

Traditional Medicine as a part of Indian healthcare system: Challenges and Recommendations

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KEY WORDS

Traditional Medicine
Challenge
Recommendation
Health care System

ABSTRACT

Background: Traditional Medicine (TM) is a system of medicine which is a combination of medical theories of various cultures, which can help in health maintenance, disease prevention and diagnostics. But this system of medicine has not been globally recognized and accepted, due to numerous reasons including, lack of research, technology, funding, etc.

Summary: The present review focuses on discussing the gaps and limitations at both academic and administrative levels in the acceptance of TM as a part of the Indian Healthcare system. Certain *in vivo* and *in vitro* studies have been discussed in the present review, showing the beneficial effects of TM on various health conditions. Based on the discussed studies and limitations, the authors have further proposed certain recommendations, including documentation, national policies, and academics that can be helpful in the implementation of TM as a part of the Indian healthcare system.

Key message: Through the present study, the authors have proposed that TM is an important part of the healthcare system, and this can be combined with conventional medicine to reduce the burden on the healthcare system in India as well as globally.

doi: 10.38205/imcr:040271

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Background

Traditional medicine (TM), as defined by the World Health Organization (WHO), is the combination of knowledge, skills, and practices which are based on the theories, beliefs, and experiences belonging to various cultures. These can be used in health maintenance as well as in the diagnostics, prevention, and treatment of physical and mental ailments (1). TM is the combination of health practices which comprises of plant, animal, and mineral extract-based medicine along with spiritual and manual techniques, and certain exercises with the combined aim of treatment, diagnosis, and prevention of illness along with the maintenance of well-being (2). TM has always been an important system of medicine that is essential for maintaining global world health needs. In the Indian scenario specifically, six systems of medicine are recognized in this field: Ayurveda, Yoga and Naturopathy, *Unani*, *Siddha*, and Homeopathy. Each system of TM is important in its context (3).

Besides each of these systems having its advantages, these are not globally accepted in the current scenario and face challenges in being accepted as an important system of Medicine. Though the above-mentioned systems of medicine have originated in India, the acceptance and recognition of these are not ubiquitous (4). Many factors have led to the current scenario with allopathic medicine taking the front end of the medicine system and other TM systems are not being

commonly recognized as a system of medicine for disease prevention and cure.

Though a huge volume of studies is available in support of the TM system (5), many factors limit the potential of the TM system to make it globally acceptable. Through the current study, the authors wanted to highlight the challenges in the implementation of TM in the current system of medicine, specifically in the Indian context. Further, the authors have also provided certain recommendations for the implementation of TM along with the current healthcare system.

TM system faces many challenges in the implementation of TM in daily lifestyle as a part of disease preventive and curative strategy. Following are some of the challenges which are faced by policy members in the following context (6).

Academic limitations

Lack of research and development in the field

The evidence-based studies are lacking in the field of traditional medicine. Small sample numbers, inconsistent or varied outcomes, and poor research methods are some of the key factors that render studies defective and insufficient. Other issues include weak controls, inconsistent descriptions of the treatment or product, low statistical power (perhaps due to small sample sizes), and a lack of comparisons with other therapies, a placebo, or both (7). Folk traditions and wisdom of traditional medicine are handed over from generation to

generation in India and are termed as 'people's health culture' with the scarcity of documentation and patents in the field of traditional medicine. As per the announcement by the Ministry of Commerce and Industry, any readymade traditional ayurvedic formula cannot be patented, however, substantial improvement and modification in this area can be patented, hence the number of patents in the field of TM is required to generate more data and evidence-based documentation (8) and hence patent in the field of TM can be used as a tool of evidence and market awareness. Obtaining patents with modified and improved TM components also enhances entrepreneurship potential.

Lack of technology to preserve the research data: While there is an increasing trend with the use of TM worldwide, the research in this field is inadequate with serious difficulties in data acquisition and preservation. The research data generated is not safeguarded and preserved in a way that it can be retrieved and reproduced. The data once acquired has to be stored in a way so that it can be retrieved from the repository.

