

**MEDICAL ETHNOBIOLOGY AND INDIGENOUS KNOWLEDGE
SYSTEM FOUND IN RAJI GROUP OF NEPAL
(A case study of Uttarganga Village Development Committee,
Surkhet, Nepal)**



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Degree of Master of Science in Zoology with special paper Ecology and
Environment**

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DECLARATION

I hereby declare that the work presented in this thesis has been done by myself, and has not been submitted elsewhere for the award of any degree. All sources of information have been specifically acknowledged by reference to the author(s) or institution(s).

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RECOMMENDATIONS

This is to recommend that the thesis entitled, **Medical Ethnobiology and Indigenous Knowledge System Found in Raji Group in Surkhet District: A Case Study of Uttarganga Village Development Committee**” has been carried out by **Ms. Mamta Paudel** for the partial fulfilment of the Degree of Master of Science in Zoology with special paper Ecology and Environment. This is her original work and has been carried out under my supervision. To the best of my knowledge, this thesis work has not been submitted for any other degree in any institutions.

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On recommendation of supervisor Prof. Dr. Nanda Bahadur Singh, this thesis submitted by Ms. Mamta Paudel entitled, **Medical EthnoBiology And Indigenous Knowledge System Found In Raji Group In Surkhet District: A Case Study Of Uttarganga Village Development Committee**”is approved for examination and submitted to the Tribhuvan University in partial fulfilment of the requirements for the Degree of Master of Science in Zoology with special paper Ecology and Environment.

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CERTIFICATE OF ACCEPTANCE

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ABSTRACT

This study has been carried out in Uttarganga VDC (currently Birendranagar- 19) of Surkhet District, Nepal with the objective to document the ethnography, explore the traditional knowledge of medicinal animals and plants used by Raji people for the treatment of different diseases and to explore the indigenous knowledge system found on them. Studies have been conducted in two different seasons in 20-26 June 2014 and 20-25 April 2015. For the data collection, group discussions, key informant questionnaire survey to Raji local healers and elder people have been carried out. The study revealed that Raji people use 36 animal species for the treatment of 30 types of ailments and 91 plants species are used to treat 60 types of diseases. Meat, skin, bone, blood, dung, carapace, urine, whole organism, tail, egg and fats of animal parts are used as traditional medicine. Similarly, plant parts such as root, fruit, leaf, whole plant, flower, latex, shoot stem hair, bark, rhizome, seed and young shoot are found to be used by the Raji people. They have deep respect on indigenous knowledge such as biodiversity conservation, agricultural practice, medicinal practices for livelihood, yeast making practices and art, craft and technology. However, indigenous knowledge and skills of medication have been less focused these days among the Raji people because of their inclination towards modern medicine and hospital facilities. It would be better to provide education, motivation to local healers and documentation on the use of such medicinal animals and plants to preserve such knowledge. Hence, to analyze and document the traditional medication system of the community is the ultimate objective of this thesis paper.

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TABLE OF CONTENTS

| TITLE | PAGE NO. |
|--|-----------------|
| DECLARATION | I |
| RECOMMENDATIONS | II |
| LETTER OF APROVAL | III |
| CERTIFICATE OF ACCEPTANCE | IV |
| ABSTRACT | V |
| ACKNOWLEDGEMENTS | VI |
| TABLE OF CONTENTS | |
| LIST OF FIGURES | |
| LIST OF ABBREVIATIONS | |
| 1. INTRODUCTION | 1-3 |
| 1.1 Background | 1 |
| 1.2 Objective of the study | 3 |
| 1.3 Rationale | 3 |
| 2. LITERATURE REVIEW | 4-9 |
| 3. MATERIALS AND METHODS | 10-13 |
| 3.1 Study area | 10 |
| 3.1.1 Location | 10 |
| 3.1.2 Climate | 11 |
| 3.1.3 Vegetation | 11 |
| 3.1.4 Wildlife | 11 |
| 3.1.5 Demography | 11 |
| 3.2 Nature and source of data | 11 |
| 3.2.1 Primary data collection | 11 |
| 3.2.1.1 Group discussion | 11 |
| 3.1.1.2 Interview with key informants | 12 |
| 3.2.1.3 Field visit and observation | 12 |
| 3.2.1.4 Sample collection and identification | 12 |
| 3.2.2 Secondary data | 12 |
| 3.3 Limitations | 12 |
| 4. RESULTS | 14-55 |
| 4.1 Ethnography of Raji | 14 |
| 4.1.1 Origin | 14 |
| 4.1.2 Physical features | 14 |
| 4.1.3 Language | 14 |
| 4.1.4 Dress and ornaments | 14 |
| 4.1.5 Education | 14 |
| 4.1.6 Occupation and economy | 15 |
| 4.1.7 Religion and festivals | 15 |
| 4.1.8 Dance | 16 |
| 4.1.9 Lifecycle rituals | 16 |

| | |
|--|-------|
| 4.1.9.1 Birth | 16 |
| 4.1.9.2 Marriage | 16 |
| 4.1.9.3 Death | 17 |
| 4.1.9.4 Association | 18 |
| 4.2 Medical ethnobiology | 18 |
| 4.2.1 Medical ethnozoology | 18 |
| 4.2.1.1 Animal parts/ product used | 19 |
| 4.2.1.2 Description of animal used in medication | 20 |
| 4.2.2 Medical ethnobotany | 29 |
| 4.2.2.1 Description of plants used in medication | 30 |
| 4.3 Indigenous knowledge system | 52 |
| 4.3.1 Biodiversity conservation | 52 |
| 4.3.1.1 Wildlife hunting and trapping | 52 |
| 4.3.1.2 Conservation of wildlife | 53 |
| 4.3.2 Agricultural practice | 53 |
| 4.3.2.1 Pest management in field | 53 |
| 4.3.2.2 Livestocks and poltery practice | 54 |
| 4.3.2.3Storage of grains | 54 |
| 4.3.2.4 Medicinal practices for livestock | 54 |
| 4.3.3 Yeast making practice | 54 |
| 4.3.4 Art, craft and technology | 55 |
| 4.3.5 Boat making and Boating | 55 |
| 5. DISCUSSION | 56-60 |
| 6. CONCLUSION | 61-62 |
| 7. RECOMMENDATIONS | 63 |
| 8. REFERENCES | 64-70 |
| ANNEXES | 71-86 |
| Annex 1: Checklist | 71-73 |
| Annex 2: List of Tables | 74-85 |
| Table 1: Animals having medicinal values on Raji community | 74 |
| Table 2: Disease treated by using animal species | 77 |
| Table 3: Plants having medicinal values on Raji community | 78 |
| Table 4: Diseases treated by using plant species | 83 |
| Annex 3: List of Photographs | 86 |

LIST OF FIGURES

| TITLE | PAGE NO. |
|--|-----------------|
| Figure 1: Location of Uttarganga VDC in Surkhet district | 11 |
| Figure 2: The number of animal belonging to different classes | 20 |
| Figure 3: The different product/ organ used for medication | 22 |
| Figure 4: The number of plants belonging to their different life forms | 36 |
| Figure 5: The different forms of medication by using plants part | 40 |
| Figure 6: The different parts/ products of plant used for medication | 40 |

LIST OF ABBREVIATIONS

ANM-Auxillary nurse midwifery

BC- Before Christ

CBS- Central Bureau of Statistics

IUCN- International Union for Conservation of Nature

Km- Kilometer

Spp- Species

VDC- Village Development Committee

1. INTRODUCTION

1.1 Background

Nepal is a country with diverse climate and topography. It lies in South Asia between the east medians of 88°4' East to 88° 12' East and parallel of 26°12' north to 30°27' North latitude. It has an area of 147,181 square km. Country is rich in geographic diversity, biomes, ecosystem diversity and economically important flora and fauna. Along with the diverse fauna and flora the country endows an array of ethnic groups rich in tradition, culture and indigenous system. Different ethnic group practiced their own indigenous and tradition healing system by utilizing their natural resources. Still about 80%-90% people living in rural area of Nepal depend directly on the traditional medicine for health care (Bhattra 1992).

National population census 2011 has recorded 125 different ethnic groups all over Nepal (CBS 2012). Nepal is a home for different cast and indigenous ethnic people as they have been developing distinctive culture, languages, religion, history, tradition. Indigenous people live close to the nature. They have strong sense of connection to the natural world, and maintain the relationship with the nature.

Indigenous knowledge has become recognized in whole world not only because of its intrinsic value but also because it has potentiality to science and conservation. In Nepal the indigenous knowledge of useful and medicinal animals and plants have roots in the remote past. Ethnobiology and Indigenous knowledge, major sub topic of science under Zoology and Botany forms the study of the subject.

Ethnobiology has two sub disciplines; ethnobotany and ethnozoology. In ethno botany relationship between plants and human is studied. Likewise, ethnozoology is the study of relationship between animal and human. In nature there is deep relationship between human, animals and plants.

Ethnomedicine (medical ethnobiology) is the component of ethnobiology. According to (Foster and Anderson 1978) "ethno medicine develops the totality of health knowledge, value, belief, skill and practices relating to disease which are the products of indigenous cultural development and are not explicitly derived from the conceptual framework of modern medicine".

Among the 125 ethnic indigenous nationalities Raji is one of them. These are originated from Surkhet and migrated towards Dang, Bardia, Kailali and Kanchanpur district of Mid- Western and Far- Western Development of Nepal. They believe to be similar to Raute in the past but later they settled on their own permanent community.

Rajis are considered among the one of 10 least known endangered indigenous groups (Maskey 2007). Agriculture is their main occupation. They are rich in their culture, tradition and indigenous knowledge system. They use traditional method to healing the diseases by using various parts of animals and plants. They also developed deep respect from the living organism and incorporated them in a myriad of ways into their spiritual belief and practices.

Ethnobiology is the scientific study of the way animal and plants are used by different human cultures. It study the interrelations between cultural groups, biota and environments from past to immediate present. On the basis of available natural resources the ethnic community developed their own indigenous knowledge to heal their ailments. The ethnobiological study aims to promote the exchange of original knowledge and research in any area.

The ethnic people developed their valuable knowledge depending on the climate where they inhabit, ecology, culture and tradition which helps to sustain the society (Maskey 2007). But this indigenous knowledge for treating the diseases is the hidden treasure of the whole world which can provide essential information for human beings in this modern world only if we are successful to document them properly.

Objectives of the study:

General objective:

The general objective of the research is to explore the medical ethnobiology and indigenous knowledge found on the Raji community in Uttarganga VDC of Surkhet district.

Specific objectives:

To study and document the ethnography of Raji community.

To explore the traditional knowledge of medicinal animal and plants used by Raji community for the treatment of various diseases.

To explore the indigenous knowledge system found in Raji group.

Rationale

Raji community particularly inhabit the inner Terai as well as hills found in many areas of west Nepal, though their main areas of settlement is chure hills of mid western Nepal (Maskey 2007). They are continuously in contact with nature, and have developed

appropriate tools for adaptation in the environment such as indigenous knowledge system. They have interesting ethnography and own indigenous medicinal knowledge by using various animals and plants as the main resource of medicine. However, these resources are poorly documented and still that are stored in people's memories and activities. As this knowledge is transmitted orally, it is vulnerable to change especially where people are displaced or when young people acquire different lifestyles. It is obvious that when a knowledgeable elder person dies, a whole library will be disappeared and cannot be recovered. Thus, inventory of such medicinal animals and plants is soon essential. Uttarganga is adjoining to the community forest which is considered to be rich source of medicinal animals and plants for the Raji people. Therefore, the research on medical ethnobiology of Raji community in Uttarganga VDC is very essential.

2. LITERATURE REVIEW

The usage of plants by human beings is scripted in ancient Sanskrit. The Rigvedas describe the medicinal values of plants, it is considered to be the oldest record available dating back to 4000 BC to 5000 BC (Maheshori 1995). The scientific study of human begins with their indigenous knowledge of animal and plant came in existence from western countries. The term ethnobiology was first used in Casetter in 1935; ethnobotany was used by Harsenberger in 1895 and ethnozoology by Meson in 1899 in the United States of America (Clement 1998).

In the context of Nepal, the work begins in 19th century as plant documentation with the botanical exploration by Hamilton 1802 to 1803 which was followed by Wallich in 1820, and Hudgson in 1822 who spent 21 years in Nepal contributing to the natural history of the country (Banerji 1958). The proper documentation of plants resources for medicinal purpose begins by Banerji in eastern Nepal (Banarji 1957). His work was pursued by (Devkota 1968) who has documented different animals and plant having medicinal values. Dobremez (1976) has studied on the medicinal plants of eastern Nepal. Similarly, Adhikari and Shakya (1977) documented 217 aromatic plants with medicinal value. Gurung (1979) reported 30 species of medicinal ferns from all over the Nepal. Similarly, Manandhar (1980) reported 37 medicinal plants to treat 26 diseases in the Tharu tribe.

The pace of documentation of medicinal plants used by different ethnic group seems increased after 1980s. Mahashori et al.(1981) enumerated 62 plants species to treat 26 diseases in the Tharu tribe. Similarly, Coburn (1984) studied the herbal medicines used by Gurung of west Nepal and documented herbal medicines from Parbat, Syangja and Kaski districts. Similarly, Shrestha (1985) carried out study on ethnobotany of Palpa and reported 83 plant species of which 29 species were medicinal, 23 were poisonous, 22 were edible, 5 were fodder, 2 were as green manure and 5 plants had miscellaneous usage. Bhattarai (1988) studied the ethnobotany of Jumla, Mugu and Kalikot districts of Karnali zone and reported 73 plant species used for various purposes.

Singh (1995) initiated the work in ethnobiology for the first time in Nepal, in his work in Raute the endangered tribe. He reported 188 plant species belonging to 58 families out of which they use 68 wild plant species; 17 for wooden utensils, 29 for fruits, 10 for vegetables and 12 for shoots roots, nuts and seeds. Among 188 species only 5 plant

species are used as medicinal purposes. Among animals, he found out 48 wild and domesticated fauna. Bhattarai et al. (1995) conducted a study on non-medicinal uses of selected wild plants by the people of Mustang district, and recorded several uses of 51 plant species (29 herbs, 12 shrubs and 10 trees), belonging to 19 families under 31 genera. Among 51 species recorded, 23 species were used as fodder; followed by decoration materials and organic manure (nine species each). Plants were also used to make household articles, construction materials, recreational drugs, dye, soap, to make a beverage that is consumed as a substitute for tea and others. Manadhar (1995) conducted a survey of medicinal plants of Jajarkot district, and reported 60 species (including 2 species pteridophytes, 2 species monocotyledons and 56 species dicotyledons), and 25 types of diseases have been identified in this area through his field work. Acharya (1996) studied the folk medicinal plants in Pawannagar of Dang district and documented 65 plant species having different medicinal values. Dhakal (1997) conducted the study on ethnobiology of the Kumal in Gorkha district and recorded 62 animal species and 264 plant species for their needs of food, medicine, fodder, timber, fiber, thread etc. Similarly, Dangol and Gurung (1999) carried out a study on ethnobotany of the Darai tribe in Chitwan district and documented 181 plant species having medicinal values, among which 30 were wild vegetables used for pickles, 15 were wild fruits, 6 were pesticides and 14 were fodder. Similarly, Dahal and Das (1999) studied the ethnobotany of the Aathpahariya Rai in and around Dhankuta and recorded 30 plant species having medicinal values. Nepal (1999) conducted a study on the ethnobotany of the Rai and Sherpa communities of Makalu-Barun Conservation Area and reported 142 plant species representing 119 genera and 87 families, of which 128 species belonging to dicotyledon, 12 species of monocotyledon and 7 Cryptogamic plants, 74 species of fodder plants, 22 species of wild edible plants and 46 species for miscellaneous purposes were documented.

