



TRADITIONAL KNOWLEDGE ON ETHNOMEDICINAL PLANTS AMONG LOCAL PEOPLE OF SARAIN RANGE, CHOPAL FOREST DIVISION, HIMACHAL PRADESH, INDIA

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Abstract

The present study was carried out to know the traditional knowledge on ethnomedicinal plants used by people of Sarain range, Chopal forest division, Himachal Pradesh. Information on these plants was collected from 115 people including traditional healers of twenty different villages through semi-structured interview during year 2017. A total of 53 ethnomedicinal plants recorded from the region belong to 41 families and are used to treat various diseases. Of these, 09 were trees, 10 shrubs, 31 herbs, 1 fern and 2 climber species. The family Lamiaceae had maximum 4 while Asteraceae and Pinaceae had 3 ethnomedicinal species each. Various plant parts such as leaves, bark, roots, flowers, etc., were used for medicinal purposes. Of these the most used part for medicinal purpose was root (34%) followed by leaves (17%). It was observed that 54% people interviewed did possess knowledge about the ethnomedicinal plants, clearly reflects the increasing trend in knowledge about the medicinal plants. Out of 115 people interviewed, 39% people were having educational qualification of matriculation while 18% of were illiterate. During the present study each of 53 medicinal plants were described in detail with their botanical name, local name, family, habits, parts used, habitat, mode of consumption and ethnobotanical usage. Documentation of the traditional knowledge is very important in the present prevailing situation as it will help in preservation of knowledge and also opportunity for remedial measures for conservation and sustainable harvesting of those species for additional income generation of local communities in perpetuity.

Key words: Traditional knowledge, Ethnomedicinal Plants, Documentation, Sarain Range, Chopal Forest Division

Introduction

The people of the rural areas are the repository of accumulated experience and knowledge about traditional uses of medicinal plants, however due to modern civilization invading in these belts, knowledge about the use of traditional herbal wealth by people is diminishing day by day. Ethnobotanical information on important plants and their use by local inhabitants is useful not only in conservation of traditional knowledge and biodiversity, but also to improve community health care (Farooq *et al.*, 2014). The WHO report estimates that about 80% of the population in developing countries depends upon herbal medicines for curing ailments (Gupta, 2011). The dependence on herbal resources to cure different types of ailment is well known. It has been estimated that there are between 3,500 and 70,000 plant species that have been used around the world, at one time or another, for

medicinal purpose. At least 65,000 species are used in Asia alone as home remedies for various ailments (Karki and Willians, 1999). Medicinal plants are largely used by all divisions of the population either directly as folk medicines or indirectly in the preparation of current pharmaceuticals (Qasim *et al.*, 2010). India is known for its rich biodiversity of Medicinal plants and hence called botanical garden of the world (Vedavathy *et al.*, 1997). Ethnomedicines are of particular relevance in developing countries like India (Ali, 1999; Jamir *et al.*, 1999; Sharma *et al.*, 2001; Buragohain, 2008; Ignacimuthu *et al.*, 2008), where modern health service is limited.

Himachal Pradesh is a hilly state with altitude range from 350 m to 7000 m above mean sea level and is considered as the veritable emporium of medicinal and aromatic plants in western Himalaya region. The flora included about 8000 species of angiosperm, 44 species of gymnosperm and 6900 species of fungi (Singh and

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Hajra, 1996). These included some 1600-1800 species of medicinal plants (Samant *et al.*, 2007). The ethno-botanical knowledge possessed by the communities through trial and error is getting depleted, with the advent of modern education and cultural changes. Hence, documentation of ethno-botanical knowledge is highly essential. Moreover, over-exploitation coupled with habitat degradation has already threatened many medicinal plants in their natural habitats. Documentation of such indigenous knowledge is essential for conservation and utilization of biological resources. Several efforts have been made to document the traditional ethno-botanical knowledge of the people in Himachal Pradesh (Uniyal and Chauhan 1971; Chauhan 1998; Kapahi 1990; Kala and Manjrekar 1999; Sharma and Rana 1999; Singh, 1999; Sood, 2001; Singh, 2004, Singh *et al.*, 2008, Kumar and Choyal, 2102; Singh *et al.*, 2017; Singh *et al.*, 2018; Singh *et al.*, 2019, Sharma *et al.*, 2015; Kumari and Sharma, 2015; Kumari and Sharma, 2017). However, specific information about the ethnobotanical uses of medicinal plants of study region is lacking, in relation to the floristic diversity. Keeping this in view, the present study was undertaken with the objective to document ethno-medicinal plants used by indigenous people of Sarain range, Chopal Forest Division, Himachal Pradesh.

