



Ethnobotanical study of Janachana community forest in Rautahat district, Nepal

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Abstract

Community forest user groups (CFUGs) have been receiving different ecosystem services and facilities from the community forest, which are very crucial in their daily life activities. The present study is aimed at identifying the facilities and services received from the different plant species in the Janachana Community Forest, Rautahat district, Nepal. Altogether, 84 members of community forest groups participated in an interview using a semi-structured questionnaire. In total, 65 plants were identified in the study area for use as medicine, firewood, fodder, bedding, food, and other purposes. However, most plants were used as fodder for livestock. Altogether, fifty-eight plant species (89%) were used for multiple purposes (more than one use) and seven (11%) species were used for single purpose. Among the reported plant species, thirty species were used for medicinal purposes. Seeds and leaves were common parts of the plant used as medicine. Most of the plants were used to treat gastritis, cough, and blood clots, which seem to have high prevalence in the study area. These results imply the various benefits taken by the CFUGs from the community forest in their daily life.

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1. Introduction

Community forestry is an activity of allowing local communities to manage forest for socio economic needs by maintaining ecological wellbeings. And, it gives more benefits to household having more land and livestock (Adhikari, 2003). Beside these, community forest is focused on forest conservation (Thoms, 2008) by restoring degraded habit and habitats, conserving biodiversity, increasing supply of forest products, empowering of disable groups, generating income, and Human empowerments in rural area (K.C., 2012). Community forest has good history since its establishment, and is best among local people due to their participation in management and use of forest resource for its sustainability (Tylor, 1995). Nepal encompasses approximately 6973 angiosperms (GoN/MoFSC, 2014) and has been used for various purposes by the local people of Nepal for their daily activities (Chaudhary et al., 2020). Due to the presence of different types of climatic condition, elevational

gradient, topographical condition, Nepal has able to encompass such a huge diversity of flowering plants (Magar & Chaudhary, 2022).

Economic status and decline ecosystem are linked with the dependency of rural population in forests (Jazib, 2015). Forests play a vital role in maintaining ecological balance as well as economic development in one hand and in another hand Nepalese people has set their own traditional rules, culture and strategy for conservation and utilization of those natural resources. Practice of searching important medicinal plants help in development of useful drugs (Newman & Cragg, 2012). About 70-80% people are using plants as medicine that has global interest increasing because of its low or no side effects (Jordon et al., 2010). Moreover, local people have been using forest products for food, fodder, bedding, dye making household equipments (Chaudhary et al., 2020). Traditional knowledge helps in conservation and management of indigenous culture, threatened species and plant

diversity and also promote the use of forest products for their sustainable uses (Watson & Glaspell, 2003). Therefore, the present study aimed to document the use of flowering plants of Janachana Community Forest and its adjoining National Forest in daily activities by the community forest user group.

2. Materials and Method

2.1. Collection of samples

The study area is located in Chandrapur municipality of Rautahat district, Central Nepal (Figure 1). The study was carried out on ward number

4 of the municipality, which lies at the coordinates ranging between 27°80'N - 27°90'N and 85°20'E - 85°90'E. The study region is between 100 and 185 m above sea level and the study was carried out at the Janachana Community Forest (JCCF) and the nearby national forest. JCCF was handed by government of Nepal in 2053 B.S. in order to reduce the excessive deforestation in national forest by strong monitoring and management by local peoples. It occupies an area of 211.67 hectares, surrounded by Kaptantol in south, Chadi-khola in north and east, and National Forest in west.