Lack of SOPs (Standard Operating Procedure): Despite the rising research and acceptance of the field of TM, certain studies are reporting adverse health effects of TM, this may be due to the variable quality, efficacy, and contents of herbal products as a class of medicinal products. In this regard, the development of SOPs for carrying out research studies based on TM could help generate evidence-based research data, also the data generated could be patented based on standard operating protocols used (9).

Lack of funding: There is a lack of higher education support system in traditional medicines such as Ph.D. and Post Docs. Traditional medicine is primarily practiced by folk people or indigenous communities and from here only limitations appear and hence, the general population access gets restricted (10). When government will promote Ph.D. research fellowships and Post Doc fellowships, only then a large number of communities will become part of the standardization and quality assurance in traditional medicine (11). Medical institutes should bring courses for learning as well as training of TM so that from here only the development of collaboration of modern medical system with traditional medicine can start (12).

Lack of high-impact TM journals: For the wide acceptance of research, publication in high-impact journals is paramount, but a limited number of high-impact journals consider publishing research data on TM due to limitations in the research data, and also due to the lack of approval to TM research (13).

Administrative limitations

Lack of administrative bodies: There is a lack of administrative policies specially made for traditional medicines. In Medical institutions, there should be a separate ethical committee and Dean for approval of doing Traditional medicine research (9). These committees should contain medical experts as well as people who are experts in traditional medicine. This

collaborative method might yield good results as well as be helpful in the standardization of outcomes of every traditional medicine study (14).

Policies and regulations, development and enforcement: In TM, there is a wide range of products, techniques, and practitioners. Some of these techniques are aimed to provide health benefits, while others have their risks or are solely motivated by business interests. Government should choose where to concentrate its efforts given its limited resources to give consumers the greatest and safest type of healthcare while meeting the requirement to protect consumer choice and it must be supervised within their jurisdiction. In TM systems that are referred to as codified medical systems, policymaking, and standardization are arguably the most challenging issues (15). For instance, some courses might place more emphasis on the physical parts of the healing system than others, which might place more emphasis on the mental and spiritual aspects. For this to be done correctly, it would be necessary to have policies and particular nodal agencies to control and offer guidance (16). As per the WHO report in 2004, to implement TM in any country's healthcare system, formulation and implementation of national policies and laws as per the country's situation are needed (17).

Lack of awareness among medical practitioners about TM: For the integration of TM into the conventional healthcare system, medical practitioners should be made aware of the system of TM, which could generate more evidence.

Lack of documentation of TM leading to lack of transfer of knowledge of TM to future generations

Lack of documentation is one of the major hurdles in the acceptance of TM, which could be due to the limited documentation of traditional medicine-based medicine through, research papers, clinical trials, and well-documented libraries, which could preserve the information. The preserved information could have then been passed on to future generations. Due to lack of proper documentation, knowledge transfer has been majorly impacted leading to less acceptance of the TM system of medicine in the masses. To overcome the issue, Government has now initiated the Traditional Knowledge Digital Library (TKDL), which is a digital repository of knowledge of TM. This repository is currently under the AYUSH ministry.

Lack of awareness and acceptability of the consumers concerning TM

In contrast to Western biomedicine, these medical traditions have a distinctive understanding of physiology, aetiology, pharmacology, and medicines (18). These medical systems have recently become professionalized, maybe as a result of this systematic approach. Traditional medicine refers to those traditional knowledge systems that are more frequently passed down orally, were developed by communities over many years, and utilize readily available and accessible elements of the local ecosystem (15). Government should focus

on advertisements, researchers, applicability, and implementation methods for the optimal use of TM.

Industrial development: Due to a lack of patents and entrepreneurship in the field of TM, this stream has not been established well in the field of industries, and hence people self-medicate as per the oral transfer of the knowledge of the field which may generate negative health effects. There is a need of enough evidence to generate optimum industrialization in this field through patents, documentation of SOPs, and storage of data to stimulate standardized drug industrialization in the field of TM.