IUCN (2000) published a book named as National Register of Medicinal plants in Nepal, 150 different medicinal plants, with their scientific information, medicinal use and sites of availability are explained in the book. Basnet et al. (2001) described 60 wild and domestic plant species used by Chepang of Makawanpur district where, 26 plant species for food, 17 for medicine, 16 for food as well as medicine and one for miscellaneous use. Similarly, Karki (2001) carried out the study on the indigenous knowledge and utilization of plant resources by Chepang community of Dhusa VDC of Dhading district and

reported the indigenous use of 55 plant species used in treating 34 different ailments. Parajuli (2001) conducted the study on medicinal plant used in cuts and wounds in Kaski district and their antibacterial activities and reported 39 plants species being used to treat “cuts and wounds”. Among the 39 species of plants, 29 different medicinal plants were screened for their antibacterial activities against four strains of bacteria and found 11 plant species were able to produce zone of inhibition with all test bacteria and 7 plant species didn't show zone of inhibition with any test bacteria. Similarly, Gautam (2002) carried out a study on medicinal plants used by Tharu people to treat respiratory complains in Nawalparasi district and their antibacterial activities. She reported 33 plant species used for curing respiratory diseases and were screened for their antibacterial activities. Dangol (2002) conducted study on ethnobotanical knowledge of the Kumal community of Chitwan district and recorded 27 wild plant species belonging to 54 different families used for various purposes. Out of 97 plant species, 66 species of medicinal value, 41 plant species of food and religious value. Gurung (2002) carried out study on the medicinal practice using local plant among Gurung, Kami, Sarki, Pariyar, Chhetri, Bhujel etc. of Chitre VDC, Parbat and Bahadure VDC, Kaski. She documented 83 medicinal plant species belonging to 51 families and 77 genera used by them for curing 52 different ailments. Similarly, Shrestha and Dilon (2003) reported 58 species of plant belonging to 40 families, used to treat 113 different ailments in Bouch VDC of Dolkha district. Oli (2003) recorded 40 medicinal plants among the limbu community of Tapethok VDC, Taplejung used for medication. Rokaya and Ghimire (2004) conducted study on ethnobotany and conservation status of highly used medicinal plants in Dhotarap; upper Dolpa and recorded 43 plant species with medicinal values. Similarly, Chapagain et al.(2004) studied the indigenous uses of plants by Tharu community in the south western buffer zone of Bardiya National Park and reported 203 plant species both cultivated and wild used for the treatment of 73 human and 11 cattle ailments. Koirala (2004) reported 180 plant species used by Musahars of Bachhuli VDC of Chitwan district and reported 30 plant and animal species used for curing different ailments. Dhakal (2004) carried out the study on major people of Palpa district and documented 43 plant species and 10 animal species used by them for the treatment of 18 different ailments. Similarly, Pokhrel (2005) carried out the study in ethnobiology on the status of Tharus of Dang district and he reported 14 animal species and 56 plant species which were used to treat different disorders. Siwakoti et al.(2005) carried out study on ethnobotanical study of plants and animal among Rajbansi and Dhimal communities of eastern Nepal. They

used artifact and inventory interviewing techniques and reported 117 species of angiospermic plants. Out of these, 85 plant species were used by Rajbansi and 88 by Dhimal, and 50 species were used by both communities. Rajbansi had been using 77 plant species to treat 25 types of ailments and Dhimal had been using 76 plant species to treat 17 types of ailments. Kunwar and Adhikari (2005) carried out a research of the ethnomedicine of Dolpa district and accounted 58 medicinal plant species used by the local people. The greater number of species found to be used in fever (17 species) and diarrhea and dysentery (17 species). Pandey (2006) conducted the study on the use of medicinal plants in traditional Tibetan Therapy system in upper Mustang and documented 93 species of medicinal plants belonging to 74 genera spread over 35 families used by Amchis to treat different diseases. Kala (2007) carried out the study on local preferences of ethnobotanical species in Indian Himalaya of Uttarakhand and found 32 plant species of medicinal plants; 16 species of horticulture, 22 species of fodder plant and 20 timber yielding plant species were selected as most preferred. Pokhrel (2005) carried out the study in ethnobiology on the status of Tharus of Dang district and he reported 14 animal species and 56 plant species which were used to treat different disorders. Similarly, Pokhrel (2006) conducted study on ethnobiology of Bankariya and reported 58 animal species (wild and domestic) and 268 plant species (wild and domestic) used for food, medicine, timber, fuel wood, fibre and ritual requirement. Among 58 animal species, 8 were used for treatment of 7 different diseases and out of 82 were used for treating 35 types of diseases. Thapa (2008) conducted study on medico- ethnobiological knowledge of Magar at Saliya VDC of Parbat and reported 85 plant species and 18 animals for primary health care services. The most treated ailments were respiratory tract infection, gastro- intestinal ailments, skelo- muscular problems and dermatological infection. Teklehaymnot and Giday (2007) conducted a study on ethnobotanical from October 2005 to June 2006 to investigate the uses of medicinal plants by people in Zegie Peninsula, northwestern Ethiopia. Information was gathered from 200 people: 70 female and 130 males, using semi structured questionnaire. Of which, six were male local healers. Sixty-seven medicinal plants used as a cure for 52 ailments were documented. They are distributed across 42 families and 64 genera. The most frequently utilized plant part was the underground part (root/rhizome/bulb) (42%). The largest number of remedies was used to treat gastrointestinal disorder and parasites infections (22.8%) followed by external injuries and parasites infections (22.1%). The administration routes were oral (51.4%), external (38.6%), and nasal (7.9%), and ear (2.1%). Khatri (2008) studied

Medical ethnobiology in Rajbanshi of Jhapa district and recorded 27 animal species belonging to 23 order and 23 families similarly, plant species belonging to 54 families and 82 genera. He has reported 21 animal and 49 plants, for different ailments. Respiratory tract infections, gastrointestinal ailment, skeleton-muscular problems and dermatological infections are the most frequent diseases found to be treated. Mahawar and Jaroli (2008) conducted the research on traditional zootherapeutic study in India and identified approximately 109 animals and 207 uses are reported in traditional medicine in different parts of India. Of these, the mammals constitute the highest number of animals used for medicinal purposes. 40% mammals, 22% invertebrates, 17% birds, 11% reptiles, 2% fishes and 2% amphibians have been reported for medicinal purpose. Ale et al.(2009) carried out study on Ethnobotanical knowledge, associated with plant resources were in Siluwa, VDC,Palpa district. This study revealed that Magar community has a vast knowledge of using plant resources. Local people were using plants for medicinal, wild fruit, food, religious and other various domestic purposes. The ethno botanical knowledge is gradually decreasing in the younger generations. Sapkota (2010) carried out study to explore the socio-cultural condition, knowledge and changing pattern for their environmental adaptation of Magar inhabitant at Bukini Tityang VDC of western Nepal. He reported that 86 plant species used to heal the human and domestic animal diseases, 17 species for fodder, 14 species for making agricultural equipment, 25 species as wild fruits and 23 species for different rituals and ceremonies. Lohani (2010) carried out the study on zootherapeutical knowledge of Jirels of Dolakha district and identified 35 animal species uses in 50 different purposes.

Gautam (2011) carried out the study on indigenous uses of some medicinal plants of Panchthar district and reported 87 medicinal plant's species used for different ailments. Thapa (2012) studied indigenous knowledge on common medicinal plants among Raji community of Surkhet district, Mid-western Nepal and recorded 10 medicinal plants of their localities. Rai(2013) studied medico-ethnobiology of Rai community in Bhojpur district and recorded 27 animals were used to treat 28 ailments, and 87 plants were used to treat 65 types of disorder. Luiteal et al.(2014) conducted the study on medicinal plant used by the Tamang community in Makwanpur district of central Nepal and identified out of 161 plant species belonging to 86 families and 144 genera to cure 89 human ailments were documented. And they come to the conclusion that 86 plant species were cited as

medicinal in previous studies, 55 different species uses by Tamang people were not found in any of compared study.

3. MATERIALS AND METHODS

This study was conducted in Uttergarga VDC (currently Birendranagar-19) Surkhet district of Mid-Western development region of Nepal where Raji ethnic community belongs to.

3.1 Study area

3.1.1 Location

Surkhet district lies in Bheri Zone of Mid- Western Development Region. The area of Surkhet is 2,451 sq. km. It lies in the Siwalik hill .The district lies between 80°59'E to 82°2' E longitude and 28°14' N to 28°58'N latitude. The topography has the elevation range of 250 to 2,200 meters above the sea level.The neighboring boundary districts of Surkhet are Achham, Dailakh,and Jajarkot district in the north; Doti district in the west; Kailali and Bardia in the south and Salyan district in the east.

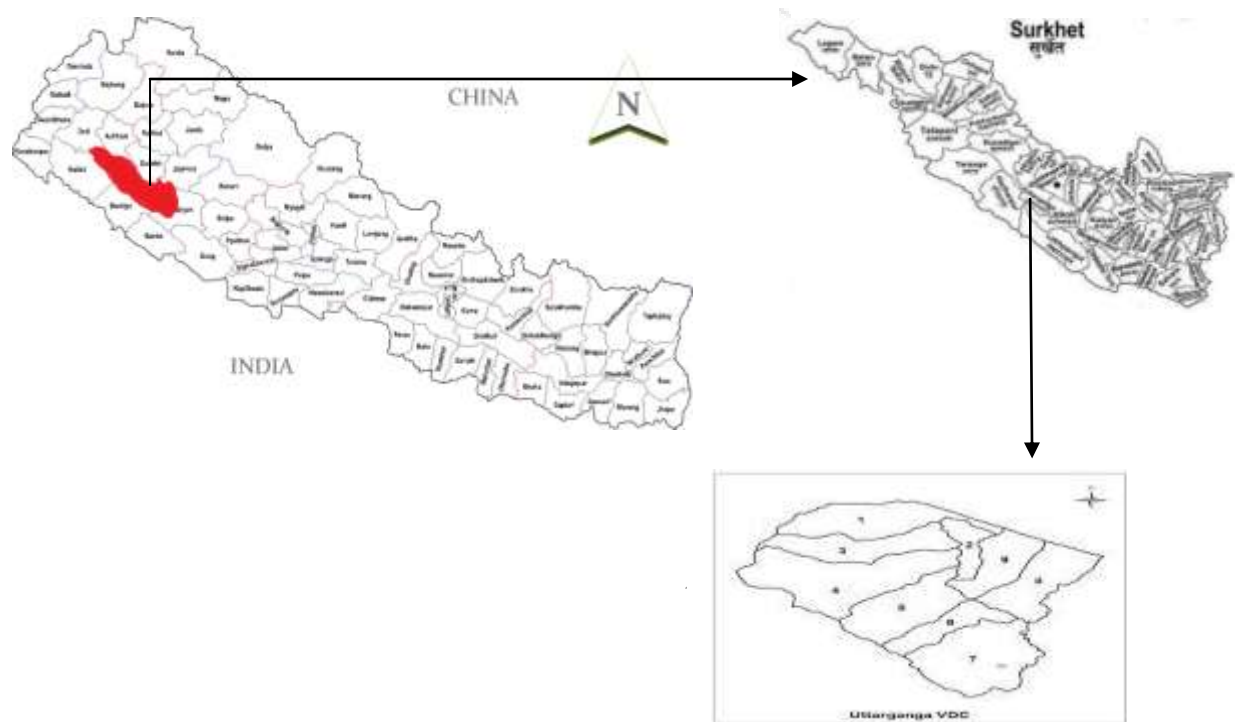


Fig 1: Location of Uttarganga VDC in Surkhet district, Nepal.

3.1.2 Climate

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It can be divided into three major regions topographically, they are Mahabharat range, Middle plain and valley and hills of Churiya range. Again it can be categorized into four

climatic regions. They are hot dry sub-tropical climate, warm dry sub-tropical climate, warm moist temperate climate and cool moist temperate climate.

3.1.3 Vegetation

Percentage of forest coverage in Surkhet district is 71 and that of under cultivation is 27 and 2% land was used for infrastructures and other purposes. A variety of vegetation was available in the study area ranging from forage to shrub and trees.

3.1.4 Wildlife

The study area is near to the Bardiya National Park. Jackal, deer, monkey, rabbit, porcupine, tortoise, kalij, wild boar etc are seen occasionally.

3.1.5 Demography

According to CBS (2011) the total population of Raji was 4,235 in the country. In the Surkhet district the population of Raji was 1,171 in which 557 were male and 614 were female. There are all together 63 Raji people residing in the Uttarganga VDC.

3.2 Nature and source of data

To fulfill the objectives of this research work, two kinds of data were used, primary data were collected from the field visit and secondary data were collected from the relevant textbooks, research paper, journals and publications.

3.2.1 Primary data collection

3.2.1.1 Group discussion

Unstructured interview with small groups that consists of youth, women and local elderly people along with member of Raji Salma Samaj was conducted to generate information on various subjects like culture, tradition, religious festivals, use of traditional medicine, indigenous knowledge present in community etc. that has supported to fulfill the intended objectives of the study.

3.2.1.2 Interview with key- informants

Key informants for traditional medicinal practices were the local healers like Dhami, Jhakri and Gurau. A number of questions about traditional healing practices, plants and animals used as medicine for different diseases were asked which were helpful to complete this research work.

3.2.1.3 Field visit and observation

The study area was personally visited in June 20 to 26, 2014 and April 21 to 25, 2015 and observed in order to understand physical and cultural settings. The actual condition of medicinal animals and plants prepared and herbal medicine used were observed directly and collected.

3.2.1.4 Sample collection and identification

Samples of different animals and plants both known and unknown were collected from the field visits. The collected samples were identified with standard literatures and with the help of experts. The plant and animal species were taxonomically classified into class, family, genera and species.

3.2.2 Secondary data

Secondary data were very important for the comparison and Justification of the primary data. It was collected from different sources like books, journals, theses, research articles of different authors.

3.3 Limitations

Though, this work aims detailed study on ethnobiology of Raji people in Uttarganga VDC Surkhet, it has following limitations:

The time has been one of the most important limiting factors for the present study since it was accomplished within one academic year, and thus the comprehensive study is not possible.

There is no financial support from any institution, project etc., for this research.

The researcher has no professional experience on social researchers, hence the work might have difficult from some methodological limitations

There is no active participation from these people during the time of group discussion and questionnaire survey as they remain busy in their own work.

It is difficult to collect detailed information from the healers as they believe that the knowledge should be kept secret.

4. RESULTS

4.1 Ethnography of Raji

4.1.1 Origin

There are many stories and myths on origin of Raji community, but there is no exact evidence of their origin and even Raji people and members of Raji Salma Samaj Surkhet branch are unknown about it. Some people said initially Raji people used to live in the Shore of Rara Lake later due to brusting of Rara they were driven away by the water and later they began to live in the bank of these river.

4.1.2 Physical features

The Raji have flat cheek, narrow eyes, medium height and with sparse hair on the face.

4.1.3 Language

Linguists say that the language of the Raji's belongs to the Tibeto-Burman family. There is an opinion that the Raji speak three dialects incomprehensible to one another, Purbiya, Doteli, Bundel are said to be the three dialects of the Raji (Gautam and Thapa 1997). They speak own language but they don't have their own script.

4.1.4 Dress and Ornament

Raji men during ancient time used to wear Markin's Bhoto, Jaikot (waist coat), kachad, Langauti, Dhoti of Maain and topi. Now days Raji men prefer wearing daura surwal, pant and T- shirt. Raji men used to have tradition of wearing Mundri in ear. Similarly, Raji women wear Guniu of chhit, pharia, ghalek, majetro. In ornaments, phuli(nose bud), bulaki (nose ring), dhungri (ear bud), mandarin (ear ring), tilhari(beads necklace), kampani mala(necklace), munga mala(muga necklace) and pote(beads). However, nowadays modern dresses like T- shirts, pants, vest, lungi, and kurta salwar have become common. During the field visit the traditional Raji costume was not found.

