

The journey of Indonesian traditional medicine

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ABSTRACT

Indonesia is the second mega biodiversity country in the world, with more than 17.000 islands and 1.340 tribes with abundant potency in traditional medicine. Traditional medicine in Indonesia has a long history. It has been greatly influenced by foreign cultures, such as India (Ayurveda), China (Traditional Chinese Medicine), and the Middle East (Arabic/Islamic/Thibbun Nabawi). Traditional Indonesian medicine is also known as Jamu, which refers to prayer, physical and non-physical techniques, and herbal medicine that aims to maintain and improve health. Many national surveys have shown that Indonesian people strongly believe in traditional medicine and still use it daily. The development of traditional medicine in Indonesia started early in the 8th century, as shown in the reliefs of Borobudur and many other temples. The development of traditional medicine in Indonesia also refers to the WHO's traditional medicine strategy, which focuses on the 3Ps (Products, practices, practitioners). World Health Organization (WHO) recommends using traditional medicines to maintain public health, preventing and treating diseases, especially chronic and degenerative diseases. WHO also supports efforts to improve the safety and efficacy of traditional medicines. Traditional Indonesian medicine has great potential to help improve the community's health. Cross-sectoral cooperation from all sectors, such as academics, business, government, and the community, is needed to develop traditional Indonesian medicine and support its use in health service facilities towards independence in the health sector.

Keywords: *Indonesia; tradisional medicine; jamu*

INTRODUCTION

Indonesia is the largest archipelagic country in the world, with more than 17.000 islands and 1.341 tribes. Cultural diversity is our wealth, including in the health sector. The local wisdom of each tribe enriches the traditional medicine treasury in Indonesia. History proves that Indonesia has a long history of traditional medicine. Until now, traditional medicine continues to be one of the community's choices in maintaining health and treating diseases. Traditional medicine, which was previously empirical, as a culture passed down from generation to generation, continues to develop until it is equipped with formal education and is included in the national health system.

Jamu, the cultural heritage of the nation

As the world's largest archipelagic country, Indonesia has diverse habitats, flora, and fauna spread across various regions. Indonesia also has a lot of biodiversity, including traditional medicinal plants. The wealth owned by the Indonesian people is based on natural biological resources and various other sources, such as the cultural wealth of ethnic groups in all provinces of Indonesia.^{1,2}

Indonesia has more than 300 ethnic groups or tribes, or precisely 1,340 tribes,

according to the 2010 BPS census. Each ethnic group has at least one traditional healing tradition, which is relatively different from other ethnic groups. However, the exact number of total traditional treatments that have developed and have been inherited by the ancestors of this archipelago has yet to be discovered. Based on the number and diversity of ethnic groups alone, it is reasonable to believe that Indonesia is a wealthy nation with the largest and most diverse traditional treatments integrated with its people's local wisdom.³

The Indonesian people initially knew traditional medicine since the emergence of an understanding of mystical medicine and belief in supernatural powers rooted in animism. In its development, traditional medicine in Indonesia has been greatly influenced by foreign cultures, such as India (Ayurveda), China (Traditional Chinese Medicine), and the Middle East (Arabic/Islamic/Thibbun Nabawi).^{1,4,5}

Traditional Indonesian medicine is also known as Jamu (djamoe), which comes from the words “Djampi” (mantra/physical/non-physical technique) and “Oesodo” (health). So, Jamu refers to prayer, physical and non-physical techniques, and herbal medicine that aim to maintain and improve health.^{1,6-8} Jamu

has a unique holistic approach that is applied based on beliefs and ethnocultural and is very distinctive and Indigenous. Indonesia is known for its deep biocultural diversity, which strengthens the uniqueness of Jamu as the heritage of ancestral cultural masterpieces and evidence of Indonesia's highest spirituality and culture. Temple reliefs in Indonesia show many traditional medicine history.¹

