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An Ethnomedicine Practices and Traditional Knowledge among the Kamar Tribe of Mahasamund District, Chhattisgarh, India

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Abstract

Introduction: Ethnomedicine broadly refers to traditional medical practices that reflect cultural interpretations of health, disease, and illness, and address healthcare practices and treatments prevalent in rural and tribal areas.

Objective: To study the ethnomedicine practices and traditional knowledge among the Kamar tribe of Mahasamund district in Chhattisgarh.

Methodology: The present study was conducted in 18 Kamar tribal villages in the Mahasamund Bagbahra block of Chhattisgarh. A triangulation analysis was also conducted to verify the collected data, which was essential for systematic data collection. These ethno-medicine practitioners, known locally as 'Baiga' and 'Dai', possess extensive knowledge of the natural and beneficial plant resources locally available in the surrounding forests. The data collected in the field was analyzed using both quantitative and qualitative methods. Details regarding plant names, local names, phytochemical constituents, and the parts used were tabulated.

Results: A total of 109 participants from the Kamar community were included in the study. According to the current study, 82% of the participants utilized medicinal plants to treat fever and respiratory symptoms; among these, the Zingiberaceae family emerged as the most prominent. Herbs constitute the largest category within the medicinal plants examined in these studies. Among the medicinal plants studied, leaves are the most frequently utilized plant part (accounting for approximately 31% of all species), reflecting their easy availability and high content of secondary metabolites.

Conclusion: Chhattisgarh reveals a rich repository of traditional plant-based knowledge that has been preserved and transmitted orally for generations. These findings confirm that the knowledge systems of the Kamar tribal community, though ancient, are highly relevant to modern medicine and drug discovery. Many of the identified species contain bioactive compounds with proven medicinal properties, suggesting their potential for the development of standardised herbal formulations. And integrating this indigenous knowledge with modern scientific approaches can make significant contributions to community health, biodiversity conservation and the broader field of ethno-pharmaceuticals.

Keywords: Ethnomedicine, Tribal community, medicinal plant, health practices, India

1. Introduction

India, which is home to the largest number of indigenous people in the world (8.6% of India's total population), has a rich herbal heritage (Mandal, 2020) [9]. Herbal medicines help meet the health needs of approximately 80% of the world's population, especially millions of people living in rural areas of developing countries (WHO, 2001; Singh *et al*., 2014) [20].

Ethnomedicine refers to the study of traditional medical practice, which is concerned with the cultural interpretation of health, disease and illness and also addresses the healthcare-seeking process and healing practices. The practices of ethnomedicine is a complex, multi-disciplinary system constituting the use of plants, spirituality and the natural environment and have been the source of healing for people for millennia (A. Singh, 2019) [18]. Herbal medicines are in high demand around the world due to their low side effects and high promise. Natural resources are threatened by this increase in demand (Chand *et al*., 2021) [2].

Early humans relied on their natural allies, plants, to cope with hardships, illnesses, and injuries, and to survive in the wild. Through trial and error, this inevitably led to the discovery of the healing properties of plants. (Mishra & Broker, 2009) [10]. Herbal medicines have been used by them since antiquity for the treatment of diseases; however, scientific evidence regarding the use of ethnomedicinal plants remains limited. Recently, Schmidt *et al*., (2009) scientifically showed that plants provide great opportunities for research to verify traditional medicinal uses and to discover new medicines (Xavier *et al*., 2014) [24]. Medicinal plants are essential for local health care and economies, but their populations are rapidly declining due to overexploitation and unsustainable harvesting. Many valuable alpine species are now rare and endangered (A. Singh *et al*., 2017) [19]. Thus, combining modern and traditional conservation methods is crucial for the sustainable use and preservation of these plant resources (Chaudhury *et al*., 2018) [3].

Traditional healing and care practices are part of the cultural and religious life of tribals. Chhattisgarh is the seventh largest state in India with a large tribal population documenting traditional knowledge through ethnographic studies is important for the preservation and use of indigenous knowledge (Tetali *et al*., 2009) [21].

The traditional knowledge of medicinal plants among the tribes of Chhattisgarh is an important part of their culture and also a valuable scientific and economic resource. This knowledge needs to be properly recorded, protected, and developed(Sahu, 2024) [17]. Around the world, indigenous communities have used traditional methods for treating human and animal diseases for generations. In remote tribal areas, people depend on their local wisdom and experience to cure various illnesses (Divya *et al*., 2024) [4]. Among the tribes of Chhattisgarh, allopathic, homoeopathic, Ayurvedic, and plant-based medicines still play a major role in healthcare (Patel *et al*., 2025) [14]. Thus, the present study aims to study the ethnomedicine practices and traditional knowledge among the Kamar tribe of Mahasamund district in Chhattisgarh.

2. Materials and methods

2.1. Study area and setting

The present study was conducted in the 18 Kamar tribal villages of the Mahasamund block, Bagbahra block. And nine villages from each block were selected on a community basis. The major tribes living in the district are Kanwar, Binjhwar tribe, Bhujia tribe, Dhanwar tribe, Halba tribe, Kamar, Munda tribe, Pardhi, Baheliya, Saur, Sonar, Kharia, Sanwara and Kharwar tribe, Saharia tribes. Mahasamund District is endowed with abundant forest resources. A review of the literature reveals that substantial work has been conducted regarding various aspects of herbal medicines and medicinal plants. In this context, it was observed that interactions were conducted between practitioners of ethnomedicine and rural healers to document the ethnomedicinal (folk-medicinal) uses of local plant species, drawing upon traditional and medicinal knowledge. Therefore, a comprehensive survey was conducted across various villages in the Mahasamund district to compile a list of ethnomedicinal plants used by the Kamar community. The methodology used for this study includes in-depth interviews and non-participant observation.

