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Traditional knowledge of herbal plants used by local communities for primary healthcare

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Abstract
Local communities have an important role to play in primary healthcare, including through traditional knowledge about herbal plants which can be used in the absence of access to modern medical services in many rural communities and in those that are underserved. For centuries, indigenous people have used traditional knowledge to prevent and treat common ailments through the use of medicinal plants. These herbal remedies are deeply rooted in cultural beliefs, local biodiversity and traditional healing practices, which is important component of community health and wellbeing. In recent years traditional medicine and herbal remedies have gained increasing recognition worldwide in the field of health care. There are many medicinal plants used for treating fever, cough, digestive disorders, skin infections, etc.Medicinal plants are widely used in treating fever, cough, digestive disorders, skin infections etc. Herbal medicine continues to be used because it is affordable, readily available, culturally acceptable and effective for the use of local people. Traditional herbal knowledge also promotes the preservation of traditional indigenous culture as well as useful information for the future development of pharmacological drugs and research. The traditional knowledge of medicinal plants is, however, at risk due to the quick rate of biodiversity loss, environmental change and the modernization of our society. A lot of this information is not recorded and is likely to be lost with the older generation. Hence, documentation and scientific assessment of local communities' use of herbs is crucial to safeguard cultural heritage and ensure safe, effective and evidence-based incorporation of traditional medicine into health care services and provision.

Keywords: Local communities, traditional herbal knowledge, biodiversity, environmental change

Introduction
According to the World Health Organization, traditional medicine is the collective body of knowledge, skills, and practices, with associated theories, beliefs, and experiences, among different groups that have been passed on through the generations from one generation to the next. Traditional medicine is defined by the World Health Organization as the knowledge, skills and practices associated with theories, beliefs and experiences indigenous to various cultures that are used in the maintenance of health and the prevention, diagnosis, improvement or treatment of physical and mental illnesses, passed from one generation to the next. Herbal medicine, which involves the use of plants and natural remedies to treat ailments, is one of the oldest and most prevalent forms of medicine within this general class. Herbal medicine is not viewed as a substitute for modern medicine, rather it is the only available medical treatment in many cultures and rural communities where access to modern medical facilities is limited. These practices are firmly entrenched in local traditions, cultural beliefs and the knowledge passed down over the years. There has been a renewed interest in traditional, complementary, and integrative medicine (TCIM) in recent years in the world (World Health Organization [WHO], 2013) [8]. This increased focus is motivated by a number of factors such as the increasing prevalence of chronic diseases; needs for mental health care; increasing healthcare costs; and seeking more comprehensive and culturally relevant care. There are many people looking for health care systems that provide not just treatment for sickness but also methods of promoting wellbeing and health through lifestyle and preventative action. The emphasis on balance, natural healing, and community-based care in traditional medicine is attractive to people around the world. In this context, the knowledge of use of herbal plants by the local communities for their day to day health care is of high importance. Local traditional medicine practices can be studied to help maintain valuable traditional knowledge, to identify the plants used in traditional medicine that could be beneficial in modern medicine and to help develop culturally appropriate and evidence-based healthcare policies. It can also enhance the partnership between traditional healers and biomedical health care practitioners and support the development of more inclusive and accessible health care systems.

Global and Regional Patterns of Use
Global reliance on traditional herbal medicine
According to WHO and UN reports, more than 80% of the world's population relies on traditional medicine in over 170 out of 194 WHO Member States, with herbal medicines, yoga, Ayurveda, acupuncture and indigenous systems being some of the forms of traditional medicine used. In many LMICs, traditional medicine is the most immediate and often the sole source of health care for populations who do not have access to basic allopathic healthcare. Medicinal plants in Asia, particularly, have been reported as available, affordable and culturally relevant primary health care resource for over 80% of the population. Pluralistic health seeking behaviours also exist: traditional herbalist medicine is widely applied in high income countries, either as complementary treatment or as secondary rather than primary treatment. In the global healthcare context, however, the percentage of research funding for traditional medicine is still less than 1% of total funding for health research, which still means there is a big evidence gap in relation to the use of traditional medicine. This discrepancy is a call to action for systematic ethnomedicinal documentation, together with pharmacological and clinical validation (World Health Organization [WHO], 2013).

