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Perception and use of herbal medicine by Indonesian Medical Doctors

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ABSTRACT

Indonesia has a long experience in traditional medicine such as *jamu*. The government has been encouraging all sectors, especially pharmaceutical industries together with research institutions and academia to increase herbal medicine research so that herbal medicine is increasingly used in health services, including by medical doctors. Various efforts have been made but empirically it seems that this goal has not been achieved. For this reason, it is necessary to conduct a survey to determine the understanding and use of herbal medicine among doctors. I was a cross-sectional study using an electronic questionnaire distributed to doctors who are members of the Indonesian Medical Association (IMA) per province. Three-hundred sixty-two respondents from 29 out of 38 (76%) provinces of Indonesia responded, and 263 out 362 respondents (72%) are general practitioners. In prescribing herbal medicines only 18.5% prescribed, 35% did not and 46.6% sometimes prescribed, respectively. Of the eleven phytopharmaceuticals/standardised herbal medicines only one medicine No. 5 was widely recognized by respondents (46.6%). This study showed that doctors' understanding of herbal medicine still needs to be improved through various means including webinars/seminars, journals that show good clinical trials so that they are more confident when prescribing herbal medicine to their patients. There is a need for more comprehensive information regarding the indications, efficacy and side effects of herbal medicine, through books or formularies that can be accessed by doctors. In addition, respondents agreed that herbal medicine should be taught in medical schools both in the pre-clinical and clinical phases.

ABSTRAK

Indonesia memiliki pengalaman panjang dalam pengobatan tradisional seperti jamu. Pemerintah telah mendorong semua sektor, terutama industri farmasi bersama dengan lembaga penelitian dan akademisi untuk meningkatkan penelitian jamu agar jamu semakin banyak digunakan dalam pelayanan kesehatan, termasuk oleh para dokter. Berbagai upaya telah dilakukan namun secara empiris nampaknya tujuan tersebut belum tercapai. Untuk itu perlu dilakukan survei untuk mengetahui pemahaman dan penggunaan jamu di kalangan dokter. Penelitian ini merupakan penelitian potong lintang dengan menggunakan kuesioner elektronik yang disebarkan kepada para dokter yang tergabung dalam Ikatan Dokter Indonesia (IDI) per provinsi. Sebanyak 362 responden dari 29 dari 38 (76%) provinsi di Indonesia memberikan respon, dan 263 dari 362 responden (72%) adalah dokter umum. Dalam meresepkan obat herbal hanya 18,5% yang meresepkan, 35% tidak meresepkan dan 46,6% kadang-kadang meresepkan. Dari sebelas fitofarmaka/obat herbal terstandar hanya satu obat (46,6%) yang dikenal luas oleh responden. Penelitian ini menunjukkan bahwa pemahaman dokter mengenai jamu masih perlu ditingkatkan melalui berbagai cara termasuk webinar/seminar, jurnal yang menunjukkan uji klinis yang baik agar mereka lebih percaya diri ketika meresepkan jamu kepada pasiennya. Diperlukan informasi yang lebih komprehensif mengenai indikasi, khasiat dan efek samping jamu, melalui buku atau formularium yang dapat diakses oleh para dokter. Selain itu, responden setuju bahwa jamu harus diajarkan di sekolah kedokteran baik pada fase pra-klinis maupun klinis.

