

Traditional Healthcare Approaches By Indigenous People In Assam And Their Scientific Relevance (A Review)

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Abstract

Assam is nestled in the north-eastern corner of India with a tropical monsoon climate and rich flora and fauna. Geographically, it extends from 22°19' to 28°16' North Latitude and 89°42' to 96°30' East Longitude. Assam is home to a diverse array of indigenous tribal communities, each with its unique cultural practices and beliefs. Their knowledge of herbal medicine and healthcare has been passed down through generations. It is estimated that Assam is endowed with more than 2000 medicinal compounds, of which 1,500 are derived from plant origin and the remaining from animal and mineral origins. For example, *Bambusa valgeris* shoots have high nutritional values and medicinal properties such as anti-hypertensive, anti-hyperlipidemic, and anti-diabetic. The denizens of Assam have played a pivotal role in domesticating various wild plants and herbs for their curative potential, ensuring the continued availability of resources integral to maintaining good health, such as *Abelmoschus manihot* (Usipak) for chronic bronchitis, *Abrus precatorius* (Latumoni) for cough and cold, *Desmodium laniforum* (Bhuter chira) for amenorrhoea and uterine infection, etc. The collective indigenous wisdom has not only inspired researchers but also underscored the importance of a symbiotic relationship with nature. Globally, the World Health Organization estimates that 80% of individuals in developing nations rely on traditional medicine for their primary healthcare needs, and about 3.5 to 4 billion people worldwide rely on plants as sources of medicine. However, these invaluable resources are now perilously endangered, with many already lost to time and ignorance. To safeguard this traditional medicinal knowledge, concerted conservation efforts are paramount. Initiatives like rigorous documentation, scientific validation of traditional remedies, sustainable cultivation, and educational programs should be taken to preserve this heritage. By combining indigenous wisdom with modern scientific rigor, we can ensure the continuation of these time-honored practices for generations, preserving both culture and biodiversity.

Keywords: Indigenous, Herbal medicine, Sustainable cultivation, Traditional knowledge.

1. Introduction

As we know, human knowledge results from past experiences, the human tendency to understand nature, and the conclusive measures taken based on existing knowledge. Thus, the importance of traditional and cultural practices in framing the outline

of this existing knowledge hub is viable. Different cultures have different traditional approaches concerning health care, which mainly depend on the availability of natural resources, geographical area, vegetation, medicinal plants, and their ancestral beliefs. The traditional and cultural practices in the

context of health care can lead to the door of many potential research interests. The scientific relevance and logical explanations behind many traditional prevention and cure measures are poorly understood. Thus, it requires a thorough review to provide insight and relevant scientific explanations for those approaches.

Northeast India, or NE India, has a rich array of plant resources, constituting a significant portion of the Indo-Myanmar biodiversity hotspot. This region is also acknowledged as one of the 25 global biodiversity hotspots, an official recognition in the field of conservation (Myers et al. 2001). It is home to numerous ethnic groups and tribes, showcasing a remarkable cultural diversity (Teron & Borthakur, 2012). According to census 2011, this region is inhabited by a total of 427 distinct tribal groups, each possessing its own unique and traditional cultural identity (Borah & Prasad, 2017). Among the eight north-eastern states of India, Assam stands as the second largest, distinguished by its wealth of ethnic and cultural diversity, as well as its abundance of forest resources and wildlife sanctuaries.

The State of Assam, often referred to as the “land of the red river and blue hills” serves as the gateway to Northeast India. Geographically, it stretches from 22°19’ to 28°16’ North Latitude and 89°42’ to 96°30’ East Longitude, nestled between the foothills of the Eastern Himalayas and the Patkai and Naga Hill Ranges. Assam shares its northern border with Bhutan and to the east with Arunachal Pradesh. Along the southern periphery lie Nagaland, Manipur, and Mizoram. To the southwest, it is neighbored by Meghalaya, while West Bengal and Bangladesh flank it to the west. The state is administratively divided into 33 districts (Assam Disaster Management Authority). Since the state of Assam is known to have a tropical monsoon climate with the

maximum amount of rainfall, therefore has rich vegetation. Assam is the homeland of various diverse communities, each having its cultural heritage. Prominent groups include the Bodo, Karbi, Mishing, Tiwa, Deori, Rabha, Sonowal Kachari, Dimasa, Ahom, Chutia, Garo, Kuki, and Kachari, each contributing to the vibrant diversity of Assamese culture. The people of Assam are generally living close to nature and they are influenced more by traditional, socio-cultural, and environmental dimensions in their day-to-day practices.

