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## REVIEW ARTICLE

# Information seeking and knowledge conservation practice in traditional medicine practitioners: a systematic review

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**ABSTRACT**

This research study represents an essential initial step to delving into the potential for investigating information-seeking behaviours and knowledge-conservation practices among traditional medicine practitioners. The study thoroughly examines the existing literature on information-seeking strategies and knowledge-conservation practices within this community. It meticulously explores the nuanced meanings and definitions of traditional medicine, information-seeking, and knowledge conservation in this context, providing a comprehensive understanding of the subject matter. Additionally, the study meticulously analyzes the current research trends in traditional medicine, shedding light on the diverse approaches employed for information gathering, the procedures utilized for preserving knowledge, and the multifaceted challenges encountered in this process.



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# INTRODUCTION

The Earth provides all the essential resources for living beings and fulfils human needs such as food, shelter, fibre, and medicine (Dutt *et al*., 2015). To meet these needs, humans have developed a set of skills and techniques known as indigenous knowledge. Indigenous knowledge, also referred to as traditional knowledge, is familiarity that has been advanced in a particular region by previous generations and passed down through the years (Porsanger, 2012). This knowledge is rooted in practical experience, cultural beliefs, and societal traditions (World Health Organization, 2019). It encompasses a wide range of knowledge including agriculture, medicine, biodiversity, as well as traditional forms of expression such as dance, music, design, and artwork (Singh, 2008). The use of plants and animal parts in medicine remains deeply rooted in various cultures and societies. It's interesting to note that around 80% of the global population relies on traditional medicine (Ros *et al*., 2018). Changes in ecological and social circumstances have meaningfully influenced and transformed traditional knowledge, particularly in the medical field, through the adoption of diverse processes and innovative techniques (Pirker *et al*., 2012). Following the Alma Ata declaration on the primary health care system (PHC) in 1978, every country initiated PHC facilities within their health systems for the betterment of public welfare (WHO, 1978). In contemporary years, traditional knowledge has become increasingly valuable in various fields and is now considered relevant for scientific research (Biró *et al*., 2019). The WHO crafted a strategy during the 13th general assembly to address Sustainable Development Goals (SDGs) in the 2019-2023 program work, aiming to elevate 3 billion people from inadequate health conditions to overall well-being and a healthy environment in society (WHO, 2018). Traditional medicine plays a crucial role in this initiative (World Health Organization, 2019). In remote and inaccessible locations, such as high-altitude areas of cold deserts and dense forests, people heavily rely on traditional medicine due to limited access to primary healthcare systems (J. A. Bhat *et al*., 2013). During the global COVID-19 pandemic, six Chinese traditional medicine treatments have proved remarkable efficacy in treating coronavirus disease (Huang *et al*., 2021). Indian traditional medicine, with its emphasis on various aspects of the immune system and historical evidence, is graduallydocumented for its relevance in treating and preventing COVID-19 (Prajapati &Gv, 2020).

The impact of modernization, unregulated economic activities, deforestation, and the growing disconnect between traditional healers and the younger generation has resulted in the marginalization of traditional knowledge, which is now predominantly held by the elderly (Rajbanshi & Thapa, 2019). International organizations such as the World Wildlife Fund (WWF), UNESCO, and WHO actively promote traditional knowledge, conduct research, and involve local communities at the grassroots level (J. A. Bhat *et al*., 2013). At the national level, the Indian government is prioritizing the promotion of traditional knowledge and has established institutions like NIITM https://icmrnitm.res.in/ (ICMR-NITM, 2004), TKDL (Ministry of AYUSH, 2001), and initiated the IJTK journal (Indian Journal of Traditional Knowledge (IJTK), n.d.) under the guidance of CSIR.

**Definitions:** "Indigenous or traditional knowledge refers to the refined methods and practices developed over generations, based on a deep understanding of the local environment. These methods were created to safeguard lives and belongings from natural disasters and to manage the ecosystem effectively" (Joshi *et al*., 2011).According to the WHO, "Traditional medicine has an extensive history. It includes information, skills, and practices derived from the theories, beliefs, and experiences of various cultures. These methods are used to preserve health as well as prevent, diagnose, improve, or treat physical and mental diseases"(World Health Organization, 2019). In nearly parts of the world, traditional medical knowledge is used as a complementary treatment for various illnesses. "Complementary medicine is a range of therapeutic and diagnostic disciplines that exist primarily outside of mainstream healthcare organizations" (Zollman & Vickers, 1999).Gathering information on traditional knowledge is challenging. Wilson defines information-seeking behaviour as the purposeful seeking of information to fulfill a goal. This process may include interaction with manual or computer-based information systems (Wilson, 2000).Survival or protection is critical for the future use of traditional knowledge. The Merriam-Webster dictionary defines preservation as "the take action, manage, or end result of conserving something important alive, intact, or free from damage or decay".(Merriam-Webster, 1828).

