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Traditional Medicinal Plant Practices of the Baram People in Gorkha, Nepal

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Abstract

The Baram people, a marginalized ethnic group in Nepal, rely significantly on these plants for healthcare, yet the specific medicinal plant practices remain underexplored. The purpose of this study is to explore the medicinal plants used by the Baram people in Gorkha District, focusing on their applications in treating various health problems. We employed ethnographic method with semi-structured interviews, observations and focus group discussions. The findings of the study listed 112 medicinal plant species from 47 plant families used by the Baram people to treat 41 distinct health conditions, and the most commonly treated health problems: heat stroke, cough, gastritis, and stomach problems. The study underscores the importance of preserving both the plant species and the indigenous knowledge that sustains them, as they are essential to the Baram's cultural identity and survival, as well as promoting sustainable use of natural resources for both ecological and economic benefits.

Keywords: Baram people, ethnomedicinal knowledge, indigenous knowledge, medicinal plants, traditional medicine

Introduction

The Federal Democratic Republic of Nepal is a small nation in its area, though rich in social and cultural phenomena with multi-caste, multi-ethnic and religious practices. The latest population census has listed 142 caste-ethnic groups with 124

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languages in Nepal (National Population and Housing Census (NPHC), 2021). This variation in caste-ethnic groups has been observed in their belief system and their survival in their environment. Most of the indigenous and ethnic peoples have a close relationship with the natural resources of their surroundings, vegetation and have indigenous knowledge and practice of food, firewood, fodder and medicine for their daily life (Sharma & Mishra, 2009). This pattern of using plant resources varies according to the ethnic group, as they have their own traditional beliefs and knowledge of using plant resources.

Various studies (Luitel et al., 2014; Siwakoti et al., 2008; Siwakoti, 2011; Tamang & Singh, 2014) have been carried out on the use of plants for treating several health problems of the people in different parts of Nepal. Such practices have been observed in different castes and ethnic groups of Nepal. The Barams, one of the marginalized ethnic groups among 142 groups with 1539 population and 1539 native speakers, seem to be practising a traditional treatment method to heal different health problems (NPHC, 2021). The major inhabitants of this ethnic group are the Takukot and Pandrung of Gorkha district. However, they are spreading over 13 districts of Nepal (CBS, 2011; Baramu, 2066 BS).

The Barams are animists or nature worshippers who revere their ancestral and household deities, such as Chandi, Bhume, and jungle gods and goddesses. They follow the guidance of their traditional shamans, who oversee rituals, preserve cultural practices, and treat illnesses (Baramu, 2066 BS). For healing and religious rites, they rely on *Dhamis* and *Jhakris* (witch doctors), who serve as magico-religious authorities, herbal healers, or priests. As healers, they diagnose ailments, gather medicinal plants, and perform exorcisms using herbal remedies. They are highly knowledgeable about

medicinal herbs and prescribe them for treatment. Concerning this ethnic community, some researchers are concerned with the socio-lingual aspects of the Barams (Baram, 2066 BS). Ghorbani et al. (2012) pointed out that these people depend on the forest by taking maximum benefit of forest products. However, how they use the medical plant for healing different health problems is underexplored. So, this study explores *what plant species the Baram people use in medicine. What is the medicinal use of the plant species?* Further study intends to suggest the way of the traditional practice of using medicinal plants by this ethnic group and its conservation and promotion in the coming days.

This study will be important for stakeholders, including policymakers, practitioners or researchers, to get to know the importance of indigenous knowledge and the practice of different plant species in healing of different health problems. It would be helpful to understand the inter-relationship between the tribe, nature and living patterns. This study may show the importance of conservation of plant resources for the sake of preserving and promoting the indigenous knowledge and skills about using those plants and their importance in their survival.

Literature Review

This section makes the tentative claim that the study of how indigenous people survive by using plant resources to heal different health problems. Analyses of the different research literatures provide additional knowledge on the issue and support in the justification of the research gap for this study.

Indigenous Practice of Medicinal Plants by Different Ethnic Groups in Global Context

Observing indigenous practice of medicinal plants in the global and regional context, Taek et al. (2018) reported that the indigenous people named 'Tatun' in West Timor-Indonesia, found newly documented plants as a supportive source for preparing new drugs and developing the strategic program of malaria elimination. Similarly, Rahmatullah et al. (2012) stated that the Chakmas ethnic residing in Laos, Cambodia via Myanmar and big population in Rangamati Bangladesh around 300,000, includeing different clan groups, practiced medicinal plants as their traditional medicine.

JU et al. (2019) concluded from a large scale study of data from a wide diversity of both plant species and ethnic communities of South India, and underlines the very rich sources of indigenous knowledge and uses of various medicinal plants to treat different diseases. They further suggested further studies on medicinal screening and preservation of traditional ecological knowledge and skills. Similarly, Emmanuel and Didier (2012) reported that 94 plant species were used to treat 140 illnesses of different ethnic groups of people in Douala, Cameroon. They focused on investigating the different cultural practices of different indigenous people of their traditional medicinal practice and healing system and handed it down to the next generation.

