Ethno-Medicinal uses of Plants in Cure of Ailments in Patalkot Region from Madhya Pradesh

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Research Article

ABSTRACT

Between January 2020 and December 2021, ethno botanical research on therapeutic plants was conducted in patalkot the unseen world of central India Madhya Pradesh. Due to its stunning geographic location and natural surroundings, the planned study site in patalkot is quite significant. The patalkot valley is located between 22.24 and 22.29°North and 78.43 and 78.50°East, covering an area of 79 sq. km at an average height of 2750-3250 feet above mean sea level. Using semi-structured questionnaires during interviews, information was gathered.

Field trips were taken with herbal medicine collectors and traditional healers. The information was displayed using descriptive statistics. Consensus agreements among informant and fidelity ratios were computed. Ere were 77 plant species in all, divided into families that were used to treat different illnesses. 6.5%, of the recorded plant species belonged to the major family *caesalpiniaceae*.

The local community places a high value on the variety of medicinal plant species employed and the related indigenous knowledge, therefore their protection and preservation are of the utmost importance. The known medicinal applications of plants offer fundamental knowledge for further study aimed at pharmacological investigations and preservation of the most significant species.

INTRODUCTION

The growing popularity of herbal therapy has therefore fuelled research into plant based pharmacological treatments for variety of diseases. Due to unsustainable rates of exploitation and the health of many people who cannot afford conventional care, the use of medicines that are harvested from the wild has had a severe influence on plant resources. This necessitates the necessity of documentation, sustainable use, and conservation.

Documenting materials that have historically been used to treat a condition is the first step in conservation. Numerous medicinal plants have been identified and reported for use in treating a variety of diseases in Madhya Pradesh in previous research but they have focused on specific illnesses and do not explain common use. Indigenous usage and a larger number of medicinal plants are yet undocumented.

Oral tradition has played a significant role in the transmission of Indian cultures' rich history and them inventive use of plants as a source of medicines down the Generations.

As the custodians age away before passing on their wisdom to the next generation, this knowledge is steadily disappearing. One of the biggest challenges to traditional medicine has been overharvesting of medicinal materials from their natural habitat, which has occurred in addition to the progressive loss of ethnobotanical knowledge due to a lack of documenting.

Reliable information on the range and level of use of wild plant species is required in order to conserve them. The documentation of indigenous knowledge through ethnobotanical studies is important in conservation and utilization of biological resources. The identification of local names, scientific names and indigenous uses of plants not only preserves indigenous knowledge but also facilitates future research on safety and efficacy of medicinal plants in treatment of various ailments [1]. It is against this background that utilization of medicinal plants as a source of primary health care by communities adjacent to documented.

This will ensure that traditional knowledge about use of these plants is conserved. It will also facilitate the discovery of new sources of drugs and promote sustainable use of medicinal plant resources in Madhya Pradesh. In addition, conservation of medicinal plants will add value to the recreational environment as well as health improvement through sustained ecosystems. This study aimed at collecting data on plant species used to treat different health conditions by communities adjacent to patalkot.

MATERIALS AND METHODS

Study area

The proposed study site of patalkot is of great importance because of its geographical and scenic beauty. The patalkot valley is spread over an area of 79 Sq. Km. at an average height of 2750-3250 feet above Mean Sea Level from 22.24 to 22.29° North and 78.43 to 78.50° east. The valley is located at a distance of 78 km from chhindwara in the North-West direction and 20 km from Tamia in the North-East Direction. 'Doodhi' river flows in the picturesque valley.

There are total 12 villages and 13 hamlets with a total population of 2014 (1017 male and 995 female) in the valley. The site were located and distribution based on the mapping of the patalkot valley with the help of geo-informatics were we found the exact location and collected data from the study site as shown in Figure 1.