Materials and Methods

Study area

The study area in Sarain Range of Chopal Forest Division, Shimla circle of Himachal Pradesh lies between latitude 30° 50.03' 02" N to 31° 00' 19.3" N and Longitude 77° 26' 25.0" E to 77° 32' 52.4" E with altitude ranging from 1601 m to 2404 m Fig. 2.1 The Sarain range has been distributed in 3 forest blocks *viz.* Bhal, Jakholi and Sarain and 14 forest beats *viz.* Badlog, Gilath, Jhina, Thundal, Deothi, Lehat, Bhaila, Khagna, Bagher, Navoni, Kiara, Sarain, Chiuna and Kuhal. The total geographical area of the range is 12027.92 ha, out of which 7192.35 ha is DPF and 4834.87 is UPF. The total area under demarcated protected forests is 7192.35 ha and 4834.87 ha (Wooded- 3390.92 ha & Blank-1443.95 ha.) is undemarcated protected forests (Somal, 2003). It is located 92 KM towards East from District headquarters Shimla and 24 KM from Chopal. Sarain is surrounded by Rajgarh Tehsil towards west and Sangrah Tehsil towards South of Sirmour district and Theog Tehsil towards North and Jubbal Kotkhai Tehsil towards North of Shimla district. The study area has a cool and moderate climate. Between December and March, the town gets heavy snow and the temperature can hover around freezing point. During the summer, the climate is warmer with temperatures

around thirty degrees Celsius. The average annual rainfall of the area is around 1200 mm. The entire area is mountainous and is having heterogeneous mixture of metamorphic and sedimentary rocks with sparse exposure of intrusive igneous granite. The vegetation of the area is subtropical to temperate type (Somal, 2003).

Methods

A total of 115 respondents from 20 different villages of Sarain forest range of Chopal Forest Division, Shimla circle of Himachal Pradesh interviewed during the study through semi-structured interview during April to October, 2017. Each randomly selected village was visited at least once in the entire study period. The Gram pradhan was consulted most of times to know about the presence of local traditional healer in his Panchayat, villagers were interviewed randomly. Snowball sampling, a method typically used with unknown or rare population was also used to locate traditional healer/ vaidyas in different villages (Coleman 1958; Goodman 1961; Spreen 1992). The respondents were classified into four age classes *viz.* Age 1 (10-20), Age 2 (21-40), Age 3 (41-60) Age 4 (61 years and above). Irrespective of presence or absence of the traditional healer/ Vaidyas in each of the surveyed village. A total of 91% male and 9% female were interviewed for the present study. The uses of each species were cross checked with the different informants. The efforts were made to identify plant species in the field and those which could not be identified in the field were brought to the laboratory and identified with the help of regional floras (Hooker, 1872; Collett, 1921; Chowdhery and Wadhwa, 1984; Polunin and Stainton, 1984) and herbarium at HFRI. The plant specimens were dried processed and preserved in the form of herbarium.

Results and Discussion

Current status of ethnomedicinal knowledge, education and occupation

Out of 115 interviewed, respondents only 54% possess knowledge about ethnomedicinal plants while 46% were ignorant, which indicates that majority of people in the Sarain range have interest towards use of ethnomedicinal plants Fig. 3.1.1. Many villages in the study area are situated far from road head and lacks basic modern medical facilities, hence may be more people in the study area have more knowledge about the ethnomedicinal plants. It has been further revealed that 46% of respondents possess knowledge about only one ethnomedicinal plants while 12% (2 Plants); 23% (3 Plants); 9% (4 Plants); 2% (5 Plants); 3% (6 Plants); 1% (7 Plants); 3% (8 Plants) and 1% (12 Plants) possess knowledge about ethnomedicinal plants (Fig.3.1.2).

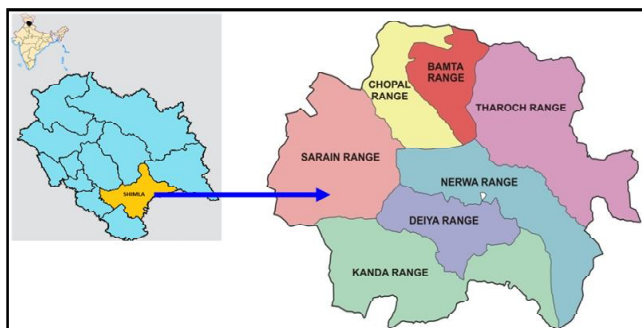


Fig. 2.1: Study area map of Sarain Range of Chopal Forest Division, Shimla Forest Circle, Himachal Pradesh.