Sherpa et al. (2015) revealed that a large population of different ethnic people of Sikkim, including Lepcha, Bhutia, Limboo, Sherpa and Nepali, residing in rural areas have dependency and a tradition of using forest resources for their daily needs such as firewood, timber, fodder, medicine and agricultural tools. For that, they collected different forest products such as forest scrub, crude drugs as per their need and use. Through their practice and experience of treating different health problems can expand

the useful and harmful aspects of plant sources. Furthermore, this knowledge can form the better utilization of traditional medicine practice. Aziz et al. (2018) reported that indigenous people residing in rural Pakistan have a powerful belief in their traditional medicine and have very less access to modern allopathic medicines. Hence, traditional ethnomedicinal knowledge can be one of the approaches to preserve the community's indigeneity.

Studies pointed out that many plant species have religious, cultural and socioeconomic value and are the source of food, fiber, shelter and medicine (Shengji, 2002). Different ethnic groups have been taking large benefits for their daily life from their surrounding forest and have their own beliefs and use patterns of medicinal plant sources (Ghorbani et al., 2012).

Indigenous Practice of Medicinal Plants by Different Ethnic Groups in Nepalese Context

Various studies (Dangol & Gurung, 1991; Paudyal, 2000; Ghimire et al. 2000; Subedi and Dani, 2020) reported that medicinal plants and their utilization in different sicknesses healing by the Tharu ethnic in different parts of Nepal. Luitel et al. (2014) pointed out that Tamang living in Makwanpur district, Nepal have rich traditional knowledge on using medicinal plants to maintain their health and fighting different diseases. Traditional medicinal remedies and uses that have been given importance by this community are proven scientifically through phytochemical and pharmacological studies. Manandhar (1990) mentioned 80 medicinal plant species used to treat different health problems by Danuwar people residing in the Siwalik region. Similarly, in the ethnobotanical study, Dangol (2008) reported that 181 plant species were used for medicinal purposes by the Tharu and Darai communities in Chitwan district of Nepal.

Dongol (2002) documented his ethnobotanical study regarding the knowledge of the Kumal people residing in Chitwan district, Nepal, using for medicinal purpose 54 plants species among 97 are used for the purposes like medicinal, food, fodder, and ceremonial purposes. Similarly, Tamang (2003) documented the use of 44 plant species for medicinal purposes from Ghorsyang Nuwakot district. Koirala (2004) reported as Satar ethnic group people living in Korobari Jhapa district found cultivated various wild resources and plants. They have used 182 plant species for their daily life for various purposes like medicine, food, fuel, fodder, toxicant, etc.

Siwakoti et al. (2008) conducted an ethnobiological study on Rajbanshi and Dhimal people living in Eastern Nepal, were reported that 77 different plant species were used by Rajbanshi people and 76 plant species were used by Dhimal people. Furthermore, Siwakoti (2011) carried out ethnobiological study on Santal people of Eastern Nepal and reported their traditional healing practice by using 110 different plant species to treat 14 types of health problems. In a different context, Tamang and Singh (2014) reported that practicing indigenous knowledge to use different wild and domesticated plant sources for medicinal and other purposes by Lapcha people of Fikkal, Illam district Nepal, among 61 plant species, 39 plant families belonging to medicinal plant group that are helping to care for 36 different health problem. Likewise, Ghimire (2016) explored the use of plant sources for medicinal and other purposes by Munda ethnic people living in Mechinagar, Jhapa District. 61 plant species were used to cure 55 different health problems using their own traditional healing practices.

In conclusion, Baram are one of Nepal's marginalized people groups, basically dependent on forest resources for their health care and survival. Their traditional beliefs and dependence on medicinal plants for treating various health problems remain

underexplored in existing literature. Hence, this study identifies a critical research gap: it is necessary to analyze and document the use of traditional knowledge and practices on medicinal plants for healing diverse ailments of Baram people.

Research Methods

The study was based on qualitative (descriptive exploratory) ethnographic research design following constructivist research paradigm. This study had utilized the ethnographic case study research tradition. Specified Baram people are the population of this study. The study area is Barpak Sulikot Municipality (Pandrung, Takukot) of Gorkha district where highest population of Baram people is found and is considered the origin place of Baram (Baramu, 2066 BS).

Participants in the study were selected purposively, with the primary consultation with local leaders, social workers, and teachers tend to be familiar with the context and understand the purpose of the study. Six resource persons as participants in this study including local healers (Dhami/Jhankri) and elderly people, were selected. Semi-structured interviews were used as a guide with predefined questions, while also allowing for spontaneous follow-up questions based on participants' responses. This balance provides structure while allowing flexibility to explore emerging themes (Bernard, 2017). Ensuring the reliability and validity of interview data can be challenging, as responses may vary based on the context and the rapport between the interviewer and interviewee. Using multiple data sources and triangulating findings can help address this challenge (Silverman, 2013).

For the flexibility of collecting information, unstructured observation is allowed by an open-ended approach, where the researcher records observations as they happen without predefined categories. This method is particularly useful for capturing

the complexity and richness of the Baram community's cultural practices. Information was collected by creating ethnographic records by using field notes based on field observation and prepared interview notes from in-depth interviews with local healers and medicinal plants practitioners, and taking some photographs. Then, the sheet of major findings of the qualitative study was prepared. These qualitative findings are triangulated with the support of the literature, where it is appropriate and possible. Data were tabulated, which were collected from the interviews and observation, and described thematically using descriptive procedures following a qualitative process. Coding and categorizing the data help in organizing and interpreting the information effectively (Braun & Clarke, 2006). Data were coded, looked for recurring themes, and interpreted their meanings.

