies, not many students knew about homeopathy, aromatherapy, hypnotherapy, and chiropractic.¹⁴

Perception of CAM

Students generally show positive perception about CAM and more than 90,4% of respondents consider CAM can be integrated into conventional medicine, consistent with previous studies.^{9,14-16} Students believe that CAM has ideas and values that conventional medicine could use and that knowledge about CAM is important in their future career. In one

cohort study, students' positive perception toward CAM did not change as their medical study progressed.¹⁷

More than 90% of respondents welcome the integration of CAM and jamu into medical curriculum, an attitude that is also observed in other studies.^{9,12,14} Hence, it is appropriate that the current medical education start to integrate knowledge about CAM in the curriculum.¹⁴ However, integration of CAM into medical education is not inherently equal to endorsement of CAM for practice. Students generally want CAM curricula to focus on awareness and skills regarding patients' use of CAM, such as identifying CAM modalities through history taking, because students not intend to practice CAM themselves. Students need to be equipped with CAM evidences and relevant informations before interacting with patients who may have used CAM.^{15,16}

Use of CAM and jamu

The use of CAM by 48,4% and jamu by 37,2% of respondents reflects growing acceptance of CAM by general public and medical community in recent years. Those numbers are even higher than the rate of CAM use by Indonesian general population as reported in the 2007 Socioeconomic Survey.³ In the US and UK, studies show the rates of CAM use by medical students are higher than the general

population.^{14,15} However, use of CAM does not necessarily translate into recommendation for patients.¹⁶ A US study shows that CAM users are more educated and are not dissatisfied with conventional therapies, but they also believe in the values of CAM.¹⁵ Thus, the high rate of CAM use among medical students is not an unexpected phenomenon and does not signify less trust in conventional medicine.

The most common motivation of consuming jamu in this study is family endorsement. The UK study also reported the same finding: family use of CAM is the strongest predictor of students' use because family plays an important role in shaping health behaviours.¹⁴ Females are also more likely to use CAM compared to males, as other studies show^{14,18}, and several therapies are somewhat gender specific.¹⁴

Knowledge of CAM and jamu regulation

Respondents barely know the current jamu classification. Year 3 students show better knowledge of CAM, its examples, and jamu regulations in Indonesia compared to Year 1-2. Year 3 students have gone through more medical education, and in FKUI, Year 3 is also the last pre-clinical year. These students are not totally unprepared if later they find cases related to CAM.

This study also found that students correctly say that only standardized jamu is safe for consumption, in contrast to the prevailing view that jamu is inherently safe to consume because it is an all-natural product even as evidence of toxicity is growing.³¹

To review, there are several issues on the safety of herbal medicine.³¹ First, lack of standardization may compromise jamu's efficacy and safety. Second, in case of adverse events related to jamu use, there is no well-established surveillance system. Third, the extent of jamu-drug interactions is not well studied yet. Last, there has been reports of jamu adulterated with unlisted drugs such as steroids and NSAIDs.

Nevertheless, this problem is not isolated to Indonesia. A systematic review of traditional Asian medicine adulterated with unlisted drugs found cases from several countries, including the US, UK, Australia, Belgium, New Zealand, and China itself.¹⁹ A study in Taiwan, analyzing 2,609 samples of traditional Chinese medicines from eight major hospitals, found that an average of 23,7% of samples were adulterated.²⁰

Strength and limitations of the study

The respondents came from only one medical faculty out of more than seventy in Indonesia so

the results of this study may not reflect the diversity of Indonesian medical students as a whole. There is also a dearth of epidemiological data on CAM and jamu in Indonesia, so most comparisons are made to foreign populations.

Nevertheless, this study is one of the few to explore CAM and jamu in the perspective of Indonesian medical students. It can provide useful information to the medical community, universities, and policy makers. Additionally, this study can raise awareness of CAM and jamu so that more research will be done in the near future to further explore the issue.

Government policies on jamu

The Indonesian government, through a 2003 ministerial decree, acknowledges that traditional medicine is still used by Indonesians and, to protect them, is issuing Traditional Medicine Practitioner licenses for those with proven safety records. Methods covered in the regulation includes traditional concoctions (jamu, aromatherapy), skills (massage, chiropractice), religious approaches, and supranaturals (reiki, qigong).²¹

Recognizing the medical and economic potential of traditional medicine, the government enacted policies to support its development. An article in the 2009 Law on Health recognizes and allows the practice of

traditional medicine, given that they satisfy certain requirements. Additionally, the government assumes the responsibility of supervising and regulating these traditional practices.²²

In 2007, a ministerial regulation on CAM practices was issued. The regulation allows CAM practices to be integrated into conventional medical centers, as long as it has acceptable scientific evidence and safety record.^{23,24}