Javanese people have consumed a lot of Javanese herbal medicine (traditionele Javanese geneeskunde) since 1200 AD. This culture can be seen in the Borobudur Temple reliefs, which depict Javanese herbal medicine consumption. Two relief panels are generally interpreted as depictions of people making herbal medicine. One relief depicts people making herbal medicine on panel 19 of the Karmawibangga relief, located on the temple base's southeastern wall. The relief, which, among other things, depicts people pounding with herbal medicine pounders, tells the story of an expression of gratitude for someone's recovery from their illness. Another relief about herbal medicine at Borobudur Temple is located in the corner of the first corridor, north side, lower main wall, precisely near the ship relief. The relief depicts a woman holding a grinding stone or pipisan with

two reliefs of stilt houses on top (Picture 1)^{1,6}



Picture 1. One of the reliefs of Borobudur Temple depicting the consumption of herbal medicine

The healing traditions of a community must be distinct from the local culture. Each region in Indonesia has its type of traditional medicine, which has its uniqueness and characteristics because it can be obtained from learning and experience as a cultural heritage passed down from one generation to the next. Indonesia, from the past until now, even though it has known medicines processed in modern pharmacies, still believes that traditional medicine recipes inherited from ancestors are still efficacious.^{1,2}

The acculturation of cultural and health practices can be seen in many regions, such as Aceh. In historical literature, the Acehnese people were influenced by Indian Muslim and Hindu culture called India kleng. So, the mixture of cultures is still practiced today in people's lives,

especially regarding traditional healing traditions.²

Cultural acculturation is also seen in local cuisines. *Ie Bu Peudah*, an Acehnese cuisine influenced by Indian culture brought in by Indian traders, is also known to be beneficial for health and warming the body. This food is made from 44 types of spices and leaves that are beneficial for the body, including turmeric and ginger, which are also widely used by traditional healers to increase immunity and vitality.⁹ Spices that are widely used as cooking spices also have medicinal properties.^{1,10}

The cultural background that has taken root in Acehnese society, as well as in other parts of the archipelago, cannot be separated from pre-Islamic animism; worship of media objects is seen from the tradition of traditional ceremonies that are more mystical. The readings in the ceremony are poured into literary forms, either in the form of poetry (*mantera* or *tangkey*) or prose (*do'a*) by a respected person known as a '*pawang*', *meuilmee* and *teungku*. *Meurajah* in Aceh is always associated with spells, *ajimat* (charms) and *do'a*, which are used in two ways, for good and bad (evil). Traditional medical knowledge in Aceh is not free from foreign influences. The herbs used by a *tabib* (doctor) are several original products native to Aceh, but there are also

many traditional Indian, Arabic, and Chinese herbs.²

The nobility widely documented traditional medicine in Java for its heritage of knowledge. The elite use Herbal medicine not only for treatment but also for body care and maintaining beauty. The general public uses herbal medicine only for treatment due to limited knowledge.¹¹ Empirical knowledge about herbal medicine that is communicated verbally emphasizes information about ingredients for herbal medicine mixtures. It differs from modern medicine, from scientific research to treat diseases. The traditional Javanese healing system focuses on analyzing the relationship between people and their environment. This knowledge is based on Javanese *primbon*.¹² According to Javanese cosmology, illness results from an imbalance in the relationship with the environment. Therefore, some Javanese people argue that to cure someone's illness, more than just knowledge about herbal medicine is needed. Namely, it must be accompanied by certain prayers and rituals. People in Java generally believe that many of the ancient recipes for herbal medicine were received by '*dukun*' with mystical revelations through dreams and meditation. Many consider traditional Javanese healing a sacred ritual in which mysticism and magic play

an integral role in developing herbal medicine.^{1,12} Based on Javanese understanding, the palace maintains knowledge about traditional medicine from generation to generation. Many Javanese believe the royal family has learned about traditional medicine through divine revelation. There are several important books related to traditional healing that are kept in the palace, both the palaces of Yogyakarta, Surakarta and Cirebon, including Lontar Husada (Healing Book), Serat Kawruh chapter of jampi-jampi (1831, a book that discusses almost all healing methods), Serat Primbon Jampi, Serat Racikan Boreh Wulang Dalem, Serat Wulang Wanita, Pakubuwono IX, Serat Centhini (1788-1820 M by Pangeran Adipati Anom Hamengkunegara III, Pangeran Sunan Pakubuwono IV) Candra Rini (1792 by Mangkunegaran IV) which contains information about religious knowledge, spirituality and mystical healing, and the Book of Tetamban in the Cirebon Palace. Kitab Kakawin Ramayana, Sarga 1-9, 898-910M, about Usada (Bali).^{1,6}