Quality: Implementation and functioning of Inter-University and inter-medical institute nodal centres are required to generate enthusiasm and data out of collaborative research between various Institutions through student impart training and Inter-University projects.

AYUSH and health secretariat collaboration- The anticipated unification of the nation's Traditional Health and Modern Medical systems can be achieved through the implementation of a clearly defined procedure (18). AYUSH and the modern health secretariat should collaborate for access to generalized facilities, and find task forces and administrative portfolios which are already available. To further the process of coordinated action and achieve complete integration of both ministries at all functional and conceptual levels, a monthly joint review mechanism might be created (19).

Lack of Integration between Western Medicine and Traditional Medicine- Integrating traditional medicine into a modern healthcare system can benefit industrialized nations as well (20). There should be a Centre for Training and Learning established inside every hospital. To improve the staff's knowledge, skills, and general capacity, the Institutions should hold frequent academic meetings of various kinds related to traditional medicine so that their knowledge can embark with current knowledge in the field (21). A significant barrier to the incorporation of TM into mainstream medical practices is the absence of pharmacological and clinical data on the bulk TM items. Pharmacological and, in particular, comparative effectiveness, clinical research, must be done (22).

Integration of TM into National and Primary Healthcare

A Joint health secretary must be appointed to support and direct the execution of national policies on indigenous medical practices and to promote the resurgence of those practices (23). The development of India's national health strategy should include traditional medicine experts.

Comparative *in vitro* and *in vivo* studies on scientific validation of TM

A double-blind, placebo-controlled randomized study, tested the efficacy of pennogenyl extracted from French maritime pine bark extract which has been known for its clinical efficacy in lowering blood glucose levels recruited N = 147 pre-diabetic participants above the age of 18 with FPG between

5.5–6.9 mmol/L and BMI >25 kg/m² and compared this with standard placebo who were given an extract containing NaCl with other excipients except for maritime pine bark extract. The participants were tested for the efficacy of pine bark extract by measurement of FPG and other parameters but in this study, the authors were not able to find any improvement after 12 weeks of intervention. However, the study had its limitation concerning the duration of intervention, non-stringent recruitment criteria and the participants had a wide initial FPG range (24). As per a study published in the JAMA network in 1998, which investigated by a survey of 1035 individuals for examination of choosing traditional alternative medicine over conventional treatment, it was reported that the major contributors to choosing traditional medicine were higher education and poorer health status, also it was reported that one of the major reason for choosing traditional medicine over conventional was being dissatisfied with conventional medicine also alternative medicine was as per their values, beliefs and philosophical orientation towards life (25). A survey-based study on the usage of traditional medicine over conventional medicine among the general population in a city in Malaysia reported that 31.7% of the total recruited population having traditional medicine over conventional for self-management of cardiovascular health conditions as they were not prescribed to take the traditional medicine, which highlights the need of research-based studies on traditional medicine to avoid self-mismanagement of cardiovascular conditions (26). A study randomized controlled study in 2019, identified the effectiveness of adjunct yoga therapy over conventional therapy in diabetic lung patients where N = 72 participants were randomized in adjunct yoga and control group. The adjunct yoga group was given yoga training thrice a week for 4 months and assessed for the efficacy of adjunct yoga in the improvement of pulmonary function in diabetic lung patients. It was observed that the yoga group showed a significant change in weight and BMI after 4 months, also the yoga group showed a significant improvement in pulmonary functions i.e., FEC1 (Forced expiratory Volume), FVC (Forced Vital Capacity), and in case of conventional therapy, these parameters worsened with time (27). Another yoga-based study identified the efficacy of yoga-based traditional medicine in a primary care setting, where participants with high blood pressure (Systolic Blood Pressure of ≥140 mmHg and <160 mmHg or Diastolic Blood Pressure of ≥85 mmHg and <100 mmHg) or those who were taking medication for high blood pressure were recruited and randomized into control and yoga groups, the control group was following the conventional lifestyle or medication (if any), the yoga group was given initial 5 days physical yoga intervention in the primary care centre followed by at least 30 minutes of yoga practice to be done at home for 90 days, after yoga based traditional medical intervention, a significantly reduced systolic and diastolic blood pressure was observed. Based on these results it can be hypothesized that the addition of yoga as a standard treatment approach could be preventive for the development of major NCDs like hypertension (28). A study assessed the