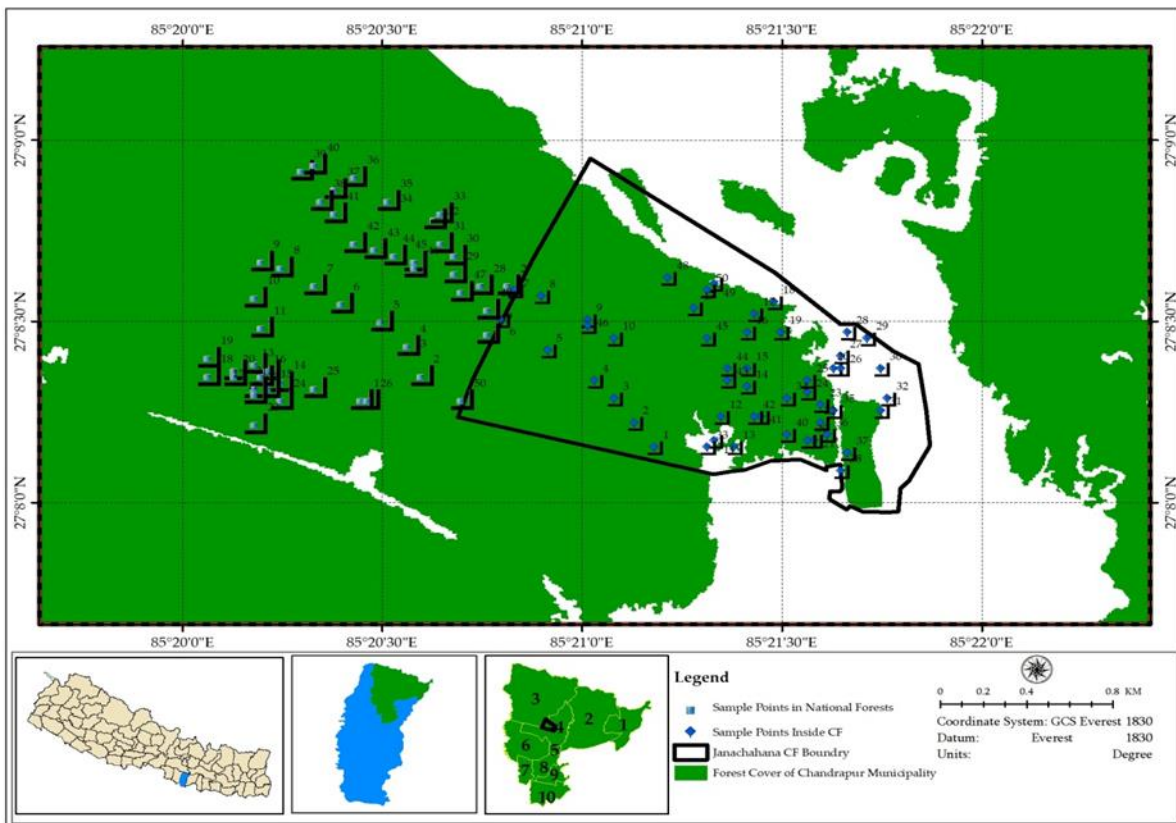


Figure 1: Map of Study Area

The study area lies in tropical region. The vegetation of the forest includes Shorearobusta, Dalbergia sissoo, Acacia catechu, Dalbergia latifolia and associate species are Bambusa sp., Terminalia bellirica, Terminalia chebula, Asparagus recemosus, Piper longum, Mangifera indica. The climate of the study area is humid with an average annual precipitation of 1341 mm. The average annual temperature of the study area is 23.6°C (<https://en.climate-data.org/asia/nepal/central-development-region/chandranigahpur-1025361/>).

2.2. Primary data collection

The random sampling was used to collect ethnobotanical information. An individual interview of 84 members of forest user group was taken with the help of semi-structured questionnaire. Semi structured questionnaire was prepared in English language but informants were asked in their own languages for their convenience.

2.3. Herbarium preparation and plant identification

With the aid of informants, plant specimens were collected and properly photographed. The field notes of all the species were recorded in the note book. While preparing field note, date of collection, collection number, locality, vegetation, and colour of flower were

noted. The necessary tools and requirements were carried out in the field such as field note book, digger, collection bags, hand lens, camera, altimeter, GPS and tags. For the preparation of the herbarium specimens herbarium sheets, labels, needle, thread, glue and seed envelopes were used. The plant samples collected were pressed with the help of herbarium press, newspaper, card board and blotting sheets. The herbarium specimens were prepared according to Lawrence (1951). Identification was done by making Herbarium specimen, with local forest user groups along with the help of experts and also made using literatures (Hooker, 1872-1897; Hara et al., 1978; Hara & Williams, 1979; Hara et al., 1982; Cullen, 1996; Harris & Harris, 2001; Chapagain et al., 2017). The nomenclature for accepted names and families was followed according to www.gbif.org.

3. Results

Altogether 65 plants were recorded in the study area which were used for medicine, firewood, fodder, bedding, food and other purposes (Table 1). Among total plants, highest number of plants (n=51) were used for fodder purpose, followed by firewood (n=37), medicine (n=30), food (n=18), religious (n=9), bedding (n=8) and other purposes (n=8) (Figure 2). Since time immemorial, the plant species have been used for different purposes by the local people. Some previous literatures (Dangol and Gurung, 1991; Kunwar and Bussmann, 2008; Rijal, 2011; Mallik et al. 2020; Chaudhary et al. 2020; Ojha Khatri et al. 2021; Bhaila et al. 2022; Dulal et al. 2022; Magar et al. 2022) had also reported the use of plants as food, fodder, firewood, bedding, medicine and religious value.

Table 1: Plant species of JCCF with their common name, family and use categories...