Figure 1. Study site Patalkot the forest reserve occupies gently undulating landscape characterized by numerous flat-topped hills, and wide shallow valleys.
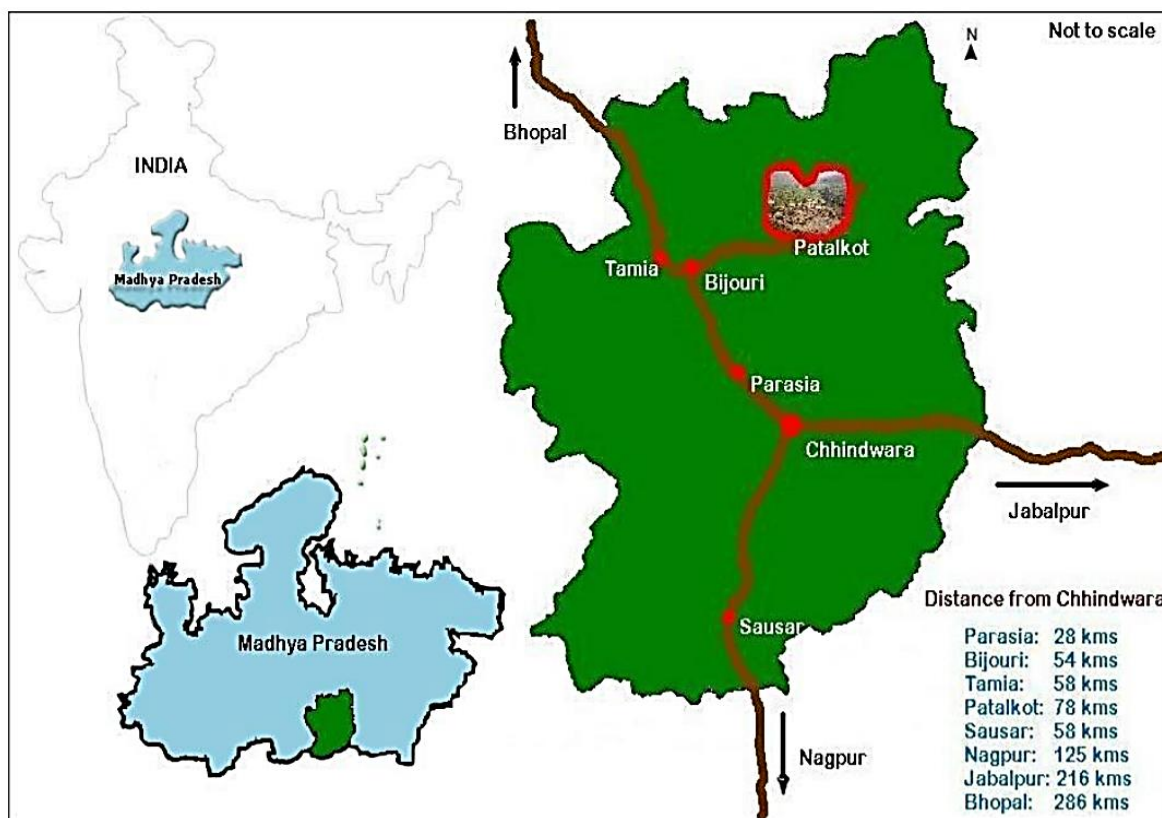
The Scheduled Tribes are notified in 30 States/UTs and the number of Scheduled Tribes is 705. The tribal population constitutes 8.6% of the country's total Population and 11.3 percent of the total rural population. The tribal population is characterized by widespread poverty, illiteracy, malnutrition, lack of safe drinking water and hygienic conditions. The population of Scheduled Tribes (STs) in the country, as per Census 2011 is 10.45 crore. Population of ST males is 5.25 crore and ST females is 5.20 crore. 89.97% of them live in rural areas and 10.03% in urban areas 2. The local people are mainly of the Bharia ethnic group of the following tribes; Bhumia, Bhuinhar Bhumia, Bhumiya, Bharia, Paliha, and Pando sub-groups and now exclusive figures for Bharia tribe are available. Baiga, Bharia and Saharia comprise respectively about 2.7%, 1.3% and 4.0% of total tribal population 14.69% of the state 4 [2].

The forest reserve has achar biji plantations around. Some local people reside in settlements for labourers on the collection of achar biji and sold to the local merchant. However, locals are engaged in cultivation of food crops mainly for subsistence consumption like maize, Kodo, Kutki, sweet potatoes and vegetables. Livestock rearing is limited to a few households.