Concerning the ethical aspect, research adhered to these guidelines to ensure the ethical treatment of participants and the integrity of the study. This involved addressing ethical issues at every stage of the research process, from problem formulation and data collection to analysis, interpretation, and dissemination of findings. Respecting the autonomy, decision-making, and dignity of participants, ensuring their human rights were not violated. Participants were fully informed about the research procedures and potential risks, and efforts were made to minimize risks and maximize benefits. Participants were selected from groups that could benefit from the research, and community values and interests were protected.

Study Context

As the first researcher of this study, the researcher’s interest in plant science and education lies in exploring and identifying the direct and indirect use value of the plant resources, and observing the use of floral species in medicine used by the people

who composed of community. They have a strong link to the surrounding environment and the plant-animal resources present in the surrounding vegetation. People are using plant resources for the treatment of different types of illnesses and suffering. The knowledge of using the resources in medicine is important because indigenous knowledge is considered the foundation for today's modern medicine. Hence, the documentation of indigenous knowledge on the medicinal use of floral species is important for the conservation of resources and indigenous knowledge. In this regard, one of the significant communities to whom experience with rich knowledge of the use of floral resources is the Baram community. The Baram tribe is one of the marginalized ethnic groups of Nepal, rich in indigenous knowledge. Takukot and Pandrung villages of Barpak Sulikot Rural Municipality of the Gorkha district are considered the original place of the Baram tribe. As a researcher, self was from the same village, and observing and experiencing their practices, knowledge and skill of using plant resources in medicinal uses since childhood. So, I am interested in the study to explore and document the floral species used by the Baram community in medicine. Their knowledge of using the resources, their management practices and knowledge transfer pattern ultimately support the conservation of indigenous knowledge and management of plant resources.

Results and Discussion

Based on field interviews, field observations and focus group discussion, Baram people were found using several medicinal plants to heal different health problems. This research recorded a total of 112 species (of 47 families) are used as medicine plant species practiced by the Baram (Annex A). These plant species were found for the treatment of 41 different types of health problems/diseases (Annex B).

The highest numbers are from the family asteraceae and rosaceae (each 8 species), which is followed by solanaceae (6 species) and is also followed by cucurbitaceae, euphorbiaceae, verbenaceae and fabaceae each five species) and least (only one species) is from convolvulaceae, chenopodiaceae, myricaceae, etc. (Annex C).

On the other hand, the total of 80 species of plants having medicinal use from 74 genera belonging to 44 families were documented by Tamang and Sedhai (2016) from the Aarupokhari of the same district. Manandhar (1990) also described 100 species (of 93 genera, 54 families) of Medicinal Plants from different locations of the Gorkha district. This study described a total of 60 (out of 189) Baram names of the plants which are different from the Nepali name, but for other plants they use the same name as in Nepali folklore (Annex A, B). Among these Baram names, 16 same names were also described.

Among the 112 medicinal plants identified here as medicine, 36 species in local name were described by the Baramu (2066) which furthermore was supported by describing 31 species as medicine by the survey report 2074. The Baram community's extensive use of plant resources for various purposes, such as medicine which illustrates their profound ethnobotanical knowledge and dependence on natural resources. The empirical findings from the field observations and interviews with the local healers and knowledgeable individuals provide a comprehensive overview of their medicinal plant usage.

The study documents 112 species of medicinal plants from 47 families, which are used to treat 41 different types of sickness. This finding aligns with other ethnobotanical research in the region, highlighting the rich medicinal plant knowledge among indigenous communities. Manandhar (1990) documented 100 medicinal plant

species from different locations in the Gorkha district, which supports the findings of this study. The prevalence of medicinal species from families such as Asteraceae, Rosaceae, and Solanaceae is also supported by these studies.

This study tried, searched and consulted with the concerned knowledgeable persons, organizations and experts of Barams, and could not find similar studies in the Baram people in the same locality. But Tamang and Sedai (2016) had conducted a descriptive study of medicinal plants used by Barams of former Arupokhari (Aarughat RM) of the same district. They had described a total of 80 species of 74 genera belonging to 44 families used as medicine to cure 27 types of health problems. Among the total 112 medicinal plants, the greatest number (26) of species are used in heat stroke, which is followed by cough (20, gastritis -19, stomachache -14, common cold -13, diarrhoea -9, and excessive fat accumulation (steatorrhea) -9 (Annex B). A detailed list of the plants used in different 41 illnesses is given in Table 4. According to Tamang and Sedhai (2016), 14 species are used in cough, 9 species in cold, 9 species for fever, 9 species for gastritis, 8 species in wound, 7 species in diarrhoea from 80 medicinal plant species.

Humans have been strongly connected with plants and animals since the beginning of civilization. Manandhar (2002) pointed out that the connection with nature can help understand the relationship between humans and plants, how humans use the plants for their daily living as food, technology of curing different health problems. Similarly, modern technology and treatment system today is supported by the use of traditional knowledge and practices gained from the experience of our ancestors (Manandhar, 1998). Ethnic groups have their own beliefs and ways of using plant

resources for healing different health problems and taking benefits from forest products (Ghorbani et al., 2012).

Conclusion and Implications

The Baram community possesses indigenous knowledge of plant resource utilization in medicine. To heal different diseases and health problems, they had been sorted out 47 families that are used in medicine and unique methods for using these resources. These plants are distributed to the Himalayan region, aligning with their environment and sustainable practices. These plant species have high medicinal benefits. The Baram people's sustainable use of these plants also reflects their respect for biodiversity and the environment. Protecting the Baram people's access to native plants is essential for safeguarding their cultural and religious practices, which contribute to Nepal's rich tapestry of ethnic diversity and ecological stewardship.