Name of the plants	Local name	Family	Habit	Use category
<i>Achyranthes aspera</i> L.	Datiwan	Amaranthaceae	Shrub	M/Fod
<i>Adina cordifolia</i> (Roxb.) Brandis	Karam	Rubiaceae	Tree	Fod/Fw/O
<i>Aegle marmelos</i> (L.) Correa	Bel	Rutaceae	Tree	M/Fod/F/R
<i>Ageratum houstonianum</i> Mill.	Gandhe	Asteraceae	Herb	M/Fod/B
<i>Albizia lebbek</i> (L.) Benth.	Siris	Fabaceae	Tree	Fod/Fw
<i>Alstonia scholaris</i> (L) R.Br	Chatiwan	Apocynaceae	Tree	M/Fw
<i>Alternanthera sessilis</i> (L.) DC	Bhringiraj	Amaranthaceae	Herb	M/R
<i>Antidesma bunius</i> (L.) spreng.	Archale	Phyllanthaceae	Tree	M/Fod
<i>Artocarpus Lakoocha</i> Wall.exRoxb.	Badhar	Moraceae	Tree	Fod/F/Fw
<i>Asparagus racemosus</i> Willd.	Kurilo	Asparagaceae	Herb	M/Fod/F
<i>Azadiractha indica</i> A.Juss.	Neem	Meliaceae	Tree	M/F/Fw
<i>Bauhinia purpurea</i> L.	Taki	Fabaceae	Tree	Fod/F/Fw
<i>Boerhavia diffusa</i> L.	Khadkaule	Nyctaginaceae	Herb	Fod
<i>Bombax ceiba</i> L.	Simal	Bombacaceae	Tree	M/Fod/Fw/O
<i>Bridelia retusa</i> (L) A.Juss	Gayo	Euphorbiaceae	Tree	Fod/F/Fw
<i>Careya arborea</i> Roxb.	Khumbi	Lecythidaceae	Tree	Fod/Fw
<i>Cassia fistula</i> L	Rajbrichya	Fabaceae	Tree	M/Fw
<i>Centella asiatica</i> (L.) Urb.	Ghodtapre	Apiaceae	Herb	M
<i>Chromolaena odorata</i> (Spreng) King & H.E. Robins.	Setobanmara	Asteraceae	Shrub	M/B
<i>Clerodendrum indicum</i> (L.) Kuntze	Bhati	Lamiaceae	Shrub	Fod/B
<i>Dalbergia sissoo</i> Roxb.ex DC.	Sisso	Fabaceae	Tree	Fod/Fw/O
<i>Dendrocalomous strictus</i> (Roxb) Nees	Bash	Poaceae	Grass	M/Fod/Fw/R

<i>Dillenia pentagyna</i> Roxb.	Tatari	Dilleniaceae	Tree	Fod/Fw/B/O
<i>Dioscorea bulbifera</i> L.	Githa	Dioscoreaceae	Climber	Fod/F/B/O
<i>Diplazium esculantum</i> (Retz.) Sw. exEchrad.	Niuro	Athyriaceae	Fern	Fod/F
<i>Eucalyptus camaldulensis</i> Dehnh.	Sapata(masala)	Myrtaceae	Tree	M/Fod/F/O
<i>Ficus hispida</i> L.	Dhungra	Moraceae	Tree	Fod/Fw
<i>Ficus recemosa</i> L.	Dhumri	Moraceae	Tree	Fod/Fw/R
<i>Garuga pinnata</i> Roxb.	Gingad	Burseraceae	Tree	Fod/Fw/O
<i>Grewia optiva</i> J.R Drumm. Ex Burret	Shyalfosra	Malvaceae	Tree	Fod
<i>Imperata cylindrica</i> (L.) P. Beauv.	Siru	Poaceae	Grass	Fod
<i>Lagerstroemia indica</i> L.	Asare	Lythraceae	Tree	Fod/Fw
<i>Leea crispa</i> Royen ex-L.	Galini	Vitaceae	Shrub	Fod/B
<i>Leucaena leucocephala</i> (Lam).de Wit	Ipilipi	Fabaceae	Shrub	Fod/Fw
<i>Litsea monopetala</i> (Roxb.) Pers.	Kutmero	Lauraceae	Tree	Fod/Fw
<i>Melia azedarach</i> L	Bakaino	Meliaceae	Tree	M/Fod/Fw
<i>Mitragyna parvifolia</i> (Roxb.) Korth	Tikulikaram	Rubiaceae	Tree	Fod/Fw
<i>Mallotus philippensis</i> (lam.) Mull. Arg.	Sindhure	Euphorbiaceae	Tree	Fod/B
<i>Moringa oleifera</i> Lam.	Sajiwan(sitalcini)	Moringaceae	Tree	M/F
<i>Morus alba</i> L.	Tuth	Moraceae	Tree	Fod/F/Fw
<i>Oroxylum indicum</i> (L.) Kurz	Tatalo	Bignoniaceae	Tree	M/R
<i>Ougeinia oojeinensis</i> (Roxb.) Hochr.	Sadhan	Fabaceae	Tree	Fod/Fw
<i>Phyllanthus emblica</i> L.	Amala	Phyllanthaceae	Tree	M/F/Fw/R
<i>Phyllanthus velutinus</i> (Wight) Müll.Arg.	Kalikath	Phyllanthaceae	Tree	Fod/Fw
<i>Piper longum</i> L.	Pipla	Piperaceae	Climber	M/B
<i>Pleurotus ostreatus</i> (Jacq. ex Fr) P. Kumm.	Chyau	Agaricaceae	Mushroom	F
<i>Pogostemon benghalensis</i> (Brum.f.) Kuntze	Rudilo	Lamiaceae	Shrub	M/B
<i>Psidium guajava</i> L.	Amba	Myrtaceae	Tree	M/Fod/F/Fw
<i>Schleichera oleosa</i> (Lour.) Oken	Kusum	Sapindaceae	Tree	Fod/F/Fw
<i>Semecarpus anacardium</i> L. f.	Bhalayo	Anacardiaceae	Tree	M/Fod/Fw/R
<i>Senegalia catechu</i> (L.f.) P.J.H. Hurter & Mabb.	Khayar	Fabaceae	Tree	M/Fod/Fw
<i>Setaria helvola</i> (L.f.) Roem. & Schult.	Banso	Poaceae	Grass	Fod
<i>Shorea robusta</i> Gaertn.	Sal	Dipterocarpaceae	Tree	M/Fod/Fw/R
<i>Smilax aspera</i> L.	Kukurdaino	Smilacaceae	Climber	M/F
<i>Solanum erianthum</i> D.Don.	Dhursul	Solanaceae	Shrub	R
<i>Stereospermum colais</i> (Buch.-Ham. ex Dillwyn) Mabb.	Padari	Bignoniaceae	Tree	Fod/Fw
<i>Syzygium cumuni</i> (L.) Skeels	Jamun	Myrtaceae	Tree	M/Fod/F/Fw