Indian context and medical ethnobotany

India is one of the world's leading centers of medical ethnobotany, having a long tradition of systems included in codified medicine like Ayurveda, Siddha, Unani and Sowa-Rigpa and a wealth of localised folk traditions in more than 500 tribal communities. About 70% of the rural population in India use plants as their primary source of health care, either by itself, or in combination in preparation for their own use at home, or by consulting a village healer. Thousands of medicinal plants can be found across various agro-climatic regions of the country from the Himalaya to the Western Ghats and the Eastern Ghats and Central forests, within community health practices. Dozens to hundreds of medicinal plant species have been reported from different regions in India for a wide range of medicinal uses, confirming commonalities and also a strong locospecificity. For instance, 51 medicinal plant species were observed in Garhwal Himalaya being used by locals for home medicinal purposes and 97 species were observed around the Kedarnath Wildlife Sanctuary used by the locals for their primary health care in various category of disease. The ethnomedicinal surveys conducted in the Trans-Himalayan region of Ladakh revealed 176 plant species belonging to 45 different families for 116 ailments with 4841 use reports underlining the extent and complexity of local pharmacopoeias (Bodeker & Kronenberg, 2002) [4].

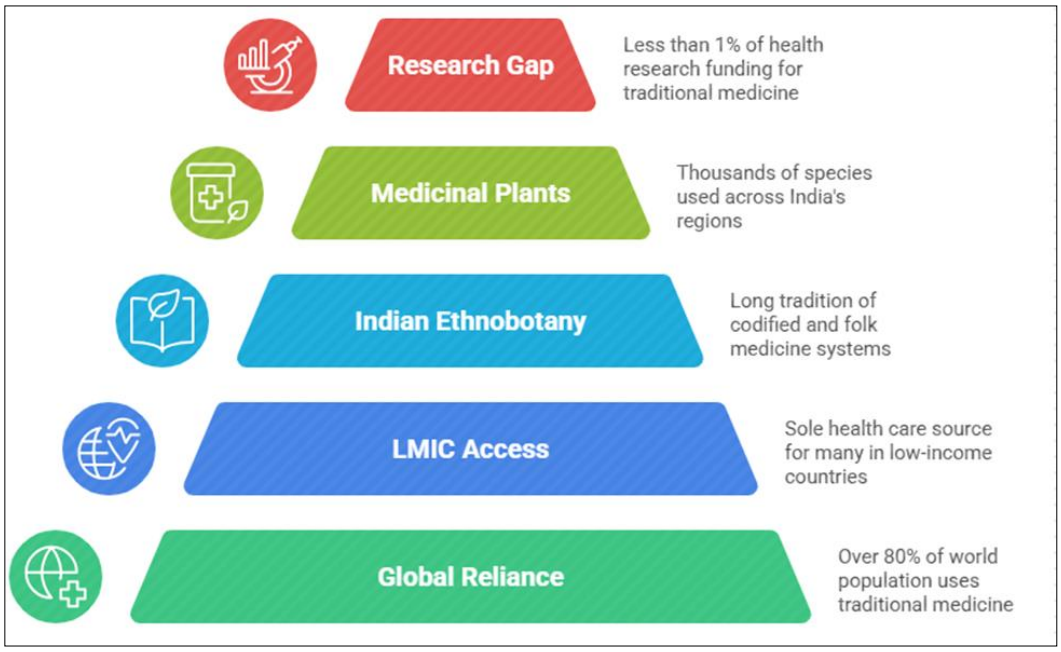

Fig 1: Hierarchy of Traditional Medicine

Traditional Herbal Plants in Primary Healthcare

Ailments commonly treated

In ethnomedicinal research in India and elsewhere, common household problems, which constitute the majority of primary health care issues, such as respiratory, digestive and skin diseases are commonly treated with traditional herbal plants. Coughs, colds, fever, bronchitis and asthma are common ailments for which they use plant medications on a regular basis, as well as gastrointestinal disorders like indigestion, diarrhoea, dysentery, constipation, stomach ache and intestinal worms. The same household pharmacopoeia is also used for dermatological problems such as skin infections, itching, rashes, boils, pimples, burns and minor cuts and wounds and topical pastes, poultices and washes are generally made from locally available species (World Health Organization [WHO], 2025) [2].