4.1.5 Education

*Their literacy level is increasing but the gap between primary to higher education as well as male to female is still high. In Uttarganga VDC (Birendranagar-19), there are 4 schools with 21 Raji students among them 9 were boys and 12 were girls. The number of government schools was more than private schools in the entire study area. There were 1 primary school, 1 lower secondary school and 2 higher secondary schools in Raji community. The name of schools and the total number of Raji students and staffs of the Raji community is illustrated in the **Table 1**.*

Table 1: Total students and staffs from the Raji community

| S.N | Name Of Schools | Total Students | Total Raji Student | Total Staff | Raji Staff |
|-----|--|----------------|--------------------|-------------|------------|
| 1. | <i>Faith english school (lower secondary school)</i> | 250 | 6 | 20 | 1 |
| 2. | <i>Saraswati lower secondary school</i> | 285 | 5 | 23 | – |
| 3. | <i>Ananda secondary school</i> | 584 | – | 22 | – |
| 4. | <i>Liberal boarding school</i> | 400 | 4 | 18 | – |

In Raji community the number of student with higher education in the study area is very less; only one student has completed bachelors. Three Raji girls have gone to Bhairahawa to study ANM.

4.1.6 Occupation and Economy

Occupation depends on people life styles and their expenditure in their daily life. Fishing and boating is ancestral occupation of Raji people. After the passage of time, such occupation resulted to inadequacy of their survival. These days they started agriculture and livestock farming. They are not business oriented community, now a day some of them are involved in services like Journalist, army, police, pujari, office assistant and driver.

4.1.7 Religion and Festivals

The field visits of 2014 and 2015 revealed the fact that all Raji people mentioned themselves as Hindu. Festivals of Raji although influenced by Hinduism. They celebrate Dashain, Tihar, Chaite Dashain, Maghe Sakranti and Ghee Sakranti which they celebrate in Bhadra 1st is their one of the special festivals.

Compulsory festive food of Raji community:

During the field study, it was found that it is compulsory to have Githa (*Dioscorea bulbifera*), Bhyakur (*Dioscorea deltoids*) and Tarul (*Colocasia spp.*) on Maghe Sakranti. Similarly, they celebrate Ghey (Ghee) Sakranti on first Bhadra that is similar to the Teej of other Hindu Nepalese. On this day Ghee and Karkalo (*Colocasia esculanta*) leaf is compulsory to eat. There is belief that if Ghee is not eaten, they will be caterpillar in re-incarnation.

4.1.8 Dance

Group dance are popular among the Raji people. Among the various dances namely Singaru, Tappa, Kucha and Sorathi dance. The lyrics of such dance songs are in Khas Nepali language.

4.1.9 Life cycle rituals

4.1.9.1 Birth

Cultures of Raji are influenced by Hinduism, which is seen during birth. They have started to practice Satak for 10 days. According to this custom, a woman who has given birth is kept in corner for seven days and purified by taking bath, sprinkling cow's urine. Sixth day of newly born son is entertained as 'Chhaiti'. They have belief that the Bhabi (a god who will write the future of the child on his forehead) will come on sixth day to write the future of the newly born. The eleventh day is celebrated as Nawaran. In this day name of child is given.

4.1.9.2 Marriage

Marriages of Raji people take place within their own cast. Now days the young generation also prefer marrying with other caste people but such culture is not accepted easily in the society. Marital rites slightly differ from other caste people.

In arranged marriage (Maghi bibaha), parents of boy offer liquors to girl's parent and propose the marriage. The engagement ceremony of marriage is known as 'Dharma Jokhne'. In this process, a strong knot is made in long belt of white cloth by father of groom and handed over to the father of bride. Bride's father also makes another strong knot and return to groom's father. This is an oath of relationship and it is said as 'Dharma Jokhne' and they fix the date of marriage function. Marriage ceremony is generally held in the month of falgun (February- March)

One day before marriage, in bride groom's house 'Pathara' ceremony is performed. Pathara is people who pick up leaf for the sake of marriage function. Pathara go to jungle to pick up seven leaves each of Bar (*Ficus bengalensis*), Pipal (*Ficus religiosa*) and Bel(*Aegle marmelos*) and tie them with picked up and make fourteen bundles. During this function, panchebaja are also taken with them. Along with this, there should be wooden mungro. The leaf bundles are taken to home and Pathara go to the bride house along with the musical instrument. They circle the bride's house seven times. This process is called 'Bhaur Ghumenang', then, they enter through the decorated gate where they are stopped by men. In bride's house groom's head is shaved. His hair is kept in tapari by sisters of the groom, who were taken to nearby river, then he takes a bath and wears white Jaama, Pagadi and Kaatari in the waist. Marriage ceremony is performed early in the morning. In this function, he-goat from groom's side is kept in west side of house of bride's house. A pipe is passed from the hole from inside the house, which should touch the ear hole of the goat. Water is passed from this pipe, when goat shakes the head and sprinkle the water. The goat is then hit by mungro on the head. The goat meat is shared with the two families. This is called 'Washyapak' which takes place around 8 am. After 'Washyapak' the feast and pathara returns to their home.

4.1.9.3 Death

During ancient period they used to dump their dead body. Now a day some use to burn the dead bodies. They spent 13 days for mourning following the funeral. During which blood relatives abstain from eating salt and meat. They used to eat only one meal a day and having bath every day.

4.1.9.4 Association

In the past the Raji people used to choose a head of their community. The head was called "Mukhiya" who used to adjudicate the cases of their society. These days they have made their association called "Raji Salma Samaj" which works for their own community welfare. The head office of this association is located on Tikapur, Kailali, Nepal. The Raji Salma Samaj, Surkhet branch works for the economic development, savings and also leadership development activities.

4.2 Medical Ethnobiology

Ethnobiology is the science that deals about the relationship between humans, animals, plants including the ecosystem. According to (Hughes 1968),ethnomedicine is those beliefs and practices relating to disease which are the products of indigenous cultural development and are not explicitly framework of modern medicine.Medical ethnobiology is divided into Medical ethnozoology and Medical ethnobotany.

4.2.1 Medicaethnozoology

Raji community of Uttarganga had been using a number of animal species both wild and domesticated in their traditional healing practices.

The list of animal species used in medicine by the Raji people of the study area is shown in **annex 2 (Table 1)**

On the basis of this research altogether 36 animal species both domesticated and wild belonging to 22 orders; 31 families had been used for treatment of 30 diseases. Among them 5 species were domestic and 31 species are wild animals.

Among 36 zootherapeutic animals, number of Arthropoda was 12, Mammal was 9, Amphibia was 2, Aves was 7, Pisces was 2, 3 was Reptile and 1 is Annelida.(**Figure. 2**).

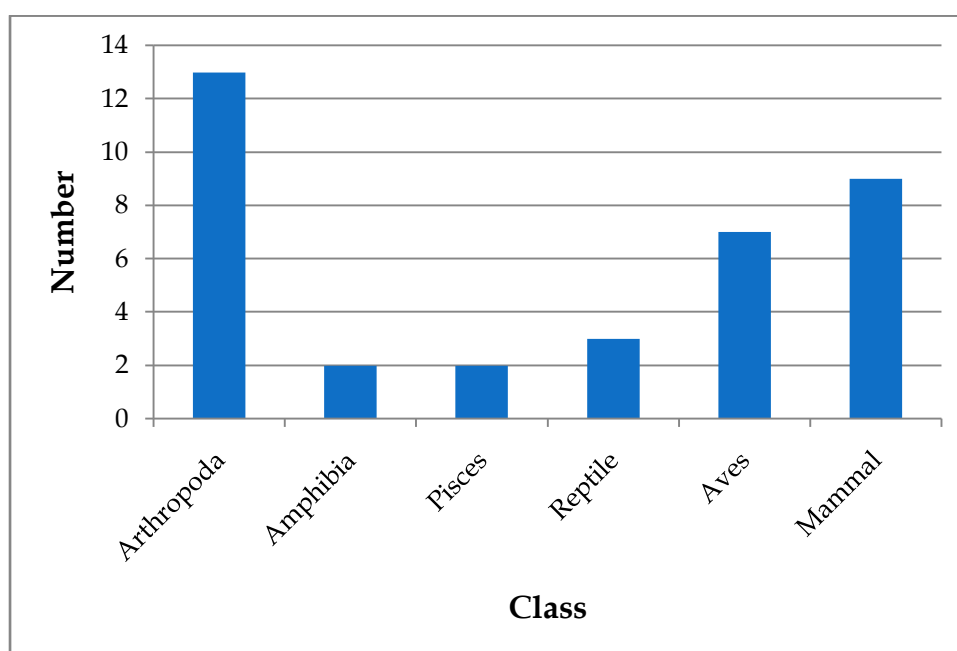


Figure 2: The numbers of animals belonging to different classes

4.2.1.1 Diseases treated by traditional method

In the Raji community of study area, the diseases were treated by using folk knowledge; the result revealed that the community had been using 36 different types of animal to treat 30 different types

of diseases. The name of the ailments and the animal species used to treat ailments are presented in the Annex 2(Table 2).

4.2.1.2 Animals parts/ products used

The data showed that, the Raji people has been using different organs of animals. Compared to the forms, the use of meat was more prevalent (30.3%), followed by whole organism (27.27%), dung (9%) and skin, fat and tail (6.6%). Similarly, honey, bile, bone, blood, urine, carapace and milk products were also used for medication (**Figure. 3**).

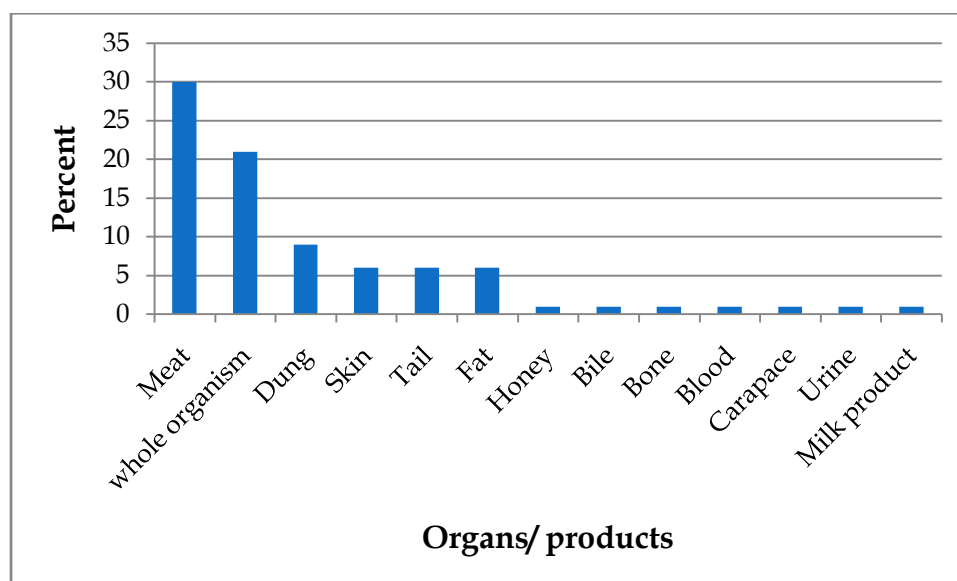


Figure 3: The different products/organs used for medication

5.2.1.3 Description of animals used in medication

On the basis of collected information of study area the animals used in traditional medicines is described below. The descriptions are given in detail in alphabetical order of family of animal species.

Family :Aphidae

Apis cerena(Ghar mauri)

Type- Insect

Product used- Honey

Form of medication- Raw

Preparation and application: Honey mixed with juice of *Zingiber officinale* to cure cough.

Dose: 1-2 teaspoon for 2-3 times a day.

Honey is mixed with Luke warm milk or water and taken every morning to treat malnutrition.

2. Family: Anguillidae

Anguilla begalensis (Raja Bam macha)

Type -fish

Organ used: tail

Form of medication- Raw

Preparation and application: Tail of Anguilla begalensis is enclosed on a cotton cloth and prepares "buti" then it is tied on the tail of cattle to treat Khoret.

3. Family: Arachnidae:

Araneaspp. (Makuro)

Organ used: whole body

Form of medication: Raw

Preparation and application: The whole body of Aranea spp. is given orally to the chicken to treating fracture.

4. Family: Bovidae

i) Bubalus bubalus (Bhaisi)

Type – Mammal

Organ used- stool

Form- Raw

Medicine preparation and application: Raw form of stool is applied on infected area to treat scabies.

ii) Bos indicus (Gai)

Type- mammal

Organ used- milk and its product

Form- Raw and in the form of ghee

Medicine preparation and application: 1-2 tablespoon honey is added to the milk to cure malnutrition and general weakness. Ghee is applied on the body and gently message to get relief from body pain.

5. Family: Cancridae

Cancer spp (Gangato)

Type: Insect

Product used: Meat

Medicine preparation and application: For the treatment of Jaundice meat of Cancer is cooked and is taken orally.

6. Family: Canidae

Canis aureus (shyal)

Type- Mammal

Product used- meat

Form of medication – Liquor

Medicine preparation and application: Meat of Canis aureus is dried and liquor prepared and is taken orally to treat arthritis and rheumatism.

7. Family: Cervidae

Muntiacus muntjack (Mirga)

Type: Mammal

Organ used: Skin

Form: Dried meat

Medicine preparation and application: Dried skin of Muntiacus muntjack is crushed and 1 teaspoon paste is daily taken orally to treat "mirgi".

8. Family: Charadriidae

Vanellus indicus(Huttityaun)

Type: Aves

Organ used: egg and meat

Form: Raw

Medicine preparation and application: Egg and meat of *Vanellus indicus* is taken orally to treat pneumonia and common cold

.

9. Family: Columbidae

Columba livia(Parewa)

Type: Aves

Organ used: Meat

Forms-Raw

Medicine preparation and application: Meat of *Columba livia* is cooked and taken orally to treat arthritis and common cold.

10. Family: Cyprinidae

Tor tor (Sahar)

Type: Fish

Organ used- Bile, Oil, meat

Form: extract

Medicine preparation and application: Bile and extracted oil of *Tor tor* is applied to treat wounds and burns. Boiled meat is also used to cure gastritis.

11. Family: Dicruridae

Diceurus spp.(Lampuchhre charo)

Type: Aves

Organ used: Meat

Forms of medication: Raw

Medicine preparation and application: Meat is cooked without adding salt and is taken orally for treating piles.

12. Family: Dryophthoridae

Cosmopolites sordidus(Gabaro)

Type - Insect

Organ used- Whole organism

Forms of medication- Paste

Medicine preparation and application: Whole body of *Cosmopolites sordidus* is crushed and paste prepared and is taken orally to treat epilepsy.

13. Family: Dysticidae

Acilius spp.(Pani kiro/ Jade kiro)

Type- Insect

Organ used- Whole organism

Forms of medication- Buti

Medicine preparation and application: Whole body of *Acilius spp.* is wrapped in a cotton cloth, so formed called Buti and is hanged on the ear to cure dizziness.

14. Family: Equidae

Equus caballus(Ghoda)

Type-mammal

Product use- Dung

Form – Raw

Medicine preparation and application: Dung of *Equuscabalus* is makes paste with some water and filter it with cotton cloth. The extracted is taken orally for treating fever (kufat) and pneumonia.

15. Family: Formicidae

Selonopsis spp.(Rote kamilo/bekmota)

Type –Insect

Product use- whole organism

Form-Raw

Medicine preparation and application:2-5 gm of *Selonopsis spp.* is boiled half litre water and taken orally to cure pneumonia.

16. Family: Felidae

Panther tigris tigris(Bagh)

Type – Mammal

Product used – Fats

Form – Raw

Medicine preparation and application: The fat of *Panthera tigris tigris* is applied directly to treat rheumatism and arthritis.

