

Research Article

ETHNO MEDICINAL PRACTICES OF SELECTED TRIBAL COMMUNITIES IN GOA- TRADITIONAL HEALING WISDOM AND CULTURAL HERITAGE

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Article History: Received 24th May 2025; Accepted 2nd June 2025; Published 31st July 2025

ABSTRACT

Ethno medicinal practices includes the study of flora and fauna by various tribal communities. It is a hybrid discipline that integrates both natural and social science which examines the historical, sociological, anthropological, economic and environmental aspects of the relationships between humans, plants and animals. In the beautiful landscapes of Goa, where green forests meet rolling hills and serene rivers, exist vibrant and diverse tribal communities. These communities are an integral part of Goan cultural mosaic, each contributing its unique traditions, customs, and way of life. Despite their relatively small population size, these tribes hold a significant place in Goan cultural heritage, preserving ancient traditions and knowledge that have been passed down through generations. Spread across different regions of Goa, each community has its own distinct identity and connection to the land, shaping Goa's rich cultural tapestry. For the present study, a purposive sampling strategy was utilized to select participants, comprising 5 medicinal healers from Velip and Dhangar tribal communities each in Goa. Terms such as voktoli and vakdali were used interchangeably to refer to medicinal healers within the communities.

Keywords: Dhangar, Traditional healer, Velip, Voktoli, Zootherapy.

INTRODUCTION

Ethno medicinal use of plants has been known since ancient times and several plant and animals were used to cure the diseases in tribal communities. Traditional knowledge of Ethno medicine involves both disease causation and medication. They are continuous processes dealing with health seeking behavior, in every social, economic and biology events (Das and Choudhury 2012). 80% of human population is depending on plant sources (Farnsworth *et al.*, 1985). More than 52,000 flowering plant species are used for medicinal purpose. (Schippmann *et al.*, 2005). India is regarded, due to its rich medicinal plant diversity as Botanical Garden of the World (Vedavathy *et al.*, 1997). Tribal communities exhibit diverse customs, languages, and social structures, reflecting their unique historical experiences and interactions with the land. (Kumar and Jain 2023). Despite this diversity, there exists a common thread of shared values, beliefs, and practices that bind these communities together. From the celebration of

festivals to the practice of traditional healing, tribal cultures in Goa serve as repositories of ancient wisdom and living embodiments of resilience and adaptability (Naik *et al.*, 2014).

Traditional knowledge documentation of medicinal uses of plants has provided many important drugs of modern time. (Anon 1994). The tribal communities in Goa possess a wealth of traditional healing wisdom that has been cultivated over centuries. Their healing practices go beyond addressing physical ailments, encompassing holistic approaches to health that consider the interconnectedness of the body, mind, and spirit. Drawing upon the abundant biodiversity of their surroundings, tribal healers utilize a diverse array of medicinal plants, herbs and natural remedies to treat a wide range of health issues (Kesarkar and Khan 2021). Moreover, these healing traditions are deeply rooted in spiritual beliefs and cultural rituals, reflecting a profound reverence for nature and a harmonious relationship with the environment. (Kandari *et*

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al., 2012) Despite the resilience of tribal healing traditions, they face numerous challenges in the modern era. Rapid urbanization, deforestation, and encroachment on traditional lands threaten the availability of medicinal plants and resources essential for traditional healing practices. Moreover, limited access to modern healthcare services and lack of recognition of traditional healing by mainstream institutions further exacerbate the challenges faced by tribal healers in preserving their traditions.

Research plays a crucial role in documenting, validating, and promoting traditional healing practices among tribal communities. By conducting ethnographic studies, pharmacological research, and community-based participatory research, scholars can contribute to the preservation and recognition of indigenous knowledge systems. The traditional use of medicinal plants in hinterland of tribal dominated Chhota Bhangal Western Himalaya was studied by Uniyal *et al.*, (2006). Health and ethno medical practices among the Malayali tribes of Tamil Nadu were recorded by Jaiswal *et al.*, (2022). Similarly traditional and ethno botanical medicine of plants in Bhagirathi valley in western Himalaya (Uniyal *et al.*, 2002b), traditional phototherapy among the inhabitants of Parvati valley in Western Himalaya (Sharma *et al.*, 2004), in Chitteri hills (Kadhirvel *et al.*, 2010), Malayali tribes in Kolli hills (Vaidyanathan *et al.*, 2013 and tribal people of Purandar in Maharashtra (Bhosle *et al.*, 2009) were reported. The natural environment plays a central role in supporting traditional healing practices among Goa's tribal communities. From the towering trees of the Western Ghats to the meandering rivers and streams, Goa's natural landscapes serve as pharmacies and sanctuaries, offering healing and solace to those in need. Moreover, the spiritual significance attached to natural landscapes underscores the deep connection between tribal communities and their environment, emphasizing the importance of environmental conservation and stewardship.