Indonesian traditional medicine development

In 2009, WHO (World Health Organization) noted that around 30-50% of the Chinese population still use

traditional medicine / CAM (Complementary Alternative Medicine) to support their health; in Ghana, Mali, Nigeria, and Zambia, 60%; In Europe, North America, and surrounding areas 50% of the total population; in San Francisco, London around 75%. These facts show that traditional medicine has an important meaning, namely supporting life, and has progressive potential to be developed. People generally choose traditional medicine over modern medicine because of several factors, including financial aspects, social relations factors, knowledge and education factors. Medicinal ingredients are easy to find. Many people are healed by prayer or mantra. A habit carried out from generation to generation will create a culture. Society is the perpetrator of a culture through habits often carried out. These habits will produce culture and are believed to benefit society greatly. This treatment has been passed down by our ancestors since ancient times from generation to generation, starting from traditional natural medicine, psychics, or people considered qualified by the community to treat diseases patients suffer in accordance with religious values.^{1,2}

Much evidence has supported the development of traditional medicine in Indonesia. In the 19th century European

doctors began to be interested in herbal medicine. In 1892, the German doctor, Carl Waitz wrote about herbal medicine; Willem Gerbrand Boorsma, a pharmacist and director of the pharmacology laboratory of the botanical gardens in Buitenzorg (Bogor Botanical Gardens), isolated the active ingredients morphine, quinine, and coca, likewise in 1880 A.G. Vordermaan wrote in full about herbal medicine. Research on herbal medicine was conducted by M. Greshoff and W.G.Boorsma in the laboratory of the Bogor Botanical Gardens. In 1933 Kloppenburg-Versteegh written The Atlas van Indische Geneeskrachtige Planten.

In 1940 during the colonial period where the 2nd Indonesian Doctors Association Congress was held in Surakarta, it was determined at that time that herbal medicine would be complementary to conventional Western medicine and was declared as Indonesian Traditional Medicine.

Continued during the Japanese occupation where Dai Nippon supported the use of herbal medicine for treatment and health care because at that time the availability of synthetic drugs was very limited and on June 1944 by Prof. Dr. Sato the Indonesian Traditional Medicine Committee was formed and declared. Then “The Indonesian Traditional

Medicine Committee” and “The Herbal Medicine Agency” were formed and led by Dr. A Rasjid, Chairman of the Indonesian Doctors Association.

As the war continued, there was a shortage of synthetic drugs, so health workers learned and used traditional medicines to maintain health and treat disease. After the proclamation of independence in 1945, Indonesia’s first president (Sukarno) launched the concept of BERDIKARI - standing on one's own feet, a “self-reliance” policy., including in healthcare system, by utilizing Indonesia’s natural resources, so that the use of herbal medicine became increasingly known and popular. Along with this, congresses, seminars and research on the benefits of herbal medicine began to be encouraged.¹ This policy is still being fought for by efforts to achieve independence, including procuring medicine by developing natural medicine products. 6 December 2023 marked a great milestone in Indonesian traditional medicine history. UNESCO has acknowledged Jamu wellness culture as an intangible cultural heritage.

The results of the National Socioeconomic Survey (Susenas) 2007 showed that the Indonesian population who complained of illness within a month before the survey was 30.0%, where 65.01% of them chose self-medication

using drugs and/ or traditional medicine. The use of herbal medicine in society is increasingly popular; according to National Basic Health Research (Riskesdas) 2010 data, as many as 59.12% of Indonesians aged 15 years and over have drunk herbal medicine, and 95.6% of them feel the benefits of drinking herbal medicine (Riskesdas 2011). People increasingly believe in the benefits of herbal medicine.^{13,14} In the 2013 Riskesdas data, 30.4% of families in Indonesia used traditional medicine services.¹⁵

Traditional Indonesian medicine has a holistic approach, including physical approach (proper food, natural products (herbal medicine), physical activity, massage, acupuncture, etc.), mental approach (positive thinking, life purpose, meaning of life, etc.), emotional approach (catharsis process, forgiveness, sincerity, etc.), spiritual approach (vertical/transcendent relationship with the Creator), social approach (relationship with the surrounding community (family, and broader community), cultural approach (cultural interaction with the surrounding community).¹⁶