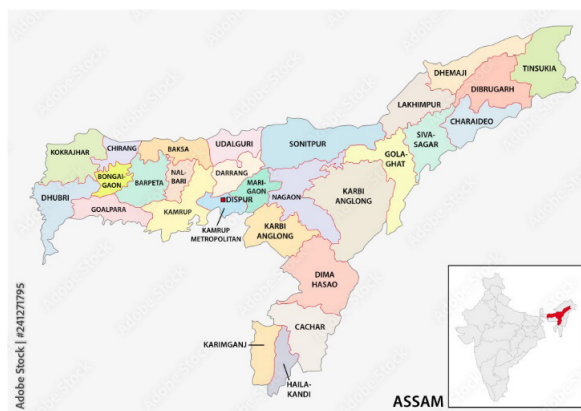


Fig: Map of Assam with different districts

Source: <https://stock.adobe.com/in/images/administrative-and-political-map-of-indian-state-of-assam-india/241271795>



Fig: Map of North-Eastern region of India

Source: https://upload.wikimedia.org/wikipedia/commons/d/d3/Northeast_india_map.png

Indeed, the knowledge of ethnomedicine holds deep historical roots. The utilization of plants and their derivatives in various aspects of human life has been extensive, with their medicinal applications dating back to ancient times, marking the very inception of human civilization. In India, employing medicinal plants can be traced back to the prehistoric period, underscoring the enduring significance of traditional medicine in the country's cultural heritage (Ballabh & Chaurasia, 2007). The Himalayas, a region of profound natural diversity, bear witness to the early recognition of medicinal plant properties. The Rigveda, a seminal work penned between 4500 BC and 1600 BC, stands as the earliest known compendium of human knowledge, detailing 67 plants with therapeutic value. Following the Rigveda, Ayurveda, the cornerstone of Hindu culture's science of life and art of healing, expounds upon the medicinal significance of an impressive 1200 plants. This heritage of wisdom, steeped in antiquity, places India at the forefront of early contributors to the world's understanding of the healing properties of plants. The utilization of diverse plants by various ethnic communities in remote regions, guided by Traditional Knowledge, holds significant importance in treating various diseases (Pushpangadan & Atal, 1984; Upadhyay et al. 2007). Even today, thousands of individuals rely on nature for sustenance, including food, fuel, medicines, and livelihoods (Sarma & Bhattacharjya, 2006; Saikia et al. 2010; Yinebeb et al. 2022; Kunwar et al. 2022). Herbal remedies are experiencing a surge in popularity owing to their effectiveness and reduced incidence of side effects. Formulations derived from herbs have been shown to have considerably fewer

adverse effects in comparison to allopathic medicines (Banerjee et al. 2018; Kala et al. 2006). This resurgence of interest in herbal medicine is driven by a growing recognition of its potential to offer effective and safe alternatives for healthcare.

Numerous studies have underscored the critical role of Traditional Knowledge in medicine for unearthing new and innovative drugs. As the efficacy of synthetic medicines gradually wanes, and pathogens develop resistance against specific treatments, the imperative to uncover novel drugs becomes evident (Gold & Moellering, 1996; Walsh & Amyes, 2004; Yap et al. 2014). The wealth of Traditional Knowledge regarding medicinal plants and their efficacy against various ailments is a promising resource for developing highly effective medicines (Bhattacharjya & Borah, 2008). This reinforces the notion that tapping into traditional wisdom can offer valuable insights and solutions for contemporary healthcare challenges.

2. Methodology

This review is based on a comprehensive collection of studies published from 1984 until now, encompassing a wide range of relevant research in the context of the North-eastern region, especially the Assam people. To conduct our extensive bibliographic research, we employed keywords such as "Indigenous," "Herbal medicine," "Sustainable cultivation," and "Traditional knowledge." These keywords were utilized to search databases, including Google Scholar, Scopus, Web of Science, and Science Direct. Additionally, we expanded our search beyond online resources to encompass newspaper articles, books, and gray literature, such as NGO reports.

The gathered materials underwent an initial screening process to eliminate redundant data. Subsequently, we systematically compiled information about traditional knowledge studies and conducted a section-wise analysis of traditional healthcare approaches. This rigorous methodology ensures that our review is as comprehensive and up-to-date as possible, offering valuable insights into the subject matter.