Change in life style is one of the major cause of change in attitude of people towards the use of traditional healthcare (Uniyal *et al.*, 2003). Out of 115 people interviewed 39% people were having educational qualification of matriculation; 5th (13%); 8th (10%); 10+2 (13%; BA (7%) while 18 % of them were illiterate Fig.3.1.3. By occupation most of the people in the study area were farmers (84%); Govt. employ (6%); Shopkeeper (1%), House wife (6%), student (2%) and Driver (1%) Fig.3.1.4.

Ethnomedicinal knowledge holders in different age group

Mostly male respondent (91%) and female (9%) were interviewed during the study. The respondents in age group 41-60 years were having more knowledge about ethnomedicinal plants. While in age group 21-40 most of the respondents didn't possess knowledge about any ethnomedicinal plants. The younger generations of age group 10-20 are quite ignorant about various ethnomedicinal plants, which indicates that transfer of knowledge about indigenous knowledge is declining. The chi square test results show that there is significant relationship between age group and knowledge about ethnomedicinal plants ($\chi^2=13.96$, $df=3$, $P<.001$; Fig.3.2). Even in the past common knowledge is held by most people in a community but older people have different type of knowledge than the young (Langil and Landon, 1998). This was evident even in the present study, with majority of the ethnomedicinal plants knowledge holders were age group of 41-60 years. There is lack of interest about traditional knowledge among younger generation, as they generally rely on the modern medicinal. Things may change after the COVID-19 as people are now relying more on Ayurvedic herbs to boost their immunity.

Ethnomedicinal plants of Sarain range

A total of 53 ethnomedicinal plants recorded from the region, belong to 41 families which are used to treat various ailments table 2. Of these, 9 were trees, 10 shrubs, 31 herbs, 1 fern and 3 climber species Fig.3.3.1.

Generally, herbaceous plants contributes larger portion of medicinal plants than shrubs and trees (Dhar *et al.* 2000; Planning Commission 2000; Uniyal *et al.*, 2002 a, b; Kala *et al.*, 2004). This might be due to the considerably larger area is under pine forests which lacks diversity of understory species (Singh and Singh,1987). The family Lamiaceae had maximum 4; Asteraceae and Pinaceae with 3 each; Amaranthaceae, Febaceae, Ranunculaceae, Rutaceae and Utricaceae with 2 each respectively while all other families had 1 each ethnomedicinal species Fig.3.3.2. Various plant parts such as leaves, bark, roots, seeds, stump Tuber, Fruits and Galls etc., were used for medicinal purposes. Of these, the most used part for medicinal purpose was roots (34%) followed by leaves (17 %); leaves and roots (9%) and seeds (9%) Fig.3.3.3. A similar study was carried out by

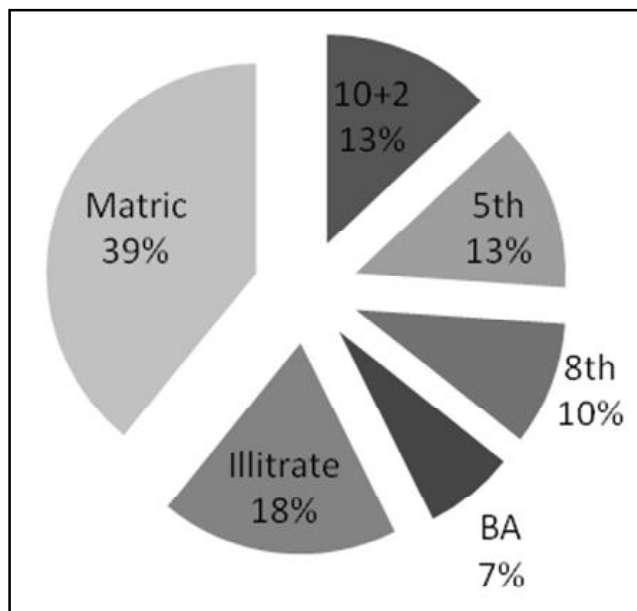


Fig. 3.1.3: Education qualification.

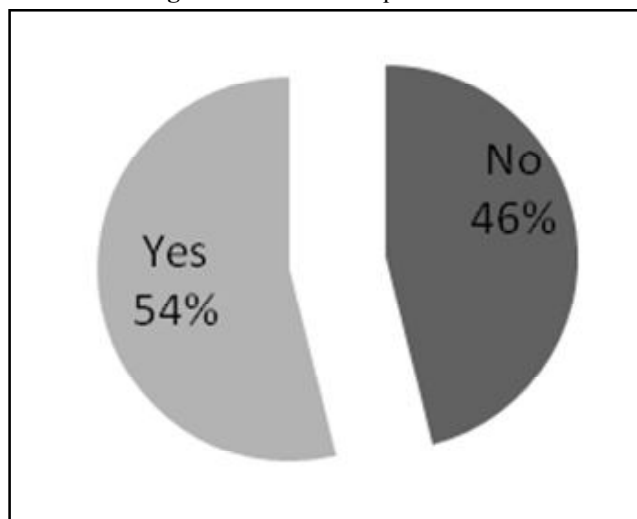


Fig. 3.1.1: Possession of Ethnomedicinal knowledge as shown by interview survey (n=115).