# METHODOLOGY

This systematic review adhered to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, ensuring a structured approach for the identification, screening, and selection of relevant studies on traditional medicine knowledge conservation and information-seeking practices.

**Design and Eligibility Criteria:** The review included primary research studies, case studies, and qualitative or quantitative research focusing on traditional medicine practitioners' information-seeking behaviour and knowledge conservation. The inclusion criteria were as follows:

**Study Types:** Only novel research articles, case studies, and studies that used interviews, surveys, or ethnographic methods were considered. Clinical trials, systematic reviews, and meta-analyses were excluded as they did not align with the focus of this review.

- **Timeframe:** The researcher selected studies published between 2013 and 2024 to capture recent trends in traditional medicine knowledge.
- **Language:** Only papers published in English were included for consistency and accessibility.
- **Content Focus:** Studies had to specifically address the conservation of traditional medicine knowledge and the information-seeking practices of conventional medicine practitioners.

In addition to journal articles, we included three doctoral theses from the Shodhaganga Repository, seven web pages (including entries from dictionaries and encyclopaedias), and the Traditional Knowledge Digital Library (TKDL) website [http://www.tkdl.res.in]. Furthermore, we reviewed nine research papers from the Indian Journal of Traditional Knowledge (IJTK), spanning from 2000 to 2022—reports from UNESCO and WHO were also included to provide broader perspectives on traditional medicine knowledge conservation.

**Information Sources and Search Strategy:** We devised an advanced search strategy using Google Scholar, J-Gate+ and PubMed to identify relevant studies. The search query used was: ((((((traditional medicine) AND (information seeking)) AND (traditional knowledge)) AND (practice)) AND (conservation)) AND (preservation)) AND (traditional medicine knowledge conservation barriers)). The search was conducted from November 2022 to February 2023. Additionally, relevant references were gathered from key government and institutional reports such as the TKDL and WHO (2018, 2019).