With rapid urbanization, industrialization, modern education system the original ethno medicinal practices are gradually disappearing from the tribal communities of Goa (Naik *et al.*, 2014). Despite their enduring relevance and cultural significance, traditional healing practices in Goa's tribal communities face a range of challenges and threats. Urbanization, deforestation and environmental degradation are leading to the loss of traditional medicinal plants and habitats, threatening the availability and sustainability of these resources. Additionally, socioeconomic factors such as poverty, migration and globalization are eroding traditional social structures and value systems, leading to decline in the transmission of traditional knowledge and skills. Moreover, the lack of recognition and support for traditional healing practices within mainstream healthcare systems further marginalizes tribal healers and limits access to culturally appropriate healthcare services. In the face of these challenges, tribal communities in Goa have demonstrated remarkable resilience and adaptability, drawing upon their deep cultural heritage and collective strength to innovate and adapt traditional healing practices to changing circumstances. Community-based initiatives

aimed at preserving traditional knowledge, conserving biodiversity, and promoting sustainable resource management are empowering tribal communities to reclaim agency over their health and well-being.

Moreover, the integration of traditional healing practices with modern healthcare system offers promising opportunities for enhancing healthcare delivery, particularly in rural and underserved areas where access to mainstream healthcare services are limited. The recognition and protection of traditional healing practices within legal and policy frameworks are essential for safeguarding the rights and interests of tribal communities in Goa. Legislative measures aimed at protecting traditional knowledge, biodiversity, and cultural heritage can provide a legal basis for the preservation and promotion of traditional healing practices. Research can play a big role in helping tribal communities in Goa. By studying their healing practices and sharing what we learn, we can help raise awareness about their traditions and the challenges they face. (Velip *et al.*, 2023, Gaonkar *et al.*, 2024) This can lead to better support and resources for tribal communities, helping them preserve their culture and way of life. Learning about the healing practices of tribal communities in Goa isn't just about medicine - it's about respecting and celebrating their rich culture and traditions. Present study is designed with an intention to identify traditional medicinal practitioners and document their knowledge of ethno medicinal practices of tribal communities in Goa.

MATERIALS AND METHODS

A questionnaire was developed to collect comprehensive data on various aspects of the healers' practices, beliefs, and experiences. The questionnaire consisted of multiple sections, covering various aspects of the healers' personal background, ethical considerations, approach to healing, patient assessment methods, success stories, medicinal plant and animal usage, preparation methods, and disease treatment modalities. Each section was carefully designed to elicit detailed information while maintaining cultural sensitivity and respect for indigenous knowledge systems. Prior to the survey Ethno medicinal studies and surveys that reported plants used traditionally in treating various diseases were referred. All potentially qualified papers were examined. We introduced ourselves and explained the objectives of the research to the participants, fostering rapport and trust. Data collection was carried out through face-to-face interviews with the selected healers, comprising five medicinal healers from Velip and Dhangar tribal communities in Goa with the help of community leaders, local contacts, and snowball sampling techniques, ensuring a diverse representation of healers from different geographical areas and cultural backgrounds. Other terms such as "Vaktoli" and "Vakdali" were used interchangeably to refer to medicinal healers within the communities. The study was conducted in various tribal settlements and rural areas of Goa. These communities have a rich Cultural heritage and a long history of traditional healing practices, making them ideal settings for exploring ethno medical knowledge and beliefs. Each

interview, conducted lasted 2-3 hours and was conducted in Konkani. Prior to data collection, informed consent was obtained from all participants, who were provided with detailed information about the study's purpose, procedures, and potential risks and benefits. Confidentiality and anonymity were assured, and participants were informed of their right to withdraw from the study at any time without consequence. However, all participants agreed to publish their identity. Data, including the plant name, local name or vernacular name, parts used, reported traditional uses, detail of informants, and area of the survey was recorded.