17. Family : Galliformes

*Francolinusfranco*linus (Titra)

Type- Aves

Organ used- Meat and egg

Form of medication- Raw

Medicine preparation and application: Meat and egg of *Francolinus franco*linus is taken orally to treat malnutrition.

18. Family: Hystricidae

Hystrix indica(Dumsi)

Type –Rodent

Product used – Dung

Form of medication – Dried, powder

Medicine preparation and application: At the month of Chitra the dung of *Hystrix indica* is collected, dried and powdered. The prepared powder is soaked in water over night and is taken orally at every morning to treat asthma.

19. Family: Ichhneumonidae

Ichhneumonida spp.(Kamalkuti)

Type – Insect

Product used- Whole body

Form of medication- Buti, paste

Medicine preparation and application: Whole animal is wrapped on white cotton cloth and prepare "buti" and is hang on ear to cure tooth ache. Paste made by crushing the animal is taken orally to treat gastritis and weightloss.

20. Family: Lampyridae

Photuris spp. (Junkiri)

Type – Insect

Product used- Whole body

Form of medication- Buti

Medicine preparation and application: Whole animal is wrapped on white cotton cloth and prepare "buti" and is hang on ear to treat tooth ache.

21. Family: Megascolecidae

Pheretima posthuma(Gadyeula)

Type – Annelida

Product used- Whole body

Form of medication: Soup

Medicine preparation and application: Few number of Pheretima posthumaisboiled and soup is given to the mother this helps to enhance lactation.

22. Family: Muscidae

Musca domestica (Makho)

Type- Insect

Product used- Whole body

Form of medication: Paste

Medicine preparation and application: Whole insect is crushed and paste is applied to treat wound made by spider's stool.

23. Family: Passeridae

Passer domesticus(Bhangero)

Organ used - Blood

Form of medication- Raw

Medicine preparation and application: 1-2 drop of blood of Passer domesticus is poured into the ear to treat ear ache.

24. Family: Phasianidae

Lophura leucomelanos(Kalij)

Type- Aves

Organ used- Meat

Form of medication – Raw

Medicine preparation and application: Meat of Lophura leucomelanos is cooked and taken orally to cure common cold.

25. Family: Ranidae

i) Rana tigrina tigrina(Paha)

Type- Amphibia

Organ used- Meat

Medicine preparation and application: Meat of Rana tigrina tigrina is cooked and taken orally to cure heart disease.

ii) *Rana tigrina* (Bhaguto)

Type- Amphibia

Organ used- skin

Form of medication: Paste

Medicine preparation and application: Skin of Rana tigrina is rubbed in a stone and prepared paste is taken orally to cure diphtheria.

26. Family: Reptile

Bam Sarpa

Organ used- Tail

Form of medication: Raw

Medicine preparation and application: Tail of Bam sarpa is wrapped in cotton cloth and tied around the neck to control vomit and Dizziness.

27. Family: Scarabaeidae

Scarabaeoidaspp. (Guye kira)

Type- Insect

Organ used- whole organism

Form of medication- Paste

Medicine preparation and application: Whole organism is crushed and paste is taken orally to cure fever and food poison.

28. Family: Suidae

Sus spp. (Sungur)

Organ used- Urine

Form- Boiled

Medicine preparation and application: 2-3 table spoon urine of Sus spp. is boiled by adding 1 glass of water and is given orally for 3 days to cure pneumonia.

29. Family: Testudinadae

Testudo spp. (kachuwa)

Type- Amphibia

Organ used – Carapace

Form of medication- paste

Medicine preparation and application: Carapace of Testudo spp. is rubbed and 2-5 gm of paste is taken orally to cure pneumonia and diarrhea.

30. Family: Ursidae

Melurus ursinus ursinus (Kalo bhalu)

Type- Mammal

Organ used- Bone

Form of medication- Paste

Medicine preparation and application: The bone of Melurus ursinus ursinus is crushed and paste is applied for the treatment of fracture and arthritis.

31. Family: Varanidae

Varanus spp (Gohoro).

Type- Reptilia

Organ used- Meat

Form of medication- Cooked

Medicine preparation and application- Meat of varanus spp. is cooked and taken orally to cure asthma and breast feeding problem (Thunelo).

4.2.2 Medical ethnobotany

Along with the different species of animal various species of plant has been also found to be used as medicines for treating different diseases in Raji community of Birendranagar 19. The result shows that the community uses 91 medicinal plant species in treating 60 types of ailments.

The result revealed that Raji of Uttarganga VDC use 91 plant species belonging to 51 families. Among 91 medicinal plant species 29 were trees, 29 were herbs, 19 were shrubs 6 were climbers 4 were grasses, 1 was fern, 1 was epiphytic and 1 parasitic plant was found. Plants having medicinal value in raji community are given in the Annex2 (Table 3)

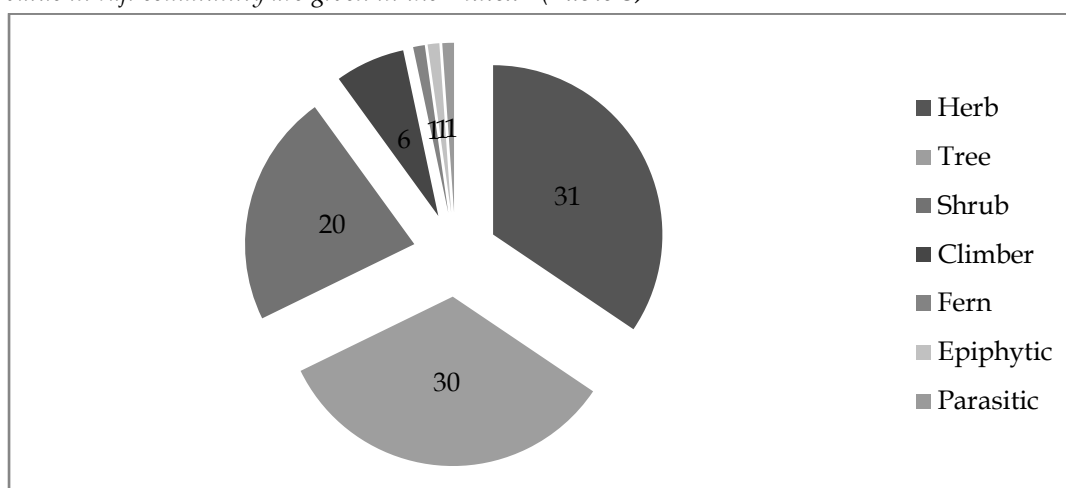


Figure 4: The numbers of plants belonging to their different life forms.

4.2.2.1 Diseases treated by using plant species

The study revealed that Raji community uses 91 medicinal plant species for the treatment of 60 different types of diseases. The detailed study about the diseases and plants species used for treatment by Raji community of Uttarganga (Birendranagar 19) is mentioned in the Annex 2 (Table 4).

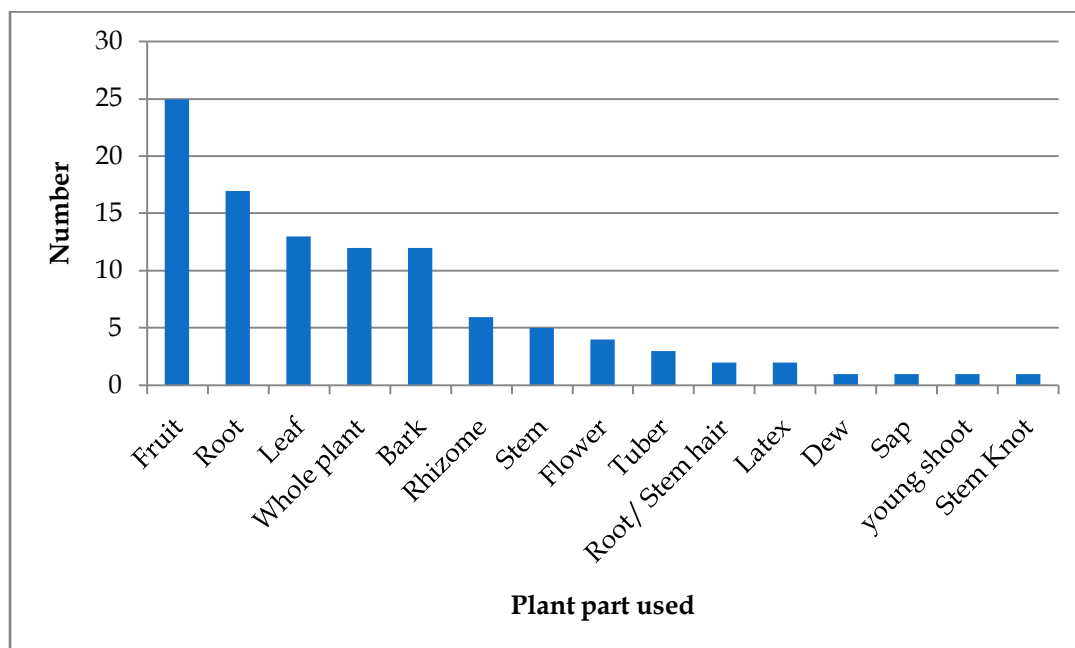


Figure 5: The different forms of medication by using plant parts.

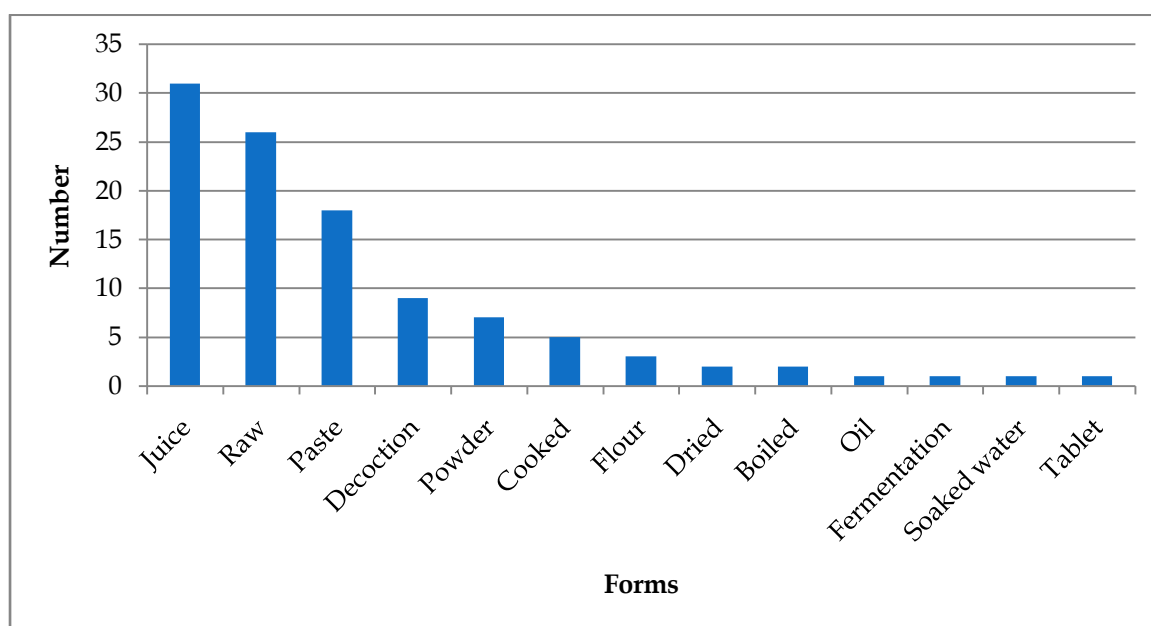


Figure 6: The different parts/ products of plant used for medication

4.2.2.2 Description of plants used in medication

The plants parts/products used in treatment of different diseases and methods of preparation and application are described according to family as follows.

1. Family: Acanthaceae

Justice adhatoda(Asuro)

Part used- Root

Form- Juice

Medicine preparation and application: Root of Justice adhatoda is crushed and juice is extracted and is taken orally to cure piles.

2. Family: Amaranthaceae

i) *Achyranthus aspera* (Ulte kuro)

Part used- Whole plant

Form- Juice

Preparation and application- whole plant of Achyranthus aspera is crushed and juice is extracted and taken orally for gastritis, loss of appetite, nausea and menstrual haemorrhage. In addition, the shoot is chewed to cure tooth ache.

ii) *Amaranthus bidentia* (Datiwan/Ulte kado)

Part used- whole plant

Form- Juice

Preparation and application- whole plant of Achyranthus bidentia is crushed and juice is extracted and taken orally for blood purification and menstrual haemorrhage. In addition, the shoot is chewed to cure tooth ache.

iii) *Amaranthus spp.* (kade lude)

Part used- whole plant

Form- Juice

Medicine preparation and application: Whole plant part of Amaranthus spp. is crushed and juice is extracted and is given orally to cure leucorrhoea.

3. Family: Apocynaceae

Periploca calophylla (Sikari lahara)

Part used – Latex

Form- Raw

Preparation and application- Fresh latex of Periploca calophylla about 1 tea spoon is taken orally and also applied to cure fracture and burning urine.

4. Family: Anacardiaceae

i) *Rhus javanica* (Bhakkimlo)

Part used- Fruit, root

Form- Raw, Powder

Preparation and application- Fruit of Rhus javanica is mixed with curd and is taken orally for the treatment of diarrhoea.

ii) *Mangifera indica* (Aanp)

Part used- Bark

Form- Juice

Preparation and application- The fresh bark of Mangifera indica is crushed and taken orally for the treatment of dysentery. In addition the bark of Mangifera indica and Psidium guajava of east and west direction, leaf of Cissampelos pareira and whole plant of Drymeria dinda is crushed and juice is extracted and is taken orally on Sunday or Tuesday to cure abdominal distension (Begar pareko and gano gako).

Similarly, bark paste of *Mangifera indica*, *Psidium guajava* and *Syzygium cumini* is crushed and taken orally to cure diarrhoea and dysentery.

iii) *Semecarpus anacardium* (Bhalayo)

Part used- Fruit

Form- Paste

Preparation and application- Fruit paste is extracted by crushing and is applied for the treatment of wound.

5. Family: Araceae

i) *Acorus calamus* (Bojho)

Form- Dried

Part used- Rhizome

Preparation and application- Dried rhizome of *Acorus calamus* is chewed to cure tonsillitis and cough.

ii) *Colocasia esculanta* (Karkalo)

Part used- Leaf

Form - Cooked

Preparation and application- Leaf of *Colocasia esculanta* is cooked and applied for the treatment of wound.

iii) *Phoenix acaulis* (Khajuri)

Part used- Stem, fruit

Form- Raw

Preparation and application- Inner part of stem and unripe fruit is taken orally to cure diarrhoea and dysentery.

6. Family: Asclepiadaceae

Calotropis gigantea (Aak)

Part used- Bark, latex

Preparation and application- Bark juice of *Calotropis gigantea* is extracted and taken orally to cure bloody stool. In addition latex is also extracted and applied to cure sprain. The bark of *Calotropis gigantea* and *Thaysanolena maxima* is crushed and applied for the treatment of snake bite.

7. Family: Asparagaceae

Asperagus racemose (Kurilo)

Part used- Root

Forms- Juice

Preparation and application- Root paste of *Asperagus racemose* is crushed and juice is extracted and is given orally to cure fracture. In addition, it is given to the mother to enhance breast feeding and also to remove general weakness.

8. Family: Berberidaceae

Berberis aristata (Chutro)

Part used- Bark, root

Form- Juice

Preparation and application- Bark juice of *Berberis aristata* is extracted and given orally to cure diarrhoea. In addition, root is crushed and juice is extracted and given orally to cure pinworm.