Data collection

This was a field survey targeting custodians of Traditional Medicine used in treatment of diseases. Verbal pre-informed consent was obtained from the participants before the interview. Interviews were conducted in patalkot of

chhindwara district and the local language in the area using guided semi structured questionnaires and a research assistant that was conversant with the local language as shown in Figure 2.

Figure 2. Collection of medicinal plants information

A small adaptation of Martin's approach was utilized to gather information on the medicinal plants used to cure various illnesses in the research region. Rapid Rural Appraisal (RRA) with village leaders was utilized to identify Palani Gaildubba, Ghanasaldhana, Kodiya, Ghatlinga, and Gudhichatri communities that significantly rely on the forest for primary health care. The term "heavy dependency" was developed based on the local knowledge of the village council leaders, namely the number of people whose sole source of income is herbal medicine. Villages between 1 and 5 km from the forest were included in the study [3]. This is because people's consumption of forest goods is influenced by their proximity to the forest.

After describing the purpose of the study to local authorities, permission was obtained before entering each of the communities. A total of 36 important informants were chosen, including at least eight knowledgeable herbalists who had been recommended by the locals in each hamlet including Sharia, Bhumia, Bhuinhar Bhumia, Bhumiya, Bharia, Paliha, and Pando. Primary collectors, sellers, and traditional healers-who are the keepers of indigenous knowledge on herbal medicines were among the informants. Herbalists, who primarily use herbs, and diviners, who also conjure ancestral spirits to help them in their healing work, are the two primary categories of traditional healers. They offered details on the plants and parts used, the illnesses treated, the method of preparation and

administration, the custom, the source, and the accessibility of medicinal herbs [4]. Field trips were undertaken along forest routes with traditional healers serving as guides and with cited medicinal items.

Preference ranking: Preference ranking of the 10 most available medicinal plant species and diseases commonly treated by each were shortlisted by the 12 key informants according to importance attached to the species as per frequency of use and effectiveness (number of days taken to healing in treating particular diseases successfully). The values assigned for each species across were summed up for all the informants to get an overall rank value. The species were then ranked in descending order with the species that had the highest total ranked first [5].

Plant identification and processing of voucher specimens: On the basis of field guides for plant identification, some plant identification was done outside. Herbarium collected and later recognized voucher specimens [6].

Data assessment: Utilizing Microsoft Excel, descriptive statistics were employed to summarize the data using frequencies and percentages. Different categories of diseases that the medicinal plants were used to treat were identified.

RESULTS

Medicinal plant uses Communities near patalkot treat a variety of illnesses with a variety of flora, and the locals have a wealth of traditional knowledge about medicinal plants [7]. Both sexes used therapeutic plants, however men were more prevalent than women, accounting for 70% of responses. The respondents' ages ranged from 25 to 80 years old 46% of the responders were, on average, under 50 years old.

Acanthaceae 1%, Amaryllidaceae 1%, Anacardiaceae 1%, Apocynaceae 1.6%, Araceae 2.6% , Asclepiadaceae 1.6%, Asparagaceae 1.3%, Asteraceae 2.9% , Bignoniaceae 1.2%, Cactaceae 1.3%, Caesalpiniaceae 6.5 %, Celastraceae 1.3%, Chenopodiaceae 1.3%, Combretaceae 5.2%, Convolvulacea 2.6%, Costaceae, Cucurbitaceae 5.2%, Dioscoreaceae 2.6%, Euphorbiaceae 6.5%, Fabaceae 3.9%, Flacourtiaceae 1.3%,Fumariaceae 1.6%, Gentianaceae 1.3%, Lamiaceae 2.6 %, Lauraceae 1.3%, Liliaceae 3.9%, Malvaceae 1.69%, Meliaceae 2.6, Menispermaceae M 2.3%, Mimosaceae 2.6% , Moraceae 2.6%, Myrtaceae 2.1%, Nyctaginaceae 1.3%, Oleaceae 1.3%, Piperaceae 2.6% Plumbaginaceae 1.3%, Soanaceae 5.2%, Sapotaceae 1.3% Trapaceae 0.69%, Verbenaceae 3.9%, Vitaceae 3.9%. 40% of herbal medications are manufactured with leaves and roots.