The commercial cultivation of medicinal plants is essential for sustainable resource management and economic development. By providing guidelines and training, local communities can engage in cultivating these plants, ensuring their availability for future use. Policies should also integrate indigenous knowledge into formal education systems to promote awareness of traditional practices and resource conservation. Supporting indigenous ecological knowledge through resources and incentives can aid in preserving biodiversity and natural resources. Documenting and preserving the knowledge of local healers is crucial for safeguarding cultural heritage and advancing ethnomedicine. Educational strategies like storytelling and role-playing, along with community involvement, are effective methods for transmitting indigenous knowledge. Awareness programs should be conducted to highlight the value of traditional medicines and engage the community in conservation efforts. Additionally,

encouraging local healers to mentor younger generations ensures the continuity of valuable medicinal knowledge.

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Interest of Conflict

The authors declare no conflict of interest in the entire research procedures, research findings and publication process of this manuscript.

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Annex A

List of Medicinal Plant species used by Baram

SN	Family	Scientific name of plants	Local name	Baram name	English name	Parts used
1	Acanthaceae	*Justicia adhatoda* L.	Asuro	Asuro*	Malabar nut tree	Leaves
2	Acanthaceae	*Justicia simplex* D.Don.	Phuli jhar			Whole plant
3	Amaranthaceae	*Amaranthus spinulosus* L	Kande lude		Spiny pigweed	Whole plant
4	Amaranthaceae	*Achyranthes aspera* L.	Dattiwan	Dattiun	Chaff flower	Stem
5	Anacardiaceae	*Mangifera indica* L.	Anap	Aamp	Mango	Stem, leaf, fruit
6	Anacardiaceae	*Semecarpus anacardium* L.	Bhalayo	Jung	Marking nut tree	stem, fruit
7	Apiaceae	*Hydrocotyle sibthorpioides* Lam.	Sano ghodtapre		Lawn pennywort	Whole plant
8	Apiaceae	*Centella asiatica* L.	Thulo ghodtapre	Ghotapre	Indian pennywort	Whole plant
9	Apiaceae	*Anethum graveolens* L.	Soup		Dill	Stem, leaf
10	Araceae	*Acorus calamus* L.	Bojho		Sweet flag	Root
11	Asteraceae	*Ageratum conyzoides* L.	Gandhe		Goat weed	Leaf, Stem

12	Asteraceae	*Eupatorium adenophorum* Spring	Banmasa		Croftonweed	Stem, leaf
13	Asteraceae	*Artemisia dubia* Wall	Titepati		Mugwort	Stem, leaf
14	Asteraceae	*Inula cappa* (Buch.-Ham. ex D. Don) DC	Gaitihare		Golden samphire	Stem, leaf, flower
15	Asteraceae	*Tagetes erecta* L.	Sayapatriful		African miragold	Flowers, leaf
16	Asteraceae	*Gnaphalium polycaulon P*ers.	Bokeful		Cudwed	Stem, leaf, flower
17	Asteraceae	*Elephantopus scaber* L.	Sahashra buti			Whole plant
18	Asteraceae	*Spilanthes paniculata*Wall. ex DC.	Goraspan			Leaf
19	Bignoniaceae	*Oroxylum indicum* L.	Tatelo		Indian trumplet flower	Fruit, stem
20	Bombacaceae	*Bombax ceiba* L.	Simal	Ho	Kapok	Flower, leaf, stem
21	Bombacaceae	*Gmelina arborea* Roxb.	Khamari		Malay bueh beech	Stem, leaf
22	Brassicaceae	*Raphanus sativus* L.	Mula		Radish	Leaves, root
23	Bromeliaceae	*Ananus comosus* (L.) Merr	Bhuin katahar		Pine apple	Fruit

24	Cactaceae	*Cereus peruvianus* L.	Siundi		Cactus	Stem
25	Cannabinaceae	*Canabis sativa* L.	Ganja	Ganja	True hump	Fruit
26	Capparaceae	*Crateva unilocularis* Buch. -Ham	Sipligan	Chyamli	Garlic pear	Leaf, tuber
27	Caricaceae	*Carica papaya* L.	Mewa		Papaya	Fruit
28	Caryophyllaceae	*Drymaria diandra* Blume	Abijale		Lightening weed	Whole plant
29	Chenopodiaceae	*Chenopodium album* L.	Bethu		Lambs quarter	Stem, leaf
30	Combrataceae	*Terminalia bellerica* Roxb.	Barro	Barra	Bedda Nuts	Leaf, fruit
31	Combrataceae	*Terminalia chebula* Roxb.	Harro	Harra	Myrobalan	Leaf, fruit
32	Combrataceae	*Terminalia alata* Heyne ex Roth	Saaj	Dha	Laurel tree	Leaf, stem
33	Convolvulaceae	*Poranopsis panic ulata* (Roxb.) Roberty.	Shikari Lahara	Shikari Lahara	Bridal boquet	Root
34	Cordiaceae	*Cordia dichotoma* J.R. Frost.	Bohori		Large sebesten	Stem
35	Cucurbitaceae	*Luffa cylindrica* L.	Ghiraunla	Ghiramla	Sponge	Fruit, leaf
36	Cucurbitaceae	*Benicasa hispida* Thunb.	Kubindo		White guard	Fruit