9. Family: Brassicaceae

i) *Brassica compestris*(Tori)

Part used – Fruit

Form- oil

Preparation and application- For the treatment of Pubic rashes oil of *Brassica compestris* is applied. In addition, oil is also applied to cure body pain and sprain.

ii) *Raphanus sativus*(Mula)

Part used- whole plant

Form- Sinki

Preparation and application- whole plant of *Raphanus sativus* is semi dried in sun and fragmented into small pieces with the help of Dhiki (a kind of wooden simple machine used to fragment or exfoliate raw grains), and the fragmented pieces are kept into jar till it turned into sour taste and smell. The product so prepared is called 'sinki' which is used to cure high altitude sickness. Similarly, sinki is tken with rice to cure dysentery.

iii) *Lepidium sativum*(Chamsur)

Part used- Fruit and young shoot

Form- Cooked

Preparation and application- Fruit of *Lepidium sativum* is cooked by adding milk and sugar and taken orally to cure body pain and back pain. Vegetable of young shoot is also taken to cure body pain.

10. Family: Burseraceae

Garuga pinnata(Dabdabe)

Part used- Bark

Form- Juice

Preparation and application- Fresh bark of *Garuga pinnata* is crushed and juice is extracted and taken orally to cure diarrhoea, dysentery and bloody stool.

11. Family: Caricaceae

Carica papaya(Mewa)

Part used- Root and fruit

Form- Paste, Raw

Preparation and application- The juice extracted from the root of *Carica papaya* is taken orally about 2 tablespoon to cure renal calculus. In addition, the ripe fruit is taken orally to cure jaundice.

12. Family: Caryophyllaceae

Drymeria diandra (Abijalo)

Part used- Whole plant

Form- Paste, juice

*Preparation and application-*Whole of *Drymeria diandra* is crushed and paste is extracted and about 2 teaspoon is given orally to cure abdominal distension (Begar pareko). In addition, about 1-2 drop of its juice is applied drop wise on the nostril to cure sinusitis.

13. Family: Chenopodiaceae

Chenopodium album (Bethe)

Part used- Fruit, root

Form- cooked, juice

Preparation and application- The dry seed of *Chenopodium album* is cooked with milk and flour of *Oriza sativa* by adding ghee and sugar and is given orally to retention of placenta. In addition, the root of *Chenopodium album* is crushed and juice is extracted and taken orally to get relief from labour pain.

14. Family: Combretaceae

i) *Terminalia belerica* (Barro)

Part used- Fruit

Form- powder

Preparation and application- Dry seed of *Terminalia belerica*, *Terminalia chebula*, *Emblica officinalis* is crushed and extracted powder called 'Trifala' is given orally with luke warm water to cure constipation and loss of appetite. In addition, the dry fruit is chewed to cure cough and throat pain.

ii) *Terminalia chebula* (Harro)

Part used- Fruit

Form- Powder

Preparation and application- Dry seed of *Terminalia belerica*, *Terminalia chebula*, *Emblica officinalis* is crushed and extracted powder called 'Trifala' is given orally with luke warm water to cure constipation and loss of appetite. In addition, the dry fruit is chewed to cure cough and throat pain.

15. Family: Compositae

Artemisa vulgaris (Titepati)

Part used- Leaf

Form- Raw

Preparation and application- The fresh leaves of *Artemisa vulgaris* is gently smashed and is applied to cure scabies and cut wound. In addition, 2-3 drop juice is inhaled for the treatment of nose bleeding.

16. Family: Convulvulaceae

Cuscuta reflexa (Akashbeli)

Part used- whole plant

Form- Juice, Paste

Preparation and application- whole plant of *Cuscuta reflexa* is crushed and paste is extracted and is taken orally jaundice. The plant is chewed for the removal of placenta in cattle. In addition, extracted juice is applied on hair to cure dandruff.

17. Family: Dioscoreaceae

i) *Dioscorea bulbifera* (Githa)

Part used- tuber

Form- Boiled

Preparation and application- Tuber of *Dioscorea bulbifera* is boiled and taken orally to cure pinworm and also control body heat.

ii) *Dioscorea deltoidea* (Bhyakur)

Part used- Tuber

Form- Boiled, paste

Preparation and application- Tuber of *Dioscorea deltoidea* is boiled and taken orally to cure constipation. In addition, extracted paste is applied for the treatment of fracture.

18. Family: Ericaceae

Rhododendron arboretum (Gurans)

Part used- Flower

Form- Dried, raw

Preparation and application- Flower of *Rhododendron arboretum* is chewed for fish bone prick and is also used to cure cholera.

19. Family: Euphorbiaceae

i) *Euphorbia* spp. (Siudi)

Part used- Stem

Form- Paste

Preparation and application- Fresh stem of *Euphorbia* spp. is pounded to paste and applied to the next eye of the infected eye to treat eye infection in cattle.

ii) *Sapium insigni* (Khirro)

Part used- Sap

Form- Raw

Preparation and application- Fresh sap of *Sapium insigni* is applied around naval region for the treatment of cholera and green stool.

iii) *Mallotus philippensis* (Royani)

Part used- Bark

Form- Juice

Preparation and application- Bark juice of *Mallotus philippensis* is extracted and given orally to treat diarrhoea, dysentery and stomach ache.

iv) *Phyllanthus urinaria* (Bhui amala)

Part used- Leaf

Form- Juice

Preparation and application- Leaf juice of *Phyllanthus urinaria* is taken orally to cure diarrhoea and dysentery.

v) *Emblica officinalis* (Amala)

Part used- Fruit

Form- Powder

Preparation and application- Dry seed of *Terminalia bellerica*, *Terminalia chebula*, *Emblica officinalis* is crushed and extracted powder called 'Trifala' is given orally with luke warm water to cure constipation and loss of appetite. In addition, the dry fruit is chewed to cure cough.

20. Family- Equisetaceae

Equisetum debile (Kurkure ghans)

Part used- Whole plant

Form- Juice

Preparation and application- Whole plant of *Equisetum debile* is crushed and extracted juice is taken orally for the treatment of jaundice. Besides, the plant is rubbed in related part to cure warts.

21. Family: Fabaceae

i) *Bauhinia varigete* (Koiralo)

Part used- Bark

Form- Juice

Preparation and application- Bark of *Bauhinia varigete* is crushed and extracted juice is taken orally to cure diarrhoea, dysentery and bloody stool.

ii) *Acacia catechu* (Khayar)

Part used- Bark, stem

Form- Soaked water

Preparation and application- the bark or stem of *Acacia catechu* is soaked in water and the water is taken to cure stomachache.

iii) *Cassia fistula* (Rajbrichya)

Part used- Fruit

Form- Raw

Preparation and application- Small part of fruit of *Cassia fistula* is chewed to cure constipation.

22. Family- Lamiaceae

i) *Pogostemon amaranthoides* (Rudilo)

Part used- Leaf

Form- Juice

Preparation and application- Leaves of *Pogostemon amaranthoides* is crushed and juice is extracted and is applied for the treatment of lice and to control body heat.

ii) *Menthe spicata* (pudina)

Part used- whole plant

Form- Juice

Preparation and application- Whole plant of *Menthe spicata* is crushed and juice extracted is taken orally to treat jaundice and control body heat.

iii) *Colebrookea oppositifolia* (Dhursele)

Part used- Leaf

Form- Raw

Preparation and application- Leaf of *Colebrookea oppositifolia* is gently smashed and is inhaled to cure sinusitis.

23. Family: Lauraceae

Lindra neesiana (Siltimmur)

Part used- Fruit

Form- Raw, decoction

Preparation and application- The seed of *Lindra neesiana* is boiled and decoction is taken orally to cure altitude sickness and abdominal distension.

24. Family: Leguminosae

i) *Trigonella foenumgraceum* (Methi)

Part used- Seed

Form- Decoction

Preparation and application- The seed of *Trigonella foenumgraceum* is allowed for decoction and taken orally to cure cough and cold.

ii) *Dolichos biflorus* (Gahat)

Part used- Seed

Form- Decoction

Preparation and application- The seed of *Dolichos biflorus* is allowed for decoction and taken orally to cure cough and cold.

iii) *Bohunia vahlii* (Bhorlo)

Part used- Root

Form- Juice

Preparation and application- Root of *Bohunia vahlii* is crushed and extracted juice is taken orally to cure bloody stool.

25. Family: Liliaceae

i) *Smilax aspera* (Kukurdino)

Part used- Root

Form- Juice

Preparation and application- Root of *Smilax asperais* crushed and extracted and taken orally to cure stomach ache and fever.

ii) *Aloe vera* (Gheu kumari)

Part used- Leaf

Form- Juice

Preparation and application- leaf juice of *Aloe vera* is extracted and is taken orally to cure gastritis and abdominal distension. Besides, the inner part of leaf is applied to cure burnt skin.

26. Family: Loranthaceae

Viscum articulatum (Hardchur)

Part used- Leaf

Form- Paste

Preparation and application- The leaves paste of *Viscum articulatum*, latex of *Pinus spp.* along with simrik (red rock) is mixed together to make paste and is further mixed with cooked flour of *Eleusine caracana*. Then used as plaster to cover the fractured bone and is wrapped with lokta paper (Nepali handmade paper) and tied by Kapro (bamboo's cage) so that fractured bone immovable and hence cured. After 15 days it is removed out and gently massage by *Panthera tigris* tigris's fats to cure fracture.

27. Family: Lythraceae

Woodfordia fruticosa (Dhiero)

Part used- Flower

Form- Raw

Preparation and application- Flower of *Woodfordia fruticosa* is chewed to control cholera.

28. Family: Malvaceae

Bombax ceiba(Simal)

Part used- Bark

Form- Paste

Preparation and application- Bark paste of *Bombax ceiba* is extracted and is mixed with flour to make roti and is given to the children for the treatment of constipation.

29. Family: Menispermaceae

i) *Cissampelos pareira*(Batul pate)

Part used- Root and leaf

Form- Paste

Preparation and application- The root and leaf of *Cissampelos pareira* is crushed and pounded paste is taken orally to cure gastritis and menstrual disorders. In addition, it is mixed with bark paste of *Mangifera indica* and *Psidium guajava* and taken orally to cure abdominal distension (Begar pareko).

ii) *Tinospora cordifolia*(Gurge gano)

Part used- Rhizome

Form- Paste

Preparation and application- The root paste of *Tinospora cordifolia* is extracted and taken orally to cure abdominal distension (Gano gako) and piles.

30. Family: Moraceae

i) *Ficus australis*(Kimbu)

Part used- Root

Form- Juice

Preparation and application- The juice extracted from the root of *Ficus australis* is taken orally for the treatment of pin worm.

ii) *Artocarpus lakoocha*(Badahar)

Part used- Leaves

Form- Raw

Preparation and application- Leaves of *Artocarpus lakoocha* is given to the cattle for the removal of placenta.

iii) *Ficus semicordata*(Khanyu)

Part used- leaves

Form- Raw

Preparation and application- Leaves of *Ficus semicordata* is given to the cattle for the removal of placenta.

iv) *Ficus religiosa*(Pipal)

Part used- Root

Form- Decoction

Preparation and application- Decoction of root of *Ficus religiosa* and *Silajit* is taken orally for the treatment of the spleen swelling.

31. Family: Musaceae

Musa paradisiaca (Kera)

Part used- Flower

Form- Juice

Preparation and application- Juice extracted from flower of *Musa paradisiaca* is taken orally to retain placenta after parturition. Besides, the water inside the trunk of it is applied to the body to control body heat.

32. Family: Myrtaceae

i) *Cleistocalyx operculatus* (Kemuno)

Part used- Leaf

Form- Juice

Preparation and application- Leaf of *Cleistocalyx operculatus* is crushed and juice is inhaled to cure sinusitis and nose bleeding.

ii) *Myrica esculenta* (Kafal)

Part used- Bark, fruit

Form- Juice, raw

Preparation and application- The juice extracted by crushing the bark of *Myrica esculenta* and is taken orally to cure cholera. In addition, the fruit of

33. Family: Myristicaceae

i) *Myristica fragrans* (Jaifal)

Part used- Seed

Form- Decoction

Application and preparation- Decoction of little amount of seed of *Myristica fragrans* is taken orally to prevent from cold. But high amount is dangerous for health.

ii) *Psidium guajava* (Belauti)

Part used- Bark

Form- Juice

Preparation and application- The bark juice of *Psidium guajava* is taken orally to cure diarrhoea. In addition, bark of *Psidium guajava*, *Mangifera indica* and *Cissampelos pareira* is crushed and extracted juice is taken orally to cure abdominal distension (begar pareko).

34. Family- Nyctaginaceae

Mirabilis jalapa (Malatiphool)

Part used- Root

Form- Juice

Preparation and application- Root of *Mirabilis jalapa* is crushed and extracted juice is taken orally to cure gastritis, stomach ache. Root can be dried and store.

35. Family: Orchidaceae

Orchid spp. (Badar kera/ Sungava)

Part used- Whole plant

Form- Paste

Preparation and application- Whole plant of *Orchid* spp. is crushed and prepared paste is applied to cure fracture.

36. Family: Oxalidaceae

Oxalis corniculata(Chariamilo)

Part used- Whole plant

Form- Raw

Preparation and application- Whole plant of *Oxalis corniculata* is burned and extracted ash is applied on the body for lowering the body heat.

37. Family: Piperaceae

Piper nigrum(Marich)

Part used-Seed

Form- Decoction

Preparation and application- Decoction of seed of *Piper nigrum* is taken orally to cough and cold infestation.

38. Family: Poaceae

i)*Eleusine caracana*(Kodo)

Part used- Seed

Form- Fermentation, flour

Preparation and application- The liquor (Jaad) made from *Eleusine caracana* is taken orally to cure cold and diarrhoea. Besides, for gluing fractured bone cooked flour is applied.

ii)*Saccharum officinarum*(Ukhu)

Part used- Stem

Form- Juice

Preparation and application- Juice extracted from *Saccharum officinarum* is taken orally to cure jaundice.

iii)*Thaisanolaena maxima*(Amriso)

Part used- Bark hair, root

Form- Raw

Preparation and application- Bark hair of *Thaisanolaena maxima* and *Calotropis gigantea* is taken orally and also applied to cure snake bite. Besides, the root of it is kept in naval of delivering mother to minimize the labour pain.

iv) *Hordeum vulgare*(Jau)

Part used- Seed, dew

Form- Flour, raw

Preparation and application- The seed of *Hordeum vulgare* is roasted and crushed flour is prepared called 'satu'. Satu is taken orally with warm water or milk to cure constipation. The dew of *Hordeum vulgare* at early morning is applied on newly made earhole or nose hole to prevent from infection.

iv)*Imperata cylindrical*(Siru)

Part used- Root

Form- Juice

Preparation and application- Root juice of *Imperata cylindrical* is extracted in half a glass of water and taken orally two times a day for the treatment of Ascariasis.

v) *Eulaliposis binata* (Babio)

Part used- Stem hair

Form- Raw

Preparation and application- Stem hair of *Eulaliposis binata*, just above of root is peeled and applied on freshly cut wound to cure and check the blood flow.

vi) *Bambusa arundinaceae* (Bans)

Part used- Stem knot

Form- Paste

Preparation and application- Stem knot of *Bambusa arundinaceae* is crushed and paste is applied on boils wound to cure it.

vii) *Oriza sativa* (Dhan)

Part used- Seed

Form- Flour

Preparation and application- Flour of *Oriza sativa* cooked with *Curcuma caesia* and *Chenopodium album* and given to retained placenta.

39. Family: Pteridaceae

Cheilanthes dahousiae (Rani sinka)

Part used- Stem

Form- Raw, solid

Preparation and application- Small piece of stem of *Cheilanthes dahousiae* is inserted into the newly made earhole to protect from infection.