2.2. Study population

Most of the Kamar earn their income by making bamboo items, which they sell and trade in the weekly markets. Many engage in basketry throughout the entire year, and they are well known for this skill. Their fine bamboo baskets can be traded for goods such as rice, tea and liquor. Farming is the secondary occupation of the Kamar, followed closely by hunting and fishing.

2.3. Sampling

This study population comprised 109 respondents. 55% of the participants were men and 45% were women, with an average age of 41 years. 40% were local healers; 60% were lay people with knowledge and practice in home remedies and traditional medicine. These ethno-medicine practitioners, known locally as 'Baiga' and 'Dai', possess extensive knowledge of the natural and beneficial plant resources locally available in the surrounding forests.

2.4. Data collection

Data collection was carried out over four months. The Ethnomedicinal knowledge of indigenous tribes was evaluated. Interview scheduled used for the data collection.

2.5. Data Analysis

The medicinal uses and properties of the plants were classified into different categories according to the standard chart developed by (Petrovska, 2012) [15]. The data were analysed both quantitatively and qualitatively. Plant names, local names, phytochemical components and details of parts used were tabulated.

3. Result

3.1. Diversity of Medicinal Applications

The plants listed in the table below cover a wide range of medicinal uses, highlighting the versatility of plant-based remedies in traditional health care practices. These 53 plant species, spanning more than 30 botanical families, reveal an impressive range of medicinal applications, from common infectious diseases to chronic metabolic disorders. A wide range of plants are used to treat respiratory ailments such as coughs, colds, sore throats, asthma, and bronchitis. Common species such as Allium cepa (onion), Allium sativum (garlic), Ocimum tenuiflorum (basil), and Justicia adhatoda (adhatoda) are widely used for their expectorant, antimicrobial, and anti-inflammatory properties. These plants are rich in volatile oils, flavonoids, and alkaloids that help reduce respiratory congestion and infections.

Another major therapeutic area is digestion and gastrointestinal health. Several species—including Aegle marmelos (bael), Curcuma longa (turmeric), Terminalia chebula (harad), and Costus speciosus—are traditionally used to relieve constipation, indigestion, diarrhea, worm infestations, and ulcers. The high presence of tannins, saponins and terpenoids in these plants promotes their use as digestive tonics, laxatives and anti-parasitic agents.

3.2. Phytochemical Diversity and Its Role in Therapeutic Efficacy

The efficacy and quality of medicinal plants arise not from a single active compound, but from synergistic interactions between multiple phytochemicals that enhance bioavailability, reduce toxicity, and target diverse molecular pathways. For example:

- In Allium sativum (garlic), organosulfur compounds such as allicin, diallyl disulfide (DADS), and diallyl trisulfide (DATS) exhibit combined antibacterial, antiviral, and cardioprotective activities. Similarly, Tinospora cordifolia (giloy) attributes its immunomodulatory and antipyretic actions to the combined effects of alkaloids, glycosides, flavonoids, and terpenoids.
- Azadirachta indica (neem) contains limonoids, nimbin, and a wide range of flavonoids, which collectively contribute significantly to its antimalarial, antifungal, and detoxifying properties.
- Similarly, Withania somnifera (Ashwagandha) exhibits adaptogenic and anti-stress effects due to its diverse steroidal alkaloids and saponins, called withanolides.

This diverse phytochemical synergy reflects the holistic principle of traditional medical systems such as Ayurveda, where plant extracts are used in their crude or semi-purified form to maintain the natural balance of active constituents. Modern pharmacological studies support this concept, demonstrating that the combined action of multiple compounds can produce greater efficacy than isolated synthetic analogues.

3.3. Synergistic Effects of Phytochemicals

The presence of multiple bioactive compounds in a single plant species suggests that these plants may act synergistically, contributing to their therapeutic potential. For example, garlic (Allium sativum) contains allyl sulphur compounds (such as diallyl disulfide), which, combined with its flavonoids and phenolic compounds, provide potent antioxidant, anti-inflammatory, and immune-modulating effects. Similarly, the combination of terpenoids and flavonoids in cinnamon (Cinnamomum verum) makes it an effective agent for both blood sugar control and digestive health.