<i>Syzygium nervosum</i> DC.	Khyamun	Myrtaceae	Tree	M/Fod
<i>Terminalia alata</i> Heyne ex Roth	Saj	Combretaceae	Tree	Fod/Fw/O
<i>Terminalia anogeissiana</i> Gere & Boatwr.	Bhajhi	Combretaceae	Tree	Fod/Fw/O
<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Barro	Combretaceae	Tree	M/Fod/F/Fw
<i>Terminalia chebula</i> Retz.	Harro	Combretaceae	Tree	M/Fod/Fw
<i>Thysanolaena latifolia</i> (Roxb. ex Hornem.) Honda	Amriso	Poaceae	Grass	Fod/O
<i>Tinospora sinensis</i> (Lour.) Merr.	Gurjo	Menispermaceae	Climber	M/F
<i>Trema orientalis</i> (L.) Blume	Kuyal	Cannabaceae	Tree	Fod/Fw

Footnote: M = Medicine, Fod = Fodder, F = Food, Fw = Firewood, B = Bedding, R= Religious purpose, O = Other

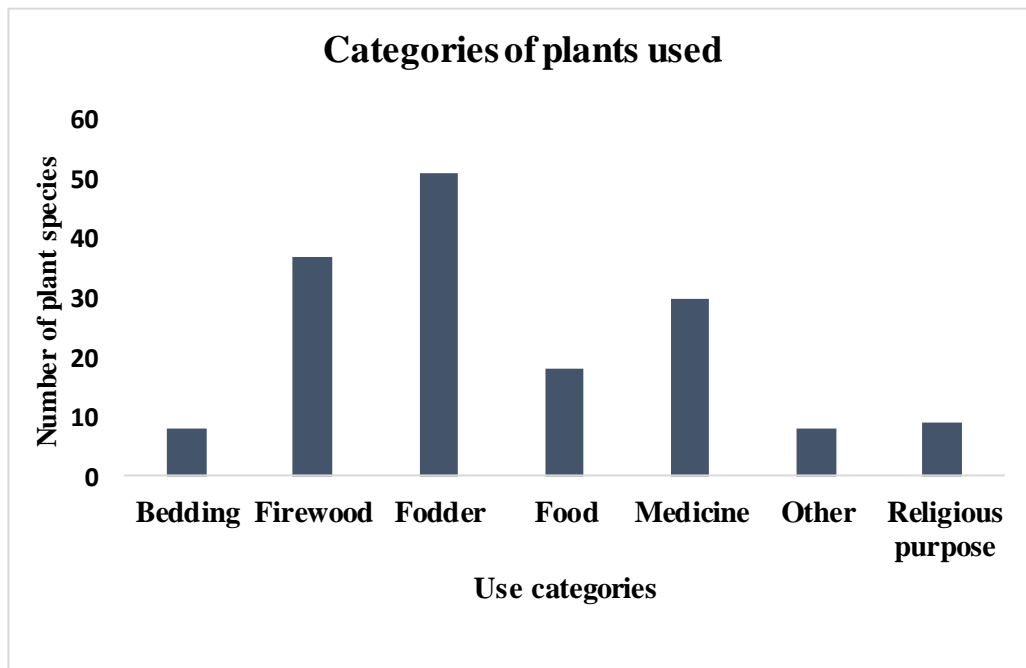


Figure 2: Number of plants species per use category

3.1. Fodder

Fodder plants like *Ficus hispida*, *Bridelia retusa*, *Phyllanthus velutinos*, *Artocarpus lakoocha*, *Trema orientalis*, *Litsea monopetala*, *Bauhinia purpurea*, *Leucaena leucocephala*, *Melia azedarach* etc were found to be planted in JCCF as most of the local people were engaged in agricultural and livestock husbandary. Wild plants like *Dillenia pentagyna*, *Shorea robusta*, *Mallotus phillipinsis* were also used for fodder. Grasses like *Steria glauca*, *Imperata cylindrica*, *Sorghum bicolor*, and *Thysanolaena latifolia* were also used for fodder in JCCF. Many plants were recorded for fodder use because local people have planted fodder plants as they had engaged in agriculture and animal husbandry. Fodder of different species were known to be collected

throughout the year as different species has different useful part that has particular time of development and harvesting which was supported by previous finding of Magar (2018). The collection throughout the year was similar for medicinal use, litter, firewood, food and other uses.

3.2. Firewood

Plants like *Ficus hispida*, *Brideli aretusa*, *Phyllanthus velutinos*, *Artocarpus lakoocha*, *Trema orientalis*, *Litsea monopetala*, *Bauhinia purpurea*, *Leucaena leucocephala*, *Dillenia pentagyna*, *Shorea robusta*, *Eucalyptus camaldulensis*, *Dalbergia sissoo*, were used as firewood for cooking purpose. Firewood collection was also done from adjoining National Forest because of insufficient resource in JCCF.