40. Family: Rosaceae

i) *Rubus ellipticus* (Ainselu)

Part used- Bark

Form- Paste

Preparation and application- Bark of *Rubus ellipticus* is crushed and paste is taken orally to cure mouth wound and tonsillitis. Besides, bark of *Rubus ellipticus* and *Boerhavia spp.* is crushed and paste is taken orally to cure oral wound.

ii) *Rosa indica* (Gulab)

Part used- Flower

Form- Raw

Preparation and application- Juice extracted from flower of *Rosa indica* is taken orally to cure dysentery.

41. Family: Rutaceae

i) *Citrus limon* (Kagati)

Part used- Fruit

Form- Juice

Preparation and application- Juice extracted from fruit of *Citrus limon* is taken orally to cure high altitude sickness and also for vomit control. Beside, juice is applied to the scalp for the treatment of dandruff.

ii) *Murraya koenigii* (Asare)

Part used- Leaf

Form- Juice

Preparation and application- Leaf juice of *Murraya koenigii* is putted on eyes to cure eye diseases. Besides, it is direct applied to cure skin diseases.

42. Family: saxifragaceae

Bergenia ciliate (Pakhanbed)

Part used- whole plant

Form- powder

Preparation and application- Whole plant of *Bergenia ciliate* is dried and crushed into powder and 2-3 tablespoon is taken orally to cure fracture, renal calculi and menstrual haemorrhage.

43. Family: Solanaceae

i) *Datura metel* (kalo dhaturu)

Parts used- Fruit

Form- Tablets

Preparation and application- Fruit of *Datura metelis* mixed with flour dough and given orally to cure cough in cattle. Besides, it is about 2-3 small seed is taken orally with banana to cure swollen body and rabies.

ii) *Solanum nigrum* (kalikamai)

Part used- Leaves

Form- Cooked

Preparation and application- Vegetable of leaf of *Solanum nigrum* is cooked and taken orally to treat insomnia and indigestion.

iii) *Solanum capsicoides* (Kanthakari)

Part used- Seed, Root

Form- Raw, Paste

Preparation and application- Root paste is applied to the wound bitten by dog to treat Rabies.

iv) *Solanum tuberosum* (Alu)

Part used- Tuber

Form- Raw

Preparation and application- Fresh tuber of *Solanum tuberosum* is cut and rubbed on the skin to treat burnt skin.

44. Family: Sapotaceae

Diploknema spp. (Chiuri)

Part used- Bark

Form- Juice

Preparation and application- Bark juice is extracted and taken orally to treat diarrhoea and dysentery.

45. Family: Umbelliferae

i)Centella asiatica(Ghodtapre)

Part used- Whole plant

Form- Juice

Preparation and application- Whole plant of Centella asiatica is crushed and extracted juice is taken orally to treat jaundice.

ii)Anethum sowa (Samphu)

Part used- whole plant

Form- vegetable

Preparation and application- vegetable of Anethum sowa is cooked and taken orally to get relief from back pain and body pain. Besides, seed is cooked in rice flour to treat body pain.

iii)Carum copticum(Jawano)

Part used- Seeds

Form- Decoction

Preparation and application- Decoction of seed of Carum copticum is taken orally to cure cold infestation. Besides, it is given to the mother for lactation enhance.

46. Family: Utricaceae

Utrica dioca(Sisnu)

Part used- Root paste, leaf powder

Form- Paste, decoction

Preparation and application- Root paste of is given to delivering mother to minimize labour pain and retain placenta. Besides, leaf powder in the form of decoction is taken orally for the treatment of high blood pressure.

47. Family: Zingiberaceae

i)Curcuma caesia(Haledo)

Part used- Rhizome

Form- Raw, paste

Preparation and application- Root paste of Curcuma caesia is taken orally to treat burning urination and retain placenta.

ii)Curcuma longa(Besar)

Part used- Rhizome

Form- Raw, paste, decoction

Preparation and application- Paste extracted from root of Curcuma longa is applied on wound to prevent from infection. Decoction of powder is taken orally to treat cough.

iii)Curcuma zedoaria(Kachur)

Part used- Rhizome

Form- Paste

Preparation and application- Rhizome of Curcuma zeodariais chewed or crushed and extracted paste is taken with honey and ghee for the treatment of indigestion, heart disease, joint pain and pin worm.

iv) Zingiber officinale

Part used- Rhizome

Form- Powder, raw

Preparation and application- Rhizome piece of Zingiber officinaleis chewed or powder is put in tea for the treatment of indigestion, cough, throat pain and high altitude sickness.

4.3 Indigenous knowledge system of Raji People

The serious effect on the natural resources had increased gradually due to the change in environmental, economic and cultural activities in the Uttarganga VDC. Indigenous knowledge is human life experience in different natural and social boundaries within unique local and

contemporary setting. Raji people have their distinct indigenous knowledge suitable to their environment. It has been described under different heading given below.

4.3.1 Biodiversity conservation

The Raji people relied on great variety of natural resources rather than a few species only. These people utilized the environment as a whole as an integrated system. Raji community had deep respect and love for the natural resources. The Raji people depended considerably on the forest for much of their requirement. These days some Raji people such as healers had planted some commonly used medicinal plants in their home garden. This shows that the Raji community was aware about the importance of medicinal plants and their extinction in near future.

4.3.1.1 Wildlife, hunting and trapping

The Raji had rich possession of different products such as meat, bone, hide, horn, antlers and skins of wildlife. They had vast knowledge of habit, habitat and behavior of wildlife. Although, their traditional occupation was fishing and hunting now, they were engaged in agriculture and animal rearing. They reared domestic mammals which are basically for the purpose of milk and meat products. Some of these species also had ritual as well as medicinal values. In contrast, wild mammals were hunted for the purpose of meat, hides and other purposes. This ethnic group showed keen enthusiasm on the fishing activities too. They usually fish near the Bheri River, Chinchu River and the tributaries. They use different fishing impliments such as cast net, hook and line for catching the fish. Mostly children use hook and line whereas as adults enjoy catching fish with nets. Women also involve in the fishing activities in these group. They also use poisonous plants for fishinng purpose such as Agave Americane, Sapium insigne, Euphorbia valyelane, and Mainfal as fish poison.

4.3.1.2 Conservation of wild life

Conservation of animals:

Raji people had good knowledge of sustainable use of domestic and wild species of animal. They had tradition of killing adult male of animals and preserving female and juvenile of both wild and domestic animals. This helped in the conservation of successive generation of animals.

Conservation of wild plant species

Raji people had been found to cut down old trees instead of new and young plants for firewood and grass. They taken out yam only of githa, bhyakur and tarul instead of plucking out all, but leave some part inside the pit and covered it with mud and leaf litter so that it could produce fruit continuously.

4.3.2 Agricultural practice

The Raji people were involved in agricultural occupation since a long time. According to the aged Raji, they used to farm in a large land which was sufficient for these family. But, nowadays due to lack of their own agricultural land, it had made difficult to overcome their family hunger so they were engaged in different occupation these days. Some of them also practiced cultivation of wild herbal and medicinal plants in their own garden, for examples *Sparagus racemose*, *Mirabilis jalapa*, *Thaysanolaena maxima*, *Emblica officinalis* etc.

4.3.2.1 Pest management in field

Raji people had their own traditional method for pest control. They used organic pesticides and insitcicides intentionally or unintentionally for pest control. They used wood ash, cow's urine and neem juice to control a kind of aphid (Lahi) in vegetables. They used to spread litters of *Pinus roxburgii* (Salla) and *Acacia catechu* (Khyar) in paddy field when paddy is affected by Khaire disease (yellow colour in paddey leaves). Mechanical practices such as hand picking and destroying of affected parts, is very common method. Sperying of cow's urine, local beer (Jaad), tobacco solution, neem's leaf juice is popular practices among Raji community.

4.3.2.2 Livestock and Poultry practice

Goat and chicken were the major animals reared by Raji people for the meat as well as religious purpose. Very few of them had buffalo and cow for milk purpose. Their protein level is maintained by fishing and hunting of wildlives.

4.3.2.3 Storage of grains

The Raji people of Utaarganga were found to use powder of neem (*Bhumea lacera*) was used to preserve the grains like maize (*Zea mays*), wheat (*Triticum aestivum*) and cowpea (*Vigna cylindrical*). The dried leaves of neem plant were crushed and extracted powder is mixed with seed of grains and stored. Besides, the oil cake (Kati) was applied on whole grains and stored on air tight pot for long term storage.

4.3.2.4 Medicinal practices for livestocks

i) The paste of *Allium sativum* (Bhote lasun) was administrated orally to the cattle for the treatment of indigestion.

ii) five to six seeds of *Datura metel* (Dhaturo) was put inside the flour's dough and administrated orally to cure cough in cattle.

iii) The paste of *Aranea spp.* (Makura) was given orally to the chicken to cure fracture.

iv) The powder of *Curcuma longa* (Besar) and oil of *Brassica compestris* (Tori) was mixed and was applied to cure wound in livestocks.

v) The paste of leaf of *Prunus persica* (Aru) was applied on wound to kill the worms.

vi) Local beer (Jaad) was administrated orally to the cattle for the treatment common cold and cough.

4.3.3 Yeast making practice

Yest making practice was common among the Raji community. It was prepared by adding dried powder Dhoshre with rice flour. Dhoshre was mixed with rice flour and again added in water. The mixed mass was made into round balls. The yeast was used for preparing alcohol made for food grains.

4.3.4 Arts, Crafts and Technology

Bamboo baskets (Doko) were also prepared by some people of Raji community. The split bamboos were interwoven to make 'U' shaped basket. Sekhu was also prepared by Raji people as umbrella during the monsoon period. These 'V' shaped structure were usually used only farming in the rainy season.

Gundri (hey mat) was generally prepared by the Raji women. These mats were prepared by paddy straw.

Decorative materials were also prepared by Raji people using bamboo.

They also prepared plough, leveler from these trees branches or shoot for cultivation purpose.

4.3.5 Boat making and Boating

In the past there were no bridges for ferrying the river. Making boat and boating was their main occupation, which had helped a lot of people in transportation. Old aged Raji were also expert in making and rowing boat. These boats were prepared from the large trunk of the Tree such as Simal, Sal and Tuni tree but these types of indigenous knowledge are vanishing these days.

5. DISCUSSION

Despite the development and globalization of modern medicines, there is still believed on the use of medicinal animals and plants in Uttarganga VDC, Surkhet. Total 36 animals and 91 medicinal plant species are in use in the study area to treat human and animal diseases. The results show that 30 types of diseases are treated using 36 animal species belonging to 22 orders and 31 families. Among 36 species 31 species are found to be wild and only five species are domestic. A total four species were used to treat asthma, and three species for pneumonia. Similarly, two species are used for common cold, fever, rheumatism and tooth ache and one species for body ache, breast problem (thunelo), diphtheria, conjunctivitis, diarrhoea, dizziness, heart diseases, ear ache, epilepsy, gastric disorder, jaundice, khoret, laprosy, malnutrition, mirgi, piles, scabies, sinusitis, snake bite, tetanus and vomiting. For different medicinal purpose different animal parts as well as products are used such as honey, milk, blood, urine, dung, bone, skin, meat etc.

The different species of plants and animals reported with their traditional medical treatment in the present research work are also supported by the finding of other researches. For example, stool of *Hystrix indica* is reported to treat asthma. Tamang (2003), Thapa (2008), Lohani (2010), Lohani (2011a, 2011b), Lohani (2012), Chalise (2010) have reported the use of bile of *Hystrix indica* for treating asthma. Rai (2012) and Dhimal (2015) reported the stomach of same species for treating asthma, dizziness, vomiting and tetanus. Present study documents the use of *Canis aureus* for the treatment of rheumatism and arthritis where as Benarji et al. (2010), Dhimal (2015), Poudyal and Singh (2014) clearly reported that *Canis aureus* also used for the treatment of arthritis and rheumatism. Chalise (2010) reported the wine and meat of *Canis aureus* used for the treatment of asthma, against gout, joint pain, acidity, meat wine and gyne- problem. The meat of *Tor tor* is used to enhance lactation in the present study, whereas, oil and bile of it is used to treat gastritis and other gastrointestinal disorders (Lohani 2011). Similarly, cooked soup of *Pheretima posthuma* is used to enhance lactation as observed in the present study. In addition, *Pheretima posthuma* is used to treat measles and typhoid (Lohani 2010)

Similarly, the dung of *Equus caballus* used for the treatment of pneumonia whereas Dhimal (2015) also reported the same species for the treatment of typhoid and pneumonia. In the present study, *Musca domestica* is used to treat wound, *Trombidium spp.* is used for gastritis, *Aranea spp.* is used for fracture, *Selonopsis spp.* was used for pneumonia, *Photuris spp.* was used for tooth ache, *Acilius spp.* for vomit and dizziness, *Scarabidae* is used for fever and *Bam sarpa* is used for dizziness and vomit. To the extent of so far reviewed literature this finding has not been reported by preceding researches. Thus, the finding seems new addition in the ethnozoological field.

The ethnobotanical study had been conducted on August 17 to 25, 2012 by Thapa (2012) on the Raji community of Uttarganga and Chinchu VDC and had reported only 9 common medicinal

plant used by Raji community for the treatment of 19 ailments, but my field visit for the 9 days (20-26 June 2014 and 20-25 April 2015) only on Uttarganga VDC reported that 91 medicinal plants have been used by same community for the treatment of 60 different ailments. Similarly, Thapa (2013) reported that only 43 plant species were used by the Raji people of Surkhet and Kailali district for gastrointestinal diseases only but my study only on Uttarganga VDC reported that 47 plant species were used only for the treatment of gastrointestinal diseases. Among the plants many of the species are used for treating same disease. For example, 11 species of plants are used for the treatment of diarrhoea, seven species for constipation, six species for abdominal distension, gastric and gano gako, cough, hotness of body, five species for cold, four species for labour pain, loss of appetite and cholera, three species for anticeptic use, body pain, bloody stool, dysentery, piles, removal of placenta, renal calculus, retained placenta and tonsillitis. Similarly, two species are used for blood purification, burnt wound, burning urination, dandruff, high altitude sickness, lactation enhancer, menstrual haemorrhage, nose bleeding, rabies, snake bite, sprain, swollen body and stomach pain, and one species of plant is for antilice, boils wound, general weakness, heart disease, high blood pressure, indigestion, insomnia, joint pain, leucorrhoea, meanstrual disorder, micturation, nausea, scabies, skin disease, tooth ache, ulcer, vomit, warts and wound.

The finding of present study is supported by many researches; viz. *Jaustice adhatoda* (Asuro) has been used to cure piles, the similar uses have been observed (Dharmahars 2005, Thapa et al. 2013 and Rai 2012). However, Poudyal and Singh (2014) have reported its use in blood purification. Likewise *cuscuta reflexa* and *Saccharum officinarum* have been used for the treatment of jaundice (IUCN 2004; Thapa 2008, Thapa 2012, Rai 2012, Dharmahans 2005). Similarly, Acharya (1996), Bhattarai et al. (2009), Pokhrel (2006), Rai (2004), Shrestha (1988), and Thapa (1998) has observed the use of it for treating jaundice while Ale et al. (2009), Malla and Chhetri (2009), Dhimal (2015) have reported *Saccharum officinarum* for the same use. In the present study, *Calotropis gigantea* is used for sprain, snake bite, bloody stool and joint pain (Acharya 2012, Ale et al. 2009, Dangol 2010; Dangol and Gurung 1999, Dangol 2000; Manandhar 1993, and Rai 2004, Rai 2012). However, Pokhrel (2006) reported its use in cuts, swelling in finger joints, and its heated leaves are used for treating rheumatism.

The use of *Asparagus racemose* is reported for enhancing lactation in present study which is supported by various researches (Ale et al. 2009, Bhattarai et al. 2009, Das and Chattopadhyaya 2007, dharmahans 2005 Kunwar and Bussman, 2009, Pokhrel 2006, Rai 2012, Reddy et al. 2007, Singh et al. 2011, Singh et al. 2012, Thapa, 1998 and Thapa 2008).