37	Cucurbitaceae	*Cucumis sativus* L.	Kankro		Cucumber	Fruit
38	Cucurbitaceae	*Momordica charantia* L.	Karela		Bitter guard	Fruit
39	Cucurbitaceae	*Coccinia grandis* L. vioget	Goalkankri		Ivy guard	Fruit
40	Elaeocarpaceae	*Elaeocarpus sphaericus* L.	Rudrakshya		Rosery Nut	Fruit
41	Euphorbiaceae	*Holarrhena pubescens* Wall ex.G. Don	Bankhirro	Khirra	Conessi	Leaf
42	Euphorbiaceae	*Mallotus philippensis* Muel. Arg	Kancho simrik	Kachosimri, Pagusimri	Monkey Face Tree	Fruit
43	Euphorbiaceae	*Euphorbia hirta* L.	Dudhe jhar		Snack weed	Whole plant
44	Euphorbiaceae	*Phyllanthus emblica* L.	Amala		Emblic myrobalam	Stem, leaf, fruit
45	Euphorbiaceae	*Jatropha curcus* L.	Sajiban		Physic Nut	Stem, fruit
46	Fabaceae	*Lagerstroemia parviflora* Roxb.	Budhodhairo			Stem, Leaf
47	Fabaceae	*Dolichos biflorus* Roxb.	Gahat		Horse grain	Fruit
48	Fabaceae	*Bauhinia variegata* L.	Koiralo	Puntho, Koiralo*	Kachnar	Stem, leaf
49	Fabaceae	*Mimosa pudica* L.	Lajjwoti jhar		Touch me not	Whole plant

50	Fagaceae	*Castanopsis indica* Roxb.	Katus	Bharwaa	Chestnut	Stem, fruit, leaf
51	Gesneriaceae	*Aeschynanthus parviflorus* (D.Don) Spreng.		Thirjo, Thircho	Sikkim Blush wort	Whole Plant
52	Juglandaceae	*Engelharatia spicata* Sch. Ex.	Mauwa			Stem, leaf
53	Lamiaceae	*Colebrookea oppositifolia* Sm.	Dhursilo		Indian squirral tail	Root
54	Lamiaceae	*Pogostemon bengalensis* Kuntze	Sano Rudilo			Leaf
55	Lamiaceae	*Mentha spicata* L.	Patena		Mint	Leaf
56	Lamiaceae	*Ocimum sanctum* L.	Tulasi		Basil	Whole plant
57	Liliaceae	*Aloe vera* (L.) Burm.f.	Ghukumari		Aloe vera	Leaf
58	Liliaceae	*Smilax ovalifolia* Roxb. ex D.Don.	Kukurdaaino		Rough bird Weed	Leaf, stem
59	Liliaceae	*Asparagus officinalis* L.	Kurilo	Aampunag	Asparagus	Root, fruit
60	Liliaceae	*Allium sativum* L.	Lasun		Garlic	Root, leaf
61	Loranthaceae	*Viscum album* L.	Harchool	Hardul, Harchul	Mistletoe	Leaf
62	Lythraceae	*Woodfordia fruticosa* (L.) Kurz	Dhayanri		Fire flame brush	Stem, leaf

63	Melastomataceae	*Melastoma melabatracum* L.	Bhale angari		Indian rhododendron	Leaf
64	Melastomataceae	*Osbeckia nepalensis* Hook	Angeri			Fruit
65	Meliaceae	*Azadirachta indica* L.	Nim		Neem or Margosa	Leaf
66	Menispermaceae	*Tinospora sinensis* (Lour). Merr.	Gurjo		Chinese tinospora	stem
67	Menispermaceae	*Cissampelos pareira* L.	Badulpate		Ice vine	whole plant
68	Moraceae	*Ficus religiosa* L.	Pipal	Pipal	Sacredfig	Whole plant
69	Moraceae	*Ficus lacor* L.	Kapro		Java fig	Whole plant
70	Moraceae	*Morus alba* L.	Kimbu		Mulberry	Fruit, leaf
71	Moraceae	*Ficus semicordata* buch Ham	Khanayo	Aaikok, Aankok*	Fodder fig	Leaf, stem, fruit
72	Musaceae	*Musa paradisiaca* L.	Kera	Umse	Banana	Fiuit, root
73	Myricaceae	*Myrica esculenta* Buch-Ham.ex.D.Don	Rukh Kafal		Boxmyrtile	stem, leaf, fruit
74	Myrtaceae	*Psidium guajava* L.	Amba	Aamba, Amphal*	Gauva	Fruit, stem
75	Myrtaceae	*Cleistocalyx operculata* Roxb.	Kyamuna	Bandhuwa	Black plum	Leaf,fruit

