

Prognosis of Tribal Medicine: Current Status, Therapeutic Potential, and Future Directions

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Abstract:

Tribal medicine is an ancient form of health care provided to the world's indigenous population. It is a hands-on learned art formed through generations and generations of experience, awareness of the local environment, and cultural traditions unique to the tribe. The traditional medicinal systems of various tribes throughout history have served as significant means to halt the progression of disease, determine the cause of health problems, and provide care for sick individuals, particularly in isolated, remote locations with limited or no access to modern health care services. The scientific community has begun to expand its focus on the use of traditional health care practices, particularly those involving plant-based medicines and utilizing traditional indigenous treatments, and to demonstrate their efficacy. The recent opening up of this discussion has raised the possibility of incorporating traditional health care systems into modern health care delivery. However, many barriers continue to impede the recognition and use of traditional health care practices and resources, including: (a) the loss of ancient, cultural knowledge; (b) a decrease in the diversity and availability of plant-based medicinal materials; (c) the lack of scientific documentation; (d) an insufficient amount of published literature; and (e) the lack of supportive health care policies. This review evaluates the status of tribal medicine today, examines scientific research regarding its potential healing properties, and considers how best to enhance, incorporate, and sustain tribal medicine as a modern-day health care system. Utilizing the experiences of indigenous peoples in India and elsewhere, this review concludes that tribal medicine is far from a concept of the past—rather, it is a vibrant, living system that contains resources that can significantly contribute to improving public health and discovering new drugs.

Keywords: Tribal medicine, ethnomedicine, indigenous healthcare, ethnopharmacology, medicinal plants, traditional healing systems, healthcare integration.

Introduction:

Traditional medicine has been used by indigenous peoples and tribes throughout the ages to help treat certain health issues. They have been using plants, animal parts, spiritual healing, and culture-based cures to help treat their illnesses, and this knowledge was developed over the course of so much time spent interacting with their environment and has been passed down for many generations.

Right now, most people get their healthcare through the use of modern bio-medicine, but traditional medicine can still help a significant portion of the world's population,

especially those without access to formal healthcare. The World Health Organization recognizes the importance of traditional practices and states that traditional practices will provide many people in the world with primary healthcare - especially those living in rural areas.

Tribal and indigenous medicinal systems not only help to maintain cultural tradition, but they also contribute to making healthcare more available in many communities while building community resilience to health issues.

Those in tribal communities throughout India have a variety of ethnomedicinal wisdom due to their unique cultural backgrounds as well as their unique natural environment. Those who live in Andhra Pradesh, Odisha, Kerala, and Mizoram know many different types of plants to use for medicinal purposes and have a great deal of knowledge about home remedies. Scientific research has shown that tribal communities throughout India use a wide range of plants for a variety of illnesses, including infections, reproductive conditions, gastrointestinal issues, skin conditions, respiratory conditions, and chronic conditions, and have extensive knowledge of these types of plants.

Objectives of the study:

1. Understand the present status of Aboriginal Medicine and how it has evolved over time within the indigenous community.
2. Assess the potential of Traditional Knowledge and Plant Medicine to provide healing benefits.
3. Identify barriers to the preservation, validation, and utilization of Aboriginal Medicine.
4. Determine how we might develop sustainable methodologies for integrating this knowledge into future Health Care Systems.

3. Review of Literature

3.1 Overview of Traditional Indigenous Medicine in North America

Redvers et al., (2020) examined traditional indigenous medicine in North America through a scoping literature review. They highlighted that Traditional Indigenous Medicine incorporates several elements other than just physical aspects of health, such as spiritual aspects; community involvement; emotional aspects; and the environment. Further, indigenous practices view health holistically or from a "whole picture" perspective as oppose to how the medical model approaches health. The authors concluded that the use of culturally based health care can improve community well-being, and help to reduce the level of inequity in the provision of health care to indigenous peoples. Lastly, they demonstrated that traditional medicine can still offer value today, and can complement the provision of modern health care when implemented in a culturally respectful manner.

3.2 Ethnomedicinal Plants Utilized in Traditional Anti-Malarial Practices in Odisha

Research conducted by Behera et al. (2025) has highlighted a number of plant species used for traditional treatment of malaria among tribal groups in Odisha, India, as well as identified the fact that many have actual medicinal properties that warrant investigation through a scientific lens to identify useful bioactive compounds for future drug development. This research provides evidence of the resource potential available through these traditional healthcare practices as both a means to address local healthcare needs, as well as provide a rich source of potential bioactive compounds for other biomedical studies.