Keywords:
herbal medicine;
medical doctors;
knowledge;
prescribing

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INTRODUCTION

Jamu is one of the Indonesia's natural wealth and traditional medicine. Although herbal medicine has been used for a long time, the proof is only empirically. It has now been widely developed into standardized herbal medicine (SHM) and phytopharmaceuticals. Standardized herbal medicine and phytopharmaceuticals are currently called original indonesian modern medicines (OIMM). In 2010, the Indonesian government launched *Saintifikasi Jamu* (scientification of herbal medicine), a national program to assess the efficacy and safety of herbal medicine in research-based healthcare facilities, with the goal of gathering more data from patients in both pre- and post-treatment approaches.[1,2] Phytopharmaceuticals in addition to modern preparations have gone through pre-clinical and trial-clinical trials and are indicated for certain conditions or diagnoses. Because phytopharmaceuticals are similar to conventional medicines, it is hoped that they will be an alternative choice for doctors when treating patients with certain diseases that correspond to phytopharmaceutical claims, such as hypertension, hyperlipidemia, and diabetes mellitus.[3]

Various studies in both Asian and Western countries on the use of herbal medicine in health services in various parts of the world has been increasing tremendously.[4,5] Simatupang *et al*.[6] have also found that there is a tendency to use herbal medicine among doctors. However, there is still hesitation in doctors giving it to their patients, or only limited to certain diagnoses, such as hypertension.[7,8] Besides of their efficacies, the issue frequently raised by doctors who will use herbal remedies in their services, is a lack of clarity in efficacy, safety (side effects), indications, and contraindications.[6,7]

Furthermore, phytopharmaceuticals have not been included in the National Formulary, which is used as drug information supported by Indonesian Social-Health Security Agency. In addition, if herbal medicine is increasingly used among the people, then herbal medicine needs to be introduced in medical schools.[9] Though some medical schools has introduced herbal medicine into their curricula but some improvement should be made.[10] The study's goals were to explore medical doctors' understanding and perceptions of herbal medicine, as well as to solicit their feedback on herbal medicine education in medical school.

MATERIAL AND METHOD

Design

This was a cross-sectional study and an online questionnaire was developed and distributed to the members of Indonesian Medical Association (IMA), who were practicing in several regions of Indonesia.

Procedure

The validated questionnaire (Cronbach's α 0.73) comprised of demographic characteristics, perceptions and usage pattern of herbal medicine by the respondents. To find out the use of herbal remedies by respondents, we included a list of 11 branded phytopharmaceuticals and standardized herbal remedies in the questionnaire. Respondents were also asked their opinion should herbal medicine also been learned in the medical faculty. The responses were automatically tallied and summarized by the online system of the computer that The collected data are descriptively presented by distributing electronic questionnaires to respondents of registered medical doctors practicing in various health care facilities (primary, secondary and tertiary levels). A snow-ball recruitment technique, was used for recruiting the respondents. Respondents gave their consents.

Data analysis

Data was descriptively and analyzed bivariately using SPSS v. 25. The study received approval from the research ethics committee No. 22/Etik Penelitian/FK UKI/2022.

RESULTS

Three hundred and sixty-two doctors gave their responses. The demographics of respondents are showed in TABLE 1 and 2. Only 67 (18.5%) respondents prescribe herbal medicine, while 127 (35%) do not prescribe and 169 (46.6%) prescribe herbal medicine occasionally. On the issues of indication-counter indications, efficacy and side effects of herbal medicine, it is shown in TABLE 4.

Methods to increase the knowledge of medical doctors on herbal medicine, respondents' answers were seminar (82.1%), brochures/leaflets/non-scientific journals (51.9%), training/workshop (44%), peer-reviewed journals (39.8%), medical-representatives (37.9%), and via distribution of books like MIMS, and National Formulary of Herbal Medicine.

TABLE 1. Demographic of respondents (n=362)

Characteristics	n (%)
Sex	
• Male	145 (39.9)
• Female	217 (59.8)
Age	
• < 30	40 (11.0)
• 31-40	97 (26.7)
• 41-55	148 (40.8)
• >55	77 (21.2)
Duration of practice (yr)	
• >20	103 (28.4)
• 11 - 20	115 (31.7)
• 6 - 10	74 (20.4)
• <5	71 (19.6)
Membership of the IMA	
• Bali	3 (0.8)
• Bangka Belitung	1 (0.3)
• Banten	13 (3.6)
• Bengkulu	9 (2.5)
• DI Yogyakarta	4 (1.1)
• DKI Jakarta	60 (16.5)
• Gorontalo	1 (0.3)
• Jambi	4 (1.1)
• West Java	29 (8.0)
• Central Java	82 (22.6)
• East Java	18 (5.0)
• West Kalimantan	1 (0.3)

TABLE 1. Continued...