Table 1: Ethnomedicinal plants of Mahasamund and Bagbahra block of Mahasamund district, Chhattisgarh

S.N.	Botanical name	Common name	Local name	Family	Parts used	Disease cure	Phytochemical components	Mode of preparation
1.	*Allium cepa*	Onion	Gondali	Amaryllidaceae	bulb	Common cold	carbohydrates, flavonoids Alkaloids, phenols, glycosides, saponins	Extract juice from fresh bulbs and take it with honey.
2.	*Citruslimon (L.) Osbeck*	Lemon	Nibu	Rutaceae	Leaf, fruit	Malaria, Colds, cough, sore throat	phenolic chemicals, limonoids, and alkaloids	Add 1 teaspoon lemon juice to 1 cup water, add 2 black peppers and 5 drops of honey, boil it and make a decoction and drink it.
3.	*Azadirachta indica A. Juss*	Indian lilac	Neem	Meliacea	Leaves, bark	Malaria and Typhoid fever,	imonoids, flavonoids, phenols, catechins, gallic acid, polyphenols, nimbins.	Make a paste of 1 teaspoon of neem leaves and add 2 cloves to it, boil it for 20 minutes and take it on an empty stomach.
4.	*Allium sativum*	Garlic	Lahsun	Amaryllidaceae	Bulb	Cold and cough	joene, dithiins, allyl methyl trisulfide, diallyl sulfide (DAS), diallyl disulfide (DADS), and diallyl trisulfide (DATS)	Take 4 to 5 garlic cloves and roast them in medium flame on the hearth, then chew and eat them with warm water.
5.	*Syzygium aromaticum (L) Merr.& L.M. Perry*	Clove	Luang	Myrtaceae	Dried flower buds	Malaria sore throat, sore throat,	Terpenoids, Phenols, Tannins, Flavonoids,	Grind 4 cloves, boil them in hot water and make tea from it and drink it by sipping.
6.	*Bambusa vulgaris Schrad. Ex J.C. Wendl.*	Bamboo	Bans	Poacoae	Leaves and shoots	constipation, loss of appetite	phenols, flavonoids, coumarins, phytosterols, saponins, tannins, and triterpenes.	Cut fresh bamboo shoots into small pieces, cook them well, then add salt, turmeric powder to it and eat it.
7.	*Ocimum tenuiflorum*	Indian basil	Tulsi	Lamiaceae	Leaves	cough	monoterpenes and phenylpropanoids	Boil some basil leaves and grated ginger in 1 cup of water and then make a decoction and drink it on an empty stomach.
8.	*Ficus religiosa*	Bodhi tree	Pipal	Moraceae	Leaves	Jaundice	phenols, tannins, steroids, alkaloids and flavonoids, β-sitosteryl-D-glucoside, vitamin K, n-octacosanol, methyl oleanolate, lanosterol, stigmasterol, lupen-3-one.	For jaundice, grind the bark of the peepal tree and add honey to it and drink it.
9.	*Hedychium coronarium*	white ginger lily	Gulbakawali	Zingiberaceae	Leaves	Cataract, Night blindness	flavonoids, glucosinolates, organosulfur compounds, saponins, monoterpenes, sesquiterpenes, capsaicinoids, and capsinoids.	3-4 drops of Gulbakauli flower extract are applied to the eyes to treat night blindness and Cataract.
10.	*Tinospora cordifolia*	Heart-leaved moonseed	Giloy	Menispermaceae	Petioles	Fever, Diabetes	alkaloids, glycosides, steroids, flavonoids, phenols, tannins, terpenoids, polysaccharides, essential oils, and a combination of fatty acids	For fever, 6-7 stalks of Giloy are heated thoroughly in 300 ml of water, then consumed on an empty stomach. A similar process is used for diabetes control.
11.	*Justicia adhatoda*	Malabar nut	Adusa	Acanthaceae	Leaves	Cough, Asthma, Swelling, Bronchitis	phenols, tannins, alkaloids, anthraquinones, saponins, flavonoids and reducing sugars, vasicine, vasicinone alkaloid and	Add some Adusa leaves in 200 ml water, boil it well and make a decoction and consume it by adding 1