3.3 Medicinal Plants Used For Leucorrhoea By Tribals

According to Beura et al. (2024), there are several medicinal plants that can treat leucorrhoea and reproductive health issues that are used by tribal people. The authors note that there are a number of herbs that have been combined with modern medicine and used for healing. These plants can provide affordable alternatives to remedying women's health issues through traditional medicine, especially where access to medical assistance is limited.

3.4 Review of Ethnomedicinal Plants Utilized by Indigenous Tribal Communities in Andhra Pradesh

Bushi et al. (2021) examined the role of ethnobotany in tribal communities such as those of Andhra Pradesh and found that various plant species are utilized within these communities for medicinal purposes. The uses of these species are numerous, as tribes utilize plants to treat conditions such as fever, gastrointestinal (GI) disorders, skin disorders, cough, and reproductive health as well. Each Tribe's healthcare system relates itself back to the native relationship they hold with their surrounding environment, and to the extensive generational knowledge of their relationship with nature.

Tribes develop an understanding of which plants provide medicinal benefits through trial and error research that is conducted long before written documentation, thereby making tribal medicinal systems intelligent in nature. Bushi et al. show that these systems are not limited to old folklore but have been developed as a result of long-term use in relation to the environment that surrounds the tribes.

The research conducted by Bushi et al. provides a significant call to action for recording and preserving the knowledge of the medicinal use of plants in tribal communities before it is lost due to the progression of modern society and the migration from rural to urban areas. The knowledge of tribal medicine needs to continue being shared as well as validated scientifically in order to protect the culture that created the knowledge and to ensure the future of tribal medicine and practice.

3.6 Medicinal Plant Ethnomedicinal and Phytochemical Review

Abat et al. (2017) studied the numerous ethnomedicinal, phytochemistry, and pharmacology disciplines connected to medicinal plants. The purpose of the study was to establish an association between the traditional use of these indigenous plants and confirmed therapeutic agents derived from these plants.

The authors point to the value of incorporating laboratory research into the establishment of safe, effective, reliable community-based health services. In addition, an important conclusion of the paper is that traditional medicine is not meant to be in direct competition with today's modern pharmaceutical industry. Rather, the authors state that both traditional and modern medicines can be utilized cooperatively, with the wisdom of traditional practitioners potentially providing new insight into drug discovery.

Abat et al. (2017) noted that many tribal communities utilize diverse biological resources for medicinal purposes; however, these potential therapeutic agents remain largely overlooked by the pharmaceutical industry. Therefore, the likelihood that new therapeutic agents will be identified from information collected from traditional medicine practitioners who have developed a strong bond with their local biological community is enhanced.

3.7 Ethnobotanical Knowledge of Tribal Communities in Kerala

In the 2024 study done to highlight Kerala's tribal groups, researchers found out how much they have historically used local plants for healing purposes, listing many different types of ways of using local plants to cure various types of illnesses. The research indicated that tribal healers have a large amount of knowledge about the plants they utilize, including how to identify the plants, how to prepare remedies from the plants, and how much to give depending on various types of ailments.

The means by which this knowledge has been passed to the younger generations is through the oral transfer of knowledge from elders to the younger members of their communities, which is very much part of their cultural identity and traditions. However, a big threat to continuing this transfer of knowledge is occurring; many youth have migrated away from their tribal lifestyles to reside in cities and have adopted modern lifestyles, thus abandoning their traditional use of medicinal plants. This change has left a very real possibility that valuable medicinal knowledge could be lost forever.

To help protect and preserve this information, the review recommends that people within tribal groups work to record this information within their communities and strongly advocates that this information be included in educational programs, while simultaneously respecting the rights of the tribes to their own knowledge.

3.8 Tribal Health Care in India: An Overview of Evidence

Behera et al. (2023) contributed a paper that provided an overview of the barriers to accessing medical care by tribal communities and health care personnel as well as to accessing health care in general for tribal health care services in India. These include geographic isolation, limited health care infrastructure, financial constraints, and disconnection in terms of cultural aspects between health care providers and tribal peoples.