**Study Selection and Screening**

**A four-step screening process, based on PRISMA guidelines, was used to select relevant studies:**

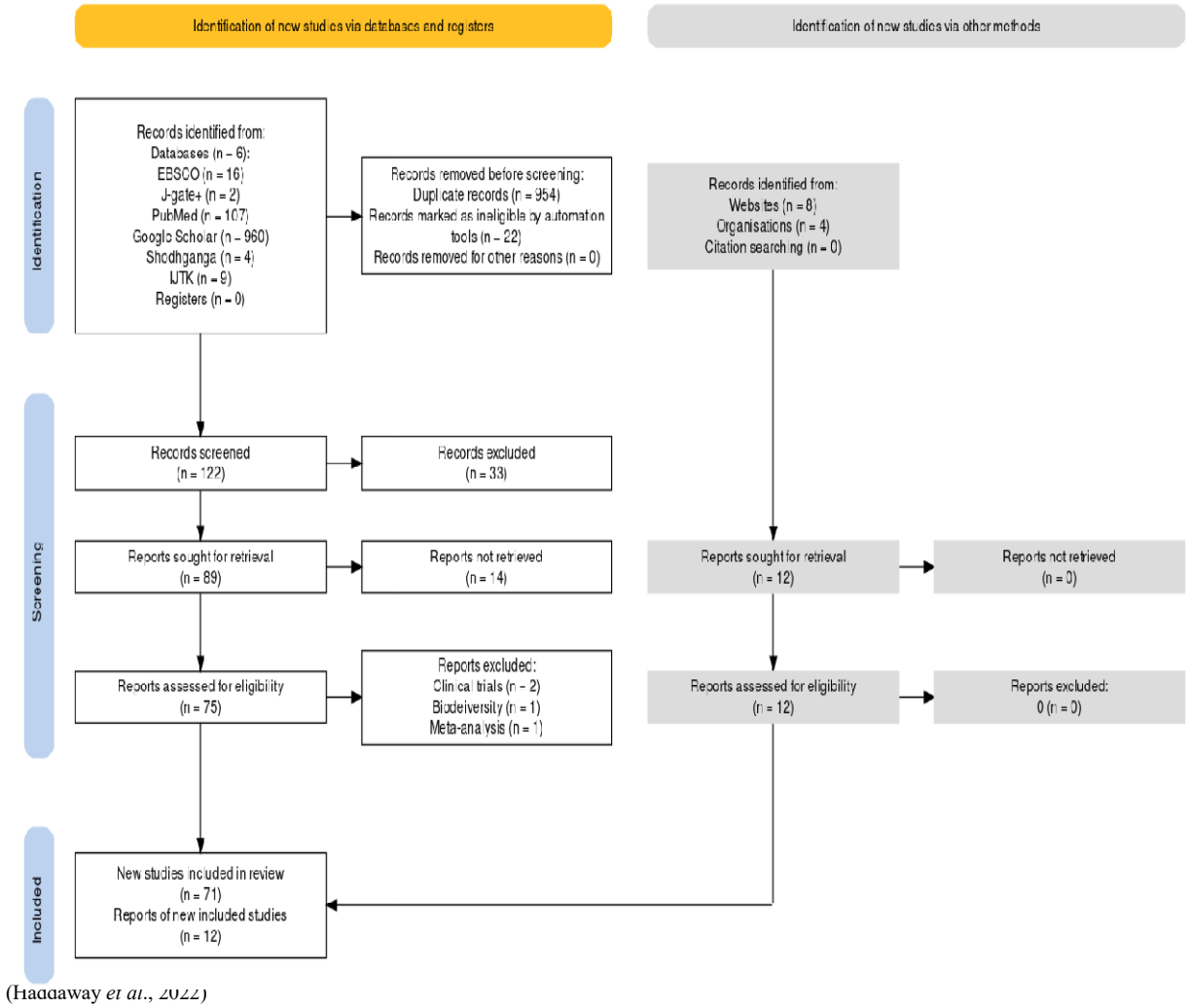
- **Identification:** We identified 960 papers from Google Scholar and 107 from PubMed. Other resources included reports, theses, and papers from IJTK.
- **Screening:** After removing duplicates, titles and abstracts were screened to exclude irrelevant studies.
- **Eligibility:** Full-text reviews were conducted on studies that met the inclusion criteria.
- **Inclusion:** A total of 54 studies were selected for the final review based on their relevance to traditional medicine knowledge conservation.

**Data Extraction and Synthesis**

Data extraction focused on methodologies, key findings, and identified challenges. The extracted data were synthesized to highlight common themes, gaps, and opportunities for enhancing information-seeking practices among traditional medicine practitioners.

**Development of Traditional Medicine Knowledge:** Traditions exist in all civilizations, passing down through customary behaviors, actions, and beliefs. Traditional knowledge refers to indigenous peoples' wisdom, ideas, and practices, which are frequently passed down orally and collectively owned.

**Flow-chart**




(Haddaway *et al*., 2022)

Knowledge, on the other hand, is a person's awareness, comprehension, or skill gained via experience or education. It is a vital asset that enables people to maintain cognitive engagement with reality (Vujicic &Cohall, 2021). Indigenous peoples rely heavily on the interwoven components of knowledge, practice, and beliefs to pass down traditional wisdom from generation to generation. Traditional medicine knowledge is practiced under numerous names in different nations, such as Unani, which mixes Greek and Arab traditional medicine abilities and is based on the elements of Earth, Water, Fire, and Air. This customary wisdom has been passed down from generation to generation. The Caribbean is well-known for its plentiful medicinal plants and varied flora. Many traditional healers received their expertise of traditional medicine from older family members (S. P. Kumar 2015). Even in the modern era of medicine, the value of traditional medicine knowledge is increasing, emphasizing the need to conserve and pass it on to future generations. The Hakka community, a sub-ethnic linguistic group, knows traditional diets and includes medicinal plants into their food to avoid disease, a technique that has been practiced since antiquity (Luo *et al*., 2019). Traditional medicinal herbs are highly valued throughout Africa, particularly in Kenya. The local community's culture, traditional folklore, art, religious beliefs, and expertise in traditional medicine have all been influenced by the region's natural vegetation and biodiversity (D. Kumar, 2008).