							quinazoline	teaspoon of honey in it.
12.	*Andrographis paniculata*	green chiretta	Bhuineem	Acanthaceae	Dry leaf	Fever, Diabetes, Viral infection, boost immunity, digestion	lactones, diterpenoids, diterpene glycosides, flavonoids and flavonoid glycosides.	Make powder of sun-dried Bhuinim leaves and take it by adding half a teaspoon of powder in 1 cup of hot water.
13.	*Nyctanthes arbor-tristis*	Night jasmine	Parijaat	Oleaceae	Leaf	High fever, Sciatica pain	Iridoid glycosides, mannitol, beta-amyrin, beta-sitosterol, hentriacontane, benzoic acid, astragalin, nicotiflorin, oleanolic acid, nyctanthic acid, friedelin and lupeol.	For high fever, boil Parijat leaves in water to make a decoction and drink it on an empty stomach. This is also the same procedure for sciatica pain. Additionally, a paste of 3-4 leaves and applying it to the affected area provides pain relief.
14.	*Gymnema Sylyestre*	Sugar destroyer	Gulmar	Asclepiadaceae	Leaf	Diabetes	tartaric acid, gurmarin, calcium oxalate, glucose, saponins	Take some Gulmar leaves, boil them in water and make a decoction and consume it or make its powder and take it with hot water.
15.	*Withania somnifera*	Indian ginseng	Ashwagandh	Solanaceae	Leaf,	Boost immunity, Weakness	phenolic acids, steroids, alkaloids, flavonoids, glycosides, saponins, tannins and coumarins	Boil Ashwagandha powder in 1 cup of water and drinking it sip by sip provides energy and boosts immunity.
16.	*Terminalia chebula*	Dry harad	Harra	Combretaceae	Seed	Cough and cold, constipation	quercetin, isorhamnetin 3-rhamnoside, isorhamnetin 3- o -rutinoside, isorhamnetin 3-glucosyl-4`-rhamnoside and isorhamnetin 3-o- β -glucoside.	Lightly roast dry hard on low flame and make its powder, then take it with half a teaspoon of honey twice a day.
17.	*Terminalia bellirica*	Kulekahra	Baheda	Combretaceae	Leaves and fruits	Cough, Fever, Asthma	alkaloids, coumarin, flavone, glycosides. Bark contain beta sitosterol, tannins, egallic acid, gallic acid and catechol	Take dried Baheda peel and heat it with 1 cup of water and take it with honey or make its powder and consume it with honey.
18.	*Vitex nigundo*	Horseshoe vitex	Nirgundi	Lamiaceae	Leaves	Joint pain, Skin irritation, swelling	terpenoids, polyphenols, phenolic constituents, alkaloids, carotenoids, phytosterols, saponins, and fibers	Boil 15-20 Nirgundi leaves in 1 litre of water till the water reduces to 500 ml. Its consumption provides relief from joint pain and swelling. Applying the paste of its leaves on the swollen area reduces the swelling.
19.	*Centella asiatica (Linn.) Urban.*	Indian Pennywort.	Mandukparni	Umbelliferae;Apiaceae	Leaves	Skin and wound healing	brahmoside, asiaticoside, thankuniside, hydrocotyline, vellarin	Applying Mandukaparni powder mixed with coconut oil or turmeric can provide relief from wounds.
20.	*Xylopia aethiopica (Dunal) A. Rich*	Negro pepper	Kali Mirch	Annonaceae	Bark Fruits, Seeds	diabetes, dysentery, cough,	Terpenoids, Alkaloids, Saponins, Glycosides, Tannins, Flavonoids, Steroids, Anthraquinones, Carotenoids	Roast 5-6 black peppers on low flame and make its powder. Taking it with 1 teaspoon honey can provide relief from cough.
21.	*Solanum virginianum*	yellow-fruit nightshade	Bhaskatiya	Solanaceae	Fruit	Cough, fever, bladder stones	terpenoids, polyphenols, phenolic constituents, alkaloids, carotenoids, phytosterols, saponins, and fibers	Take the entire Bhaskatiya plant, including its roots, wash it thoroughly in clean water, boil it in 1.5 liters of water in a pot for two hours, cool it, and give it to the patient for one month. This can provide relief from bladder stones.

22.	*Cinnamomum verum*	true cinnamon tree	Dalchini	Lauraceae	Bark	Diabetes control, digestion	terpenoids, polyphenols, phenolic constituents, alkaloids, carotenoids, phytosterols, saponins, and fibers	Take 4-5 pieces of cinnamon, boil them in 1 glass of water and consume it on an empty stomach, this helps in controlling diabetes.
23.	*Moringa oleifera*	Drumstick tree	Munga	Moringaceae.	pods, leafs	Anemia, diabetes, blood pressure balance	phenolics, flavonoids, tannins, saponins, sterols, tocopherols, carotenoids, and chlorophylls	Wash well and cook lightly (don't overcook). Eat 3–4 times a week**.**
24.	*Zingiber officinale Roscoe*	Ginger	Adrak	Zingiberaceae	Ginger Rhizome	Malaria, Typhoid fever, Cough, asthma,	Alkaloids, Terpenoids, Phenols, Tannins, Steroids, Flavonoids	Crush 1 inch fresh ginger, Boil in 1 cup water for 5–7 minutes**,** Strain and drink warm, 2 times a day
25.	*Madhuca longifolia*	Buttercup	Mahua	Sapotaceae	Fruit	Limb pain	common sugars, amino acid, proteins and chlorophyll	Dried flowers are soaked and crushed into a paste. Then Applied externally on the painful area.
26.	*Mentha spicata L*	Mint	Pudina	Lamiaceae	Leaf	Dry winds	diterpenes, steroids, tannin, flavonoids, Carbohydrates, alkaloids, phenols, coumarin, and saponin	Applying mint paste on the forehead gives a cooling sensation. Helps reduce headache caused by sun and dry winds.
27.	*Diospyros melanoxylon*	Coromandel ebony	Tendu	Ebenaceae	Fruit	Diabetes	rich in calcium, magnesium, sodium, potassium, phosphorous, thiamine, riboflavin, ni-acin and vitamin C, with potassium	Ripe tendu fruit is eaten in small quantities.
28.	*Moringa oleifera*	Drumstick leaf	Munga bhaji	Moringaceae	leaf	Diabetes	vitamin A and vitamin C. Alkaloids, protein, quinine, saponins, flavonoids, tannin, steroids, glycosides, fixed oil, and lipids	Dry the leaves in shade. Then Grind into powder. Take **1 teaspoon** with warm water daily on empty stomach
29.	*Amaranthus*	Amaranth	Khedha	Amaranthaceae	Leaf	cholesterol	Flavonoids, alkaloids, tannins, phenolics, saponins, glycosides Phytochemicals, flavonoids, alkaloids, tannins, phenolics, saponins, glycosides	Cook with garlic, onion, and spices Eat with roti or rice
30.	*Colocasia esculenta*	Taro	Kochayi	Araceae	Leaf	Burning	alkaloids, glycosides, flavonoids, terpenoids, saponins, oxalates, phenols.	Leaf paste is sometimes used for minor skin irritation, burning and swelling
31.	*Chenopodium vulgare*	Bathua	Bathua	Laminaceae	Leaves	Skin Problem	vitamins (ascorbic acids, thiamine, riboflavin, and others), and several other biologically active chemical components like flavonoids, saponins, steroids	Leaf paste can soothe eczema and skin irritation, provide a cooling effect and reduce redness Helps reduce itching, rashes, and minor infections
32.	*Curcuma angustifolia*	East Indian arrowroot	Tikhur Kanda	Zingiberaceae	Rhizome	Digestion, Malnutrition	Curzerene, Caryophyl-lene oxide, β-elemonene, Spathulenol, ar-turmerone, Germacrone, Isovelleral, Trimethylbicyclo, ethyl vinyl acetate, Cyclodecadien	Helps in digestive problems like diarrhea and indigestion Acts as a cooling agent for the body Used in weakness and dehydration conditions
33.	*Semecarpus anacardium*	Malacca bean tree	Bhelwa	Anacardiaceae	Fruit	constipation, piles, and worm infections.	flavonoids, biflavonoids, phenolic compounds, andaloids. Notable components	Ripe bhelwa fruit is eaten in small quantities