These factors contribute to the large disparity in health for tribal individuals when compared to non-tribals, even with government programs aimed at reducing this disparity. The authors of this study make a strong case for providing more culturally

appropriate means of delivering health care to tribal peoples. They believe that instead of disregarding traditional Indigenous healing practices, we should incorporate them more effectively into the overall health care system.

This review is significant because it emphasizes how much traditional Indigenous healing methods can help support current health care in disadvantaged communities. In addition, it calls on the health care system to acknowledge the importance of traditional Indigenous knowledge to improve the health of Indigenous peoples.

3.9 Ethnic Medicine and Traditional Healing Methods in India

Guite (2024) examined the prospects and challenges of integrating traditional tribal healing methods into official healthcare delivery systems. This report notes that while traditional indigenous health practices continue to have significance to the tribal community, they are often given little consideration within the dominant biomedical health systems.

Guite stresses that authentic integration involves more than providing scientific proof. It also requires adequate respect for indigenous peoples' culture, meaningful engagement of tribal communities, and equitable collaboration amongst tribal healers and official healthcare delivery organizations. The report also shifts the focus away from the traditional question about the efficacy of tribal medicine and onto how to make healthcare systems more culturally inclusive and sensitive.

3.10 Ethnomedical Traditions Among Indian Tribes

The authors of a paper examining the ethnomedical traditions of India's tribes indicate that there is great diversity among the effective healing practices of various tribes. These practices are influenced by climate, culture, and available resources and therefore must be considered separately. This diversity makes it impossible to generalize tribal medicine as a single format. More appropriately, tribal medicine should be viewed as being comprised of multiple autonomous and adaptive traditions, specific to their local context. Recognizing this diversity will be critical in developing policies that respect and sustain many medical systems and local knowledge.

3.11 Traditional Ethnomedicine and Indigenous Health Systems

Das et al. examined how an ethnomedicine system sustains the identity and connections of a community when looking at how indigenous tribes use their traditional medical practices to heal.

The authors show that tribal medicine is more than just curing someone's illness; it is also an integral part of society, culture and spirituality.

This study highlights the limitations of relying solely on biomedicine for healing. While the current biomedical model of healthcare is primarily focused on the treatment of physical illnesses, traditional forms of healing utilise a holistic approach to the maintenance of physical, emotional, spiritual and environmental health of the individual. The holistic perspective of traditional forms of healing could provide a

means to improve current biomedical healthcare systems' ability to meet the individual needs of each patient.

3.12 Trends of Tribal Research in India

According to Chinnaiyan and his colleagues, there has been an increase in the number of academic researchers studying Tribes in India and that Academics are focusing on issues related to Tribal health, Ethnobotany and Traditional knowledge throughout this period. Researchers are increasingly constructing their research and developing interdisciplinary approaches outside of simply providing descriptive research.

As a result, research related to all aspects of public health and environmental sustainability and conservation is being conducted. The growing recognition of Tribal knowledge as a resource with value that extends beyond saving Indigenous cultures demonstrates that Tribal knowledge/digital technologies also have the potential to contribute to larger national/international social issues, such as sustainability, conservation of biodiversity, improvement of health care systems, and community resilience.

3.13 Prevalence of Herbal and Traditional Medicine in Ethiopia: A Systematic Review and Meta-analysis

Tuasha and colleagues conducted a systematic review of the use of herbal and traditional medicines in Ethiopia and conducted a meta-analysis to evaluate the results. While there has been an increase in modern health care services in Ethiopia, there is a high reliance upon traditional medicine. One of the primary reasons for this reliance is because it is well-known, has low cost, is easily accessible, and provides high levels of trust within communities.

Although this article focused on Ethiopia, findings from this research provide important insights into why traditional medicine continues to play an important role in many cultures around the globe. Traditional medicine continues to be practised in diverse cultures throughout the globe, which illustrates that traditional health care models are able to provide an effective alternative to providing health care services that some individuals may not have available through the formal health care system. Additionally, findings from this study provide evidence to support the need for incorporation of traditional medicine into the health care systems of countries through the development of safety measures and scientific protocols for traditional medicine.