response of neem leaf extract inoculation on animals with Ehrlich Carcinoma (EC) which was inoculated in animals by regular *in vivo* intraperitoneal passage under sterile conditions and Murine B16 melanoma cell line was also maintained under standard culture conditions, when the C57 animals and B16 cell were inoculated with (1 unit/mice/week for 4 weeks) Neem Leaf extracts, significantly reduced tumour growth was observed in both Ehrlich Carcinoma and B16 melanoma cell line, no *in vitro* cytotoxic effects of neem leaf extract was observed towards both EC and B16 Mel tumour cells. Another study identified the anti-tumour effect and immune-modulating effects of an extract of the plant *Calendula Officinalis* (Asteraceae) on cell lines derived from leukaemia, melanomas, fibrosarcomas and cancers of the breast, prostate, cervix, lungs and pancreas by BrdU incorporation and analysis of total cell count. Also, nude mice which were subcutaneously injected with human Ando-2 melanoma cells were tested for anti-cancerous effects of plant extract *Calendula Officinalis* (Asteraceae). The plant extract showed a potent tumour inhibition in all the tested cell lines, further when the nude mice were provided with the extract obtained from the plant, it also showed inhibition of *in vivo* tumour growth (29). Adding on a few more studies related to Ayurveda and COVID-19, one study on an innovative herbs-mineral formulation called ZingiVir-H was created as an add-on therapy for adult patients with mild to moderate COVID-19. ZingiVir-H was proven to be efficient and secure in treating COVID-19 infections and postponing the disease's progression from mild to moderate and moderate to severe in a randomized controlled single-blinded multicentre clinical trial (30). In one another study, It has been demonstrated that the Ayurvedic formulation AYUSH 64 works well in easing the intensity of COVID-19 symptoms. AYUSH 64 was proven to be both safe and beneficial in lowering the length of hospital stays and the risk of hospitalization in a thorough multi-centre clinical investigation for the care of mild to moderate COVID-19 patients (31). In mild to moderate COVID-19, a pilot clinical evaluation of an add-on Ayurvedic formulation combining *Tinospora cordifolia* and *Piper longum* revealed that adding this formulation to standard therapy shortened hospital stays and recovery times. However, additional study is required to validate these results (32).

Recommendation for optimal TM use in Indian health system

As traditional medicine has been a topic of discussion for many now. It is a challenge to preserve, maintain and maximise the usage of the ancient science of healing.

There are 15 agroclimatic zones in India, with 47,000 plant species and 15,000 medicinal plants. Around 7,000 of the 150,000 medicinal plants are used in Ayurveda, 700 in the Unani system, 600 in the Siddha medicine system, and approximately 30 are used in the modern medicine system. This makes India one of the mega bio-diverse countries in the World (33). The recommendations for enhancing the usage of TM in the Indian health system need the correction of flaws

discussed in the challenges. The national health system in India is being integrated with traditional medicine (TM) using a two-pronged strategy. The main strategy is to advocate for the use of TM as an additional or alternative therapy, and the second strategy is to incorporate TM into the established healthcare system. The National AYUSH Mission, which began operations in 2014, is carrying out the main strategy. Through several activities, such as the creation of AYUSH dispensaries and polyclinics, the education of AYUSH practitioners, and the manufacture of AYUSH medications, the mission seeks to promote the use of TM. The National Accreditation Board for Hospitals and Healthcare Providers (NABH) is carrying out the secondary plan. Hospitals and healthcare organizations are accredited by NABH, an organization supported by the government. A new set of requirements for hospitals integrating TM was introduced by NABH in 2017. A few key points are covered by these standards such as the accessibility of TM professionals, accessibility of TM drugs, the instruction of medical professionals in TM, the inclusion of TM in a patient's entire care plan etc. It takes a lot of work to incorporate TM into the Indian healthcare system. The government's two-pronged strategy, though, is a promising beginning. The government is working to guarantee that all Indians have access to quality healthcare by encouraging the use of TM as a complementary or alternative medicine and by incorporating TM within the established medical system.