This approach has been in existence for many years and has utilized over 44 plant species to treat various ailments (Kathambi *et al*., 2020). The use of folk medicine, also known as traditional medicine, can be observed across the world under various names. For instance, in Japan, it is referred to as Kampo Medicine (Yakubo *et al*., 2014), while in China, it is known as CTM (Oyebode *et al*., 2016) or Chinese traditional medicine. Similarly, in West Asia, it is called Arab traditional medicine (Ahmad *et al*., 2017), and the list goes on. In the Indian subcontinent, which includes India, Afghanistan, Pakistan (Yaseen *et al*., 2015), Nepal, Bangladesh, and Sri Lanka, indigenous people have relied on traditional medical knowledge accumulated over centuries. Ayurveda, for example, was developed during the 2nd century B.C. (Akber *et al*., 2011) (Adhikari & Paul, 2018). In India, more than 2500 species are used in traditional medical practices, and the Western Ghats boast the highest biodiversity in South India, with vast forest resources that include various herbal plants. Some traditional medicine practitioners utilize these plant resources to treat skin disorders in their communities (P. Bhat *et al*., 2014). Notably, the United States and India co-hosted a workshop on traditional medicine in 2016 (White *et al*., 2018). Following the event, both countries have agreed to collaborate in the areas of traditional medicine, multidimensional approaches, and cancer research development. Traditional medicine practitioners currently provide a variety of techniques, such as herbal treatments, massage, mud baths,

wax baths, preventative medicine practices, therapeutic fasting, and therapy. Individual consultations with herbal medicine practitioners are now available for Covid-19 treatment in the United States (Xiong *et al*., 2021). Furthermore, many national food and drug regulatory organizations have expressed an interest in integrating traditional medicine into their healthcare systems. Karnataka, an important state in southern India, uses traditional medicine to treat a variety of ailments (Lingaraju *et al*., 2013). This information is scattered over numerous districts, with Vijayapura district making a considerable contribution in this subject. In the Vijayapura district, surrounded by villages and cities, traditional medicine practitioners are locally referred to as 'Vaidya' or 'Hakeems.' During the medieval period of Indian history, the Adil Shahis ruled over the Vijayapura district, where many Hakeems practised traditional medicine in the community. In some cases, this knowledge is limited to specific families and is passed down through generations without any obstacles (Arati, 2018).

**Information-seeking activity:** Libraries are not just sources of knowledge; they are also disseminators of knowledge at the right moment for a suitable activity (Ramakrishna *et al*., 2016). The Radhakrishnan Commission emphasized the status of libraries in an institution, stating, "Libraries are the heart of all universities" (Radhakrishnan, 2015). “Information is an advantage in all domains and has become the fifth basic requirement of humans. Grover defines information as the process of diagnosing needs, prescribing a service to suit those needs, implementing that service, and assessing the outcomes of these interactions"(Grover, 1993). Information needs are based on perception and utility, and Jean Tague has categorized information needs into social or pragmatic information needs, recreation information needs, professional information needs, and educational information needs (Frické, 1998). A person must seek out information when they feel the need for it. Therefore, obtaining information is all about what kind of information to use for what purposes (Rahman *et al*., 2020).

Information seeking is an essential component of every research setting, as is the development of literacy abilities in certain subjects. The words of Krikelas: "information-seeking behaviors refer to any activity of an individual that is undertaken to identify a message that satisfies perceived needs" (Krikelas, 1983). Researchers from a single discipline will benefit from this activity because it will help them gain a deeper knowledge of the subject (Foster, 2004). In the context of library science, information-seeking behavior gives advantages to the person for utilizing the resources very effectively (Pareek & Rana, 2013). Information-seeking skills include cognitive, psychological, and physical activity, which can be performed without computing assistance (Olorunfemi & Mostert, 2013). 'More information is always better'; every field has unique sources and resources, and seeking skills vary from domain to domain (Case & Given, 2016). Girija Kumar has explained the information-seeking process scientifically, which includes the identification of objectives, assessing the information system, defining the need, assessing the information system, establishing sources of information, information acquisition, and use of information satisfaction or dissatisfaction (Neogi& Dr, 2021). When a broad task is assigned and information needs to be collected, analyzed, and utilized effectively, information-seeking occurs (Rath, n.d.).