Characteristics	n (%)
• South Kalimantan	6 (1.7)
• Central Kalimantan	1 (0.3)
• East Kalimantan	1 (0.3)
• North Kalimantan	1 (0.3)
• Riau Islands	2 (0.6)
• Lampung	2 (0.6)
• Maluku	2 (0.6)
• North Maluku	2 (0.6)
• Aceh	8 (2.2)
• West Nusa Tenggara	3 (0.8)
• East Nusa Tenggara	1 (0.3)
• Riau	15 (4.1)
• South Sulawesi	5 (1.4)
• North Sulawesi	1 (0.3)
• West Sumatera	3 (0.8)
• South Sumatera	4 (1.1)
• North Sumatera	80 (22.0)

TABLE 2. Respondent's specialization background (n=363)

Background	n (%)
General Practitioner	262 (72.2)
Internal Medicine	12 (3.3)
Surgery	12 (3.30
Obstetry-Ginecology	12 (3.3)
Others	10 (2.8)
Pediatric	7 (1.9)
Dermatovenerology	7 (1.9)
Pathology-Anatomy	5 (1.4)
Neurology	5 (1.4)
Ear Nose Throat	5 (1.4)
Ophthalmology	4 (1.1)
Clinical Pharmacology	4 (1.1)
Clinical Pathology	3 (0.8)
Occupational therapy	3 (0.8)
Anesthesia	2 (0.6)
Cardiovascular	2 (0.6)
Oncology	2 (0.6)
Pulmonology	2 (0.6)
Urology	1 (0.3)
Clinical Parasitology	1 (0.3)
Psychiatry	1 (0.3)
Orthopedic	1 (0.3)
Total	363 (100)

TABLE 3. Respondents' answers to the question why they are not-prescribing or prescribing herbal medicine

Reasons why respondents answered NOT to prescribe herbal (n=179)	n (%)
Not many options available in the National Formulary-BPJS	46 (12.6)
Never learnt about Herbal Medicine	45 (12.4)
Not so sure about the efficacy and side effects of Herbal Medicine	41 (11.3)
Quality that has not been standardised	28 (7.7)
No knowledge of Herbal Medicine at all	19 (5.2)
Reasons why respondents answered YES to prescribing herbal medicine (n=185)	
Proven efficacy	86 (23.6)
Patient-reported adverse events were absent or minimal	54 (14.8)
Price factor that is relatively affordable for patients	22 (6.0)
The patient is used to using the herbal medicine	22 (6.0)
Clinical Trials of Herbal medicine	1 (0.3)

TABLE 4. Respondents' opinions on the indications & contra indications, efficacy, and side effects of herbal medicines

Variable	n (%)
Indications & contra indications	
• Very unclear	11 (3.0)
• Not clear	118 (32.5)
• Clear	155 (42.7)
• Very clear	17 (4.7)
• Do not know	62 (17.1)
Side effects	
• Very unclear	10 (2.8)
• Not clear	132 (36.4)
• Clear	145 (39.9)
• Very clear	12 (3.3)
• Do not know	64 (17.6)
Efficacy	
• Very unclear	8 (2.2)
• Not clear	108 (29.8)
• Clear	169 (46.6)
• Very clear	19 (5.2)
• Do not know	59 (16.3)

TABLE 5. Respondents' knowledge of herbal medicine formulary

Variable	n (%)
Do you know about the Indonesian Herbal Medicine Formulary?	
• Yes	240 (66.1)
• No	123 (33.9)
Do you know the Indonesian Phytopharmaca Formulary?	
• Yes	333 (91.7)
• No	30 (8.3)