3.3. Litter

Litters were only allowed to collect during winter season for bedding of livestock. Most of the plants from JCCF and from National Forest were used as litter. Plants like *Ficus hispida*, *Bridelia retusa*, *Phyllanthus velutinos*, *Artocarpus lakoocha*, *Trema orientalis*, *Litsea monopetala*, *Bauhinia purpurea*, *Adina cardifolia*, *Bombax ceiba*, *Mallotus philippensis*, *Dillenia pentagyna*, *Shorea robusta* were used for litter collection.

3.4. Other uses

Besides the use of plants species for fodder, firewood, litter collection some plants are used for other purposes. Maximum use of inflorescence of *Thysanolaena latifolia* was found to be used for preparing broom. Leaves of *Shorea robusta* were highly used for preparing leaf plates (tapari) for religious ceremony. Moreover, many people had adopted its trade as their income source. Maximum laves and inflorescence of *Solanum erianthum* have been found to be used for worship of God and Goddess. Seeds of *Semecarpus anacardium* were used especially for the ritual on the 11th day of the new born baby.

Young shoot of *Diplazium esculentum* was used for preparing curry and fruit pulp of *Agele marmelos* were used as Cold drinks. Cotton fibre from *Bombax ceiba* was found to be used for preparing quilt and pillow. Branches with fresh leaves of *Chromolaena odorata*, *Leea crispa*, *Diplazium esculentum*, *Clerodendrum indicum* were also found to be used for bedding purpose.

According to study, many plant species were traced with multiple use purposes i.e., 58 species (Firewood, Medicine, Bedding, Religion, Food, Fodder) such as *Shorea robusta*, *Semecarpus anacardium*, *Chromolaena odorata*, *Leea crispa*, *Diplazium esculentum*, and *Syzygium nervosum*. While for the single use only 7 species i.e. *Centella asiatica*, *Grewia optiva*, *Imperata cylindrica*, *Boerhavia diffusa*, *Solanum erianthum*, *Setaria helvola* and *Antidesma bunius* were recorded (Figure 3). Majority of the species were reported with multiple uses in compare to single use, which indicates the importance of a species in local level. As plants have various parts, they show different use for each of them. This finding was supported by previous finding of Magar (2018) and Magar et al. (2022).