Legal professionals and registered professionals typically obtain information from information centers, libraries, and various online platforms based on their specific requirements (Thanuskodi, 2010). It's worth noting that all professionals are registered except traditional medicine practitioners. The emergence of online resources and information and communication technology (ICT) has led researchers to adopt new information-seeking practices (Athukorala *et al*., 2013). Additionally, turmeric continues to hold a significant place in households for its healing properties and immune-boosting effects, even in advanced medical systems. This practice of using turmeric has been passed down from generation to generation, and information about its use continues to circulate (Kalluri, 2012).

**Information-seeking activity in traditional medicine practitioners:** Several civilizations have reported the development of a prototype to preserve traditional medicinal knowledge for future generations (Ayub *et al*. 2018). It has been noticed that those with minimal formal education can benefit from traditional medicine knowledge, but they will need some basic computer literacy instruction. Traditional medicine practitioners from diverse communities have gained practical experience in the use of plant and animal-based remedies in therapy. The bulk of these healers learned from their forefathers, although others practice independently (P. Bhat *et al*., 2014). However, resolving regional ecological and cultural concerns and building comprehensive biodiversity preservation plans require an awareness of how flora and wildlife are utilized and managed. Our research focused on the faunistic management practices of the Cuicatec people and their relationship to animal knowledge and use within this unique prehistoric civilization. Wild animals continue to hold significant importance in the Cuicatec diet, medicine, and spirituality, with a range of interactions observed, from basic hunting and gathering to communal usage regulations, specialized management techniques, and animal domestication.

According to Solís and Casas (2019), cultural and economic values, viability preservation, and resource scarcity all impact the scope of managerial interactions. There are three techniques to gather traditional medicine information from competent Adivasi people. The first strategy involves taking competent informants to the field, recording plant information, and collecting the plants as voucher specimens for the herbarium. The alternative technique is to collect all of the surrounding plants from tribal areas and give them to competent informants one by one, while recording ethnobotanical information about the plants. The first strategy is recommended. The third method of gathering information from locals is to interview them about plants used to treat a specific ailment, such as jaundice or bone fracture; alternatively, by displaying a specific plant, the disease for which it is used may be identified. Gathering information from tribals is a more difficult undertaking because tribals are conservatives by nature and do not prefer to share knowledge with outsiders, even if there are incentives. They might be secretive in the presence of their men at times. As a result, it is critical to instill confidence in them that we are not exploiting the information or interfering with their earning potential (Rao, 2016). Generation-to-generation transfer of this information about traditional medicine knowledge is passed successfully without any obstacles (Tiwari *et al*., 22 C.E.).

Sharing of information in a rural area about traditional medicine knowledge is high, and traditional medicine practitioners evaluate information through their knowledge (D. Kumar, 2008). Library appearance and services in the traditional medicine knowledge domain are very low due to a lack of awareness and less support from the society and government. In the present context, traditional medicine practitioners face barriers to information seeking, due to some technical errors and a lack of knowledge about the available resource in the library (Shuhidan *et al*., 2019). The wide research gap between traditional medicine and its importance in society is the major cause. Medical librarians can be crucial in providing physicians with the knowledge they require to treat a variety of patient populations. In this endeavor, librarians can include knowledge of conventional medical procedures, including the traditional usage of herbs. Such information is currently scattered throughout the literature of numerous fields, including medical anthropology, ethnobotany, pharmacognosy, sociology, medicine, religion, and others. This makes finding it challenging and time-consuming. All of these academic disciplines add to our understanding of ancestral history and healing practices when we talk about immigrant health issues.

The potential for research and collaboration among medical librarians, drug information chemists, public health professionals, medical anthropologists, and other academic scholars holds great promise, although only a few institutions have ventured into this interdisciplinary field (Whelan & Dvorkin, 2006). The majority of university libraries have yet to explore the collection of records on indigenous medicine, resulting in limited information resources on the subject. Additionally, some indigenous medicine practitioners are hesitant to share their knowledge due to concerns about intellectual property rights. University libraries, as custodians of knowledge transmission, are essential for disseminating indigenous medicine knowledge. Despite extensive literature on knowledge management, there has been scant attention given to managing the creation process of indigenous healthcare knowledge (Afful-Arthur & Filson, 2016). Local knowledge, including traditions and wisdom, is integral to any community and embodies its beliefs and insights. Globalization, cross-cultural communication, and modernization present significant challenges in this domain. Libraries must establish the foundation for capturing, processing, showcasing, and passing on this knowledge to future generations (Anna, 2016).