TABLE 6. Respondents' knowledge and usage on 11 brand name of standardized herbal medicine and phytopharmaca

Brand name of herbal medicine	n (%)	Contains	Indications
Tensigard			
• Do not know	157 (43.3)		
• Know	122 (33.6)	Celery extract (*Apii Herba*) and cat's whisker extract (*Orthosiphon Folium*).	A herbal medicine used to alleviate high blood pressure and cholesterol
• Not prescribing	69 (19.0)		
• Prescribing	25 (6.9)		
Rhemaneer B			
• Do not know	220 (60.6)	1. *Curcuma Domestica Rhizoma* 2. *Zingiberis Officinalis Rhizoma* 3. *Curcumae Xathorizae Rhizoma* 4. *Boesenbergiae Rhizoma* 5. *Piperis Retrofracti Fructus*	Help to reduce joint pain
• Know	73 (20.1)		
• Not prescribing	67 (18.5)		
• Prescribing	3 (0.8)		
X-gra			
• Do not know	227 (62.5)	1.*Ganoderma Lucidum* extract 2. *Eurycomae radix* extract 3. *Ginseng* extract 4. *Retrofracti* fructus. 5. Royal jelly	Supplement for men's health and stamina
• Know	76 (20.9)		
• Not prescribing	57 (15.7)		
• Prescribing	3 (0.8)		
New Divens			
• Do not know	272 (74.9)	Dried extracts of *Phyllanthus niruri* L and *Nigella sativa*	Supplements to help improve the immune system and maintain a healthy body
• Know	35 (9.6)		
• Not prescribing	54 (14.9)		
• Prescribing	2 (0.6)		
Stimuno			
• Do not know	10 (2.8)	Dried extracts of *Phyllanthus niruri* L.	A supplement used to help improve the immune system and help speed up the healing process
• Know	169 (46.6)		
• Not prescribing	33 (9.1)		
• Prescribing	151 (41.6)		
Losterol			
• Do not know	212 (58.4)	Guazuma ulmifolia	Losterol is used to help lower bad cholesterol levels in the body and help prevent heart disease.
• Know	83 (22.9)		
• Not prescribing	55 (15.2)		
• Prescribing	13 (3.6)		

TABLE 6. Continued.

Brand name of herbal medicine	n (%)	Contains*	Indications*
Resikda			
• Do not know	277 (76.3)	1. Curcuma Rhizoma, 2. Orthosipon stamineus Folium, 3. Lingustrinae Lignum, 4. Phyllanthus niruri Herba, 5. Alsthoniae Cortex.	Traditionally used to help reduce itching, festering boils, and acne caused by "dirty blood"
• Know	36 (9.9)		
• Not prescribing	50 (13.8)		
• Prescribing	0 (0.0)		
Livitan			
• Do not know	257 (70.8)	1. Achillea millefolium, 2. Cichorium intybus, 3. Solanum nigrum, 4. Terminalia arjuna, 5. Cassia occidentalis, 6. Tamarix gallica	Livitan is indicated to help increase appetite, gain weight, speed up the recovery period of liver function, help recovery from hepatitis.
• Know	53 (14.6)		
• Not prescribing	48 (13.2)		
• Prescribing	5 (1.4)		
VipAlbuminPlus			
• Do not know	98 (27.0)	1. *Ophiocephalus striatus (Channa striata)* extracts 2. *Citrus sinensis fructus* 3. *Curcuma domestica rhizoma*	Maintains body health, accelerates postoperative healing, and helps increase albumin levels in people with hypo albumin
• Know	134 (36.9)		
• Not prescribing	40 (11.0)		
• Prescribing	91 (25.1)		
Nodiar			
• Do not know	156 (43.0)	Attapulgite, *Psidii Folium* Extract, *Curcuma domestica Rhizoma* Extract	Antidiarhea
• Know	111 (30.6)		
• Not prescribing	46 (12.7)		
• Prescribing	50 (13.8)		
Inlacin			
• Do not know	226 (62.3)	Bioactive fraction DLBS3233, *Lagerstroemia speciosa* extract, *Cinnamomum burmannii* extract	Combination therapy for type 2 diabetes mellitus
• Know	60 (16.5)		
• Not prescribing	49 (13.5)		
• Prescribing	28 (7.7)		