							like anacardic acid, bhilawanols, and semicarpol	
34.	*Cassia tora (L.) Roxb.*	Stinking cassia	Charota bhaji	Fabaceae	Leaves	Itching	toralactune, physcion, chrysophanol, chrysophonic acid-9- anthrone. rubrofusarin, emodin Isoquercitrin, stearic, quercitrin, stigmasterol, palmitic, freindlen, uridine, and emodin	Take fresh leaves Then Wash and grind into a paste Apply on the itchy area 1–2 times daily
35.	*Aegle mormelos*	wood apple fruit	Bel	Rutaceae	Fruit	chronic diarrhoea, dysentery, and peptic ulcers	lavonoids, glycosides, saponins, tannins, terpenoids	Take ripe bel pulp Mix with water (make sharbat) Drink 1–2 times daily
36.	*Carica papaya*	Papaya	Papita	Caricaceae	Fruit	warts	flavonoids, phenolic acids, carotenoids, and alkaloids	Take fresh raw papaya or its milky latex (sap) Apply directly on the wart using a cotton bud Leave it for 10–15 minutes, then wash
37.	*Aloe vera*	Aloe barbadensis	Gritkumari	Liliaceae	Green stem	skin injuries affected by burning, skin irritations	vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acids and amino acids	Cut a fresh aloe vera leaf Extract the clear gel Apply directly to the affected area
38.	*Colocasia esculenta*	Colocasia leaves	Arbi patta	Araceae	Leaf	wounds for its *styptic* (bleeding-stopping), Postpartum recovery for building strength	folate and riboflavin, alkaloids, glycosides, flavonoids, terpenoids, saponins, oxalates, phenols	
39.	*Amorphophallus paeoniifolius*	Elephant foot yam	Jimikand	Araceae	Corm	Diabetes, dysentery, piles	phenolic acids, flavonoids, tannins, saponins, glucomannans, triterpenoids, and phytosterols	Eat boiled or cooked suran vegetable (avoid raw form due to irritation).
40.	*Phoenix sylvestris*	Wild date palm	Chhindi	Arecaceae	Fruit	Anaemia, Postpartum weakness, digestive problems,	amino acids, flavonoids, tannins, alkaloids, terpenoids,	Boil crushed fruit in milk or water and drink once daily
41.	*Nelumbo nucifera*	Lotus stem	Dhes Kanda (Kamal Kakdi)	Nelumbonaceae	Rhizome	diarrhoea,weakness, cough	flavonoids and fatty acids	Cooked as vegetable or soup
42.	*Curcuma longa*	Raw turmeric	Kachha haldi	Zingiberaceae	Rhizome	Skin irritation	Alkaloids, Triterpenoid, Steroids, Saponin, Tannin, Flavonoids, Cardiac glycoside, Protein and amino acids	Raw turmeric paste applied on cuts, burns, or skin irritation accelerates healing.
43.	*Carissa carandas*	Carandas plum	karounda	Apocynaceae	Fruit	Digestion	alkaloids, flavonoids, saponins, and huge amounts of cardiac glycosides, triterpenoids	Juice or decoction
44.	*Radermachera xylocarap*	Indian snake tree	Garud	Jacaranda family	Stem, bark	common cold and skin diseases.	alkaloids, saponins, glycosides, terpenoids, steroids, coumarins, tannins, and flavonoids	Leaf or bark paste is applied externally on skin infections, rashes. Helps soothe itching, inflammation, and minor wounds.
45.	*Costus speciosus (Koenig ex Retz.) j.E.Smith.*	Crepe ginger	Keu kanda	Zingiberacea e	Rhizome	skin diseases, fever,	alkaloids, terpenoids, steroids, flavonoids, saponins, tannins, and phenolics	Paste of rhizome or leaves applied externally helps heal wounds, cuts, and skin irritation.
46.	*Dioscorea bulbifera*	Air potato	Dang kanda	Dioscoreaceae	Tuber	Constipation, diabetes	alkaloids, saponins, flavonoids, steroids, tannins	Boiled or cooked yam eat in moderation as a vegetable.
47.	*Dioscorea dumetorum*	Bitter yam	Karu Kanda	Dioscoreaceae	Tuber	Control diabetes, Blood pressure, cholesterol	Alkaloids, Flavonoids, Saponins, Tannins, Steroids,	Boiled or cooked tuber eat in moderation as a vegetable.