3. Traditional Health care approaches and their scientific relevance:

3.1 Traditional medicinal plants found and their uses:

The global community's interest in medicinal plants is steadily increasing due to their minimal side effects and cost-effectiveness. According to the World Health Organization, approximately 80% of individuals in developing countries depend on traditional medicine for their primary healthcare requirements, with about 85% of these traditional practices involving the use of plant extracts. This highlights that a staggering 3.5 to 4 billion people worldwide rely on plants for their healthcare needs. This emphasizes the crucial role that medicinal plants play in global healthcare systems, particularly in regions where access to modern medical resources may be limited (Baruh et al. 2014). Assam is part of the eastern Himalayan biodiversity of India. It is home to many indigenous tribal groups with varied cultural practices and beliefs, but most of their knowledge of herbal medicine came from the same sources. It is estimated that there are 2,000 drugs for curing, preventing, and maintaining hygiene, out of which 1,500 are of plant origin and the rest are from animal and mineral origins.

Bamboo plantations (*Bambusa Valgeris*) are found in various parts of Assam, and bamboo shoots are popular ingredients in local recipes and pickles. They have high nutritional values and medicinal properties, i.e., anti-hypertensive, anti-hyperlipidemic, and anti-diabetic. The decoctions of the bamboo roots are used internally to promote urine flow (Sharma & Pegu, 2011). They also have religious virtues and are used in traditional rituals among the inhabitants. The Drumstick plant (*Moringa Olifera*) is also extensively used in traditional medicine and has properties such as antiepileptic, antioxidant, anti-ulcerative, anti-diabetic, hepatoprotective, cardioprotective, antihypertensive, and many more. Its leaves and flowers are consumed as foods and found to have zeatin, quercetin, beta-sitosterol, caffeoylquinic acid, and kaempferol compounds present in it (Al-Shahat et al. 2022).

Many wild plants and herbs are being domesticated by natives of Assam for their medicinal properties and effects in maintaining good health, such as *Abelmoschus manihot* (Usipak, Aibika), *Abrus precatorius* (Latumoni), *Desmodium laniforum* (Bhuter chira), *Thunbergiacoccinea* (Changalota, Nillata, Nilakontho), *Spilentes acmella* (Huhoni bon), *Colocasia esculentas* (Kola kochu), *Enydra fluctans* (Melechi) and *Blechnum orientale* (Dhekia). These plants have medicinal properties to treat oral, stomach and urine infections, pain, headache, skin disease, jaundice etc. (Ghosh & Parida, 2015). Plants such as *Streblus asper* (Swara), *Areca catechu* (Tamol), *Psidium guajava*, *Jatropha curcas* (Bhut-ara), *Vitex negundo* (Posotia), etc. are used by the tribes of western Assam

to maintain oral hygiene and cure ulcers (Deka & Nath, 2014). Gunaram Khanikar, a distinguished herbal medicinal expert of Assam, has made substantial contributions to the field. His book “Xahajlabhya Bon Dorobor Gun” (2012) has become a household name in Assam, offering remedies and preventative measures for a multitude of diseases, leveraging the abundant locally found herbal medicinal plants (Khanikar, 2012). Additionally, his medicines have gained international recognition, being exported to countries including Thailand, Nepal, China, Canada, and others.

The table below encapsulates significant plants and their applications in Assam, featuring their English name, local names, scientific nomenclature, form of medicinal application, and the ailments they address (Ghosh & Parida, 2015; Deka & Nath, 2014; Khanikar, 2012).