WHO has launched a traditional medicine strategy for the 2014-2023 period. This strategy is harnessing the potential contribution of T&CM (Traditional &

Complementary Medicine) to health, wellness, people-centered health care, and universal health coverage by promoting the safe and effective use of T&CM through the regulation, research, and integration of T&CM products, practices, and practitioners into the health system, as appropriate. Traditional medicine has a long history. It is the total of the knowledge, skill, and practice based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement, or treatment of physical and mental illness. “complementary medicine” or “alternative medicine” refers to a broad set of healthcare practices that are not part of that country’s tradition or conventional medicine and are not fully integrated into the dominant healthcare system. They are used interchangeably with traditional medicine in some countries. T&CM merges the terms TM & CM, encompassing Products, Practices, and Practitioners (3P). WHO recommends using traditional medicines to maintain public health, preventing and treating diseases, especially chronic and degenerative diseases. WHO also supports efforts to improve the safety and efficacy of traditional medicines.^{17,18}

Classification of natural medicine products

The classification of natural medicine products in Indonesia is divided into four groups.^{19,20} First, **Jamu**. Jamu's safety and efficacy are proven by empirical evidence. There are a total of jamu products of 19.314. Second is **Standardized Herbal Medicine**, in which raw materials are standardized—preclinical tests prove this product's safety and efficacy. A total of 99 products are categorized in this category. Third is **Phytopharmaceuticals**, in which raw materials and products are standardized. Preclinical tests and clinical trials prove the safety and efficacy of the products. There are a total of 33 phytopharmaceutical products. The last one is **Others**, which includes innovative products, imported products, and licensed products by the development of science and technology.

The Indonesian Ministry of Health launched The first national phytopharmaceutical in 2022.²¹ This formularium is a comprehensive list of selected Indonesian phytopharmaceuticals, which are medicinal products derived from plants. This formularium is a reference for prescribing these plant-based medicines within Indonesia's healthcare system. It is part of the broader effort to integrate traditional and herbal

medicines into modern medical practice, ensuring they meet safety, efficacy, and quality standards.²⁰ It contains five phytopharmaceuticals indicated for immunomodulation, stomach ulcer, antidiabetic, antihypertension, and hypoalbuminemia. This formularium could increase the utilization and use of phytopharmaceutical products in healthcare facilities as a reference for health service facilities in the selection, procurement, and use of phytopharmaceuticals. Two editions of Indonesian Herbal Pharmacopoeia are also available as a standard book in the field of pharmacy, especially for traditional medicine raw materials, containing general provisions, monographs of Simplicia, and extracts containing quality requirements consisting of organoleptic, macroscopic, microscopic, chemical content, and appendices with analysis methods including procedures and equipment. The first edition contains general provisions and 70 monographs of simplicia and extracts. In addition, there are appendices containing information and explanations of analysis methods and testing procedures in the monographs, including general testing and determination, microbiology, biology, chemistry, and physics. Meanwhile, pharmacology cannot be included in this first edition of

the pharmacopeia because few data sources meet the requirements. However, monographs of either *simplicia* or extracts that already have evidence-based or a basis of proof that can be used as efficacious materials for an indication of a particular disease will be included as a supplement to this book. The second edition contains 253 monographs of simple drugs and extracts consisting of 213 monographs, which are the result of revisions of the 1st edition and its Supplements, and 40 monographs originating from new plants. With the publication of the Indonesian Herbal Pharmacopoeia Edition II, it can become a quality standard for various interests. It will gradually improve the quality of raw material production in the interest of the traditional medicine industry so that it can compete internationally. This book is intended to be used by practitioners, researchers, academics, industry, and regulators.^{22,23}

Even though natural medicine products are sold as pharmaceutical preparations registered with the Food and Drug Administration, traditional medicine is also sold as herbal drinks. Previously, Jamu as an herbal drink was sold by a woman carrying a basket filled with bottles of Jamu, walking around selling the Jamu in the village. She is called "Mbok Jamu" (Jamu's mother). We can

hardly find Mbok Jamu walking around, especially in the city. They sell the Jamu by bicycle or motorbike. We can even find jamu sold in modern cafés to reach the younger generation's modern market. As the second mega biodiversities country in the world, Indonesia has around 40,000 types of living plants, 7,500 of which are medicinal plants. Still, only around 300 types are used as traditional medicine ingredients by the traditional medicine industry, such as ginger, turmeric, kencur, cat's whiskers, betel leaves, etc.²⁴ Many species of medicinal plants have yet to be explored as medicinal products. Further research should be conducted to build evidence-based medicine for traditional medicine products. There are many challenges to natural medicine development. Standardization of raw materials is facing problems in the continuity of raw material supply, variation in raw material quality, and marker compounds that still need to be improved. Research and commercialization of phytopharmaceutical products and lack of financial support are still limited. Traditional medicine by doctors or health facilities is still limited and yet to be covered in the national health insurance payment system.