48.	*Pongamia pinnata*	Indian Beech	Karanj	Fabaceae	stem bark, seed oil	Eczema, heal wounds due to its ropan (healing), treating skin diseases	Flavonoids, Alkaloids, Triterpenoids and Steroids, Saponins	Extracted oil
49.	*Cinnamomum tamala*	Indian bay leaf	Tejpatta	Lauraceae	Dried leaves	improve the digestion of food	Flavonoids, Phenolic Compounds, Tannins, Alkaloids, Terpenoids	Boil 1–2 leaves in water, strain, and drink warm after meals.
50.	*Piper betel*	Betel leaf	Pan	Piperaceae	Leaves	Sciatica	essential oils, alkaloids, flavonoids, and phenolic compounds	Crush fresh betel leaves into a paste and apply to lower back or affected area.
51.	*Alkanna tinctoria*	alkanet	Ratanjot	Boraginaceae	Root, Dried fruit	reducing Pain, swelling	lavonoids, terpenoids, and phenolic acids, isolated via HPLC, GC-MS, and NMR	Grind dried roots into a paste and apply to affected area. Cover with a cloth for 30–60 minutes, 1–2 times daily.
52.	*Buchanania lanza*	charoli nut	Char	Anacardiaceae	Bark	Skin problem	Saponins, flavonoids, terpenoids, phenolic compounds	Oil extracted from seeds can be applied to wounds, burns, or dry skin**.**
53.	*Achyranthes aspera*	Chaff flower	Circita	Amaranthaceae	Whole plant	skin diseases	lignin, alkaloids, saponins, tannins, flavonoids, terpenoids, protein, glycosides and carbohydrates	Crush fresh flower into a paste and apply to affected area.

3.5. Name of Plants families

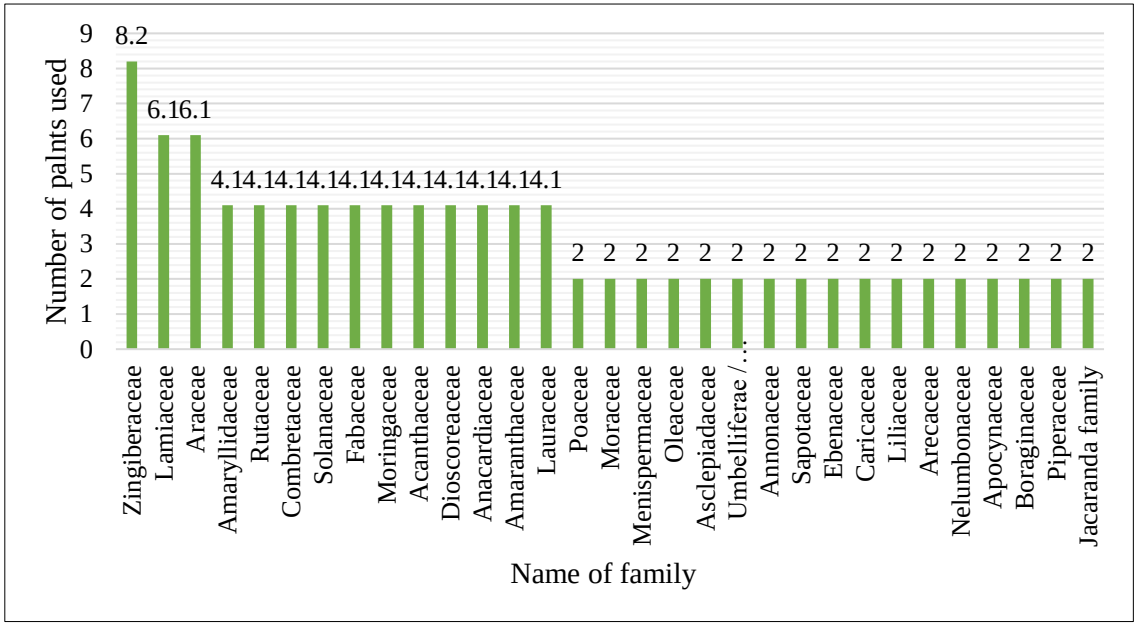

Fig 1: Name of plant families among studied population

According to the current study, the Zingiberaceae family emerged as the most prominent family in the above diagram, containing four medicinal plant species. This family includes many well-known species known for their medicinal, beneficial, and important properties. Following Zingiberaceae, the Lamiaceae family showed significant representation with three species, while families such as Araceae, Amaryllidaceae, Rutaceae, Combretaceae, Solanaceae, Fabaceae, Moringaceae, Acanthaceae, Dioscoreaceae, Anacardiaceae, and Amaranthaceae contributed two species each. These families collectively represent a cluster of similar families, indicating a pattern of repeated occurrence of medicinally valuable plants in certain taxonomic lineages. In contrast, several families, such as Lauraceae, Poaceae, Moraceae, Menispermaceae, Oleaceae, Asclepiadaceae, Umbelliferae (Apiaceae), Annonaceae, Sapotaceae, Ebenaceae, Caricaceae, Liliaceae, Arecaceae, Nelumbonaceae, Apocynaceae, Boraginaceae, Piperaceae, and Jacaranda, were represented by only one species each. This reflects a high level of phylogenetic diversity, indicating that medicinal properties are distributed across a wide range of unrelated plant groups.