3.14 Protocol for a Scoping Review of Traditional Medicine Research Methods

Traditionally, biomedical research methods have been considered the gold standard for assessing complementary and alternative medicine (CAM). This method; however, will likely lead to the loss of significant elements in the evaluation of a CAM. As noted above, if biomedical researchers were to evaluate many indigenous systems of health care today, they would be unlikely to include or consider many of the following: culture; spirituality; social networks; and ecological knowledge; all of which are important to understanding how traditional medicines work.

Therefore, moving forward, it is suggested that researchers use a variety of methodologies to evaluate traditional medicine. A combined method of ethnography,

pharmacology, public health, community-based research, etc., will provide a holistic view of the effectiveness of traditional medicine.

3.15 Protecting Indigenous Research Data

Researchers Calac et al. published a review of the ethical considerations involved in handling Indigenous research data (2025). They identified many cases where Indigenous knowledge has been abused through misrepresentation and unwarranted usage, and advocated for the use of research methodologies that return control of data to the respective communities, provide equitable consent and opportunities for the collective sharing of data.

This is especially true for tribal medicinal practices because of their potential economic and pharmaceutical value. In pursuing the development of new health solutions based on this knowledge, it needs to be agreed to credit the Indigenous community and secure their rights to any benefits derived from its use.

3.16 Indian Traditional Medicine: General Overview

Ravishankar et al. (2007) have provided an overview and analysis of Indian traditional medicine systems such as Ayurvedic, Siddha, Unani, and indigenous systems of medicine and how they relate to historical development and modern use in India.

The authors state that Indian traditional medicine is a significant part of the health care system in India because it provides culturally relevant and low-cost options for treatment. Furthermore, the authors suggest that viewing tribal medicine in isolation fails to recognize its inclusion in an extensive historical system of health that has served people for generations.

3.17 Indigenous Knowledge of Plants in Local Health Care Management

The study by Saha and colleagues (2014) explored the use of indigenous plant knowledge by communities related to healthcare. The findings of the research indicated that many local health systems utilize medicinal plants in order to prevent diseases, treat symptoms, and improve the overall well-being of individuals.

In addition to providing benefits to local healthcare systems through the preservation of this traditional knowledge, the protection of these practices also ensures preservation of the natural environment. Since many communities that utilize traditional medicine practice sustainable harvesting and cultivation, their ongoing use of traditional medicine maintains the health of the earth as well as the people's health. Thus, continuing the use of tribal medicine is an environmentally friendly choice.

3.18 Health of Tribes - Overview of the Challenges and New Innovations for the Future

Khobragade (2025) explores the major health problems impacting tribes today and what new solutions are emerging. For example, tribes face challenges with access to

healthcare, the burden of disease, limited resources, and an insufficient number of healthcare providers.

However, there are promising potential solutions: i.e. the combining of digital health (i.e. telemedicine) with traditional and culturally relevant community based healthcare efforts has the potential to improve access to healthcare while still supporting nature-based and culture-specific healing practices as they have been for thousands of years. In conclusion, Khobragade provides readers with an optimistic approach to improving healthcare for tribes in the future.

3.19 Ethnomedicine for Treating Anemia and Menstrual Problems among Indigenous Populations

A review of medicinal plants that tribal populations are utilizing for treating anaemia, as well as women's menstruation difficulties. The swift transition to indigenous alternatives from conventional medicine highlights the varying degrees of access to modern medical practices where either out-of-reach from economic means or unsuitable from cultural perspectives.

Furthermore, this review emphasizes how the use of ethnomedicine within cultural groups offers numerous benefits for women's reproductive health. This factor serves as evidence that the knowledge gained from utilizing these natural resources will be of benefit regarding culturally appropriate and cost-effective future solutions for women's reproductive health.

3.20 Ethnobotanical Study of Medicinal Plants Used by Mizo Tribes

Laldingliani et al. (2022) studied the use of different medicinal plants by Mizo tribal groups in North East India. They documented how the traditional people used many different species to treat infected wounds, indigestion, breathing difficulty, and skin irritation. This demonstrates the scope of the Mizo tribe's traditional evidence-based knowledge in relation to plants and provides a potential avenue for new discoveries in healthcare.

Research on medicinal plants that have been historically used by the Mizo community (and by other tribal communities) is providing more and more evidence of the potential new treatment options for future drug development and progress in healthcare.

5. Research gap:

Tribal medicine respects ancient culture and is being explored in the literature for both knowledge and respect. There are still significant research gaps concerning tribal healing systems, particularly with regard to plants used for healing.