The government also launched Jamu Scientification Program in 2010 that promotes healthcare-based jamu research. It is aimed to seek clinical evidences on jamu usage for disease prevention, health promotion, rehabilitation, and palliative care. Jamu research for curative purposes is also allowed with stricter requirements. The ultimate goal is to develop efficacious and safe evidence-based jamu for widespread use.²⁵

Role of medical students

Medical students are responsible for preparing themselves with unbiased knowledge of CAM as they will encounter CAM users in practice. Knowledge starts from the simple awareness of CAM modalities to how doctors can appropriately respond to CAM without necessarily endorsing it. Doctors should be able

to advise patients if their CAM use is harmful. Ultimately, this will lead to better quality of service for patients.

Students can also be initiators to fill the knowledge gap of CAM in Indonesia. Research opportunities are still wide open, ranging from basic sciences to epidemiology. Such studies are needed so that the medical community can interact with CAM appropriately, adopting its positive aspects while protecting patients from dangerous or dubious CAM methods.

Conclusion

The study shows that medical students have a positive attitude towards CAM and jamu in relation to conventional medicine they are studying. They are open to the development of jamu and can see jamu integration into mainstream medicine in the future, the time that they are doctors themselves. In fact, their rate of CAM use and/or jamu is higher than the general population. However, they still lack a comprehensive knowledge, which can be and should be fulfilled by medical faculties. Integrating knowledge of CAM into the curriculum can be of great benefit to the students as they will encounter CAM users in their clinical practice and thus, they have to take that into account in their clinical judgment.

The government has a supportive stance toward CAM and jamu as an effort to improve the health of Indonesians. Regulating CAM practices serves to protect practitioners, producers of CAM products, and consumers. While the legislative groundwork has existed, even more research is needed so that the full potential of jamu can be applied to modern medical practice.

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Table 1. Characteristics of respondents (N=250)

Variable	n	%
Sex		
Male	96	38,4
Female	154	61,6
Age (years)		
16	4	1,6
17	10	4,0
18	47	18,8
19	74	29,6
20	88	35,2
21	25	10,0
22	2	0,8
Year of study		
First	62	24,8
Second	86	34,4
Third	102	40,8
Region of origin		
Greater Jakarta	146	58,4
Java island	60	24,0
Western Indonesia	34	13,6
Eastern Indonesia	10	4,0

Table 2. Perception, knowledge, and attitude of respondents toward CAM (N=250)

	n	%
Have previously known CAM		
Yes	171	68,4
No	79	31,6
General perception of CAM		
Negative	11	4,4
Neutral	192	76,8
Positive	47	18,8
Future integration of CAM		
Yes	226	90,4
No	24	9,6

Integration of CAM in medical education

Yes, compulsory	37	14,8
Yes, elective	192	76,8
No	21	8,4

Table 3. CAM modalities identified by respondents (N=171)

CAM modality	n	%
Jamu and other herbal therapies	136	79,5
Accupuncture	95	55,6
Massage (all forms)	31	18,1
Bekam/cupping	22	12,9
Electric therapy	4	2,3
Chiropractic	4	2,3
Hirudotherapy	4	2,3
Homeopathy	3	1,8
Aromatherapy	3	1,8
Bee sting therapy	2	1,2
Yoga	2	1,2
Kerokan	2	1,2
Prana	2	1,2
Music therapy	1	0,6
Urine therapy	1	0,6
Hypnotherapy	1	0,6
Honey therapy	1	0,6

Table 4. Perception and attitude toward jamu (N=250)

	n	%
Supports jamu scientification		
Yes	220	88,0
No	30	12,0
Prescribe jamu with strong evidence		
Yes	181	72,4
No	69	27,6
Interest in doing jamu research		
Yes	144	57,6
No	106	42,4
Role of jamu		

Mostly complementary	115	46,0
Mostly alternative	58	23,2
Balanced	77	30,8
Integration of jamu in medical education		
Yes, compulsory	28	11,2
Yes, as elective	200	80,0
No	22	8,8

Table 5. CAM and jamu usage (N=250)

	n	%
Have previously used CAM		
Yes	121	48,4
No	129	51,6
Have previously consumed jamu in past year		
Yes	93	37,2
No	157	62,8
Kind of jamu used		
Traditional jamu	51	54,8
Mass-manufactured jamu	42	45,2
Pattern of consumption		
No specific pattern	48	51,6
Regularly	5	5,4
For spesific purposes only	40	43
Reason for consumption		
Doctor or medical personnel	5	5,4
Mass media	7	7,5
Family	52	55,9
Community	7	7,5
Curiosity	22	23,7