Sl. No	Plants name (English)	Local name (Assamese)	Scientific name	Form of medicine	Integral disease
1	Holy Basil	Tulakhi	<i>Ocimum tenuiflorum</i>	Extracted juice	Allergy
2	Neem	Neem	<i>Azadirachta indica</i>	Extracted juice and raw leaves	Measles
3	Shunk vine	Bhedailota	<i>Paederia Foetida</i>	Seed paste	Toothache
4	Purpureum Rosc.	Moran aada	<i>Zingiber pupureum</i>	Paste	Mums
5	Soap nut	Monisal	<i>Sapindus mukorossi garth</i>	Extracted juice	Tonsillitis
6	Henna	Jetuka	<i>Lawsonia inermis</i>	Extracted juice	Abscess
7	Leucas	Duron bon	<i>Leucas aspara</i>	Leaves or Flowers	Cold, fever, pneumonia
8	Indian pennywort	Bor Manimuni	<i>Centella asiatica</i>	Extracted juice	Dysentery
9	Rough cocklebur	Agara	<i>Xanthium strumarium</i>	Seeds	Pneumonia
10	Guava	Modhuri	<i>Psidium gujava</i>	Leaf buds	Diarrhoea
11	Taro	Kalakasu	<i>Colacasia esculenta</i>	Stem	cut injury
12	Indian Snakeroot	Sarpagandha	<i>Rauwolfia serpentina</i>	Root	Abdominal pain
13	Pineapple	Anaras	<i>Ananas comosus</i>	Soft & White portion of leaves	Worm problems
14	Bitterweed	Kalpatita	<i>Andrographis paniculate</i>	Whole Plant	Liver disease (Jaundice)
15	Indian Coral Tree	Madar	<i>Erythra indica.</i>	Bark	Jaundice
16	Mangosteen	Thekera	<i>Garcinia pedunculata</i>	Fruits	Diarrhoea & Dysentery
17	Papaya	Amita	<i>Carica papaya</i>	Newly appeared small fruits	Liver diseases (fatty liver, enlarged liver)

18	Physic nut	Bhotera	<i>Jatropha curcas</i>	Bark	Diarrhoea and vomiting
19	Climbing hemp weed	Jaibangla	<i>Mikania scandens</i>	Leaves	External bleedings
20	Coral Jasmine	Sewali	<i>Nyctanthes arbor-tristis</i>	Flowers	Malaria, worm infestation
21	Spanish cherry	Bakul	<i>Mimusops elengi</i>	Bark	Disease of oral cavity (Pyorrhoea, Bleeding gums, etc.)
22	Country mallow	Jabakutari	<i>Abutilon indicum</i>	Root	Diarrhoea and vomiting
23	Lesser balloon vine	Kapalphuta	<i>Cardiospermum halicacabum</i>	Root	Vomiting
24	Sensitive plant	Nilajiban	<i>Mimosa pudica</i>	Whole plant	Itching, Bleeding problems
25	Castor Bean	Era gach	<i>Ricinus communis</i>	Leaves	Pain & swelling
26	Spiny amaranth	Katakhtura	<i>Amaranthus spinosus</i>	Whole plant	Anemia, night blindness
27	Creeping woodsorrel	Tengesi tenga	<i>Oxalis corniculata</i>	Whole plant	Flatulence, Dysentery, loss of memory
28	Fish mint	Masandari	<i>Houttuynia cordata</i>	Whole plant	Diarrhoea, Dysentery
29	Drumstick tree	Sajana	<i>Moringa oleifera</i>	Fruits, bark	Night blindness, Pain & swelling
30	Indian Asparagus	Satmul	<i>Asparagus racemosus</i>	Rhizome	Weakness & lethargy
31	Elephant Apple	Owtenga	<i>Dillenia indica</i>	Fruit	Prevention of Chicken Pox.

Table 1. Locally found medicinal plants and their uses

3.2 Traditional Zotherapy:

Zotherapy is defined as the healing of human animals by using medicines prepared from different animals and animal-derived by-products. Among the large group of tribal inhabitants of the Northeast region, only a few use animals in traditional medicine. A total of 108 ethnomedicinal animals and animal products are being used by major tribes such as Biata in Dimahasao, Karbi, and indigenous inhabitants in adjoining areas of Pobitara Wildlife Sanctuary (Borah et al. 2017). The study also found 45 different animals, including insects which are used to treat 40 ailments such as

asthma, pneumonia, cancer, fever, piles, gastric, diabetes, snake bite, pox are Mole cricket, fireflies, cockroaches, ants, rice bugs, Muga silkworm, praying mantis, earthworm, freshwater snail, frog, Assamese snakehead fish (single mas), cobra, mongoose, porcupine, fox, buffalo, etc (Borah et al. 2017; Teron & Borthakur, 2012).

The table below gives the details of some commonly found animals used in traditional medicine (Borah et al. 2017; Teron & Borthakur, 2012; Verma et al. 2014).