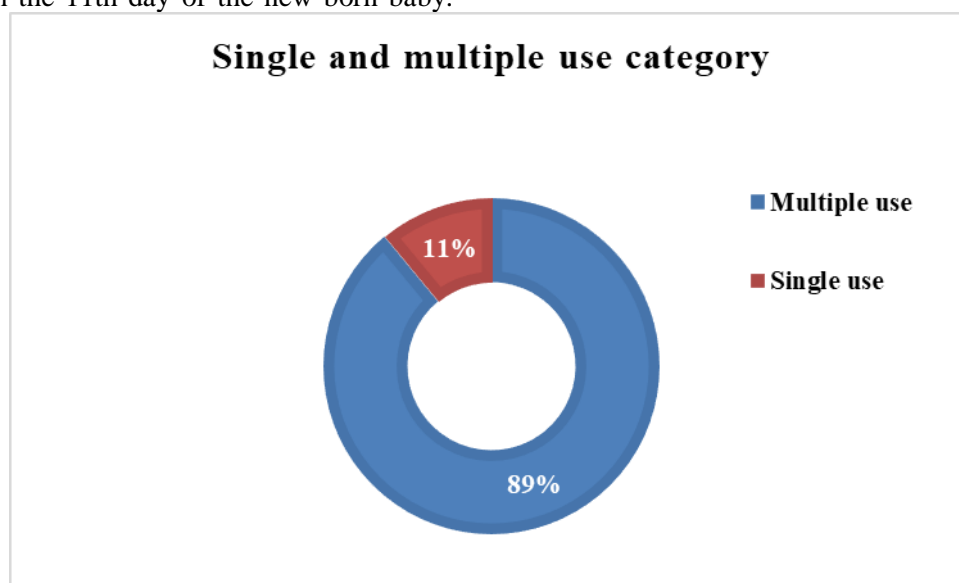


Figure 3: Number of species with single and multiple (more than two use) category

3.5. Medicinal plants and parts used

Altogether, 30 plant species were recorded with medicinal value and were from 19 families. Among the recorded medicinal plants, maximum belonged to Fabaceae (5 species), followed by Myrtaceae (3 species), Asteraceae (2 species), Amaranthaceae (2 species), Combretaceae (2 species), Phyllanthaceae (2

species), Apocynaceae (2 species) and remaining families contained one species each. Mahwasane et al. (2013) also reported similar finding, where Fabaceae encompassed maximum number of species. Medicinal plant species were known for the cure of different 25 ailments. The list of medicinal plant species and the ailments treated by them with different plant parts used has been listed in Table 2.

Table 2: Medicinal plants and its uses for treatment of different ailments

Medicinal plants	Ailments/treatment	Used parts
<i>Achyranthes aspera</i>	Piles, Typhoid	Seed
<i>Aegle marmelos</i>	Fever, Gastritis, Dysentery, Ear disease, Constipation	Seed & Leaf
<i>Ageratum houstonianum</i>	Clotting Blood	Leaf
<i>Alstonia scholaris</i>	Cattle become healthy, Urine of blood	Bark
<i>Alternanthera sessilis</i>	Sinusitis, Stomach pain, Typhoid and Clotting	Whole part
<i>Antidesma bunius</i>	Lactation, Stomachache	Bark & Root
<i>Asparagus racemosus</i>	Increase Lactation	Stem
<i>Azadirachta indica</i>	Skin diseases	Leaf
<i>Bombax ceiba</i>	Dysentery	Stem
<i>Cassia fistula</i>	Diarrhea, Dysentery	Seed
<i>Centella asiatica</i>	Diabetes, Cough, Gastritis, Asthma and Urine related disease	Whole part
<i>Chromolaena odorata</i>	Clotting Blood	Leaf
<i>Dendrocalomous strictus</i>	Diarrhea of goat	Leaf
<i>Eucalyptus camaldulensis</i>	Used as Visk to relief running nose	Leaf
<i>Mimosa pudica</i>	Diabetes	Root
<i>Mallotus philippensis</i>	Diabetes	Fruit
<i>Moringa oleifera</i>	Urine Diseases	Seed
<i>Oroxylum indicum</i>	Wound	Seed
<i>Phyllanthus emblica</i>	Common cold, Cough and Gastritis	Fruit
<i>Piper longum</i>	Cough	Seed
<i>Pogostemon benghalensis</i>	Cough, Common cold, Fever and Clotting	Leaf
<i>Psidium guajava</i>	Dysentery, Diarrhea, Gastritis	Bark, leaf
<i>Semecarpus anacardium</i>	Skin diseases	Seed
<i>Senegalia catechu</i>	Remove blood clotting, Fracture, Astringent property	Stem
<i>Senna tora</i>	Skin diseases	Stem
<i>Shorea robusta</i>	Dysentery and Stomach pain	Seed
<i>Syzygium cumini</i>	Diarrhea, Diabetes, Dysentery, Digestion, Sinusitis and Gastritis	Bark
<i>Syzygium nervosum</i>	Sinusitis, Headache	Leaf

<i>Terminalia bellirica</i>	Clotting Blood	Seed
<i>Terminalia chebula</i>	Cough, Common cold and Gastritis	Fruit

Among the plant parts used for medicinal purpose, seed and leaf were highly used with 30% (9 species each) followed by bark with 13% (4 species), stem with 13% (4 species), fruit with 10% (3 species), root with 6% (2 species) and whole plant with 6% (2 species)

(Figure 4). Many medicinal species were collected for its seed and leaves. This may be due to the specific composition of bio-active compounds for the cure of particular ailment was in agreement with Srithi et al. (2009) and Dulal et al. (2022).