Bhat *et al.*, (2013), where the consensus of informants for the roots and rhizomes of plants was the most frequently used (68%). Singh and Rawat (2011) also reported that roots are the most used plant parts. All most all previous studies documented that underground parts *i.e.* roots and rhizomes are the most used parts (Kala *et al.*, 2004; Rawat, 2005). Harvesting of roots and rhizome of medicinal plants raises serious concerns, as uprooting of entire plant may have negative impact on their population considerably (Uniyal *et al.*, 2009). In Sarain range top ten ethnomedicinal plants frequently used by the respondents were *Angelica glauca*, *Berberis lycium*, *Acorus calamus*, *Hedychium spp.*, and *Prunus cerasoides* respectively table 1.

Perusal of table 2 it is evident that ethnomedicinal plant species were used for the treatment of various ailments like Joint pain, wound healing, heat stroke,

stomachache, debility, mouth ulcer, anti-inflammatory, jaundice, boils, gastric problems, rheumatism, cough, snake bite, dysentery etc. Some of the ethnobotanical uses of plants recorded in the present study have also been mentioned in the study conducted by Singh *et al.*, (2008). During the survey it has been observed that local people voluntarily shared the knowledge about medicinal plants used for various purpose, however, some traditional healers were reluctant to share knowledge as they believe that it will lessen the healing power of that particular medicinal plant. Such hesitation to share the knowledge has also been reported by Rani *et al.*, (2013). *Angelica glauca* is used for stomachache in children, flavouring agent in Dal or curry and also gives vitality and strength to women after delivery. Bhat *et al.*, (2013) also reported that *A. glauca* is used for indigestion and constipation. *Berberis lycium* is used to cure fever and jaundice. Kritikar and Basu, 1981 also reported that it is used in Ayurveda and Unani for treating eye disorders. Use of *Berberis spp* for treating of piles has also been reported by Rani *et al.*, (2013) from Kangra district. Similarly, ethno-medicinal uses of some of medicinal plant species

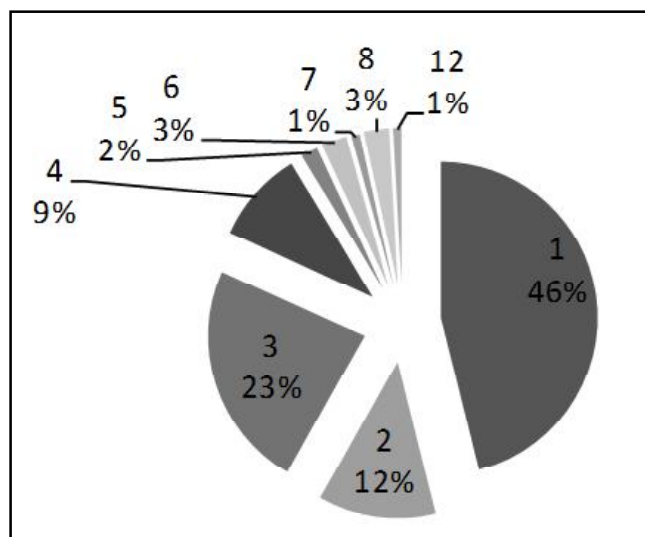


Fig. 3.1.2: Respondants knowing the no. of medicinal plants spp.

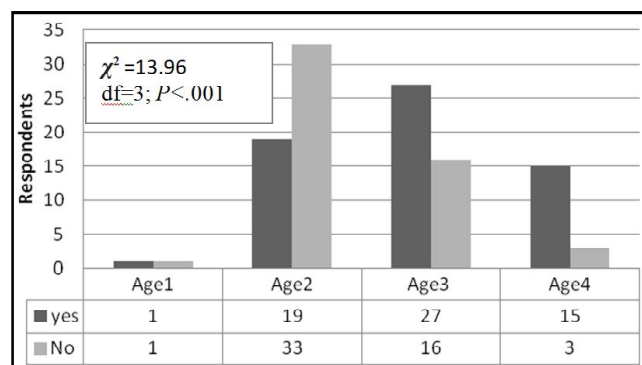


Fig. 3.2: Ethnomedicinal plants knowledge holders of Sarain Sarain range- in different age groups.