The usage of other plant parts is uncommon

Regarding the 77 chosen medical plant species, seven of them mostly employed the bark, five of them the leaves, and only three of them the roots. Leaf (Decoction) 5.2%, Seed (Decoction) 2.6%, Root (Powder) 7.8% Seed (Powder) 9.1% Whole plant (Extract) 2.6%, Tuber part (Powder) 2.6%, Pulp (Paste) 1.3%, Leaf (Powder) 2.6%, Leaf (Paste) 2.6% Tuber part (Paste) 3.9%, Root (Paste) 1.4%, Root (Decoction) 1.3% Leaf (Powder) Whole plant (Decoction) 6.5% Root (Powder) Fruit (Powder) Bark (Decoction) 5.2% Bark (Decoction) Flower (Paste) 2.6% Bark (Powder) 2.6% Bark (Paste) 3.9% , Fruit Powder) 5.2% Bark (Decoction) Latex (Juice) 3.9% Latex (Juice) 2.6% but in some cases more than one portion was utilized as shown in Supplementary Table 1 and Figures 3-5.

To make treatments, for instance, *Spathodea campanulata* leaves, bark, and roots as well as *Tamarindus indica* leaves, *Phytolaca dodecandra* fruits, and leaves, roots, and fruits of *Tamarindus indica* are employed. The majority

of therapeutic plant species were herbs (29%), which were followed by small trees (3.9%), trees (24.7%), shrubs (14.3%) and herbs (29.9%), under herbs (3.9%), climbers (18.2%), and climbing shrub (2.6%).
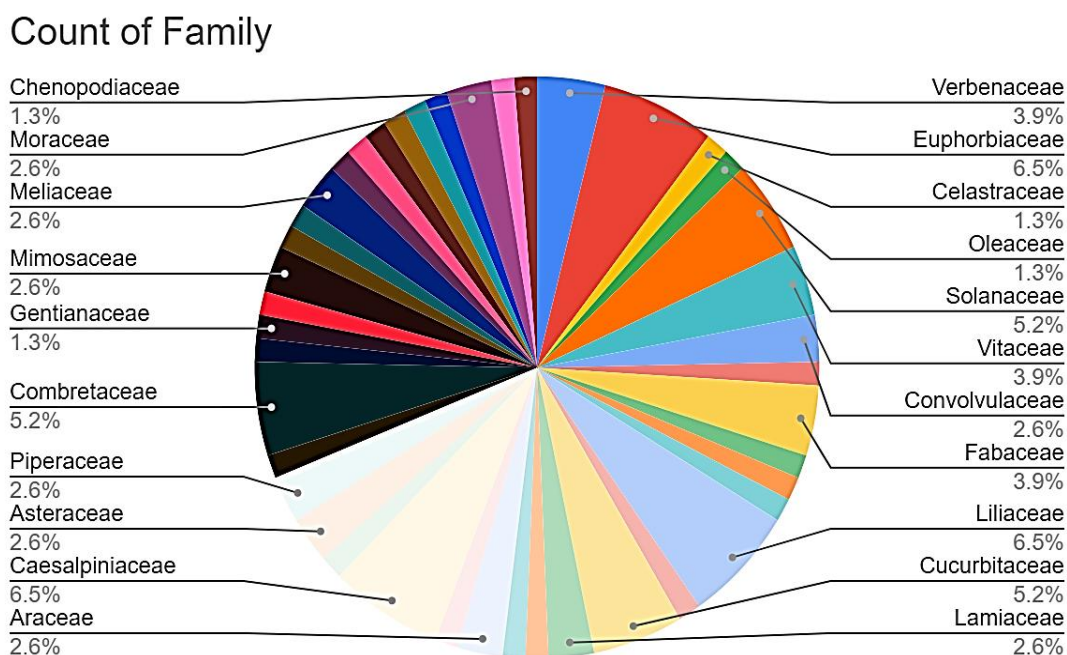
Figure 3. Percentage count of plant family.