On question of whether medical student should also learn herbal medicine, 97% respondents agreed that herbal medicine should be taught in medical faculty, and this should be given in pre-clinical and clinical phase as well.

DISCUSSION

Conventional medicine is typically provided by doctors, who have received education in areas such as anatomy, histology, biochemistry, pathophysiology, pharmacology, and other disease sciences. Traditional medicine, in addition to conventional medicine, is also known as or is often referred to as complementary medicine.

In fact, this traditional medicine was first known by the people in Indonesia as *jamu*.[11,12] The Indonesian government through the *Jamu Scientification* program aims to have j*amu*, which has been known and used by our ancestors and until now, researched in terms of more rational use through the health services provided.[2] Therefore this service is mainly and firstly centered in

Tawangmangu, Surakarta, Central Java.[1] Herbal medicinal products in Indonesia are currently available in the form of *jamu*, SHM and phytopharmaceuticals.[12] Standardized herbal medicines are herbs that have undergone animal toxicity testing and standardization in various ways, including through good traditional medicine manufacturing methods.[8]

In addition, SHM is usually already in modern packaging, in the form of tablets, capsules or liquid (syrup). Meanwhile, phytopharmaceuticals are herbal medicinal preparations that have undergone clinical trials in humans, so that phytopharmaceuticals are intended for certain disease indications like conventional drugs.[3,12] Because phytopharmaceuticals are like conventional drugs, it is hoped that phytopharmaceuticals are also an alternative choice for doctors in treating patients with certain diseases in accordance with the phytopharmaceuticals claim, for example for hypertension, hyperlipidemia and diabetes mellitus.[2,13] Studies on the therapeutic aspects of plants are currently growing rapidly. The understanding of traditional communities regarding the therapeutic effects of herbs obtained through empirical experience has been expressed through scientific approaches.[11,14]

In some countries, the use of a combination of conventional medicine and herbal or complementary medicine for various chronic diseases has begun to be widely practiced by the community.[15,16] Some of these studies reveal that the use of a combination of conventional medicine and complementary medicine needs to be further investigated from the aspects of efficacy and safety.

As it is shown in our study (TABLE 4 and 6), the use of herbal medicines, especially phytopharmaceuticals, by doctors is still low; only 67 (18.5%) respondents prescribe herbal medicine, while 127 (35%) do not prescribe and 169 (46.6%) prescribe herbal medicine occasionally, this is conveyed by various studies, namely doctors' doubts about the efficacy and side effects that may arise from herbal medicines, the lack of valid scientific evidence, especially through good clinical trials, and the ignorance of doctors about herbal medicines.[6,7,17,18] It is also apparent from our study, that only product No. 5 (TABLE 6) is well known and often recommended by doctors to their patients. In addition, product No. 1 (TABLE 6), is a product that has been marketed for a long time as a hypertension drug, but only a few (6.9%) doctors prescribe it. If so, the use of herbal medicines needs to be supported by sufficient scientific evidence through clinical trials. The results of clinical trials of herbal medicines need to be presented in scientific journals and seminars or symposiums so that doctors are convinced and willing to prescribe herbal medicines. The study on the understanding and use of herbal medicines in Nigeria also showed that of the 300 respondents studied, 285 (95%) still questioned the risks associated with the use of herbal medicines. In addition, only 62 doctors (20.7%) used or recommended herbs to their patients.[7]