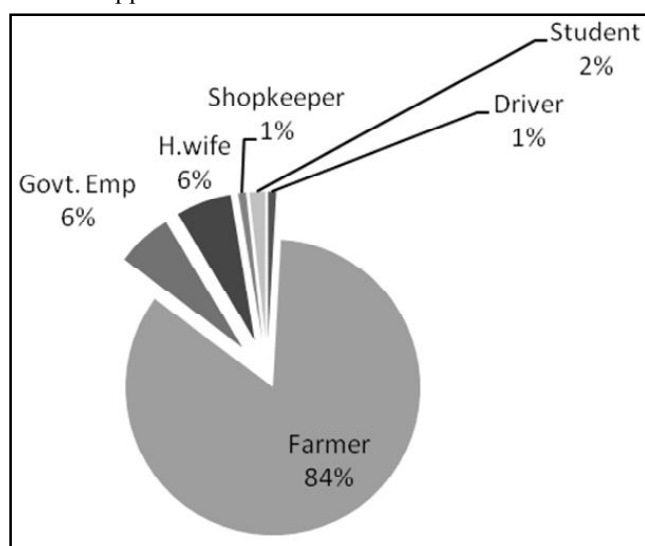


Fig. 3.1.4: Occupation.

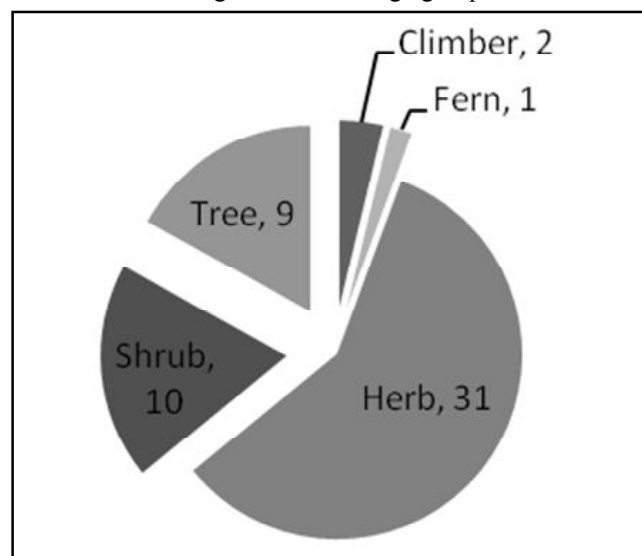


Fig. 3.3.1: Habit.

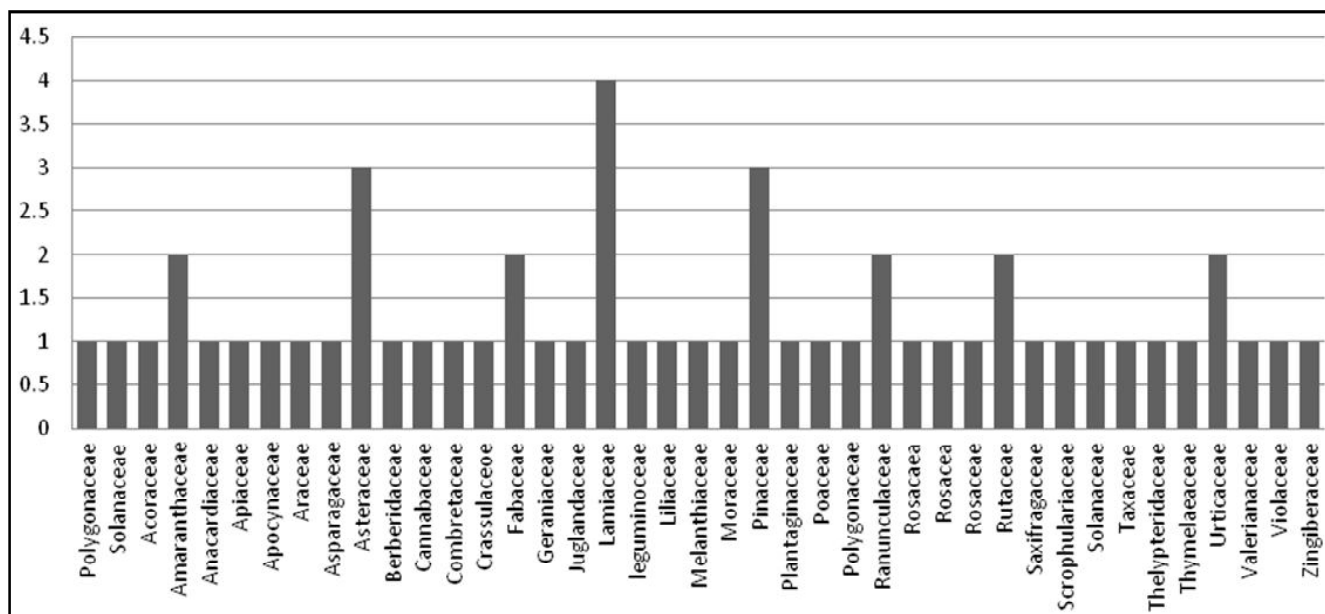


Fig. 3.3.2: No. of spp. in each family.