Advanced technology and documentation

1. Indian traditional medicine being the ancient science of healing need maintenance, preservation and curation for reducing the economic burden, which can be done through the advanced approach of technology like artificial intelligence, machine learning and the development of a database for information (34).
2. There is a lack of IP Protection or standard documentation for traditional medicine knowledge. The documentation is complicated and a potential challenge, which needs continuous effort for resolving the issue. Unresolved issues can lead to the loss of IP protection, lack of resources, legal challenges for ownership and failure in the utilization of traditional medicine knowledge (35).

Collaborations

1. The Ministry of Health, AYUSH, Science and Technology should be encouraged to collaborate with different institutes for more clinical, research, technical and Scientific growth and to Produce more evident based ancient science of healing.
2. Therapies under traditional medicine are valuable and effectively used worldwide, especially in the United States and other Latin nations. Considering that a collaboration workshop was conducted in March 2016 between the Ministry of AYUSH, Govt of India and different Institute of US like NCI (National cancer

institute), NIH (National Institutes of Health), and Office of Global Affairs, US Department of Health and Human Services (36). The result of the workshop decided standardization of TM products and make them more reliable and more scientific with the production of research and clinical trials.

3. Collaboration with other countries and different government agencies will also generate the resource for funding. External collaboration can enhance the ideas, approach and motivation for new concepts (35).
4. The time-to-time validation and assessment of information on traditional knowledge applicable to the Indian Health System.
5. There is unrecognised work by Ground innovators, who have been working in the field for years, should be encouraged and supported for registration, filing the patents, Claiming of IPR (Intellectual property rights) and other legal knowledge associated with it by the government.

National policies for traditional medicine

1. One of the reasons that lead to decreased demand for TM could be extensive national policies for ancient medicine. The role can be defined effectively and efficiently, by developing national policies needed in the health sector. Lack of policies and lack of government oversight, reduce the usage for people around the nation. Policies can build a necessary regulatory and legal mechanism, to promote and maintain good practices, that make TM equitable and accessible with more authenticity, safety and efficacy of therapies used (37).
2. Many developing countries all over the world have emerging TM policies. The Indian health system should make policies to assure the preservation and maintenance of Traditional medicine through different advanced techniques like artificial intelligence, Machine learning and Developing software to secure our ancient science of healing.
3. According to a survey done by WHO, only five nations had policies for TM in early 1990, by 2003 the number have reached 45 nations and 51 nations were still making policies for TM (38).

Integration of TM into national and primary healthcare

A joint health secretary must be made to support and direct the execution of national policies on indigenous medical practices and to promote the resurgence of those practices. The development of India's national health strategy should include traditional medicine experts.

Conclusion

TM is an important system of medicine which could be an addition to conventional medicine if integrated and can also help reduce the burden on conventional medicine in the current

system. TM is not a new era or new concept towards health. However, with the acceptance of TM in the Indian healthcare system, various challenges are currently in the acceptability of the TM medicine system which the authors have highlighted in the present review. The authors have tried to provide certain recommendations towards the acceptance of TM in the current Indian Healthcare system. For the implementation of the suggested recommendations, both state and national policies have to be implemented for the integration of TM with the conventional medical system in Indian Healthcare.

Authors' contribution

KPS: Writing and editing; MG: Writing and editing; SKC: Writing; AA: Conceptualization and editing.

Source of funding

None.

Conflict of interest

None.

Received Date: 03-03-23; Revised Date: 30-05-23

Accepted Date: 06-06-23

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