RESULTS AND DISCUSSION

An intriguing finding of our study was the variation in the number of diseases treated by healers across different communities. Velip healers demonstrated an extensive repertoire by treating an impressive 25 diseases, suggests

varying degrees of medicinal knowledge and practices within these communities, with the Velip community showcasing a particularly rich tradition of healing. Such diversity underscores the importance of respecting and preserving these ethno medicinal practices, as they offer valuable insights into the local flora and their medicinal properties. It is crucial to recognize and integrate these traditional healing methods into formal healthcare systems to ensure holistic and culturally sensitive healthcare delivery to tribal communities in Goa. Medicinal healers from the Velip tribal community, steeped in their cultural traditions and intimate knowledge of the local flora and fauna, provide valuable insights into the Ethno medical practices specific to their community. By documenting their healing techniques and areas of specialization, sheds light on the unique contributions of Velip healers to Goa's traditional healthcare landscape. (Table.1).

Table 1. Survey of Velip community ethno medicinal practices.

S. No	Name	Years of experience	Common ailments treated	Vaidya Mitra card
1	Shri. Subhash Gaonkar	30	- Fracture -Cut/Wound -Arthritis -Muscle pain -Joint Pain	Yes
2	Shri. Nakano Gaonkar	40	-Snake bite -Dog bite	Yes
3	Shri. Purso Chandru Velip	35	-Common cold -Diabetes -Piles -Kidney stone -Menstrual pain -Water warts -Dhat syndrome -Ring worm -Jaundice -Cholesterol	No
4	Shri. Bal Bombo Velip	35	-Acne -Water warts -Ring worm -Skin rashes -Cut wound -Haematoma -Conjunctivitis	Yes
5	Shri. Baba Tolu Gaonkar	25	-Diarrhea -Fever -Kidney stone -Dhat syndrome -Common cold -Sore throat -Conjunctivitis -Burns -Water warts	Yes

Medicinal healers from the Dhangar tribal community, known for their resilience and resourcefulness, draw upon their intimate knowledge of the land and ancestral wisdom to address the health needs of their community. By documenting their healing practices and area of specialization, the contributions of Dhangar healers to the rich tapestry of Goan ethnomedicine recorded. (Table.2).

Table 2. Survey of Dhangar community ethnomedicinal practices.

S. No	Name	Years of experience	Common ailments treatment	Vaidya Mitra card status
1	Shri. Bombo Bavdan	15	Piles Acne Dhat	No
2	Smt. Laxmi Zoro	20	Stomach Pain Swollen Gums Haematoma Common Cold Round Worm	No
3	Shri. Tukaram Bavdan	30	Jaundice Kidney Stone Dhat Chicken Pox Diabetes	Yes
4	Shri. Babu Yamkar	25	Toothaches Swollen Gums Acne Water Warts -Skin Rashes	No
5	Shri. Janu Zoro	38	Round Worm Piles Chicken Pox Ring Worm Skin Rashes	Yes

Table 3. Ethno botanical inventory of medicinal plants and its uses.

S.No	Botanical name	Common name	Local name	Part used	Medicinal use
1.	<i>Tabernaemontana orientalis</i>	East Indian Rosebay	Anant	Root, Bark	Kidney stone, Tooth ache
2.	<i>Anethum graveolens</i>	Dill	Shepu	Leaves	Loss of appetite
3.	<i>Andrographis paniculata</i>	King of Bitter / Kalmegh	Kirayte	Leaves	Stomach ache, Common cold, Round worm
4.	<i>Mangifera indica L.</i>	Mango	Aamo	Leaves Plant gum	Diarrhea Cracked heels
5.	<i>Catharanthus roseus</i>	Madagascar Periwinkle	Sadafuli	Leaves	Diabetes
6.	<i>Hemidesmus indicus</i>	Indian Sarsaparilla	Dudhvel	Entire plant	Cold and fever
7.	<i>Annona reticulate L.</i>	Custard Apple / bullock's heart	Sitaphal	Leaves, Seeds	Stomach ache Diabetes
8.	<i>Microcos paniculata</i>	Chinese Hibiscus / Microcos	Chivor	Root, Leaves	Diarrhea, jaundice
9.	<i>Chromolaena odorata</i>	Siam Weed /	Pat	Leaves	Wound