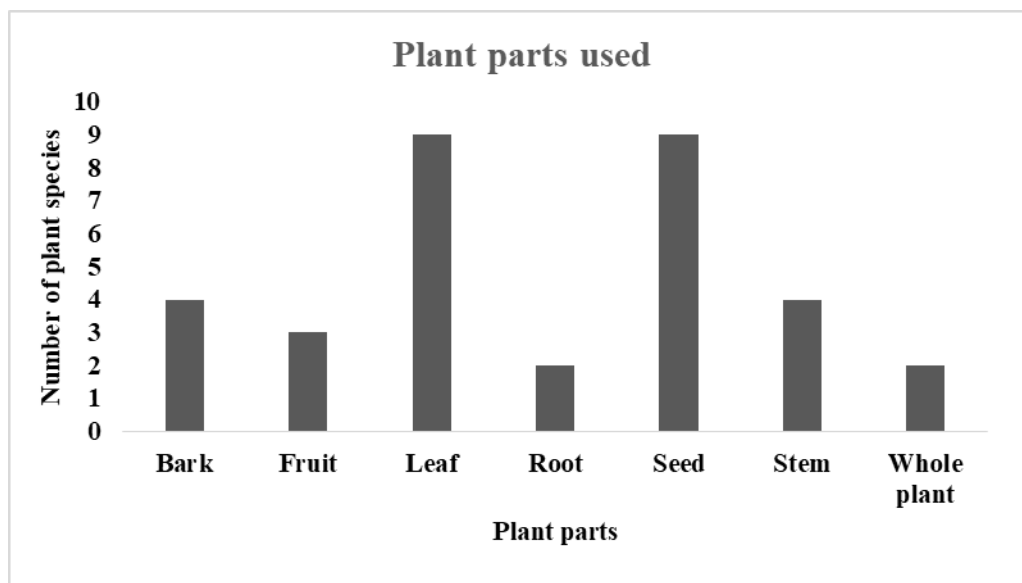


Figure 4: Plant parts used for medicinal purposes to treat different ailments

The list of plants for each ailment is given in Table 3. Out of total 25 ailments, maximum number of plants (n=7) were found to be used for Gastritis, followed by blood clotting and Cough each (n=5). The present

result described the abundant knowledge among people for cure of gastritis using various plant species and was also supported by previous finding of Sood et al. (2001), where gastritis was most prevalent ailment reported in their study.

Table 3: List of Ailments and Plants used at Jana Chahana Community Forest

Ailment	Name of species	No of species
Asthma	<i>Centella asiatica</i>	1
Astringent	<i>Senegalia catechu</i>	1
Cancer	<i>Tinospora sinensis</i>	1
Cut and wound	<i>Oroxylum indicum</i>	1
Blood clotting	<i>Ageratum houstonianum</i> , <i>Alternanthera sessilis</i> , <i>Chromolaena odorata</i> , <i>Pogostemon bengalensis</i> , <i>Terminalia alata</i>	5
Common cold	<i>Phyllanthus emblica</i> , <i>Pogostemon benghalensis</i> , <i>Terminalia bellirica</i> , <i>Terminalia chebula</i>	4

Constipation	<i>Aegle marmelos</i>	1
Cough	<i>Centella asiatica, Phyllanthus emblica, Pogostemon bengalensis, Terminalia bellirica, Terminalia chebula</i>	5
Diabetes	<i>Centella asiatica, Syzygium cumini, Mallotus philippensis, Tinospora sinensis</i>	4
Diarrhea	<i>Cassia fistula, Dendrocalomous strictus, Psidium guajava, Syzygium cumuni</i>	4
Dysentery	<i>Bombax ceiba, Cassia fistula, Psidium guajava</i>	3
Ear problem	<i>Aegle marmelos,</i>	1
Fever	<i>Aegle marmelos, Pogostemon benghalensis</i>	2
Fracture	<i>Segenalia catechu</i>	1
Gastritis	<i>Aegle marmelos, Centella asiatica, Phyllanthus emblica, Psidium guajava, Syzygium cumuni, Terminalia bellirica, Terminalia chebula</i>	7
Headache	<i>Syzygium nervosum</i>	1
Blood pressure	<i>Alternanthera sessilis</i>	1
Jaundice	<i>Tinospora sinensis</i>	1
Lactation	<i>Antidesma bunius, Asparagus racemosus</i>	2
Piles	<i>Achyranthes aspera</i>	1
Sinusitis	<i>Alternanthera sessilis, Syzygium nervosum, Syzygium cumuni</i>	3
Skin diseases	<i>Semecarpus anacardium</i>	1
Stomach Pain	<i>Alternanthera sessilis, Antidesma bunius, Terminalia bellirica</i>	3
Typhoid	<i>Achyranthes aspera, Alternatera sessilis</i>	2
Control bleeding in urine	<i>Alstonia scholaris, Centella asitica, Moringa olifera, Tinaspora sinensis</i>	4