First, the literature reveals that much of the research is a list of what plants could be used rather than an assessment of how well they work. Many plants may have been identified, but most have not been tested. Therefore, many remedies that are used within the community do not have proven efficacy from science.

Second, there is not enough research that demonstrates the success of using these types of medicine over the long-term. For example, while physicians document the preparation of traditional medicine, they rarely present validated proof of the effectiveness or safety of the medicine themselves. Furthermore, the current documentation of traditional medicine does not address typical dosage or expected outcomes for the patient.

Third, the majority of the literature focuses on documenting which plants the Indian tribes use, without documenting how they organize or deliver their healthcare system. For example, how are their healthcare services managed and how do they integrate with or supplement contemporary hospitals?

Currently, only a small number of researchers are exploring how traditional medicine can be combined with emerging technologies like AI, electronic records, and automatic systems to collect and utilize aggregate community data. Traditional medicine paired with 21st-century technology may present new and exciting avenues for research.

Additionally, there are many ethical concerns about the handling of indigenous intellectual property. With the pharmaceutical and biomedical sectors increasingly turning to traditional medicine, there is a growing need for transparency to ensure equitable benefit-sharing and continued community control.

Climate change and loss of biodiversity are not receiving enough attention. These issues pose a serious risk to the availability of medicinal plants and to the sustainability of tribal health systems. Future research should investigate how changes due to climate change and loss of biodiversity will affect the resources and knowledge used to support indigenous healthcare systems.

6.Future findings:

- Scientists, public officials, providers, and natives all need to collaborate so native peoples can protect their cultures and move scientific knowledge forward by documenting indigenous medical practises.
- The first step is to begin documenting native medical knowledge before it disappears forever. By digitising these medical practices through things such as online archives and local storage, we can help expand our knowledge of indigenous medicinal practices while confirming that we remain true to the community's control.
- It is essential that we determine the efficacy of an indigenous medicine; however, it must be done in a thoughtful manner. Pharmacological studies and clinical trials can be used to validate the effectiveness of indigenous medicines; however, we need to be cautious that scientific validation does not alter our view of the holistic nature of native healing.
- Emerging technologies (e.g., AI and machine learning) provide possibilities to help identify indigenous medicinal plant use, predict indigenous disease, and maintain records of indigenous medicine. Telehealth enables the delivery of indigenous health services to remote communities and improves collaboration between indigenous healers and doctors.
- Finally, we must implement health plan options that support the integration of traditional tribal medicines with mainstream medicine to ensure more individuals

have access to culturally competent health services, which will provide greater health and wellbeing in historically underserved areas of the world.

- There are still many significant ethical issues to consider surrounding indigenous intellectual property rights. As biopharmaceutical companies become increasingly interested in exploring

Conclusion:

This research demonstrates that tribal medicine is not merely a collection of ancient remedies but an actual, existing healthcare system. For centuries, it has been built upon Indigenous peoples' relationships with nature and continues to provide low-cost, easy-to-access, and culturally relevant assistance. Millions rely on it today.

In addition, studying how Indigenous systems function can give us many good examples of acceptable therapies. They have documented numerous plant-based remedies with real medicinal properties, many of which are now gaining the attention of the scientific community. Additionally, tribal medicine also promotes broader objectives: including equitable access to healthcare, preserving culture, protecting biodiversity, and strengthening social connections.

The future of tribal medicine is unknown. Modernization, environmental degradation, decreased biodiversity, and the loss of knowledge transmission will all contribute to the sustainability of tribal medicine, along with the lack of a policy framework. If we do not address these challenges, we could lose invaluable medicinal knowledge forever.

This overview illustrates that when using scientific evidence to evaluate tribal medicine, biomedical evidence cannot be the sole criterion. Although scientific evidence plays an important role, tribal medicine is also comprised of cultural significance, ecologically sound practices, social relationships, and holistic perspectives of health that cannot be captured by conventional methodologies. Therefore, it is significant.

To develop future pathways forward, we need to create a blending of practices rather than one replacing another. To achieve this we will need to link indigenous practices with modern science to develop future health care practices. By identifying the strengths of both groups we can develop models of effective practice. Through legitimate research, community input, technological advancements and environmentally sustainable initiatives, traditional medicine can and will continue contributing greatly to the healthcare system.

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