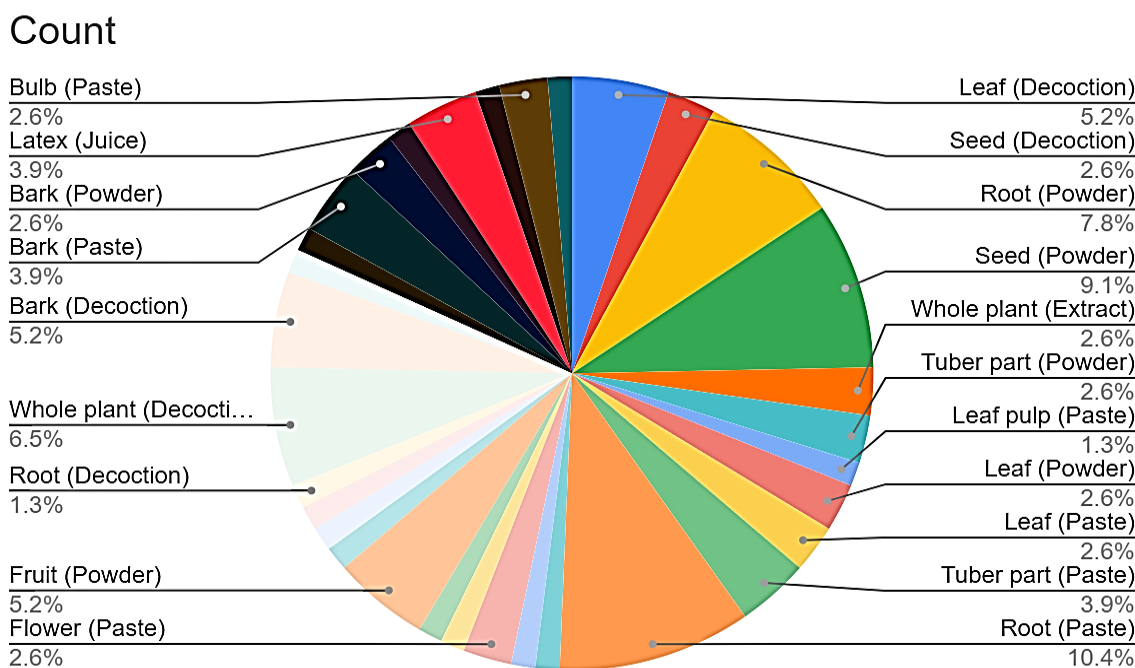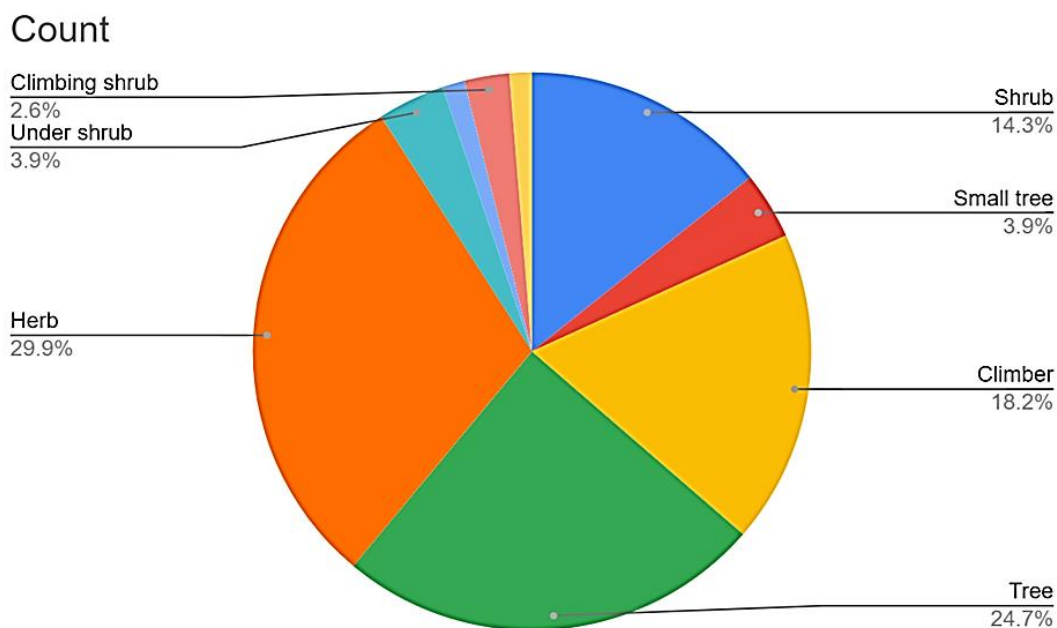**Figure 4.** Percentage count of Plant part used /Formulation.