Sl. No	Animal name (English)	Local name (Assamese)	Scientific name	Form of medicine	Integral disease
1	Mole cricket	Kumot	<i>Scapteriscus borellii</i>	Alimentary canal	Intestinal worm (thread worm)
2	Fire Flies	Junaki paruwa	<i>Lampyridae sp.</i>	Whole body	Cancer
3	Honey bee	Mou makhi	<i>Apis cerna indica</i>	Whole body, honey	Cancer, Coughs, flu, asthma
4	Cockroach	Poitasura	<i>Periplaneta Americana</i>	Whole body	Asthma
5	Hornet	Kodu	<i>Vespa affinis</i>	Whole body	Cancer
6	Green tree ant	Amoli poruw	<i>Oecphylla smaragdina</i>	Whole body	Sinus ,Cancer, Epistapix (bleeding from nose)
7	Muga silk worm	Muga palu	<i>Antheraea assamensis</i>	Whole body	Protein loss
8	Praying mantis	Gagini foring	<i>Mantis religiosa</i>	Cocoon with larva	Otorrhoea (Wound in ear)
9	Freshwater snail	Shamuk	<i>Pila spp.</i>	Whole body	Better eye sight
10	Magur	Magur mas	<i>Clarias batrachus</i>	Whole body	Fever, cough and cold
11	Assamese snake head	Chengeli mas	<i>Channa stewartia</i>	Whole body	Diabetes, fever, pain
12	Bat	Bor Baduli	<i>Pteropus giganteus</i>	Meat	Asthma
13	Porcupine	Ketela pohu	<i>Hystrix indica</i>	Elementary canal	Pre-menstrual pain

Table 2: Locally found animals and their use in medicines.

3.3 Healthcare through Hygiene

Although tribal groups in Assam have a similar way of life, the same customs and traditional practices vary among them. Assamese is the common language shared among communities of Assam, and Bihu is the main festival celebrated throughout Assam. Bihu is a harvesting festival known by different names among its tribes, such as Baisagu in Boro, Ali ai ligang in Mising, etc. It involves customs that emphasize maintaining hygiene before or after the celebration. Ahom, Chutia, Koch, and Kalita

communities start the festival by bathing themselves and their cattle with *Vigna Mungo* (Mati mah) and *Curcuma longa* (Halodhi). It is believed to be an effective prevention against skin diseases. *Vigna Mungo* has antioxidant and inflammatory properties, which help in removing injurious stimuli and initiate the healing process. The presence of inflammatory mediators called 'eicosanoids' in *Vigna Mungo* are synthesized by cyclooxygenases (cox) and lipooxygenases (lox) in cell types associated with inflammatory disorders. (Rajagopal et al. 2016)

Similarly, Boro people mop the floor and walls of their mud houses with cow dung as a custom for cleanliness and hygiene. Cow dung acts as a mosquito repellent and cleansing agent. Cow dung contains a diverse group of microorganisms, such as *Acinetobacter*, *Bacillus*, *Pseudomonas*, *Serratia*, and *Alcaligenes spp.*, which can degrade hazardous organic pollutants. (Gupta et al. 2016)

Mising people use approximately thirty medicinal plants in the 'Dobur Uie' ritual. These plants are used in the treatment of various water-borne diseases like diarrhoea, indigestion, flatulence, stomach problems, liver problems, etc. As the water sources in rural areas are not hygienic, this practice or ritual ensures hygiene and prevents bacterial and viral diseases. Some very rare plants identified to be used in Dobur Uie celebration are *Zanthoxylum nitidum*, *Pueraria tuberosa*, *Naranvelia zeylanica* etc. (Sharma & Pegu, 2011).

The necessity to maintain hygiene during the death or birth of a person leads to many traditional beliefs and practices. People from ancient times followed some sanitation and

hygiene measures to ensure the safety of the vulnerable. As we know, a newborn baby is vulnerable to germs, bacteria, and viruses in the outside world. Some cultural practices of some communities of Assam, such as Deori, Mising, Ahom, etc., consider it taboo to come in close contact with the mother and the child. They consider the house a place of impurity and termed them as 'Sua'. Furthermore, the people break this impurity by performing some rituals after a period of 10-15 days. The ritual is called 'Hudi', and it follows the preparation of 'kachu jhal' with chicken (curry prepared from arum stem, black pepper, ginger, etc.) where the mother first puts food in the baby's mouth and eats the rest. During this period, the mother and the child are kept in isolation even the family members are restricted from any social event. In this period, the baby is assumed to develop some immunity to its environment and the isolation prevents any germs or bacterial contact with the child. In addition, the mother is fed with nutrient-rich food.

It is also a common practice among most communities to sprinkle purity water before and after any ritual. The ingredients of this purity water might vary among different groups but share the common idea of sanitization. The tribes in Assam prepare this purity water with gold water, silver water, copper water, and basil leaves and particularly use a rare herb locally known as *Durun bon* to stir the water. This plant is scientifically known as *Leucas aspara* and has medicinal, antipyretic, and insect-repellent properties. This mixture, along with ions from silver, gold, or copper, possesses antibacterial properties and acts as a sanitizer (Shah et al. 2010).