76	Oleaceae	*Nyctanthes arbortristis* L.	Parijat		Cock come	Leaf, flower
77	Poaceae	*Saccharum officinarum* L.	Ukhu	Khum	Sugarcane	Stem
78	Poaceae	*Cynodon dactylon* (L.) Pers	Dubo		Doobgrass	Whole plant
79	Poaceae	*Thysonalaena maxima (Ro*xb.)	Amriso	Astun, Amriso*	Bouquet	Whole plant
80	Puniaceae	*Punica granatum* L.	Anar		Pomegranate	Fruit, stem
81	Rhamnaceae	*Zizyphus mauritiana* Lam.	Bayer		Jujube (Chinese date)	Fruit
82	Rosaceae	*Prunus cerasoides* D. Don	Painyu	Paiyan*	Himalayan cherry	leaf, stem
83	Rosaceae	*Rubus ellipticus* Sm.	Ainselu	Aaisang, Ausalu*	Raspberry	Whole plant
84	Rosaceae	*Pyrus communis* L.	Nasapati		Pear	Fruit
85	Rosaceae	*Rosa alba* L.	Gulab		Rose	Flower
86	Rosaceae	*Mussaenda roxburghii* Hook	Dhobini			Root
87	Rosaceae	*Citrus limon* (L.) Burm.	Nibuwa		Lemon or otaheite orange	Fruit, stem
88	Rosaceae	*Citrus aurantifolia* (Christ.) Swingle	Kagati		Lime	Fruit

89	Rosaceae	*Citrus chrysocarpa* L.	Suntala		Orange	Fruit
90	Rosaceae	*Citrus jambhiri* L.	Jyamir	Jambe, Jembe	Rough lemon	Fruit
91	Rutaceae	*Zanthoxylum oxyphyllum* Edgew.	Siltimur			Stem, Leaf
92	Rutaceae	*Zanthoxylum armatum* Dc.	Buketimur	Ukhmang	Anise pepper	Fruit
93	Rutaceae	*Aegle marmelos* (L.) Correa	Bel		Aegle	Fruit
94	Rutaceae	*Citrus sinensis* (L.) Osbeck. Var.jungar	Junar			Fruit
95	Sapotaceae	*Diploknema butyracea* Roxb	Chiuri	In*	neplease butter fruit	Fruit, stem,leaf
96	Solanaceae	*Solanum tuberosum* L.	Aalu	Aalu*	Potota	Root
97	Solanaceae	*Capsicum annuum* L.	Khursani	Aashok*, Gibbon	Chilli	Fruit, root
98	Solanaceae	*Lycopersicon esculentum* Mill.	Golbhenda	Golbheda	Tamato	Fruit
99	Solanaceae	*Datura met al* L.	Dhaturo	Dhaturo*	Thorn apple	Fruit,leaf
100	Solanaceae	*Solanum surttense* Burm.F.	Kanthakari		Indian salanum	Stem
101	Solanaceae	*Schima wallichi*i (DC.) Korth	Chilaune	Kengma	Needle wood	Stem

102	Urticaceae	*Urtica dioca* L.	Sisno	Aayak	Stinging nettle	Whole plant
103	Urticaceae	*Gonostegia hirta* Miq.	Narche or chiple	Chiple ghans	Gonostegia	Stem
104	Verbenaceae	*Clerodendron serratum* L.	Chuwaful			Stem, leaf, Flower
105	Verbenaceae	*Premna bengalensis* L.	Kande gideri		Black premna	Stem, leaf
106	Verbenaceae	*Callicarpa Macrophylla* Vahl	Dhaikamla		Beauty berry	Root and fruit
107	Verbenaceae	*Vitex negundo* L.	Simali		Five lived tree	Leaf
108	Verbenaceae	*Premna integrifolia* L.	Gineri		Headache tree	Stem, leaf
109	Zingiberaceae	*Zingiber officinale* Rose.	Aduwa	Aduwa*	Ginger	whole plant
110	Zingiberaceae	*Cautleya spicata* Backer in Hook	Pani saro			Root
111	Zingiberaceae	*Curcuma angustifolia* Roxb.	Besar	Haledo		Root
112	Zingiberaceae	*Amomum subulatum* Roxb.	Alainchi	Alaichi*	Nepal cardamom	Fruit

Annex B

Reported Health problems/diseases and plant species for curing them.

SN	Health Problems (no of spp.)	Plant species
1	Heat stroke (26 species) (a condition marked by fever and often by unconsciousness, caused by failure of the body's temperature-regulating mechanism when exposed to excessively high temperatures.)	***Achyranthes aspera L.,*** *Aloe vera* (L.) Burm. f., *Amaranthus spinulosus* L., *Ananus comosus* (L.) Merr., *Asparagus officinalis* L., *Benicasa hispida* Thunb., *Bombax ceiba* L., *Castanopsis indica* (Roxb.) Miq., *Cautleya spicata* (Sm.) Baker in Hook, *Cissampelos pareira* L., *Citrus aurantifolia* Single, *Citrus limon* L., *Citrus jambhiri* L., *Coccinia grandis* (L.) Vioget., *Crateva unilocularis* Buch.-Ham, *Cynodon dactylon* (L) Pers., *Diploknema butyracea* (Roxb.) H.J. Lam, *Elephantopus scaber* L., *Mangifera indica* L., *Gonostegia hirta* (Blume) Miq., *Musa paradisiaca* L., *Phyllanthus emblica* L., *Premna integrifolia* L., *Premna bengalensis* L., *Tinospora sinensis* (Lour.) Merr., *Urtica dioca* L.,
2	Cough (20) (A natural reflex action of removing irritants from our body; throat and lungs.)	*Acorus calamus* L*, Mangifera indica* L., *Terminalia bellerica* Roxb., *Terminalia chebula* Retz., *Lagerstroemia parviflora* Roxb., *Citrus chrysocarpa* L., *Pogostemon bengalensis* Kuntze., *Zingiber officinale* Rosc., *Phyllanthus emblica* L., *Cleistocalyx operculata* (Roxb.) Merr. & Perry, *Cissampelos pareira* L., *Smilax ovalifolia* Roxb., *Azadirachta indica* A. Juss., *Nyctanthes arbor-tristis* L., *Ocimum sanctum* L., *Jatropha curcus* L., *Bombax ceiba* L., *Drymaria diandra* Blume, *Cordia dichotoma* J.R. Frost., *Curcuma angustifolia* Roxb.
3	Gastritis (19) (inflammation of the stomach)	*Zanthoxylum armatum* Dc., *Anethum graveolens* L*, Elephantopus scaber* L., *Terminalia bellerica* Roxb., *Terminalia chebula* Retz., *Lagerstroemia parviflora* Roxb.,