3.6. Habit of plant species

Different habit of plant species was recorded in the study area. Among them, tree was frequently recorded (n=43), followed by shrub (n=7), herb (n=5), climber (n=4), grass (n=4), fern (n=1) and mushroom (n=1) (Figure 5). The present study has recorded tree species as the major habit in the community forest on which

CFUGs were dependent for their daily life activities which was in agreement with Cheikhoussef et al. (2011). However, some previous studies (Chaudhary et al. 2020; Ojha Khatri et al. 2021; Magar et al. 2022) have reported the herbs as frequently used species. It suggests that the CFUGs depend on a wide range of plants to suit their everyday needs and medical needs.

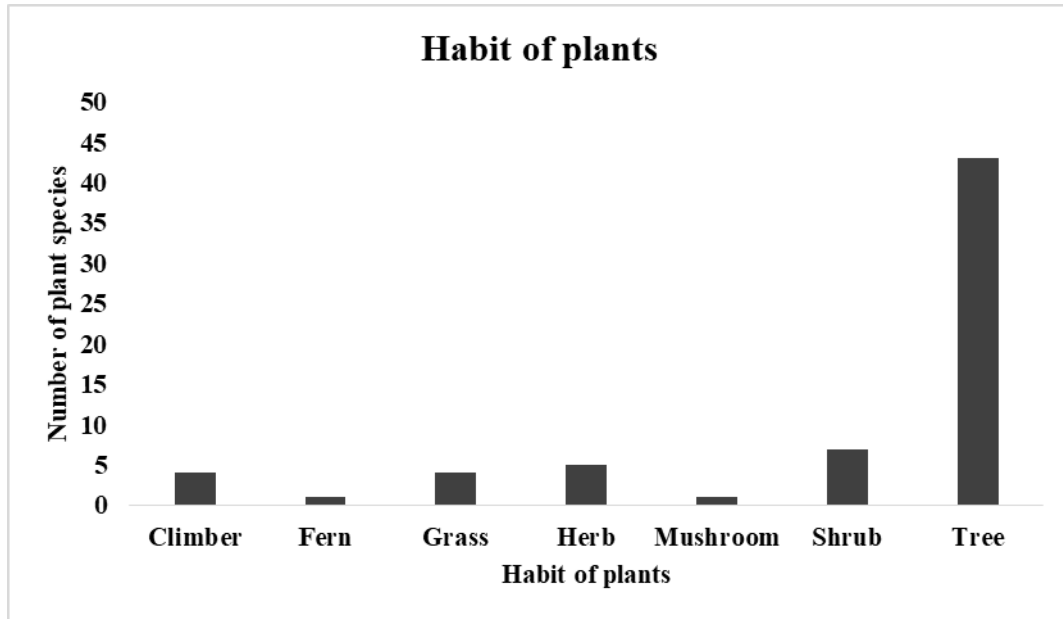


Figure 5: Habit of the plant species recorded in the study area

4. Conclusions

The plants obtained from JCCF and its adjoining National Forest were used for food, fodder for livestock, medicines, religious purposes, dye, bedding and other purposes. Community user groups had used the plants mostly for fodder, followed by food and medicine. Most of the plants were used to treat gastritis, cough and blood clot, which seem highly prevalence in the study area. These findings suggest that the CFUGs benefited from the community forest in their day-to-day activities. However, we recommend to use the forest product in sustainable and systematic way for handover to other generations and conservation of biodiversity.

Author's Contribution

Concept of the study was created by SKG and MKC. Data collection was done by SKG and GTM. Drafting and manuscript was prepared by SC and GTM. Data analysis was performed by SC. Critical revision of manuscript was done by GTM and SC. Final approval of the manuscript was done by all the authors.

Competing interests

The authors declare no competing interests.

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Ethical Approval and Consent

Verbal consent was obtained from all the respondents for the interview and further publication of the report.

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