Certain day-to-day traditional practices are performed exclusively to ensure sanitation and hygiene. Examples of such practices are –

1. Smoking dry neem leaves with coconut fibres surrounding the house to repel mosquitoes and house flies, particularly in the evening. This process is commonly known as ‘*Dhuna*’ in Assamese society.
2. The people of Assam traditionally use ashes left from burning wood to wash utensils and hands. It is a strong alkali with a pH ranging from 10-12, and most bacteria cannot survive in such pH. A similar practice is found in Deori ritual called ‘*Laa*’, where the community’s women rub their teeth with iron ash and oil paste. This practice also encourages oral hygiene along with their cultural significance.
3. People traditionally use ‘*citronella* (*Cymbopogon nardus*)’ to mop house floors to have insect-repellent properties, it can be used in aromatherapy to eliminate headaches, and fatigue and improve energy levels.

4. Importance of traditional healthcare approaches

The traditional knowledge about medicinal uses and sanitation properties of local natural resources is very helpful in understanding nature and maintaining a safe environment. Their traditional knowledge motivates scientists and research communities to devise new ways to tackle and prevent diseases. Blind following and without proper scientific knowledge of their traditional and cultural practices can lead to superstitions, wrong treatment, and social discrimination. Moreover, over-exploitation of rare and endangered species can lead to their extinction. Thus, for an efficient growth of human knowledge are must follow scientific

approach along with traditional knowledge and respect one others cultural practices.

Traditional health approaches by indigenous people hold immense significance on multiple fronts. These practices passed down through generations, represent a profound connection to their ancestral roots and cultural identity. They encompass holistic well-being, addressing not only physical ailments but also spiritual and mental health, reinforcing a sense of community and unity. Moreover, traditional health methods often rely on sustainable and environmentally friendly practices, promoting biodiversity conservation and ecological balance. In regions where, modern healthcare may be inaccessible or expensive, these age-old practices serve as a vital lifeline, ensuring that indigenous communities have access to healthcare that is both culturally competent and affordable.

Furthermore, the traditional knowledge embedded in these health approaches is a valuable resource for the broader healthcare landscape. Indigenous practices offer insights into using local flora and fauna for medicinal purposes, potentially contributing to developing new treatments and drugs. Recognizing and integrating these practices into mainstream healthcare systems not only respects the cultural heritage of indigenous communities but also enhances the overall resilience and effectiveness of healthcare provision, ultimately benefiting society as a whole.

5. Future prospective

In the coming years, traditional healthcare approaches by indigenous people are poised to play a pivotal role in shaping more inclusive and effective healthcare systems worldwide. As recognition of the value of indigenous knowledge grows, there is a

concerted effort to integrate these practices into mainstream healthcare. This integration not only respects the cultural heritage of indigenous communities but also enriches modern medicine with centuries-old wisdom. Collaborations between traditional healers and modern healthcare practitioners are rising, fostering a more holistic approach to patient care. This collaborative effort is likely to lead to the development of novel treatments and therapies that draw on the strengths of both traditional and modern medicine.

Furthermore, the preservation and revitalization of traditional healthcare practices are gaining momentum. Efforts to document and transmit this invaluable knowledge to younger generations are underway, ensuring it continues to thrive. Cultural centers and educational initiatives are being established to safeguard these practices, allowing them to evolve and adapt while maintaining their core principles. This preservation not only serves to benefit indigenous communities but also contributes to a more diverse and enriched

global healthcare landscape, where a broader spectrum of healing practices can coexist and complement one another.

Conclusion

In conclusion, the future of traditional healthcare approaches by indigenous people holds immense promise for both these communities and the broader healthcare landscape. The integration of age-old wisdom with modern medical practices stands to revolutionize patient care, offering more comprehensive and culturally sensitive treatment options. Efforts to preserve and revitalize traditional knowledge ensure these invaluable practices continue to thrive and adapt to the evolving healthcare landscape. As research and collaboration between indigenous healers and modern practitioners continue to expand, the potential for discovering innovative treatments and therapies grows exponentially. Embracing and respecting these traditional approaches not only empowers indigenous communities but also enriches the global healthcare paradigm, paving the way for a more inclusive, holistic, and effective approach to health and well-being for all.

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