**Traditional Medicine Knowledge Conservation Barriers:** In the present day, Western medicine professionals perceive themselves as superior in the health domain, dominating decision-making and designing and implementing health programs within a nation (Jones & Liyanage, 2018). However, traditional medicine practitioners have a strong faith and belief in traditional medicine, despite being less educated in documenting and preserving this knowledge (Amoji, 2016). This knowledge, rooted in ethnic practices, is being neglected by the present generation, leading to a decrease in the use of traditional knowledge and posing a threat to medicinal plant species worldwide (Padalia, 2015). Furthermore, this knowledge is largely neglected in medical field research (Helmstädter& Staiger, 2014). In the Panch Malai hills of Tamil Nadu, India, tribes continue to rely on traditional medicine. However, the number of traditional medicine practitioners is declining due to the lack of interest from the younger generation, who are increasingly seeking treatment in towns and cities (Bhaskar & Samant, 2012). India's regional cultural diversity influences the lifestyle of people in different parts of the country. For example, the Harbor tribe in Gujarat has a rich heritage and a close association with nature, carefully conserving knowledge of edible medicinal plants (Gavali& Sharma, 2004). However, modern market strategies, including mass cutting of trees, are negatively impacting this practice.

Standardizing traditional medicine practices is challenging due to the lack of conventions, treaties, and Acts, as well as inadequate learning, practice, and access by the general population (Lalitha, 2013). The profession of traditional medicine is characterized by low income, limited financial support, scarce preservation techniques, and documentation, as well as a generation gap, all contributing to the decline of traditional medicine knowledge (Arti *et al*., 2014). Urgent action is needed to preserve this knowledge (Rubeena, 2006). Recognizing the importance of traditional medicine, the Indian government initiated the Traditional Knowledge Digital Library (TKDL) to prevent the misappropriation of patents on traditional medicine. With 70% of the country's population dependent on traditional medicine, the government has taken steps to preserve and conserve this knowledge as a valuable asset to local people (Ministry of AYUSH, 2001). The rising trend in digital technologies and their applications has made it possible to maintain and conserve this knowledge, ensuring access for the general public. In the future, libraries and information centers will play a crucial role in the knowledge society (Varalakskhmi, 2009).

**Findings & Suggestions:** The lack of relevant research studies on traditional medicine practitioners' information-seeking skills is due to a lack of information awareness, limited use of libraries, and insufficient government and societal support. This highlights a significant research gap in the information-seeking skills of traditional medicine practitioners, given the informal and unorganized nature of their profession. Recognizing the invaluable nature of traditional knowledge to every community, it is crucial for libraries to overcome barriers related to geography, language, and formats to systematically transfer this knowledge into accessible formats for the general public. Measures such as providing access to information resources and granting membership in medical and AYUSH college libraries for traditional medicine practitioners, establishing regional patent facilities for local knowledge, and implementing GI-tag (Geographical Indication) facilities for popular traditional medicine practices are essential. Moreover, the government should launch various projects and strategies in this area, including formal schooling.

# CONCLUSION

The traditional knowledge is dynamic and is owned by indigenous people who live in close harmony with natural systems in specific regions. The development of diverse cultures within various biodiverse areas has given rise to unique lifestyles, religious beliefs, and arts. It is crucial to pass on this medical knowledge to future generations, as traditional practices are essential for enhancing the effectiveness of the public health system (Hussain & Malik, 2013). Increasing public awareness about traditional medicine and its significance will lead to socio-economic development, improved management of ailments, and will also contribute to

research and development, as well as its associated systems, for the advancement of traditional medicine in the future. Furthermore, traditional knowledge deeply integrated into culture continues to play a pivotal role in creating and maintaining stable biodiversity in the environment (Öllerer, 2016). It is the responsibility of each individual to preserve these traditional practices for future generations, and every country should collaborate at the international level (Benedict, 2014). Moreover, nations should establish dedicated organizations to oversee traditional knowledge, and these institutions should have specific objectives tailored to the needs of society.

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