Other musculoskeletal ailments such as general body pain, rheumatism and fractures are also treated with herbal remedies, which are usually anti-inflammatory decoctions, poultices and oils applied to the affected areas. Women's health is an important area of traditional use and particular plants are employed for menstrual problems, pregnancy related problems, family planning and post-partum care in many cultures. In addition these, local pharmacopoeias treat a large variety of "other" common ailments, including headache, toothache, eye troubles, anaemia, kidney or gallstone disease and general weakness, reflecting the ability of herbal medicine to be a comprehensive primary-care system of health care, not a side-show or occasional alternative.The highest informant consensus was observed in the categories related with pregnancy and family planning (ICF = 1), indicating that reproductive and common ailments play a crucial role in the health concerns of the community in Ladakh. This is also reflected in the findings from Garhwal and Central India, where the remedies used for the household medicine are used for recurrent infections and functional disorders, not acute surgical disorders (World Health Organization [WHO] & United Nations Children's Fund [UNICEF], 2018) [3].

Diversity of medicinal flora and plant parts used

Ethnomedicinal surveys always show high species diversity and a differential distribution of knowledge by taxa and families. From the Western Himalaya, 97 species of medicinal plants from 52 families and 83 genera were recorded and 176 species from 131 genera were reported by the communities of Ladakh. Even in the small and marginalised villages of Garhwal, 51 species from 30 families were used, indicating that there is a considerable pharmacopoeica in the small and remote communities. Depending on the plant species and illness, the parts of plants used are: leaves, roots, rhizomes, bark, flowers, fruits, seeds and sometimes the whole plants. For example, the rhizome of the turmeric plant (Curcuma domestica) is used

in the treatment of wounds and burns, the fruits of Piper nigrum in the treatment of cough and cold and the seeds or fruits of Trachyspermum ammi in gastrointestinal ailments. Roots and bark are more potent in many traditions, but can be more ecologically destructive in their removal than leaves or fruits, causing concerns about sustainability (Fabricant & Farnsworth, 2001) [5].