	Christmas Bush			
10 <i>Piper nigrum</i>	Black Pepper	Meri	Seed	hematoma
11 <i>Psidium guajava</i>	Guava	Peru	Leaves	Stomach ache
12 <i>Guazuma ulmifolia</i>	West Indian Elm / Bastard Cedar	Bakdafal	Fruit	Chicken pox
13 <i>Zingiber officinale</i>	Ginger	Aale	Rhizome	Fever, cold
14 <i>Carica papaya L.</i>	Papaya	Papoi	Seeds, leaves	High blood pressure and dengue
15 <i>Cucumis sativus</i>	Cucumber	Tovshe	Fruit, seeds	Wound, Stomach pain
16 <i>Luffa acutangula</i>	Ridge Gourd / Angled Luffa	Ghosale	Fruit	Stomach pain or Abdominal pain
17 <i>Cucurbita maxima</i>	Pumpkin	Dudhi	Fruit	Stomach ache
18 <i>Cucumis trigonus</i>	Wild Cucumber	Karit	Fruit	Cold, fever
19 <i>Shorea robusta</i>	Sal	Sail	Root	Jaundice
20 <i>Terminalia arjuna</i>	Arjuna Tree	Arjun	Bark	Wound, Diabetes, Menstrual cycle problems
21 <i>Careya arborea</i>	Wild Guava / Slow Match Tree	Kumyo	Leaves	Stomach pain
22 <i>Mimusops elengi</i>	Spanish Cherry / Bakul Tree	Vovola	Flower	Pink eye
23 <i>Syzygium cumini</i>	Java Plum / Jamun	Jambla	Seed	Diabetes
24 <i>Saraca asoca</i>	Ashoka Tree	Ashok	Leaves, fruit	Fever, Kidney stone
25 <i>Szechuan pepper</i>	Sichuan Pepper / Teppal	Teppal	Seed	Toothache, vomiting
26 <i>Rauvlfia serpentine</i>	Indian Snakeroot / Sarpagandha	Aatki	Root	Stomach ache
27 <i>Aerva lanata</i>	Mountain Knot Grass	Mutkka dyache zhad	Fruit	Kidney stone
28 <i>Terminalia paniculata</i>	Kindal Tree	Kindal	Bark	Wound, Jaundice
29 <i>Curcuma longa</i>	Turmeric	Halad	rhizome	Wound
30 <i>Mimosa pudica</i>	Touch-me-not / Sensitive Plant	Lajjalu	Root, stem	Piles
31 <i>Cynodon dactylon</i>	Bermuda Grass	Haryali	Root	Snake bite
32 <i>Aloe barbadensis miller</i>	Aloe Vera	Alovera	Leaves	acne
33 <i>Ocimum sanctum</i>	Holy Basil / Tulsi	Tulsi	Leaves	Cold, fever
34 <i>Ligustrum lucidum</i>	Glossy Privet	Rajnani	Leaves	Water warts
35 <i>Coriandrum sativum</i>	Coriander / Cilantro	Kotambir	Seed	Fever, cold
36 <i>Acgle marmelos</i>	Bael / Bengal Quince	Belva	Fruit	Inflamed gums
37 <i>Setaria italica</i>	Foxtail Millet	Kangu tandul	Millet	Chicken pox
38 <i>Myristica fragrans</i>	Nutmeg	Jai fal	Seed	Round worm
39 <i>Stachytarpheta jamaicensis</i>	Blue Porterweed	Goshe	Leaves	Round worm
40 <i>Trachyspermum ammi</i>	Ajwain / carom Seeds	Vovo	Seed	Round worm
41 <i>Azadirachta indica</i>	Neem	Kodu limbu	Leaves	Fever
42 <i>Shorea robusta</i>	Sal Tree	Sal	Root	Diarrhea
43 <i>Citrus limon</i>	Lemon	Limbu	Fruit	Common cold
44 <i>Murraya koenigii</i>	Curry Leaf Tree	Kadi patta	Leaves	Diarrhea
45 <i>Capsicum annuum</i>	Chilli Pepper / Bell	Zala mirsang	Fruit	Cut, wound