recorded during the present study have been mentioned (Kala and Manjrekar, 1999; Sharma and Rana, 1999; Sing *et al.*, 2008). However, there are certain variations in the ethno-botanical use of these medicinal plant species. For example, *Origanum vulgare* was reported to have the properties of an insect repellent by Shrama (1998) and to cure dizziness (Singh *et al.*, 2008), however, we found that people in the Sarain range area uses root powder and juice to cure stomachache, urinary infections and wound healing. It is quite interesting that *Ajuga parviflora* commonly called as Neelkanthi is used for cure heat stroke and controlling diabetes.

The documented indigenous knowledge of Sarain range of Chopal Forest Division will help in preservation of ethnomedicinal wisdom for treatment of various ailments.

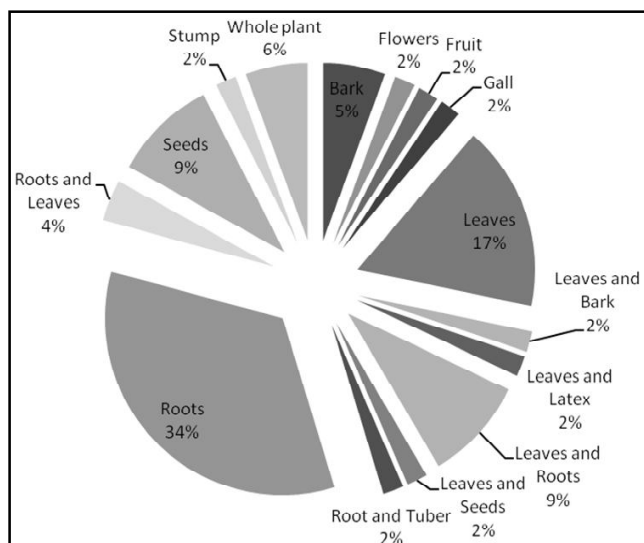


Fig. 3.3.3: Parts used.

Conclusion

The local people of Sarain range do possess knowledge of 53 ethnomedicinal plants from 41 families which are used in treatment of various ailments. Traditional knowledge of medicinal plants and their use by indigenous healers and drug development during the present scenario are not only useful for conservation of cultural tradition and biodiversity but also for community health care and drug development in the local area. It is imperative to document ethnobotanical knowledge on medicinal plant species systematically, before it is lost with urbanization, modernization and fast dwindling of natural resources. Besides, phyto-chemical and pharmacological studies on medicinal plants should be carried out. Such studies are important since sizeable rural population still uses these plants for medicinal purposes. It is therefore important to document the ethnomedicinal knowledge systematically before it is lost

Table 1: Top ten species frequently used by respondents in Sarain range.

Sr. No	Species	No. of Respondents
1.	<i>Angelica glauca</i> Edgew.	18
2.	<i>Berberis lycium</i> Royle	17
3.	<i>Acorus calamus</i> Linn.	14
4.	<i>Hedychium</i> spp	14
5.	<i>Urtica gerardiana</i> Linn.	13
6.	<i>Viola serpens</i> Wall. ex Ging.	12
7.	<i>Artemisia vulgaris</i> L.	10
8.	<i>Valeriana jatamansi</i> Wall.	8
9.	<i>Bergenia ciliata</i> (Haw.) Sternb.	7
10.	<i>Prunus cerasoides</i> D. Don	7

Table 2: The ethno-medicinal plant species of Sarain range, Chopal Forest Division (H.P).