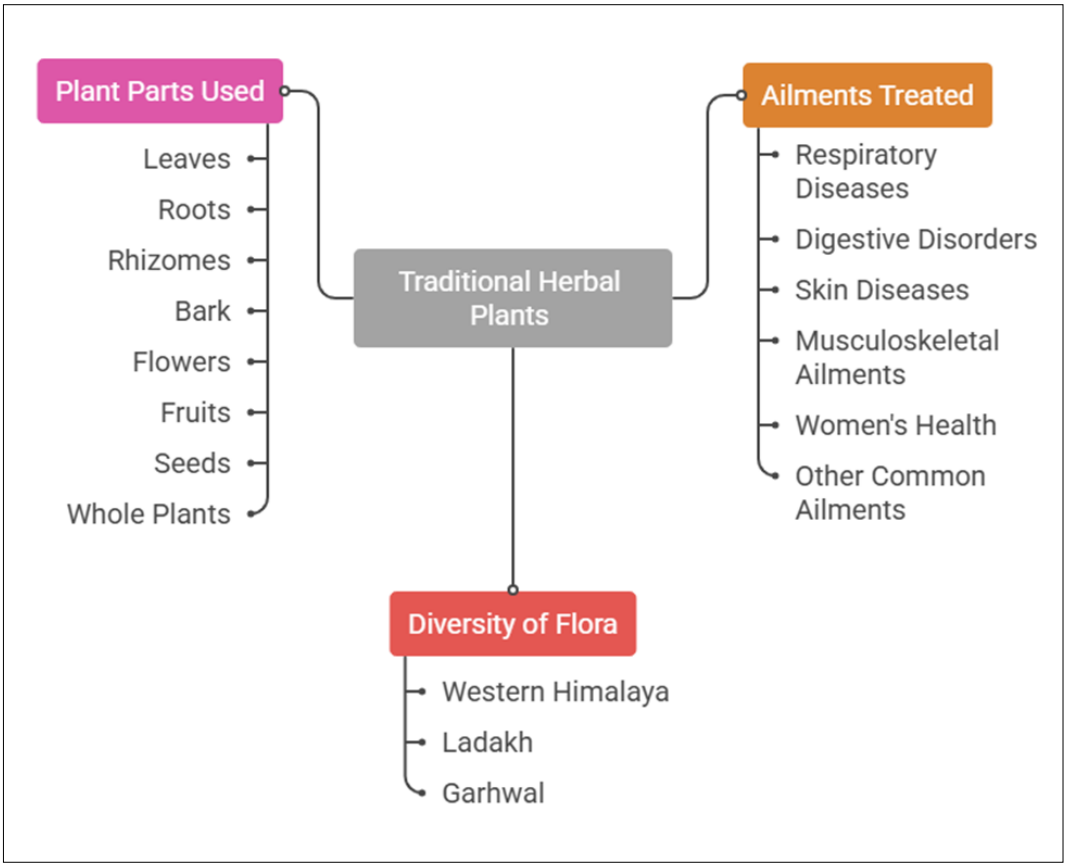

Fig 2: Traditional Herbal Plants in Primary Healthcare

Case Studies from Local Communities

Household remedies in Garhwal Himalaya

In an ethnomedicinal study, 51 species of medicinal plants were documented as household remedies (Gharelu Upchar) in five villages of Dewal block in Chamoli district, Garhwal Himalaya. It was revealed that the local people, who have lived in isolation for centuries, had a vast knowledge of phytotherapy for treating coughs and colds, stomach ailments, skin diseases, dysentery, boils, pimples, anaemia, asthma, wounds, fevers and bone fractures. The plants were primarily employed in crude form, fresh or dried, as pastes, decoctions, infusions or powders, both internally and externally. The study highlighted the importance of local healers (Vaidyas) and the need for the elders to have the knowledge, and the necessity to document this knowledge before it is lost. It also demonstrated the extent to which access to modern health care is restricted, and the extent to which plant-based remedies are trusted by the culture, and so perpetuate reliance on them as household remedies (Tilburt & Kaptchuk, 2008) [6].

Western Himalaya and Kedarnath region

In the Western Himalaya, around the Kedarnath Wildlife Sanctuary, 97 medicinal plants were identified, which are used by the local people for primary health care. Intensive field surveys at different altitudes and semi-structured interviews were used to collect the information, including local names, parts used, mode of preparation and dosage pattern. Reported uses were consistent with typical primary care conditions: fever, cough, cold, digestive, menstrual, musculoskeletal pain and infections. The authors pointed out the rapid loss of traditional knowledge as a result of cultural change, market forces and habitat loss and suggested the need for the documentation of traditional knowledge and linkage to biomedical research to find potential pharmacological leads. They considered ethnomedicinal knowledge as very important not only for local health care, but also for future drug discovery.

Trans-Himalayan Ladakh

Traditional medicinal knowledge plays an important role in the primary healthcare system in Ladakh, which is a cold arid desert area where biomedical infrastructure is limited. The ethnomedicinal data were gathered from 350 informants in 35 villages from 8 regions from 176 medicinal plant species treating 116 ailments in a large scale ethnomedicinal survey. Culturally and therapeutically important species were prioritized using quantitative indices, such as use reports and informant consensus factors (Ekor, 2014) [7].