46	<i>Cymbopogon</i>	Pepper Lemongrass	Ganzan	Leaves	Digestion, vomiting, cough
47	<i>Kalanchoe brasiliensis</i>	Brazilianm Kalanchoe	Fatfate pana	Leaves	Common cold
48	<i>Coleus amboinicus</i>	Indian Borage / Cuban Oregano	Vatlav pana	Leaves	Common cold
49	<i>Morinda citrifolia</i>	Noni / Indian Mulberry	Bartondi	Fruit	Cancer
50	<i>Phyllanthus emblica</i>	Indian gooseberry	Aavalo	Bark	Kidney stone, Piles, Diarrhea



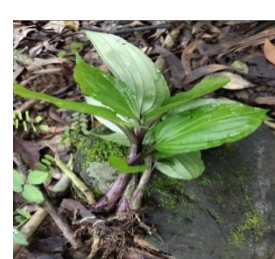
*Stachytarpheta
jamaicensis*



Hemidemsus indicus



Mangifera indica



Govenia urticulata



Psidium guajava



Hibiscus rosa-sinensis



Morinda citrifolia



Alae barbadensis



Ocimum sanctum



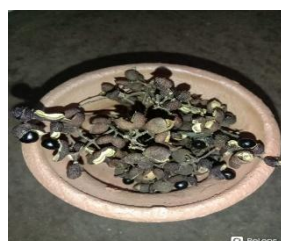
Andrographis paniculata



Mimosa pudica



Chromolaena odorata



Szechuan pepper



Cucumis sativus



Zingiber officinale



Allium sativum

Figure 1. Medicinal plants used by the tribal communities in Goa.

Based on information provided by the Vaktoli ethnobotanical knowledge of tribal communities was recorded in Table 3. (Figure 1) Our analysis revealed a variety of plant parts utilized in traditional healing practices, with leaves being the most commonly used part (in 12 plants), followed by bark (10 plants), fruit (8 plants), and seeds (7 plants). Additionally, rhizomes were used in 5 plants, flowers in 7 plants, and the entire plant in 1 instance. Documentation of these traditional uses, offers valuable insights into the pharmacological properties and therapeutic potentials of indigenous medicinal plants, which serves as a comprehensive reference guide to the medicinal flora of Goa's tribal communities, providing valuable information for researchers, Healthcare practitioners, and conservationists alike.

Utilization of animal-based remedies in the traditional healing practices of tribal communities in Goa. It outlines the name of each animal, the specific part(s) used for medicinal purposes, the method of medicine preparation, and the common ailments treated. From insects to mammals, a diverse array of animal species contributes to the ethno medical pharmacopeia, addressing a range of health concerns through traditional methods of preparation and application. This documentation not only highlights the resourcefulness of tribal healer but also underscores the importance of biodiversity conservation and the preservation of indigenous knowledge systems. (Table.4).

Table 4. Animal-based medicines and their uses.

Scientific names	Local name	Part used
<i>Semnopithecus entellus</i>	Monkey/makod	Excreta
<i>Bos gaurus</i>	Gaur/gava reda	Excreta
<i>Lepus nigricollis</i>	Indian hare/soso	Intestine ,meat, blood
<i>Paradoxurus SP.</i>	Civet cat/javvath	Intestine, testes, meat
<i>Bos taurus</i>	Cow/gaay	Urine
<i>Rusa unicolor</i>	Sambar/meru	Meat
<i>Urva auropunctata</i>	Mongoose	Bone
<i>Homo sapiens</i>	Human/munis	Urine
<i>Moschiola indica</i>	Mouse deer/pisoi	Foetus
<i>Sus scrofa</i>	Wild boar/ran dukor	Bone marrow
<i>Oryx capensis</i>	Malabar grey hornbill/bonnus	Meat
<i>Crematogaster SP.</i>	Ants/huron	Eggs, Larvae, Extracts

Insights into the preparation methods of traditional medicines used by tribal healers in Goa, along with the associated diseases treated recorded in Table 5. Documenting these preparation techniques and their therapeutic applications, contributes to the preservation and dissemination of indigenous healing knowledge, fostering a deeper understanding of traditional healthcare practices within tribal communities in Goa.