Datura metel is used for treating rabies in the present study and is supported by previous references (Coburn 1984, Rai 2004, Rai 2012 and Dhimal 2015). However, Dharmahans (2005) has observed its seed in curing cough, respiratory diseases, swelling, and asthma along with rabies. The use fruit powder of *Terminalia belirica*, *Terminalia chebula* and *Emblica officinalis* is used for the treatment of constipation, loss of appetite and throat pain is supported (Dhimal 2015, Dharmahars 2005 and IUCN 2004). However, Paudyal and Singh (2014) have reported *Terminalia belirica* for throat pain and cough, *Terminalia chebula* for Gastritis, purification of blood and *Emblica officinalis* for gastritis, purification of blood and good for eye. Similarly, the use of *Rhododendron arboretum* flower is to cure dysentery in present study is supported by other reseraches (Acharya 2012, Dharmahars 2005, IUCN 2004 and Rai 2012). This study also supports its use in fish one prick which is also supported by (Dhimal 2015, Poudyal and Singh 2014 and Rai 2012).

The dried stem of *Acorus calamus* is used in treating tonsillitis (Bhattarai et al. 2009 and Rai 2012). However, Singh et al. (2012) and Tamang (2003) have reported its use in treating

bronchitis. The unripe fruit of *Phoenix acaulis* is used in treating diarrhoea and dysentery (Thapa et al 2013). According to Saini (2007) and Rai (2012), *Utrica dioica* is used for treating high blood pressure as described in the present study. In addition, *Utrica dioica* is used for diabetes (Dharmahans 2005). Similarly, the *Achyranthes aspera* is used for treating gastritis, nausea and loss of appetite (Thapa et al.2013). In addition Teklay et al. (2013) have observed its use in treating tonsillitis, eye infection, urine retention, snake bite, wound and paralysis. Dharmaharas (2005) also supported the whole plant of *Centella asiatica* is used to treat jaundice in the present study. In addition, (Dangol(2010), Saini (2007) and Rai (2012) have reported its use in curing fever, whereas, Dhimal (2015) reported its use in diarrhoea. *Psidium guajava* is used for treating diarrhoea and dysentery in the present study which is intuned with other references(Bhattarai et al.2009, Dangol 2010, Pokhrel 2006, Rai 2012 and Tamang 2003).

Similarly, the root of *Imperata cylindrica* is used to treat pin worm (antihelminthic) in the present study is matching with other previous studies (Dhimal 2015, Dharmahans 2005 and Thapa 2013). Bark of *Mangifera indica* is used to cure diarrhoea and dysentery which is also supported (Rai 2012 and Thapa 2013). Similarly, *Woodfordia fruticosa* is used to treat diarrhoea and dysentery (Dharmahans 2005, IUCN 2004, Thapa et al.2013). *Zingiber officinale* is used to treat throat pain in present study(Dharmahans2005, Poudyal and Singh 2014, and Rai 2012). Whereas, Teklay et al.(2013) and Thapa (2013) reported *Zingiber officinale* is used in abdominal pain, vomiting and diarrhoea. For the removal of renal calculus *Dolichos biflorus* is used (Dharmahans 2005 and Dhimal 2015).

The result showed that some of the plants are blended with other plants and animals but majorities of animals and plants are used alone without blend. According to present study, the dew of *Hordeum vulgari* is used as anticeptic in newly made ear and nose hole, the fruit paste of *Dioscorea deltoids* is used in fracture, *Solanum nigrum* is used to treat insomnia, *Anthum soa* is use to treat back pain and body pain. To the extent so far reviewed literature this finding has not been reported by proceeding researchers. Thus, the findings seem new addition in this field. Like wise, *Allium sativum*, *Datura metel*, *Curcuma longa*, *Brassica compestris*, and *prunus persica* are used for the treatment indigestion, cough, wound; respectively in the livestock.

There is no doubt Raji community has vast knowledge on medicinal practices. In the Raji community, traditional healers and elder people have better knowledge about practice of medicinal animals and plants and skills of traditional medical therapy. There are various types of indigenous knowledge systems found in the Raji community such as, knowledge on biodiversity conservation, pest management, boating, hunting agricultural skills such as boat making, fish net making etc. but are found to be vanishing. Some Raji people of the study area were conscious regarding the conservation of medicinal plant species. They have managed the specific sites and place for the cultivation of must frequently used medicinal plants, such as pudina, ukhu, batulpate, githa etc. and medicinal plant trees like jamuno (*Syzygium cumini*), kemuna(*Cleistocalyc operculatus*), amala (*Emblca officinalis*), royani(*mallotus philippensis*) etc. in the forest as well as in their agricultural field.

6. CONCLUSIONS

Conclusions

Rajis are considered among the oldest people to inhabit the mid- western region, originated from surkhet and migrated to the Dang, Bardiya, Kailali and Kanchanpur. They have distinct language and physical feature. They have their own culture such as own dress and ornaments, dances, festivals, life cycle rituals, profession such as boating, hunting, agriculture skills such as boat making, fish net making etc. but are found to be vanishing.

Raji people have good skill of utilization of animals and plants for medicinal purpose. They use 36 types of animal having medicinal values to treat 30 types of diseases. The ailments treated by using animal species are diarrhoea, asthma, body ache, conjunctivitis, ear ache, arthritis, prolong lactation, breast problem, common cold, bhagute, epilepsy, fever, fracture, gastritis, heart disease, jaundice, khoret, laprosy, malnutrition, mirgi, piles, pneumonia, rheumatism, scabies, sinusitis, snake bite, tetanus, tooth ache, vomiting and dizziness, wound.

With reference to plants, there are 91 species used for treating 60 types of diseases. The ailments treated are abdominal distension, body pain and back pain, antihelminthic, antilice, blood purification, cold, cholera, diarrhoea, dysentery, constipation, anticeptic, boils wound, burnt skin, dandruff, burning urination, bone prick, eye disease, fever, bone prick, throat pain, fracture, gastritic and gano gako, general weakness, heart disease, indigestion, high blood pressure, high altitude sickness, insomnia, hotness of body, joint pain, skin disease, labour pain, jaundice, stomach pain, piles, menstrual disorder, prolong lactation, nose bleeding, leucorrhoea, loss of appetite, pubic rashes, micturation, menstrual haemorrhage, nausea, rabies, nose bleeding, removal of placenta, scabies, renal calculus, retained placenta, sinusitis, tooth ache, sprain, snake bite, ulcer, vomit, warts and wound.

Due to globalization of modern medicine and health posts and hospitals such traditional indigenous use of medicinal animals and plants is decline day by day. However, some old age people and women because of the convenientnenmost of the common ailments like diarrhoea, gastritis, boils, cut wounds, menstrual haemorrhage, warts, sinusitis, labour pain etc. are cure through traditional medicine therapy.Raji people of study area have shown their consciousness through conservation and protection of frequently used and essential medicinal plants in their own agricultural field.

7. RECOMMENDATIONS

Major recommendations of the study are presented as follows:

i) Involvement of Raji people and local people

It has been recommended to encourage local people and Rajis for commercial cultivation of medicinal plants and also provide training and required guidelines for large scale of production as well as create market to sell the products. It would be fruitful to provide training and guidelines to the Raji people and local people for sustainable use of such important medicinal plants.

ii) Education

The recommendation has been provided for the education to the Raji people for the conservation of natural habitat of animals and plants species especially to the young generation of Raji community.

iii) Motivation to the healers

It would be better to motivate the local or traditional healers of Raji community for dissemination of their precious knowledge to the young generation.

iv) Documentation

It would be better to document and keep record of medical ethnobiology and their indigenous knowledge system and present it to the young generation.

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ANNEXES

ANNEX1: CHECKLIST

Checklist for the key informant interview

Name

Gender

Locality

Education

Occupation

How long it has been doing such job?

How do you acquire this knowledge?

How do you cure your patient?

Which disease do you cure more frequently?

How do you cure your patient?

How much faith do people have in such traditional medicines?

Which plants do you use for curing such disease and how? Can you please give the detail information about the preparation of medicine from animals and plants?

For the preparation and use of medicine

Name of disease

Name of medicinal animals and plants used

Detail information on preparation of medicine

Condition of plants parts/ animal organs (e.g fresh, dried or processed)

Procedure of preparing medicine

Process of treatment along with required dose and duration of intake.

Form of medication (decoction, powder, juice and paste)

Source of medicinal animals and plants.

Checklist for the focus group discussion

What is the distribution of the medicinal plant species at present with comparison to the past years?

How do you preserving the areas of medicinal plants resources?

Have you ever cultivate important medicinal plants and where?

How curious and what is the belief of youngsters towards traditional medication system?

Is there any animal and plant species get extinct which were abundant in the past?

Is there any documentation does so far on the animal and plant species found in this community, as well as their traditional knowledge?

What are the risk for raring such medicinal practices and what is your view for the conservation of such knowledge?

What role does social organization and government has play for the conservation of your identity?

Checklist for the ethnography

What is your mother tongue?

What is the root of Raji language?

How many languages within the Raji community?

What is the physical feature of Raji people and how is it distinct from other people?

Dress and ornaments

What does Raji man wear?

| | | | | | |
|------|----------------------|------|----------------------|------|----------------------|
| Head | <input type="text"/> | Neck | <input type="text"/> | Body | <input type="text"/> |
| Leg | <input type="text"/> | Foot | <input type="text"/> | | <input type="text"/> |

What does a Raji woman wear?

| | | | | |
|------|----------------------|------|----------------------|----------------------|
| Head | <input type="text"/> | Neck | <input type="text"/> | <input type="text"/> |
| Leg | <input type="text"/> | Foot | <input type="text"/> | |

What ornament do the Raji women wear?

| | | | |
|------|----------------------|----------------------|----------------------|
| Head | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Foot | <input type="text"/> | Finger | <input type="text"/> |
| Hand | <input type="text"/> | <input type="text"/> | <input type="text"/> |

Do the yes, what is the metal and what is the ornament called?

Religion and festivals

What religion do the Raji people celebrate?

How do the religion originate?

Which God and Goddness do you worship?

Do the anciestors used to follow the same God/Godness?

Do you celebrate Dashain and Tihar?

What are the other puja Raji people do?

Do you sacrifice animals in festival? If yes, what are the animals and why?

How do Raji people select the pujari in Deutibajai temple?

Economy

What is the main occupation of Raji people?

Is there any specific occupation Raji people inherit from ancestor?

What is the main source of income?

Lifecycle rites

Birth

What is the ritual performed by Raji people during the child birth?

Which caste prist is used, from own community or other?

How is a girl 6th day celebrated?

How does the 6th day of boy celebrate?

How the girl's Nawaran and Pasni are celebrated?

How the boy's Nawaran and Pasni celebrated?

Marriage

What is the specific age of girls and boys got marriage in your community in the past?

What is the age of girls and boys get marriage in your community recently?

What the types of marriage that performed in your community?

What are the types of marriage in Raji community?

For how many days each type of marriage performed?

Is there any dowery system?

Do polygamy/polyandry exist?

Death

What is done to the dead body?

For how many days mourning is done?

How do they become purified?

Origin

How long have you been residing in this place?

Do you know about the origin of Raji people?

From where Raji people originate from?

Health

Where do you go for treatment when you become sick?

Does this community have their own indigenous technique for medication?

Checklist for the indigenous knowledge

What do you know about biodiversity conservation?

What is your role for the biodiversity conservation?

Do you ever practice hunting and trapping?

How do you manage the pest in your agricultural field?

Do you ever practice organic pesticides and insecticides for pest control?

Do you ever use chemical fertilizer and insecticides in your field?

What is the difference between these two types of fertilizer in the context of production?

What are the process and applications of organic pesticides?

Do you have livestock in your home and for what purpose?

What are the common diseases seen in the livestock?

What are the treatments for those diseases? Can you please explain in detail?

Have Raji people take liquire?

How do you prepare it?

Do you have knowledge on art, craft and technology? If yes, what are they?

ANNEX 2: LIST OF TABLES

TABLE 1: Animals having medicinal values in Raji community

| S.N | Class | Order | Scientific Name | Common name/ Local Name | Habitat | Medicinal Uses |
|-----|------------|----------------|--------------------------------|--|----------------|---------------------------------------|
| 1 | Amphibia | Anura | <i>Rana tigerina tigerina</i> | Paha (N)/ Bhainkha (R) | Wild | Heart diseases, Diptheria (in cattle) |
| 2 | Amphibia | Anura | <i>Rana tigrina</i> | Bhyaguto (N)/ Bhainkha(R) | Wild | Leprosy |
| 3 | Annelida | Neooligochaeta | <i>Pheretima posthuma</i> | Gadyeula (N)/ Katlya (R) | Wild | Increase breast feeding in mother |
| 4 | Arthropoda | Coleoptera | <i>Cosmopolites sordidus</i> | Gabaro(N/R) | Wild | Epilepsy |
| 5 | Arthropoda | Hymenoptera | <i>Ichhneumonida</i> spp | Kamalkuti(N)/ Kamalkuti gheu (R) | Wild | Tooth ache, gastritis, weight loss |
| 6 | Arthropoda | Diptera | <i>Muscadomestica</i> | Makho(N)/ Ghyeu (R) | Wild | Wound made by spider's stool |
| 7 | Arthropoda | Hymenoptera | <i>Apis</i> spp. | Mauri (N)/ Ghuwas (R) | Wild/do mestic | Snake bite, malnutrition |
| 8 | Arthropoda | Trombidiformes | <i>Trombidium</i> spp. | Makhamali kira (N)/ Chui ghyeu (R) | Wild | Gastric disorder |
| 9 | Arthropoda | Scutigermorpha | <i>Scutigera</i> spp | Khajuro (N)/R) | Wild | Wound made by itself by biting |
| 10 | Arthropoda | Araneida | <i>Araneas</i> spp | Makura (N)/ Mukuri (R) | Wild | Fracture in chicken |
| 11 | Arthropoda | Hymenoptera | <i>Selonopsis</i> spp. | Rote kamilo/ Bekmota(N)/ Jamata (R) | Wild | Pneumonia |
| 12 | Arthropoda | Coleptera | <i>Photuris</i> spp. | Junkiri (N)/Timrya (R) | Wild | Tooth ache |
| 13 | Arthropoda | Coleptera | <i>Acilius</i> spp. | Pani kiro /Jade kira(N)/ Ghyeli gheu (R) | Wild | Dizziness |
| 14 | Arthropoda | Coleptera | <i>Scarabidae</i> spp. | Gueye kira (N)/ Ghuera (R) | Wild | Fever, food poisoning |
| 15 | Arthropoda | Decapoda | <i>Cancer</i> spp | Gangato (N)/ Grain (R) | Wild | Jaundice |
| 16 | Aves | Passeriformes | <i>Passer domesticus</i> | Bhangero (N)/ Bhyeri (R) | Wild | Ear ache |
| 17 | Aves | Galliformes | <i>Lophura leucomelanos</i> | Kalij (N/ R) | Wild | Prevent from cold |
| 18 | Aves | Galliformes | <i>Francolinus francolinus</i> | Titra (N)/ Tihan chari (R) | Wild | Malnutrition |
| 19 | Aves | Columbiformes | <i>Columba livia</i> | Parewa (N/R) | Wild | Arthritis, prevent from cold. |