Figure 5. Data related to medicinal Plant avaible in study site.

This area is in the form of a deep gorge in the terrain of Tamia, Chhindi hill region, whose slope is towards north-west direction. Many seasonal and perennial river channels flow between the high hills. Which meet in the main river Dudhi of this region? Patalkot is an area rich in forestry wealth, where many types of rare plants and medicinal plants are found [8,9]. Mainly Teak, Sal, Bija, Bamboo, Mango, Jamun, Mahua, Tamarind, Semal, Palas, Pakar, Bel, Khair, Haldu, Pickle, Harra, Amaltas, Baheda, Amla, Tendu, etc. trees are in abundance. Due to being a self-created climatic zone in the geographical structure of the region and having high hills and deep river valleys, the area is a major resource site for medicinal tubers and other one-year and multi-year vegetation. The availability of wildlife habitat Bergen and the functioning of ecosystem processes. Due to the constant high humidity in the area, there is great benefit in the growth of all the plants, due to the above climatic conditions, the entire patalkot area is full of rare vegetation. The entire area is covered with light blue fog. The population of patalkot area is 3689 in 12 population villages and 13 tolas of entire patalkot area. Out of the above total population, 98% are tribal population. The main tribes are Bharia and Gond. This approach can be very efficient to compile species lists of the study areas and hence it was used in the present study. It is similar to the check listing exercise in which the assessment team surveyed the area of forest sampled, starting at its perimeter and circling inwards subjectively, that no more new species were likely to be found as shown in Tables 1-3.

Table 1. The population-wise information of the villages of Patalkot area under West Chhindwara forest division for the year 2011.

| | | | | | According to census 2011 | | | | | | |
| | | | | | Gen/Others | | Tribals | | Total population | | |
S.No.	Villages	P.H.N.	Dhana	Family	Female	Male	Female	Male	Female	Male	Total
1	Palani Gaildubba	12	1	65	5	2	180	174	185	176	361
2	Ghanasaldhana Kodiya Ghatlinga	12	2	107	0	0	263	260	263	260	523
3	Ghatlinga	12	0	133	3	1	240	242	243	243	486
4	Gudhichatri	12	1	69	0	0	164	136	164	136	300
Total			4	374	8	3	847	812	855	815	1670

Table 2. Site properties category and species bar type of forests in patalkot area.

| S.No. | Place character | Sub species | According to Former work | | According to present work | | Differences | |
			Area in Hect.	Total Forest %	Area in Hect.	Total Forest %	Area in Hect.	Total Forest %
1	Fourth "A"	Sagoun	1092.34	26.03	553.08	13.52	-539.26	-49.37
		Sal	1622.36	38.66	1966.77	48.08	344.41	21.23
		Mixed	947.5	22.58	801.88	19.6	-145.62	-15.37
2	Fourth "B"	Sagoun	14.53	0.36	22.77	0.56	8.24	56.71
		Sal	105.35	2.51	20.96	0.51	-84.39	-80.1

		Mixed	413.86	9.86	725.25	17.73	311.39	75.24
	Total		4195.94	100	4090.71	100		

Table 3. Change in density of forests found in patalkot region.