Sr. No.	Botanical Name	Local Name	Family	Habit	Part Used	Habitat	Mode of Consum.	Ethnomedicinal Usage
1	<i>Acorus calamus</i> Linn.	Shilbhow	Acoraceae	Herb	Roots	AL, FL	R	Garland of root pieces is tied around neck of infants during teeth emergence. Root paste is also given to children to cure fever. It is also used for joint pain relief and wound healing.
2	<i>Ajuga parviflora</i> Benth.	Neelkanthi	Lamiaceae	Herb	Leaves and Roots	AL, FL	R	Juice of leaves and roots are used to cure heat stroke. It is also used in controlling diabetes.
3	<i>Angelica glauca</i> Edgew.	Chora	Apiaceae	Herb	Roots	FL	R	Root powder is used to cure stomachache in children. It is also used as a flavoring agent in Rajmah dal.
4	<i>Arisaema flavum</i> (Forssk.) Schott	Yonchara	Araceae	Herb	Leaves and Tubers	FL	R	Leaves and tubers are used to cure boils and piles.
5	<i>Artemisia vulgaris</i> L.	Chamber	Asteraceae	Herb	Leaves	FL	R	Leaf extracts used for wound healing. Boil the aerial parts of the plant with mustard oil and use for massaging to get relief from body ache.
6	<i>Asparagus adscendens</i> Roxb.	Shatabar	Liliaceae	Shrub	Roots	AL, FL	D	It is used for the preparation of health tonic i.e. in general weakness and debility.
7	<i>Bacopa monnieri</i> L. Pennell	Brahmi	Scrophulariaceae	Herb	Leaves	AL, FL	R	Used to increase memory
8	<i>Bauhinia accrescens</i> Killip & J.F. Macbr.	Kachnar, koraal	Fabaceae	Tree	Bark	AL, FL	R	Used to cure all types of mouth ulcer
9	<i>Berberis lycium</i> Royle	Kashmal	Berberidaceae	Shrub	Roots	AL, FL	D	Cure fever and jaundice.
10	<i>Bergenia ciliata</i> (Haw.) Sternb.	Dhaklamu, Pathartoad	Saxifragaceae	Herb	Leaves and Roots	FL	P	Cure kidney stone.
11	<i>Cannabis sativa</i> L	Bhang	Cannabaceae	Herb	Leaves and Seeds	RS, FL, AL	R	Seed mixed in ripped rice used for curing dysentery
12	<i>Cedrus deodara</i> (Roxb. ex D. Don) G. Don	Deodar	Pinaceae	Tree	Stump	FL	P	Used to cure itching.
13	<i>Centratherum anthelminticum</i> (L.) Kuntze	Kaliziri	Asteraceae	Herb	Leaves	FL	R	Stomachache
14	<i>Chenopodium album</i> Linn.	Bathu	Amaranthaceae	Shrub	Leaves	AL, FL	R	Used in the treatment of rheumatism, bug bites, sunstroke, urinary problems, skin problems
15	<i>Cryptolepis africana</i> (Bullock) Venter & R.L. Verh.	Nirbhishi	Apocynaceae	Climber	Roots	FL	R	Root paste for snake bite and dog bite
16	<i>Daphne papyracea</i> Wall. ex G. Don	Satpura	Thymelaeaceae	Shrub	Roots	FL	R	Gastric problems
17	<i>Delphinium vestitum</i> Wall. ex Royle	Gote	Ranunculaceae	Herb	Roots	FL	R	Stomachache

Cont.. table 2....

Cont. table 2....

Sr. No.	Botanical Name	Local Name	Family	Habit	Part Used	Habitat	Mode of Consum.	Ethnomedicinal Usage
18	<i>Dioscorea deltoidea</i>	Shingli	Amaranthaceae	Climber	Roots	AL, FL	R	Used in the treatment of rheumatism, bug bites, sunstroke, urinary problems and skin problems
19	<i>Eleusine coracana</i> (Linn.) Gaertn.	Koda	Poaceae	Herb	Seeds	AL	P	Flour chapatti for sugar patient
20	<i>Ficus palmata</i> Forssk.	Fegra	Moraceae	Tree	Leaves and Latex	AL, FL	R	Leaf paste with butter to cure shoulder pain
21	<i>Geranium wallichianum</i>							
	D Don ex Sweet	Jadi	Geraniaceae	Herb	Roots	FL	R	Cure fever, intestinal disorders
22	<i>Glycyrrhiza glabra</i> Linn.	Mulathi	leguminosae	Herb	Roots	AL, RS	R	Cough
23	<i>Hedychium spp</i>	Kachoor	Zingiberaceae	Herb	Roots	AL	P	To cure cold fever cough
24	<i>Juglans regia</i> Linn.	Akhroat	Juglandaceae	Tree	Leaves and Bark	FL	R	Tooth problem
25	<i>Kalanchoe spathulata</i> DC.	Rasnai (noon)	Crassulaceae	Herb	Leaves and Bark	FL	R	Bark powder paste is applied to cure Sprain, locally called Moch
26	<i>Lactuca spp</i>	Dudhiya moru	Asteraceae	Herb	Roots	AL, FL	P	Stomachache/Flatulance
27	<i>Macrotyloma uniflorum</i> (Lam.) Verdc.	Kulath	Fabaceae	Herb	Seeds	AL, CL	D	Extract used for kidney stone
28	<i>Nicotiana tabacum</i> Linn.	Tambakhoo	Solanaceae	Herb	Leaves	AL, FL	R	To cure boils & pimple
29	<i>Ocimum sanctum</i> Linn.	Tulsi	Lamiaceae	Herb	Leaves	AL, CL, FL	D	Decoction to cure cough, fever and stomachache
30	<i>Origanum vulgare</i> Linn.	Katia,	Lamiaceae	Herb	Leaves and Roots	FL	R	Root powder and juice is used to cure stomachache, urinary infection and wound healing
31	<i>Phegopteris connectilis</i> (Michx.) Watt	Brahamsutri			Leaves			
		Fern	Thelypteridaceae	Fern	and Roots	FL	R	Used to cure Bharamsutri, to cure boils (that form ring like structure) in abdominal area
32	<i>Pinus roxburghii</i> Sarg.	Chir Biroja	Pinaceae	Tree	Roots	FL	R	To treat sprain
33	<i>Pistacia integerrima</i>							
	J. L. Stewart ex Brandis	Kakarsinghi	Anacardiaceae	Tree	Gall	FL	R	Anti-inflammatory and blood purifier, root paste applied to cure tonsil
34	<i>Plantago ovata</i> Phil.	Isabgoal	Plantaginaceae	Herb	Seeds	AL, FL	R	Root paste applied to cure tonsil
35	<i>Pleurospermum brunonis</i> Benth.	Losar	Pinaceae	Herb	Whole plant	AL	R	Cure fever and gastric
36	<i>Polygonatum verticillatum</i>							
	All.	Salam misri	Asparagaceae	Herb	Roots	FL	R	Stomachache
37	<i>Prinsepia utilis</i> Royle	Bekhal	Rosaceae	Shrub	Seeds	FL	P	Seed oil used to body massage
38	<i>Prunus cerasoides</i> D. Don	Pajja	Rosaceae	Tree	Bark	AL, FL	D	To cure dysentery
39	<i>Rabdosia rugosus</i> (Wall. ex Benth.) Hara.	Chhichadi	Lamiaceae	Shrub	Leaves	AL	D	Leaf sap is use to cure ear pain.