Table 5. Traditional Medicine Preparation Methods: Procedures, Associated Diseases and Remedial Formulations.

S. No.	Medicine preparation	Procedure for preparation	Associated disease
1	Herbal infusions	Boil plant parts (leaves, flower) in water to make therapeutic teas	Various ailments, including digestive and respiratory issues
2	Decoctions	Boil plant materials (root, bark) to create concentrated liquid.	Commonly used for treating respiratory and digestive problems
3	Paste formulations	Grind or mash plants into a paste for ingestion or topical application	Skin conditions, digestive issue
4	Oil extracts	Infuse plant materials into oils for massage or topical use	Massage for muscular pain, topical application for skin issues
5	Powdered formulas	Grind dried plant parts into a fine powder for consumption or application	Internal ailments, digestive disorders
6	Smoke inhalation	Burn specific plants to produce medicinal smoke	Respiratory issues, mouth ulcer, dental cavity

7	Fermented preparations	Allow plant materials to undergo fermentation for medicinal solutions	General health, digestive problems
8	Ritualistic medicines	Integrate culture and spiritual practices into the preparation	Often associated with various spiritual and health rituals
9	Splinting the limb with stick or cloth	To prepare a splint using stick or cloth, pad it with soft material, position it firmly in place, ensuring circulation and seeking medical assistance promptly.	Bone fracture

Table 6. Outlines traditional remedies utilized by tribal communities. Each entry details ailment and its general and specific symptoms, medicine preparation method and its application procedure. Decoction is used for 11 disorders, paste formulation for 5, Powder formulation for 5, herbal infusion for 5, oil extraction for 3 and smoke inhalation for 2 disorders as reported by Vaktoli participated in the survey. (Figure 2).

Table 6. Ethno medicinal practices of tribal communities in Goa,

S. No	Disease	Symptoms	Preparation Method	Application
1	Jaundice	-Yellow skin and -white part of the eye	Decoction	Oral administration
2	kidney stone	-weight loss - Server pain in the back and side frequent urination	Decoction	Oral administration
3	Piles	-discomfort during urination. -Pain and discomfort during bowel movement -itching around and swelling near the anus.	Decoction	Oral administration
4	water warts	- Skin small bump redness	Decoction Powdered formulas	-oral administration -apply on infected part
5	Dhat syndrome	-Loss of appetite	Decoction	-oral administration
6	Common cold	-cough -sneezing -sore throat -running nose headache	Herbal infusion Smoke inhalation	-oral administration
7	Ring worm	-Itchy skin -ring shaped rash -cracked skin	Paste formulation	-apply on infected part
8	Acne	-white head -Inflamed nodules	Paste formulation	-apply on body
9	Cut/Wound	-bleeding blood -scratches -swelling	Paste formulation	-Apply on wound
10	Round worm	-stomach pain -worm in stool	Decoction	-oral administration
11	Conjunctivitis	-itching -burning -red color patches and swelling	Herbal infusion	Wash with water
12	Diabetes	-loss of weight -frequent urination -loss of appetite	Decoction	Oral administration
13	Cholesterol	-high blood pressure -pain while	Decoction	Oral administration