3.6. Number of habits of collected plants

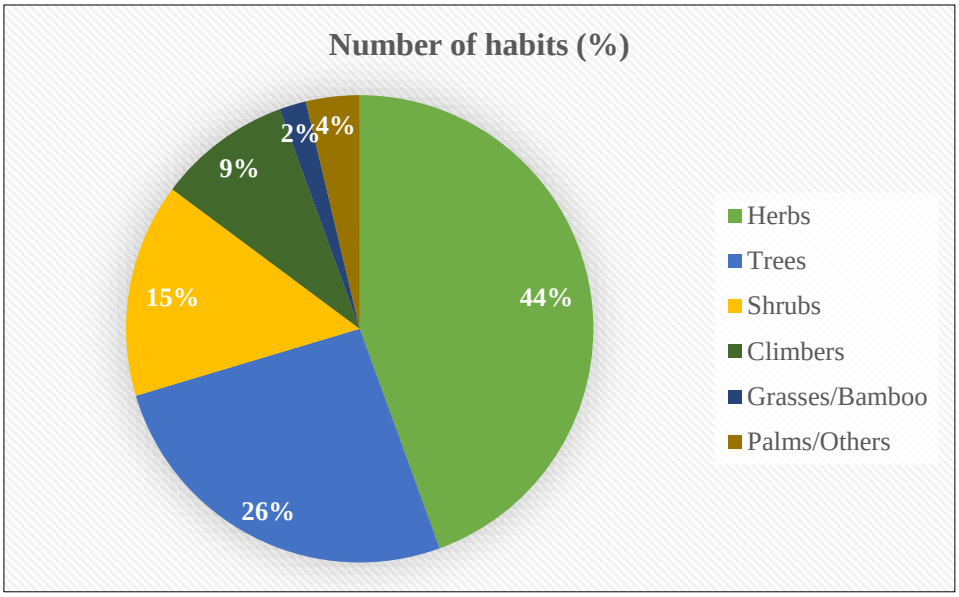

Fig 2: Number of habits of collected plants among the studied population

This pie chart illustrates the distribution of plant types. This study reveals that, among the categories examined, herbs constituted the largest group at 44%, followed by trees at 26% and shrubs at 15%; meanwhile, climbing plants accounted for 9%, palms and other types for 4%, and only 2% grasses were found to be the least represented category.

3.7. Number of plant parts used

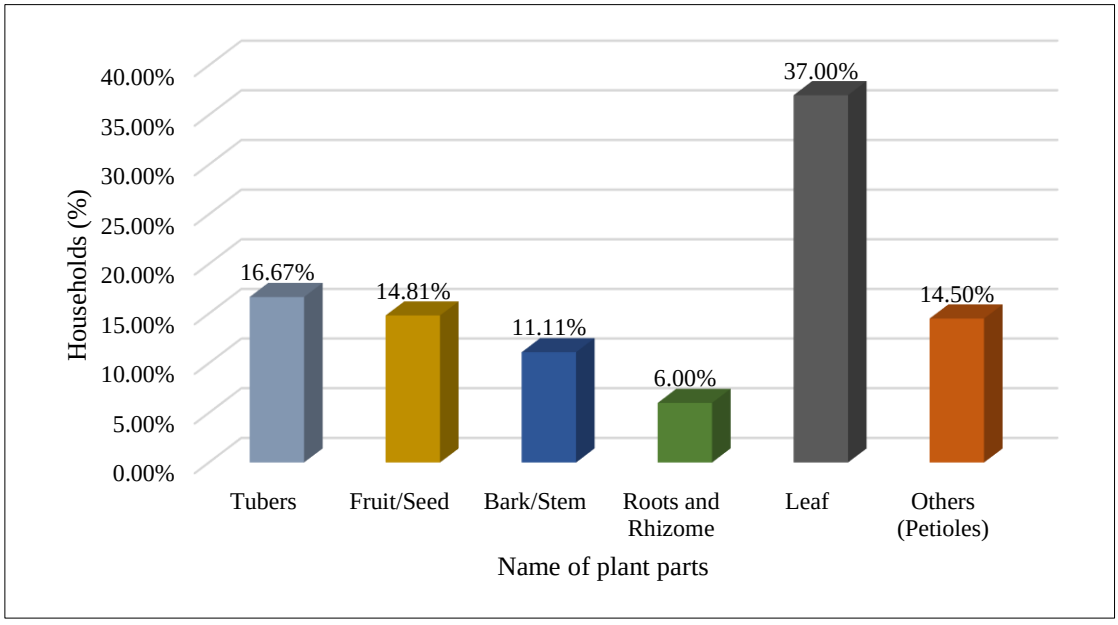

Fig 3: Number of plant parts used among the studied population

The bar chart illustrates the percentage distribution of plant parts utilized among the studied population. The study revealed that, among the medicinal plants, leaves were the most frequently used part (accounting for approximately 37% of all species), reflecting their easy availability and high concentration of secondary metabolites. Tubers (16.67%) were also commonly used, indicative of the rich phytochemical reserves contained within them. Fruits and seeds (14.81%) were utilized to a lesser extent and are often employed for their digestive and anti-inflammatory properties. The use of bark and stems (11.11%) was less common, yet noteworthy due to their unique traditional applications. Roots and rhizomes (6%) were the least utilized plant parts.