S.No.	Types of forest	According to Former work		According to present work		Differences	
		Area in Hect.	Total Forest %	Area in Hect.	Total Forest %	Area in Hect.	Total Forest %
1	Dense forest	4209.37	90.22	3661.34	79.88	-548.03	-13.02
2	Tenuous Forest	297.1	6.36	427.33	9.32	130.23	43.83
3	Shrubs forest	130.85	2.81	209.38	4.57	78.53	60.02
4	Enchrochment area	16.41	0.35	254.66	5.56	238.25	1451.86
5	Bank of river area	12.37	0.26	30.99	0.68	18.62	150.53
	Total	4666.1	100	4583.7	100	-	-

Biodiversity index

Biodiversity index has been estimated based on grid points in 8 cells of Patalkot area during forest resource survey. The Biodiversity Index of Patalkot region has been found to be 0.84 [10]. The Biodiversity Index of the Forest Division is 0.91 (as per the United Nations) based on 302 grid points falling in the work plan area. The conceptual models linking vegetation structure to optical data may vary among ecosystems and vegetation types and Conservation efforts rarely have as much funding, labor, or data as they need. Remote sensing provides valuable insights into pressing environmental challenges and is a critical tool for driving solutions Carl F. Salk, Alex M 2020. The rich biodiversity of this region is a storehouse of various medicinal species. Along with extinct and endangered species, various types of algae, fungi, bryophytes, pteridophytes, are also found in this area [11].

Plant growth patterns and medicinally useful sections: Herbal remedies are made using various plant components of medicinal plants. Therapeutic plants' source 56% of the reported medicinal plants come from forests, 14% are grown in gardens, 12% are found in grasslands and woodlands, and 18% are found on farms [12]. The limited prevalence of medicinal plant gardens was explained by the need to protect traditional knowledge and the notion that plants harvested from the wild are more potent than those grown for medical purposes, which is why the latter are favored. While species from the family Asteraceae dominated the grasslands (25%) and fallow (44%), Fabaaceae (40%) and Euphorbiaceae (54%) were the most common medicinal plant families in the forest.

Most therapeutic plants are domesticated: The vast majority of medicinal plants grown in backyard gardens are exotic species that have not been domesticated. *Callistemon citrinus*, *Capsicum frutescens*, *Moringa oleifera*, as well as fruit tree species including *Mangifera indica*, *Persea americana*, *Carica papaya*, and *Psidium guajava*, are a few of them. Users of medicinal herbs who harvest them for profit gather plants from the forest in 50% of cases [13].

Preparation and administration techniques: Different preparation and administration techniques were used using medicinal plants to treat various illnesses. The most frequent method was decoction (29%) with crushing and water mixing (24%) and the use of newly crushed material (14%) and burning (9%) following. In the current investigation,

silver fish, ash, salt, alcohol, tea, and onions were among the additions employed in the manufacture of herbal medicines [14]. Salt was utilized in toothache and oral wound cures because it is thought to destroy bacteria. Vaseline, paraffin, and ghee were applied externally to lessen friction when applying the cure. Herbal concoctions were administered *via* a variety of methods. Oral route made for 61% of the species' total contribution, followed by herbal baths (28%), rubbing leaves on injured areas (14%) and inhaling smoke (5%). Steam baths were the least popular method of herbal administration (2%).

Diseases that medicinal herbs can heal: The 25 categories used to classify the 58 health issues were dominated by gynecological conditions, digestive disorders, and skin infections. Each plant species was used to treat anything from one to six different ailments. Herbal concoctions were administered *via* a variety of methods [15]. Managing species were *Balanites aegyptiaca*, *Carica papaya*, and *Dracaena steudneri*, each of which was used to treat six distinct issues.

The most disease: On the other hand, *Allium sativum*, *Cissampelos macronata*, *Kalanchoe crenata*, *Lantana trifola Solanum anguvi*, *Tagetes minuta*, and *Vernonia lasiopus* were used to treat five distinct medic conditions. Taxonomic research revealed that the Fabaceae family of plants was used to cure the bulk (28%) of ailments. Solanaceae (24%) was next, followed by Asteraceae (19%), Euphorbiaceae (19%), and Amara. While each family received 10% treatment, the remaining families received less than 10% treatment, including Combretaceae 5.2%, Convolvulacea 2.6%, Costaceae, Cucurbitaceae 5.2%, Dioscoreaceae 2.6%, *Euphorbiaceae* 6.5%, *Fabaceae* 3.9%, Flacourtiaceae 1.3%, Fumariaceae 1.6%, Gentianaceae 1.3%, Lamiaceae 2.6%, Lauraceae 1.3%, Liliace

Most respondents were men, and their average according to african culture, traditional healers should be men in line with research conducted in rwanda a large percentage of key informants were male and 50 years of age or older [16].