The use of herbal medicine by doctors is necessary, in addition to seeing trends in the use of herbal medicine, it is also necessary to know the reasons or background of doctors using or not using herbal medicine in their practice. One study by Drew *et al.*,[18] showed that 80% of the total 157 respondents used herbs for various health benefits such as maintaining health (74%), preventing disease (38%) and therapy (49%); 95% of respondents believed in the healing power of herbal medicines. Information about medicinal plants was mostly obtained from books (57%), internet (53%), friends, colleagues and neighbors (51%) and from health workers (42%). Respondents felt that herbal medicines were safe (51%) with fewer side effects

than conventional medicines (55%). Respondents informed the use of complementary herbal medicine to their doctors (24%) and 47% of doctors accepted and agreed with their patients using herbal medicine.[4] This study shows that the initiative to use herbal or complementary medicine comes from patients and not from doctors. With regards to the necessity of learning herbal medicine in school of medicine, our respondents agreed (96.7%) that herbal medicine should be taught in medical school, and 51.2% respondents suggested the material should be given in both pre-clinical and clinical phases.

If the use of herbal medicine in health care is growing along with the increasing number of herbal medicines that are accompanied by sufficient scientific evidence, it is necessary to think about herbal medicine being studied in medical faculties. China, Korea, Japan and Cuba are examples of countries that have started to introduce traditional medicine including herbs into their medical education curriculum.[19-22] A study in Japan found that out of 80 medical schools, complementary medicine was officially taught in 16 schools (20%). Of these 16 schools, there were 19 complementary medicine courses and the anesthesia department sponsored most of the courses (six courses).[21] A similar study conducted in Korea showed that of 35 medical schools surveyed, 32 (91.4%) offered complementary and alternative medicine courses. The most common forms of different courses were integrative medicine (88.6%), traditional Korean medicine (57.1%), homeopathy and naturopathy (31.4%) and acupuncture (28.6%).[22] Teaching traditional medicine including herbs and complementary medicine in Thailand showed that from a cross-sectional survey of 21 medical faculties, 50% of the faculties taught traditional and complementary medicine. The teaching includes research and scientific evidence on the efficacy and safety of herbal products.[23] Training medical students in traditional and complementary medicine ideas is thought to be reasonable, practicable, and acceptable, and it has the potential to improve patient outcomes. There are anticipated problems in introducing hybrid medical school curricula.Based on research conducted in Iran on the history and trends in the use of herbal medicine in society and the development of research on herbal preparations, they decided that traditional medicine and complementary medicine should be integrated into the curriculum of all medical faculties.[9] No medical faculty in Indonesia has fully incorporated traditional medicine including herbal medicine into the curriculum. Some medical faculties provide lessons on herbal medicine but they are still elective. A study of medical students' perceptions and opinions on the integration of traditional medicine lessons was conducted by Ramadianto *et al*.[10] showed that students generally showed a positive attitude towards traditional medicine and herbal medicine, but their knowledge about it was incomplete. The majority of respondents (68.4%) knew about traditional medicine and 90.4% believed that traditional medicine could be integrated into conventional medicine; 91.6% wanted traditional medicine to be included in the curriculum. Almost half (48.4%) of the respondents were also users of traditional medicine.[10]

This study has a limitation due to small numbers of subjects who responded our study. However, 72.2% of subjects are GPs, which according to the Indonesian health services, GPs are the first medical personnel who are dealing with patients in the primary health centers. Therefore, the knowledge and authority to prescribe herbal medicine are most likely done in their daily practice.

CONCLUSION

This study shows that subjects' understanding of herbal medicine still needs to be improved through various means including webinars/seminars, journals that show good clinical trials so that they are more confident when prescribing herbal medicine to their patients. There is a need for more comprehensive information regarding the indications, efficacy and side effects of herbal medicine, through books or formularies that can be easily accessed by doctors.

In addition, respondents agreed that herbal medicine should be taught in medical schools both in the pre-clinical and clinical phases.

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