Tribal communities in Central India

In Central India, people living in tribal areas.In the central part of India, tribes of people. An analysis of the dependency on forest-based medicinal plants for primary health care among the tribal groups, Madiya, Muriya, Gond and Bhatra, of Dantewada district, Chhattisgarh reveals similar trends. The diversity of tribal pharmacopoeias was highlighted by one survey which recorded new or lesser-

known ethnomedicinal uses for 104 plants species from 15 villages. Another study mentioned the presence of Zingiber officinale, Ficus benghalensis, and Ficus religiosa used for both human and animal healthcare, highlighting the interdependence of ethnoveterinary practices within the community health system. The findings of these studies support the argument that even in those areas of India where penetration of biomedical services has increased, as much as 70% of the rural population still use traditional medicine as their first line of health-care. They also demonstrate the interweaving of ritual and medicinal uses of sacred and culturally valued species (Mahomoodally, 2013) [8].

Traditional herbal medicine and lived experience

In addition to plant species surveys, qualitative research has examined the perceptions and experience of traditional herbal medicine by rural people in relation to the modern healthcare system. In a phenomenological study of the use of herbal medicine in rural communities, the authors found that herbal medicine was valued as a natural, accessible and cultural health care practice among the participants, which also plays an important role in their decision making about their health. Thematic analysis indicated that there were distinct differences between the use of herbal medicine for chronic diseases, minor ailments and preventive medicine versus biomedical services for emergencies and when home remedies were ineffective. This study found that integration efforts need to go to the subjective experiences and cannot be just an assemblage of bioactive compounds, because the meaning that people put on healing practices is as important as their pharmacological effects. This insight is essential in developing people-centred primary health care models with a sense of local agency and trust (Hamilton, 2004) [9]

Socio-Cultural Dimensions of Traditional Herbal Knowledge

Knowledge holders and transmission

Traditional knowledge is often held by a few social actors like elder women, community healers (vaidyas, bonesetters, midwives), ritual specialists and experienced farmers and pastoralists. It is learned through oral tradition, apprenticeship, observation and involvement in daily nursery routines and rituals, not through formal education. Many communities have gendered knowledge systems; women are more likely to specialize in child health, nutrition and reproductive health; and men are more likely to specialize in treating musculoskeletal injuries or treating livestock. The transmission of these is disrupted by modernisation, labour migration, the spread of biomedicine and shifting value systems, and it is feared that younger generations are not interested in learning traditional remedies. Key informants are largely ‘elders' and many of the uses of plants could be lost with their deaths if they are not documented and given community revival (Shinwari, 2010) [10].

Cultural meanings and health-seeking behaviour

The use of herbs is part of a cultural perspective on health, sickness and harmony between body, mind, spirit and environment. Treatment may also involve plant remedies as well as rituals, dietary controls, and behavioral advice and can be viewed from both biomedical and spiritual perspectives in many communities. This comprehensive orientation is in line with WHO's acknowledgment that traditional medicine is more about balancing and holistic health than about treating individual symptoms.

Beyond cost and availability, therefore, the choice of health-seeking behaviour is also influenced by trustworthiness, cultural fit and side effects of the various therapies. In some communities herbal medicine is perceived to be less harsh and less dangerous in the long term and some recognise that there are very severe and acute conditions for which hospital treatment is required. These cultural logics, therefore, need to be taken into account in any policy that aspires to incorporate traditional medicine into primary health care and must not be reduced to simple substitution models (Balick & Cox, 1996) [11]