		walking -chest pain		
14	Chicken pox	-red spots on skin -fever Scab	Powdered formulas	Apply on body and also drink
15	Hematoma	-pain -swelling -redness	Paste formulations	Apply on affected part
16	Sore throat	-throat pain	Paste formulations	Apply near the throat
17	Stomach pain	-pain in stomach -vomiting sensation	Powdered formulas	-Oral administration
18	Ear pain	-pain in ear -hearing problems	Oil extract	-put few drops in the ear
19	Swollen gums	-swollen -bad breath -dark red gums	Powdered formulas	-paste, powdered on swollen jaw
20	Fracture	-swelling -pain	Splinting the limb with stick or cloth	Massage with oil, put bamboo and maida, then wrap tightly with any piece of cloth
21	Toothache	-pain when eating cold or hot item -pain in gums and tooth	Smoke inhalation	-Cloves put on tooth -gargling
22	Muscle pain	Joint pain in various parts of the body muscles like neck, thigh etc.	Oil extracts	Massage with oil
23	Menstrual pain	-stomach pain	decoction	Oral administration
24	Joint pain	-joint pain in various parts of the body	Oil extracts	Massage with oil
25	Diarrhea	-frequent loose motions -stomach ache Fatigue and weak -vomiting	Decoction	Oral administration
26	Fever	-feeling weak -shivering -body temperature increase	Herbal infusion	Oral administration
27	Skin rashes	-patches -itching -swelling -burning	Paste formulations	Apply on skin
28	Burns	-itching -pus and boils -Pain and burning at the place	Paste formulation	Apply on burn part
29	Headache	-pain in the fore and whole head - sometimes, side tooth pain	Oil extracts	Massage with oil
30	Snake bite	-vomiting -fainting -fear and panic	Decoction Powdered formulas	-Oral administration -apply on swollen or infected part
31	Dog bite	-swelling -pain	Decoction Powdered formulas	-oral administration -apply swollen or infected part



Figure 2. Medicines prepared by the tribal communities in Goa.

Several reports are available on the usage of medicinal plants (Chopra *et al.*, 1986, Kadirvel *et al.*, 2010, Vaidyanathan *et al.*, 2013) and on tribal medicine (Vedavathi *et al.*, 1998, Sawant and Rodrigues, 2015). Our study involved conducting comprehensive surveys within two tribal communities in Goa: Velip and Dhangar. During the surveys, tribal healers generously shared a wealth of personal information, including their name, age, place of residence, years of experience in healing and where they acquired their knowledge. These discussions often evolved into rich narratives, providing context and depth to their healing practices. Additionally, healers recounted anecdotes and stories passed down through generations, illustrating the cultural significance and historical roots of their healing traditions. Tribal healers elaborated extensively on their methods for treating various ailments, offering detailed descriptions of preparation techniques, disease symptoms, and the utilization of medicinal plants and animals.

Valuable flora, the main source of herbal medicine are disappearing at a rapid pace. A notable observation was the affordability and accessibility of traditional medicine compared to modern healthcare services. Tribal healers often operated on a sliding scale fee structure, ensuring that their services remained accessible to all members of the community, regardless of socioeconomic status. In instances where patients were unable to afford monetary payment, healers accepted alternative forms of compensation, such as food or goods, fostering a sense of community and reciprocity. (Iyengar and Dholakia, 2012). Many tribal healers adhere to a code of ethics governing the sharing of their knowledge and healing practices. They emphasized the importance of reciprocity and mutual respect in knowledge exchange, ensuring that information

is shared only with those who demonstrate genuine interest and commitment to learning.

Furthermore, healers emphasized the need for confidentiality and discretion in their interactions with patients, respecting the privacy and dignity of those seeking their care. The majority of medicinal healers we encountered were esteemed elders within their communities, boasting decades of experience and wisdom accumulated over a lifetime of healing. Their advanced age symbolized not only their expertise but also their deep connection to ancestral knowledge and cultural heritage. Despite the challenges of aging, these healers remained steadfast in their commitment to serving their communities and preserving their healing traditions for future generations. Gunias, Bhagats, and Baigas from Andhra Pradesh and Chattisgarh specialize in treating 45 illnesses arising from the supernatural.

These healers, possessing inherited wisdom, address diverse maladies with a unique expertise that binds the community together (Soni and Pradhan, 2016, Soni, 2020). "Bhopas" or "Bhagats," from Maharashtra are the custodians of age-old wisdom, treating physical and spiritual ailments, involving prayers, rituals, and herbal medicines. (Patil & Bhaskar, 2006). The hidden ethnobotanical treasure of Bondla wildlife sanctuary of Goa was reported by Keshari and Bishnupriya (2022). Healers shared candid insights into the challenges they encounter in their healing practices, ranging from environmental hazards, such as the danger of encountering wild animals in forested areas, to socio-economic factors, such as the increasing scarcity of medicinal plants due to deforestation and habitat destruction. These challenges underscored the resilience and adaptability of healers in navigating complex and ever-changing landscapes. Similar observations were reported by Joshi (2019). To mitigate the

seasonal variability in the availability of medicinal plants, healers employ various strategies for collection and preservation. They meticulously harvest plant materials during peak seasons, utilizing traditional knowledge to identify the most potent and effective specimens. Additionally, healers employ preservation techniques, such as drying or processing, to ensure the longevity and potency of medicinal resources throughout the year. Similar observations were made in Velip (Velip *et al.*, 2023), Gawda and Dhangar communities. (Gaonkar *et al.*, 2024).