		Ficus religiosa L., *Zanthoxylum oxyphyllum* Edgew., *Justicia adhatoda* L., *Mimosa pudica* L., *Inula cappa* (Buch. -Ham. Ex D.Don) DC., *Rubus ellipticus* Sm., *Phyllanthus emblica* L., *Vitex negundo* L., *Allium sativum* L., *Holarrhaena pubescens* (Buch-Ham) Wall. ex. G.Don., *Curcuma angustifolia* Roxb., *Coccinia grandis* (L.) Vioget., *Psidium guajava* L.
4	Stomachache (18) (pain or disorder in stomach region)	*Zanthoxylum armatum* Dc., *Terminalia bellerica* Roxb., *Terminalia chebula* Retz., *Lagerstroemia parviflora* Roxb., *Mallotus philippensis* (Lam.) Mull.-Arg., *Citrus chrysocarpa* L., *Capsicum annuum* L., *Euphorbia hirta* L., *Prunus cerasoides* D. Don, *Bauhinia variegata* L., *Psidium guajava* L., *Asparagus officinalis* L., *Holarrhena pubescens* (Buch-Ham) Wall. ex. G.Don.,*Acorus calamus* L., *Solanum surttense* Brumf., *Amomum subulatum* Roxb., *Psidium guajava* L., *Spilanthes paniulata* Wall. ex DC
5	Common cold (13) (viral infection in our nose and throat)	*Mangifera indica* L., *Terminalia bellerica* Roxb., *Terminalia chebula* Retz., *Pogostemon bengalensis* Kuntze., *Zingiber officinale* Rosc., *Phyllanthus emblica* L., *Cleistocalyx operculata* (Roxb.) Merr. & Perry, *Smilax ovalifolia* Roxb., *Azadirachta indica* A. Juss., *Nyctanthes arbor-tristis* L., *Ocimum sanctum* L., *Bombax ceiba* L., *Drymaria diandra* Blume
6	Diarrhoea (9) (A common symptom of gastr-ointestinal diseases resulting in frequent discharge of watery stool.)	*Datura met al* L., *Prunus cerasoides* D. Don, *Bauhinia variegata* L., *Psidium guajava* L., *Ficus semicordata* Buch-Ham, *Terminalia alata* Heyne ex. Roth, *Pyrus communis* L., *Aegle marmelos* (L.) Correa, *Psidium guajava* L.

7	(steatorrhea (9) (illness resulted due to excessive intake of oil and fatty edibles)	*Luffa cylindrica* L., *Lagerstroemia parviflora* Roxb., *Gonostegia hirta* (Blume) Miq., *Bauhinia variegata* L., *Psidium guajava* L., *Ficus semicordata* Buch-Ham, *Cissampelos pareira* L., *Terminalia alata* Heyne ex. Roth., *Psidium guajava* L.
8	Begar (8) (unwilling to have food and have discomfort in the stomach)	*Schima wallichii* (DC) Korth., *Melastoma melabatracum* L., *Clerodendron serratum* L., *Cereus peruvianus* L., *Osbeckia nepalensis* Hook., *Cissampelos pareira* L., *Callicarpa macrophylla* Vahl, *Coccinia grandis* (L.) Vioget.
9	Jaundice (8) (raised level of bilirubin producing yellowness in mucous membrane and eyes.)	*Citrus limon* L., *Citrus aurantifolia* Single, *Mimosa pudica* L., *Saccharum officinarum* L., *Vitex negundo* L., *Elaeocarpus sphaericus* (Gaertn.), *Diploknema butyracea* (Roxb.) H.J. Lam, *Carica papaya* L.,
10	Fever (8) (temporary rise in body temperature)	*Achyranthes aspera L.*, *Citrus limon* L., *Psidium guajava* L., *Citrus jambhiri* L., *Premna bengalensis* L., *Callicarpa macrophylla* Vahl, *Asparagus officinalis* L., *Datura met al* L.
11	Sprain (8) (a stretching or tearing of ligaments, Markinu) and fracture	*Aeschynanthus parviflorus* (D.Don) Spreng., *Viscum album* L, *Ageratum conyzoides* L., *Eupatorium adenophorum* Spreng., *Centella asiatica* (L.) Urb., *Poranopsis paniculata* Roxb., *Mallotus philippensis* (Lam.) Mull.-Arg.,., *Artemisia dubia* Wall.,
12	Sore throat and tonsillitis (8) (inflammation of the tonsil an throat)	*Acorus calamus* L, *Azadirachta indica* A. Juss., *Lagerstroemia parviflora* Roxb., *Cissampelos pareira* L., *Jatropha curcus* L., *Cleistocalyx operculata* (Roxb.) Merr. & Perry, *Callicarpa macrophylla* Vahl, *Vitex negundo* L.
13	Ganogola (7) (type of hernia)	*Zanthoxylum armatum* Dc., *Lagerstroemia parviflora* Roxb., *Mallotus philippensis* (Lam.) Mull.-Arg., *Zanthoxylum oxyphyllum* Edgew., *Thysanolaena maxima* (Roxb.),