Indonesian traditional medicine practices

Traditional medicine services is one of the implementation of health efforts regulated in the Law of the Republic of Indonesia number 17, year 2023, concerning health (UU no 17/2023) and Government Regulation of the Republic of Indonesia number 28, year 2024 (PP No 28/2024). Traditional medicine service includes promotive, preventive, curative, rehabilitative, and palliative care. It could be served in private practice, governmental health centers, traditional health service facilities, hospitals, and other facilities.^{19,20}

Indonesian traditional medicine practice has several modalities: herbal formula, manual therapy, mind therapy, energy therapy, and combination. The herbal formula consists of plants, animals, and minerals. Manual therapy includes various modalities, such as massage, cupping, scrapping, etc. Mind in 2018, at Riskesdas, 31.4% of people used traditional medicine services. Of those, 98.5% used traditional healers. The type of traditional medicine modality used the most (65.3%) was manual skills.^{16,25}

THE PRACTITIONERS OF INDONESIAN TRADISIONAL MEDICINES

Many kinds of practitioners perform traditional medicine services.^{19,20} The first is a traditional healer, whose knowledge and skills are acquired through inherited experience or non-formal education, with the most significant amount of 280.000. The second one is traditional health workers, with a total amount of 1.700. The traditional health workers group includes three kinds of health workers: traditional herbal medicine health workers, traditional healer health workers, and intercontinental traditional health workers. All of these practitioners have to study at a minimum 3-4 years diploma level, but hopefully, there will be professional education for them as the medical doctor educational system. The third is a medical worker (doctor); the other health worker has additional competencies in traditional medicine from additional courses. There are more than 600 doctors who are already trained in traditional medicine.

The integrative practice of traditional medicine, according to previous regulation of the Minister of Health of the Republic of Indonesia number 37, the year 2017 (PMK No 37/2017), could be performed in healthcare facilities by a team consisting of doctor (with additional competency in traditional medicine) as the case manager, traditional health

worker, and the doctor in charge for the patient. Firstly, the patient is registered and diagnosed by the doctor in charge; then the doctor will inform the patient about the traditional medicine service. If the patient agrees to have traditional medicine service, the traditional health worker will perform the service but still coordinate with the doctor in charge.²⁶ Integrative medicine has been performed in several places in Indonesia, such as in Hortus Medicus clinic in Tawangmangu and Kalimosodo clinic in Sardjito, where the doctor collaborates with traditional health workers to treat the patients with traditional medicine such as herbal medicine, massage, acupressure, and acupuncture. The results of mapping doctors in organizations interested in traditional medicine throughout Java-Bali, show that there are 159 doctors, of which 71.7% (114 people) practice herbal medicine and state that they believe in the benefits of herbal medicine.²⁷

CONCLUSION

Indonesia has abundant potency in developing traditional medicine and practicing integrative medicine in healthcare facilities. There are a lot of islands and ethnic groups that have their local wisdom. Regarding local wisdom, every community, including traditional communities, has a process to "become

smart and knowledgeable." This is related to the desire to be able to maintain and continue life so that community members will spontaneously think of ways to do and create something, including, for example, how to make food and how to make the equipment needed to process natural resources to ensure the availability of food. Traditional Indonesian medicine has great potential to help improve the community's health and reduce the government budget in the health sector if its implementation is maximized from promotive, preventive, curative, rehabilitative, and palliative services. For this reason, cross-sectoral cooperation from all sectors, including academics, business, government, and the community, is needed to develop traditional Indonesian medicine and support its use in health service facilities. If we succeed in doing so, Indonesia will be stronger and independent in the health sector in terms of drug product procurement and health services towards a better level of health for humanity.

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