Due to their extensive direct interaction with plant resources, older members of society (aged 51 to 80) are more knowledgeable about medicinal plants and their uses [17,18]. Due to their extensive direct interaction with plant resources, older members of society (aged 51 to 80) are more knowledgeable about medicinal plants and their uses. Younger individuals, on the other hand, generally show little interest in traditional medicine, and if nothing is done to encourage them, there seems to be a risk of knowledge loss. Younger generations are exposed to modern schooling, and as a result, they lack motivation in studying and using ethno medical knowledge that would preserve indigenous knowledge.

DISCUSSION

Knowledge of therapeutic plants varies

Among age groups was also reported in other studies in Patalkot. A variety of therapeutic plants the large number of species recorded suggests that the study area has a varied flora that is employed in treating a variety of illnesses and that the community has a wealth of traditional knowledge about medicinal plants [19,20]. In light of the fact that more than half of the therapeutic plants mentioned above were obtained from forests, patalkot is now a significant source of herbal medicine for rural people. In various regions of Madhya Pradesh, families including the Fabaceae, Asteraceae, Euphorbiaceae, Lamiaceae, and Solanaceae have been extensively recorded in herbal medicines. This widespread use may be related to the diverse spectrum of bioactive chemicals in these families [21].

According to reports, the family Asteraceae contains a great number of bioactive chemicals which may explain why so many people use the plants in the family. Due to the presence of numerous metabolites in a single plant as well as the fact that the same molecule can be effective against various diseases, one plant is often used to cure a

variety of illnesses. Other times, a mixture of plants was combined to make a herbal medicine for a specific condition, demonstrating the synergistic effects of such plants. For instance, *Balanites aegyptica* roots and *Citrus limon* leaves are combined to treat diarrhoea. *Amaranthus spinosus* and *Cleome gynandra* leaves were used to treat fungal diseases of the scalp. However, other treatments were monotherapies based on extracts from just one plant these plants may be delicious, safe, and extremely actual in contradiction of illnesses they are used to treat based on experience of users. The majority of the medicinal plant species gathered and identified in the research area were also utilized medically to treat similar or different disorders in other regions of madhya pradesh

A trustworthy indicator of the plant species' bioactivity potential is the use of the same species for the same or different ethno medicinal purposes in other nations [22,23]. A comparison of several plant species' ethomedicinal applications in patalkot populations, other parts of Madhya Pradesh, and abroad previous bioactivity research on a few of the identified plant species supports their ethnobotanical applications. For instance, the use of *Capsicum frutescens* in the treatment of various malignancies is ascribed to the substance's existence, which has antimutagenic and anticarcinogenic properties. Additionally, *Prunus africana* has been discovered to have anti-inflammatory and antioxidant properties as well as molecules such as cytotoxic phenolics, beta-sitostenone, and godocosanol that are crucial in the treatment of cancer. The same plant species has been used medicinally by diverse ethnic groups and geographical regions, which is suggestive of the species' medicinal capabilities.

CONCLUSION

The study shows that patalkot a wide diversity of plant species used as remedies for several ailments. Such plants are very useful especially to people who cannot afford modern medical care and in cases where access to modern heath facilities is not easy. Knowledge and use of herbal medicine for treatment of various ailments among the local people is still part of their life and culture and this calls for preservation of the integrity of the forest and indigenous knowledge of herbal medicine use. The documented plants have potential of being used in drug development.

ETHICS APPROVAL

Ethical approval of the study was obtained from the Indian Biodiversity Board and forest department of Tamia block of chhindwara District Madhya Pradesh India.

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