Tribal healers actively participate in programs and workshops aimed at expanding their knowledge and skills. These initiatives provide valuable opportunities for healers to interact with peers, exchange knowledge, and acquire certifications that further enhance their professional development and practice. Moreover, community-based learning initiatives foster a sense of camaraderie and solidarity among healers, strengthening networks of support and collaboration within the tribal community. Many medicinal healers hold licenses, such as the Vaidya Mitra Card, which authorize them to harvest medicinal plants for their purposes. This official recognition and validation of their expertise contribute to the legitimacy and professionalism of their practice, affirming their role as valuable contributors to healthcare within their communities. By preserving and promoting these practices, communities not only safeguard their healthcare traditions but also reaffirm their cultural resilience and identity in the face of external pressures and modernization. Moreover, traditional healing ceremonies and rituals serve as vital expressions of cultural identity and spiritual connection, reinforcing bonds of community and belonging among tribal members. (Gagnon & Berteaux, 2009) The reliance on natural resources for medicinal purposes underscores the intimate connection between traditional healing practices and environmental stewardship. By preserving forests and habitats, tribal communities contribute to the conservation of biodiversity and ensure the sustainable availability of medicinal plants for future generations. Furthermore, traditional ecological knowledge passed down through generations serves as a valuable resource for promoting ecosystem health and resilience in the face of environmental threats. (Berkes, 2008) The passing down of traditional healing knowledge from older generations to younger ones ensures the continuity and preservation of indigenous healing traditions. Through apprenticeships and mentorship programs, younger members of tribal communities learn the intricacies of traditional healing practices, ensuring their perpetuation and relevance in the modern world. Societal domination of western medicine and lack of recognition to the stakeholders of biological resources, place and value of traditional knowledge base has been impeding the entry of traditional medicine into healthcare services and related field such as nutrition, environmental management. By fostering partnerships between traditional healers, modern healthcare providers, and policymakers, we can create synergistic approaches to healthcare delivery that integrate the strengths of both traditional and modern systems. (Usher, 2000) Furthermore, investments in research, education, and

infrastructure are needed to ensure the sustainability and resilience of traditional healing practices in the face of evolving challenges and opportunities

CONCLUSION

In conclusion, our research journey into the traditional healing practices of Goa's tribal communities has provided profound insights into the resilience, richness, and cultural significance of these age-old traditions. Through meticulous surveys, engaging discussions, and immersive experiences with tribal healers, we have uncovered a treasure trove of knowledge that transcends mere medicinal remedies to encompass holistic approaches to health and well-being. Our findings underscore the deep-rooted connection between traditional healing and cultural identity. Despite facing formidable challenges, such as environmental degradation, habitat loss, and socio-economic pressures, tribal healers exhibit remarkable adaptability and resilience. They navigate these obstacles with ingenuity and resourcefulness, finding innovative solutions to sustain their healing traditions and provide vital healthcare services to their communities. Research can play a big role in helping tribal communities in Goa. By studying their healing practices and sharing what we learn, we can help raise awareness about their traditions and the challenges they face. This can lead to better support and resources for tribal communities, helping them preserve their culture and way of life. By working together and sharing knowledge, we can continue to thrive for generations to come.

ACKNOWLEDGEMENTS

Authors are thankful to Dr. Pravina Kerkar, Principal and Prof. Joydeep Bhattacharjee, Former Principal for support and encouragement and are highly indebted to the all traditional healers for providing valuable information about their rich culture, traditions and healing practices of tribal communities in Goa.

CONFLICT OF INTERESTS

The authors declare no conflict of interest

ETHICS APPROVAL

Not applicable

AI TOOL DECLARATION

The authors declares that no AI and related tools are used to write the scientific content of this manuscript.

DATA AVAILABILITY

Data will be available on request

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