Cont. table 2....

Cont. table 2....

Sr. No.	Botanical Name	Local Name	Family	Habit	Part Used	Habitat	Mode of Consum.	Ethnomedicinal Usage
40	<i>Rheum australe</i> D. Don	Arch	Polygonaceae	Herb	Roots	AL, FL	R	Joint pain relief
41	<i>Rosa moschata</i> Benth.	Kuja	Rosacea	Shrub	Flowers	AL, CL, FL	R	Used for preparation of herbal tea. Flower are also offered to local deity
42	<i>Rumex nepalensis</i> Spreng.	Kharash	Polygonaceae	Herb	Roots and Leaves	FL, CL	R	Root paste to treat boils, Leaf juice is applied to cure burnt area
43	<i>Skimmia laureola</i> Franch.	Katharchari, dhoop	Rutaceae	Shrub	Leaves	AL	R	Aromatic leaves are used in Hawan.
44	<i>Solanum tuberosum</i> Linn.	Aloo	Solanaceae	Herb	Root and Tuber	CL, FL	R	To treat skin burn
45	<i>Taxus baccata</i> Hook.	Thunera	Taxaceae	Tree	Bark	FL	R	Paste applied on breast to cure swelling & boils
46	<i>Terminalia chebula</i> Retz.	Harad	Combretaceae	Tree	Fruit	AL, FL	R	Seed coat powder with water to cure constipation
47	<i>Thalictrum foliolosum</i> DC.	Pili Jari	Ranunculaceae	Herb	Roots	FL	R	Root paste applied to snake and dog bite
48	<i>Trillium govanianum</i> Wall.	Satwa (Nag Chattri)	Melanthiaceae	Herb	Roots	FL	R	Used for wound healing
49	<i>Urtica dioica</i> Linn.	Kukva	Urticaceae	Herb	Leaves and Roots	CL, FL	D	Used for pimple problem
50	<i>Urtica gerardiana</i> Linn.	Bhabhar	Urticaceae	Shrub	Roots	AL, FL	R	Root paste is applied in piles and wound
51	<i>Valeriana jatamansi</i> Wall.	Pekhu	Valerianaceae	Herb	Roots and eaves	FL	P	Root past is applied in piles
52	<i>Viola serpens</i> Wall. ex Ging.	Vanaksha	Violaceae	Herb	Whole areal parts	AL, FL	D	Leaf paste with honey used for cough and nausea
53	<i>Zanthoxylum armatum</i>	Timmur	Rutaceae	Shrub	Leaves, Stems and Seeds	AL, FL	D	Decoction for cold, cough fever and toothache
	<i>Druce</i>							

Habitat: AL= Agriculture land, RS= Road side, FL= Forests land, CL= Community land

Mode of consumption: R =Raw, P=Powered, D= Decoction

with urbanization.

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