4. Discussion and Conclusion

The current ethno-medicinal survey among the Kamar tribe, a particularly backward tribe, of Mahasamund district, Chhattisgarh, reveals a rich repository of traditional plant-based knowledge that has been preserved and transmitted orally for generations. The study documented 54 medicinal plant species belonging to over 30 botanical families and their phytochemical constituents, and associated therapeutic uses, providing important insights into the community's traditional healthcare system. The prevalence of plant-based treatments for common ailments such as fever, cough, cold, asthma, malaria, and digestive disorders reflect the practical and accessible healthcare strategies adopted by the Kamar tribe in the absence of modern medical infrastructure. The frequent use of leaves (37%), followed by roots (6%), bark/stem (11.11%), and fruits/seeds (14.81%), indicates that the community prioritises sustainable harvesting practices that support plant regeneration.

A similar phenomenon has been observed in studies on the traditional medicinal practices of the Kamar community in other districts (V. Acharya, V. Sharma, Patra P.K, 2012) [23], of Chhattisgarh and (Prakash, 2024) [16] in other states. However, except for one study, most of these studies have documented a smaller number of plant species compared to the present study. Several previous studies (Jagtap *et al*., 2006) [6] have found that most of the plant species used were herbs. Similarly, the current study found that herbs were the main source of ethno-medicinal plants among the Kamar tribe (Bondya *et al*., 2006) [1] His previous work has also revealed the use of leafy vegetables as ethno-medicine for disease prevention among the tribes of the Maikal mountain range in Bilaspur district of Chhattisgarh.

In the study done by (Painkra *et al*., 2015) [11], it was found that Terminalia chebula, Terminalia bellirica, Moringa oleifera, Andrographis paniculata are used for cough, cold and cough, blood pressure balance, fever, that is, in the present study also these medicines are used in similar way by the Kamar tribe. While many previous studies (Zahoor *et al*., 2015) [25] have focused on the use of ethnomedicine for specific diseases, the present study documents the diagnoses made by traditional healers for a variety of ailments within the Kamar community. Similar patterns of diseases and treatments have also been observed among other tribal groups in the Surguja district of Chhattisgarh (Kala, 2009) [7]. Several previous studies (Gautam & Bhoi, 2023) [5] have found that most of the plant species used were herbs. The current study also found that herbs were the main source of ethno-medicinal plants among the Kamar tribe.

The Kamar community's knowledge of medicinal plants can be useful for research and development activities. To protect knowledge of the uses and benefits of traditional plants, the state should recognize folklore and legitimize their role. Traditional herbs are of great benefit to rural communities as well as urban residents. The species involved in their practices should be protected, as rural communities are completely dependent on them. The Kamar tribe is a particularly backward tribe and depends on forest resources for their health and livelihood; therefore, they possess a rich knowledge of a variety of plants and their uses. This knowledge is passed down from generation to generation through oral communication and they also use it in specific situations. The rich traditional knowledge of medicinal plants among the local people has been studied by various researchers (Kolay, 2016) [8]. These plants are used by the tribals either independently as raw medicines or in combination with other plants. This knowledge of the tribals is gradually disappearing; therefore, this research work attempts to document this knowledge for future generations.

This research study will provide valuable insights to academics and researchers working on promotion and restoration of indigenous knowledge systems (IKS) of tribal communities in India and the world, which are of vital importance today. Most tribal areas lack adequate resources and facilities for health care. However, now, Mitanin (Asha Worker) in every village provide the Kamar tribe with basic essential medicines for common ailments like cough, cold, fever, muscle pain and diarrhoea. However, for major diseases and disorders, the tribals still depend on a variety of beneficial traditional medicines obtained from the forests (Chand *et al*., 2021) [2]. This also provides socio-economic and livelihood security to the tribals. Therefore, efforts have been made to preserve and protect the knowledge through documentation. The results indicate that commonly used medicinal species, including Allium sativum (garlic), Ocimum tenuiflorum (tulsi), Azadirachta indica (neem), and Tinospora cordifolia (giloy), possess scientifically proven medicinal properties, including antimicrobial, antipyretic, anti-inflammatory, and immunomodulatory properties. These plants are widely cited in Ayurvedic and ethnomedicinal literature, confirming the accuracy and relevance of traditional Kamar knowledge.

This study also emphasizes the holistic approach to traditional medicine, in which crude or semi-processed plant extracts are used to treat multiple ailments simultaneously. The Kamar tribe's reliance on such multi-herbal and multipurpose remedies reflects a deep understanding of plant synergy—an approach increasingly supported by modern medicinal research. Therefore, it is crucial to document, validate, and preserve ethno-medicinal practices through participatory approaches that respect tribal intellectual property rights. This survey is crucial for documenting and preserving indigenous knowledge, which is threatened by extinction due to modernization, habitat loss, and environmental changes. This research has important applications in bio-prospecting, conservation efforts, phytochemical profiling, and integrating traditional medicine into modern healthcare for various diseases, promoting sustainable use of natural resources, and boosting local livelihoods. (2025 Neha)

These findings confirm that the knowledge systems of the Kamar tribal community, though ancient, are highly relevant to modern medicine and drug discovery. Many of the identified species contain bioactive compounds with proven

medicinal properties, suggesting their potential for the development of standardized herbal formulations. And integrating this indigenous knowledge with modern scientific approaches can make significant contributions to community health, biodiversity conservation and the broader field of ethno-pharmaceuticals.

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