Ecological and Conservation aspects

Biocultural diversity and medicinal plants

The link between biocultural diversity and medicinal plants.The connection between biocultural diversity and medicinal plants. Local medicinal plant knowledge is closely related to local ecosystems and land use as well as its biodiversity. High levels of overall biodiversity coincide with the presence of many ethnomedicinally important species in forests, alpine meadows, in sacred groves and other traditionally managed landscapes. As the landscapes are degraded as a result of deforestation, overgrazing, infrastructure development or climate change, both the plants and the knowledge are at stake. Research has documented from the Himalayas and central India that excessive harvesting of roots, bark and whole plants, particularly for commercial purposes, can threaten important species for primary health care. On the other hand, community-based conservation activities like the protection of sacred groves and village commons can support medicinal plant populations and associated traditional uses. Biocultural heritage offers opportunities for conservation and health-related approaches due to the recognition of medicinal plant knowledge (Dutta, 2025) [13].

Responsible bioprospecting and sustainability

This widespread interest in natural products and herbal remedies has led to an increase in bioprospecting activities in areas with high ethnomedicinal knowledge.The increased interest in natural products and herbal supplements worldwide has resulted in a greater bioprospecting activity in areas of high ethnomedicinal knowledge. This presents opportunities for new drug development and livelihoods; but also poses questions of unsustainable extraction, inequitable benefit-sharing and appropriation of indigenous intellectual property (Wong, 2025) [14].

Integration of formal Primary healthcare

WHO policy frameworks

In the Declaration of Astana on primary health care, 2018 [3], traditional knowledge and traditional technologies are specifically recognized as elements to create health for all and are encouraged to be incorporated in a comprehensive, people-centred primary health care. WHO's Global Traditional Medicine Strategy 2025 [13]–2034 also outlines a vision for everyone to have access to safe, effective and culturally appropriate traditional, complementary and integrative medicine, based on principles of evidence, sustainability, indigenous rights and health equity. Key strategic pillars are the enhancement of research and data on traditional medicine; the creation of international norms,

standards and regulatory frameworks; and the assistance to countries in introducing traditional medicine into their health systems in a safe and quality assured manner. This is a testament to the importance of having a hub to foster innovation, knowledge sharing and capacity-building for Traditional Medicine at the global level, as reflected in the establishment of the WHO Global Traditional Medicine Centre, India in 2022 (World Health Organization [WHO], 2025) [12].

National-level integration examples

A few countries have started to incorporate traditional medicine into formal health services at varying levels. In the Democratic People's Republic of Korea, for instance, the use of Koryo traditional medicine is completely incorporated in allopathic medicine, which is practiced at both primary and secondary levels as well as tertiary level, and all medical practitioners are trained to practice both systems. This dual-competency approach is proposed as an example of the opportunity to complement biomedicine in promoting population health through the use of traditional medicine. India has also made efforts to institutionalize traditional systems, such as through the Ministry of AYUSH and the integration of AYUSH facilities in public health institutions, but this has not been uniform across states. These schemes aim to leverage the much broader society acceptance of herbal and other traditional medicine approaches and progress towards better quality control, training, and regulation (World Health Organization [WHO], 2025) [2].

Conclusion

The traditional knowledge of these herbal plants, employed by local people, is a crucial, but underemphasized source of primary healthcare, particularly in rural and indigenous settings in India and elsewhere in the world. Ethnomedicinal investigations have uncovered a variety of local pharmacopoeias that respond to common primary care conditions such as respiratory, digestive, dermatological, musculoskeletal and reproductive ailments, using locally available remedies which are culturally meaningful. But, all this knowledge faces danger from socio-cultural change, ecological damage and inadequate formal recognition. Various policy frameworks, including WHO's Traditional Medicine Strategy and the Declaration of Astana, give guidance for the integration of traditional medicine in primary health care that is evidence-based, based on principles of respect for indigenous rights and ecologically sustainable. It will take a transdisciplinary approach to vision realisation, in collaboration with ethnobotanists, pharmacologists, public health professionals, policy makers, and community knowledge holders, and investment in research, regulation, and the revitalisation of knowledge and community-led conservation.

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