		G*naphalium polycaulon* Pers., *Spilanthes paniulata* Wall. ex DC
14	Hypertension/Hypotension (7) (rise or fall in blood pressure)	*Urtica dioca* L., *Aloe vera* (L.) Burm. f., *Crateva unilocularis* Buch.-Ham., *Justicia adhatoda* L., *Vitex negundo* L., *Momordica charantia* L., *Cautleya spicata* (Sm.) Baker in Hook
15	Small Cuts (6)	*Ageratum conyzoides* L., *Eupatorium adenophorum* Spreng., *Tagetes erecta* L., *Poranopsis paniculata* Roxb., *Artemisia dubia* Wall., *Terminalia alata* Heyne ex. Roth,
16	Kufat (6) (loss of appetite, thickening the outer layer of tongue)	*Hydrocotyle sibthorpioides* Lam., *Mussaenda roxburghii* Hook, *Euphorbia hirta* L., *Callicarpa macrophylla Drymaria diandra* Blume, *Solanum surttense* Brumf.
17	Indigestion (6) (discomfort in upper abdomen, dyspepsia)	*Anethum graveolens* L*., Zanthoxylum oxyphyllum* Edgew., *Gonostegia hirta* (Blume) Miq., *Zizyphus mauritiana* Lam., *Cissampelos pareira* L., *Curcuma angustifolia* Roxb.,
18	Loss of appetite (5)	*Cannabis sativa* L*., Gonostegia hirta* (Blume) Miq., *Bauhinia variegata* L., *Zizyphus mauritiana* Lam., *Mentha spicata* L.
19	Dysentery (4) (frequent stools containing blood and mucus)	*Psidium guajava* L., *Pyrus communis* L., *Aegle marmelos* (L.) Correa, *Woodfordia fruticosa* (L.) Kurtz.,
20	Diabetes (3) (sugar and starch are not properly metabolized)	*Terminalia bellerica* Roxb., *Urtica dioca* L., *Mimosa pudica* L.
21	Kidney stone (3)	*Dolichos biflorus* Roxb., *Citrus limon* L., *Citrus aurantifolia* Single,
22	Skin allergy (4)	*Artemisia dubia* Wall., *Mimosa pudica* L., *Semecarpus anacardium* L., *Curcuma angustifolia* Roxb.
23	Headache (2)	*Asparagus officinalis* L., *Solanum surttense* Brumf.
24	Excessive blood flow during delivery (3)	*Chenopodium album* L., *Myrica esculenta* Buch.-Ham. ex.D. Don, *Castanopsis indica* (Roxb.) Miq.

25	Anti-septic and cosmetic (skin brightening) (3)	*Rosa alba* L., *Lycopersicon esculentum* Mill., *Aloe vera* (L.) Burm.F.
26	Constipation (3) (frequent difficult bowl movement characterized by dry and hard faces)	*Raphanus stivus* L., *Terminalia bellerica* Roxb., *Terminalia chebula* Retz., *Phyllanthus emblica* L.
27	Burn (3) (injury caused by fire, heat and radiation)	*Aloe vera* (L.) Burm. f., *Lycopersicon esculentum* Mill., *Solanum tuberosum* L.
28	Asthma (3) (inflammation in the bronchial tube)	*Cannabis sativa* L., *Justicia adhatoda* L., *Rubus ellipticus* Sm.
29	Wound and wound marks/ blisters (3)	*Poranopsis paniculata* Roxb., *Citrus limon* L., *Vitex negundo* L.
30	Anemia (2) (reducing the number of blood cells and hemoglobin)	*Saccharum officinarum* L., *Punica granatum* L., *Citrus sinensis* (L.) Osbeck. Var. jungar
31	Hangover of alcohol (2)	*Justicia simplex* (D.Don), *Elephantopus scaber* L.
32	Shivering fever (2) (Kapne jworo; Local)	*Cynodon dactylon* (L) Pers., *Mentha spicata* L.
33	Snake bite (1)	*Rubus ellipticus* Sm.,
34	Back pain, knee pain (2)	*Smilax ovalifolia* Roxb., *Artemisia dubia* Wall., *Datura met al* L., Debrekumai
35	Developing infertility (1)	*Poranopsis paniculata* Roxb.
36	Depression/mental illness (1)	*Cannabis sativa* L., *Nardostachys grandiflora* DC. (purchased from the market), *Centella asiatic*a
37	Abortion (1)	*Cereus peruvianus* L.
38	Sinusitis (Pinas; nep; inflammation and swelling in the sinuses) (1)	*Cleistocalyx operculata* (Roxb.) Merr. & Perry

39	Blood purification (1)	*Momordica charantia* L.
40	Removing intestinal worms (1)	*Spilanthes paniulata* Wall. ex DC
41	Toothache (1) (pain in and around the tooth)	*Spilanthes paniulata* Wall. ex DC., *Solanum surttense* Brumf.

Annex C

Family wise number of species having medicinal value