| | | | | | | |
|----|----------|-----------------|-------------------------------|-------------------------------------|----------|--|
| 20 | Aves | Passeriformes | <i>Corvus splendens</i> | Kaag (N)/ Kauwa (R) | Wild | Conjunctivitis |
| 21 | Aves | Charadriiformes | <i>Vanellus indicus</i> | Huttityau (N)/ Tetwa (R) | Wild | Fever with red spot, pneumonia |
| 22 | Aves | Passeriformes | <i>Diceurus spp.</i> | Lampuchhre charo (N)/ Koklya (R) | Wild | Piles |
| 23 | Mammalia | Artiodactyla | <i>Bubalus bubalis</i> | Bhaisi (N/R) | Domestic | Scabies |
| 24 | Mammalia | Artiodactyla | <i>Bos indicus</i> | Gai(N/R) | Domestic | Fracture, rheumatism, sinusitis, body ache |
| 25 | Mammalia | Artiodactyla | <i>Muntiacus muntjak</i> | Mirga (N)/ Khasya (R) | Wild | Mirgi (a kind of skin disease in which red patches is seen) |
| 26 | Mammalia | Artiodactyla | <i>Sus spp.</i> | Kalo sungur (N)/ Kalo pak (R) | Domestic | Pneumonia |
| 27 | Mammalia | Carnivora | <i>Melurus ursinus</i> | Bhalu (N)/ Kangrya (R) | Wild | Arthritis, fracture, asthma |
| 28 | Mammalia | Carnivora | <i>Panthera tigris tigris</i> | Pate bagh (N)/ Goghwa (R) | Wild | Rheumatism, arthritis |
| 29 | Mammalia | Carnivora | <i>Canis aureus</i> | Shyal (N)/ Sayalla (R) | Wild | Arthritis |
| 30 | Mammalia | Perissodactyla | <i>Equus caballus</i> | Ghoda (N)/ Ghode (R) | Domestic | Fever, pneumonia |
| 31 | Mammalia | Rodentia | <i>Hystix indica</i> | Dumsi (N)/ Bhatlayebota (R) | Wild | Tetanus, asthma |
| 32 | Pisces | Anguilliformes | <i>Anguilla begalensis</i> | Raja bam macha(N)/Bam ngha(R) | Wild | Foot rotten in cattle (khoret) |
| 33 | Pisces | Cypriniformes | <i>Tor tor</i> | Sahar (N)/ Tarkaiklyak (R) | Wild | Common cold, breast feeding increment. |
| 34 | Reptilia | Testudines | <i>Testudo spp.</i> | Kachuwa (N)/ Kachu (R) | Wild | Diarrhea, pneumonia |

| | | | | | | |
|----|----------|----------|---------------------|--------------------------|------|--|
| 35 | Reptilia | Squamata | <i>Varanus</i> spp. | Gohoro (N/R) | Wild | Asthma, breast feeding problem (Thunelo) |
| 36 | Reptilia | Squamata | ? | Bam sarpa (N)/ Mughu (R) | Wild | Vomitting |

Table 2: Diseases treated by using animal species

| S.N | Name of Ailments | Types of diseases | Animal species used |
|-----|--------------------------|-------------------|---|
| 1 | Arthritis | Musculoskeletal | <i>Columba livia</i> , <i>Melurus ursinus ursinus</i> , <i>Canis aureus</i> , <i>Panthera tigris tigris</i> |
| 2 | Asthma | Respiratory | <i>Melurus ursinus ursinus</i> , <i>Hystix indica</i> , <i>Varanus spp.</i> |
| 3 | Body ache | Musculoskeletal | <i>Bos indicus</i> |
| 4 | Breast problem (Thunelo) | Reproductive | <i>Varanus spp.</i> |
| 5 | Common cold | Respiratory | <i>Lophura leucomelanos</i> , <i>Tor tor</i> |
| 6 | Conjunctivitis | Integumentary | <i>Corvus splendens</i> |
| 7 | Diarrhoea | Gastrointestinal | <i>Testudo spp.</i> |
| 8 | Diphtheria | Nervous | <i>Rana tigrina</i> |
| 9 | Ear ache | Otorhinolaryngo | <i>Passer domesticus</i> |
| 10 | Epilepsy | Nervous | <i>Cosmopolites sordidus</i> |
| 11 | Fever and typhoid | Symptoms | <i>Scarabidae spp</i> , <i>Equus caballus</i> |
| 12 | Fracture | Musculoskeletal | <i>Aranea spp</i> , <i>Bos indicus</i> , <i>Melurus ursinus ursinus</i> |
| 13 | Gastritis | Gastrointestinal | <i>Trombidium spp</i> |
| 14 | Heart disease | Cardiovascular | <i>Rana tigrina tigrina</i> |
| 15 | Jaundice | Gastrointestinal | <i>Cancer spp</i> |
| 16 | Khoret | Integumentary | <i>Anguilla begalensis</i> |
| 17 | Lactation enhancer | Not a disease | <i>Pheretima posthuma</i> , <i>tor tor</i> |
| 18 | Laprosy | Integumentorsy | <i>Rana tigrina</i> |
| 19 | Malnutrition | Not a disease | <i>Titra</i> |
| 20 | Mirgi | Integumentary | <i>Muntiacus munjack</i> |
| 21 | Piles | Gastrointestinal | <i>Diceurus spp</i> |
| 22 | Pneumonia | Respiratory | <i>Vanellus indicus</i> , <i>Testudo spp.</i> , <i>Sus spp.</i> |
| 23 | Rheumatism | Musculoskeletal | <i>Bos indicus</i> , <i>Panthera tigris tigris</i> , <i>Canis aureus</i> |
| 24 | Scabies | Integumentary | <i>Bubalus bubalis</i> |
| 25 | Sinusitis | Otorhinolaryngo | <i>Bos indicus</i> |
| 26 | Snake bite | Nervous/vascular | <i>Apis spp.</i> |
| 27 | Tetanus | Nervous | <i>Hystix indica</i> |
| 28 | Tooth ache | Dental | <i>Ichhneumonida spp</i> , <i>Photuris spp.</i> |
| 29 | Vomiting and Dizziness | Gastrointestinal | <i>Bam sarpa</i> , <i>Acilius spp.</i> |
| 30 | Wound | Integumentary | <i>Scutigera spp</i> , <i>Musca domestica</i> |

Table 3:Plants having medicinal values in Raji community

| | <i>Family</i> | <i>Scientific Name</i> | <i>Common name/Local Name</i> | <i>Life forms</i> | <i>Medicinal used</i> |
|--|-----------------------|------------------------------|------------------------------------|-------------------|---|
| | <i>Acanthaceae</i> | <i>Justice adhatoda</i> | <i>Asuro(N), Asur(R)</i> | <i>Shrub</i> | <i>Piles</i> |
| | <i>Amaranthaceae</i> | <i>Achyranthes aspera</i> | <i>Ulte kuro(N/R)</i> | <i>Herb</i> | <i>Gastritis, nausea, loss of appetite</i> |
| | <i>Amaranthaceae</i> | <i>Amaranthus spp.</i> | <i>Kade lude(N)/Marse(R)</i> | <i>Herb</i> | <i>Leucorrhoea</i> |
| | <i>Amaranthaceae</i> | <i>Achyranthes bidentia</i> | <i>Datiwan (N)/Chichibhata(R)</i> | <i>Shrub</i> | <i>Blood purification, tooth ache, menstrual haemorrhage</i> |
| | <i>Apocynaceae</i> | <i>Periploca calophylla</i> | <i>Sikari lahara(R/N)</i> | <i>Climber</i> | <i>Fracture, burning urination</i> |
| | <i>Anacardiceae</i> | <i>Rhus javanica</i> | <i>Bhakkimlo (N)/ Bharkullo(R)</i> | <i>Tree</i> | <i>Gastritis, piles ,blood purification</i> |
| | <i>Anacardiceae</i> | <i>Mangifera indica</i> | <i>Aanp(N)/gada(R)</i> | <i>Tree</i> | <i>Diarrhoea, dysentery, abdominal distension (begar pareko)</i> |
| | <i>Anacardiceae</i> | <i>Semecarpus anacardium</i> | <i>Bhalayo (N)/ Ryak (R)</i> | <i>Shrub</i> | <i>Wound</i> |
| | <i>Araceae</i> | <i>Acorus calamus</i> | <i>Bojho(N)/Bach(R)</i> | <i>Herb</i> | <i>Cough, tonsillitis</i> |
| | <i>Araceae</i> | <i>Colocasia esculanta</i> | <i>Karkalo (R/N)</i> | <i>Herb</i> | <i>Wound</i> |
| | <i>Arecaceae</i> | <i>Phoenix acaulits</i> | <i>Khajuri (N/R)</i> | <i>Shrub</i> | <i>Diarrhea, dysentery</i> |
| | <i>Asclepiadaceae</i> | <i>Calotropis gigantean</i> | <i>Aak(N)/Madar(R)</i> | <i>Shrub</i> | <i>Sprain, snake bite, joint pain, bloody stool</i> |
| | <i>Asparagaceae</i> | <i>Asperagus racemosus</i> | <i>Kurilo(N)/Kurila(R)</i> | <i>Shrub</i> | <i>Lactation enhancer, fracture, general weakness</i> |
| | <i>Berberidaceae</i> | <i>Berberis aristata</i> | <i>Chutro(N)/ Chinkari (R)</i> | <i>Shrub</i> | <i>Diarrhea, antihelmenthic</i> |

| | | | | | |
|--|------------------------|-------------------------------|------------------------------|----------|--|
| | <i>Brassicaceae</i> | <i>Brassica compestris</i> | Tori (R/N) | Herb | Pubic rashes, sprain, body pain |
| | <i>Brassicaceae</i> | <i>Raphanus sativus</i> | Mula (N)/Toti (R) | Herb | Dysentery |
| | <i>Brassicaceae</i> | <i>Lepidium sativum</i> | Chamsur (N/R) | Herb | Back pain, body pain |
| | <i>Burseraceae</i> | <i>Garuga pinnata</i> | Dabdabe (N)/Jyanda(R) | Tree | Bloody stool, diarrhea |
| | <i>Caricaceae</i> | <i>Carica papaya</i> | Mewa (N/R) | Tree | Renal calculus, jaundice |
| | <i>Caryophyllaceae</i> | <i>Drymeria diandra</i> | Abijalo(N/R) | Herb | Sinusitis, abdominal distension(begar pareko) |
| | <i>Chenopodiaceae</i> | <i>Chenopodium album</i> | Bethe (N/R) | Herb | Labour pain, retain placenta |
| | <i>Combretaceae</i> | <i>Terminalia belerica</i> | Barro(N)/Barain(R) | Tree | Constipation, loss of appetite, cough, throat pain |
| | <i>Combretaceae</i> | <i>Terminalia chebula</i> | Harro (N)/Harain(R) | Tree | Constipation, loss of appetite, cough, throat pain |
| | <i>Compositae</i> | <i>Artemisa vulgaris</i> | Titepati (N/R) | Herb | Nose bleeding, scabies, cut wound |
| | <i>Convolvulaceae</i> | <i>Cuscuta reflexa</i> | Akashbeli(N)/Akashe beli (R) | Parasite | Jaundice, dandruff, removal of placenta |
| | <i>Dioscoreaceae</i> | <i>Dioscorea bulbifera</i> | Githa(N)/Syak(R) | Climber | Antihelmenthic , control body heat |
| | <i>Dioscoreaceae</i> | <i>Dioscorea deltoids</i> | Bhyakur(N/R) | Climber | Constipation, fracture |
| | <i>Ericaceae</i> | <i>Rhododendron arboretum</i> | Gurans (N/R) | Tree | Bone prick, cholera |
| | <i>Euphorbiaceae</i> | <i>Euphorbia spp.</i> | Siudi (N/R) | Herb | Eye infection in cattle |

| | | | | | |
|--|----------------------|-------------------------------------|-----------------------------------|---------|---|
| | <i>Euphorbiaceae</i> | <i>Sapium insigni</i> | <i>Khirro(N)/Khirri(R)</i> | Tree | <i>Cholera, green stool</i> |
| | <i>Euphorbiaceae</i> | <i>Emblica officinalis</i> | <i>Amala (N)</i> | Tree | <i>Cough, constipation</i> |
| | <i>Euphorbiaceae</i> | <i>Phyllanthus urinaria</i> | <i>Bhuiamala(N)/Jhar(R)</i> | Herb | <i>Diarrhea, dysentery</i> |
| | <i>Euphorbiaceae</i> | <i>Mallotus philippensis</i> | <i>Royeni(N)/Rugnag(R)</i> | Tree | <i>Dysentery, abdominal pain</i> |
| | <i>Equisetaceae</i> | <i>Equisetum debile</i> | <i>Kurkure ghans (R/N)</i> | Herb | <i>Jaundice, warts</i> |
| | <i>Fabaceae</i> | <i>Bauhinia variegata</i> | <i>Koiralo (N)/Greainblack(R)</i> | Tree | <i>Diarrhoea, dysentery, bloody stool</i> |
| | <i>Fabaceae</i> | <i>Cassia fistula</i> | <i>Rajbrichye (R/N)</i> | Tree | <i>Constipation</i> |
| | <i>Fabaceae</i> | <i>Acacia catechu</i> | <i>Khayer (N)/Khairang(R)</i> | Tree | <i>Abdominal pain</i> |
| | <i>Lamiaceae</i> | <i>Pogostemon amaranthoides</i> | <i>Rudilo(N)/(R)</i> | Shrub | <i>Control body heat, anti lice</i> |
| | <i>Lamiaceae</i> | <i>Menthe spicata</i> | <i>Pudina (N)/ Patena(R)</i> | Herb | <i>Jaundice, control body heat</i> |
| | <i>Lamiaceae</i> | <i>Colebrookea oppositifolia</i> | <i>Dhursele (N/R)</i> | Shrub | <i>Sinusitis</i> |
| | <i>Lauraceae</i> | <i>Lindra neesiana</i> | <i>Siltimmur (N/R)</i> | Tree | <i>Abdominal distension, high altitude sickness</i> |
| | <i>Leguminosae</i> | <i>Trigonella foenumgraceum</i> | <i>Methi (N/R)</i> | Herb | <i>Cough and cold</i> |
| | <i>Leguminosae</i> | <i>Dolichos biflorus</i> | <i>Gahat (N/R)</i> | Herb | <i>Cold, renal calculus</i> |
| | <i>Leguminosae</i> | <i>Bahunia vahlii</i> | <i>Bhorlo (N)/Mahi (R)</i> | Climber | <i>Bloody stool</i> |
| | <i>Liliaceae</i> | <i>Smilax aspera</i> | <i>Kukurdino(N/R)</i> | Shrub | <i>Stomach ache, fever</i> |
| | <i>Liliaceae</i> | <i>Aloe vera</i> | <i>Gheu kumari(N/R)</i> | Herb | <i>Burnt skin, gastritis, abdominal distension</i> |

| | | | | | |
|----|-----------------------|---------------------------------|------------------------------|---------|--|
| | | | | | |
| | <i>Loranthaceae</i> | <i>Viscum articulatum</i> | Hadchur (N/R) | Shrub | Fracture |
| | <i>Lythraceae</i> | <i>Woodfordia fruticosa</i> | Dhiro(N)/Dhairee(R) | Tree | Gastritis, bloody stool |
| | <i>Maloaceae</i> | <i>Bombax ceiba</i> | Simal (N/R) | Tree | Constipation |
| | <i>Menispermaceae</i> | <i>Cissampelos pareira</i> | Batul pate(N)/Khalite(R) | Climber | Gastritis, abdominal distension (begar pareko), menstrual disorder |
| | <i>Menispermaceae</i> | <i>Tinospora cordifolia</i> | Gurge gano(N)/Bhrun(R) | Climber | Abdominal distension (Gano gako), piles |
| | <i>Moraceae</i> | <i>Ficus religiosa</i> | Pipal (N)/ Piple (R) | Tree | Spleen swelling |
| | <i>Moraceae</i> | <i>Artocarpus lakoocha</i> | Badahar (N/R) | Tree | Removal of placenta |
| | <i>Moraceae</i> | <i>ficus semicordata</i> | Khanyu (N)/ Karchya (R) | Tree | Removal of placenta |
| | <i>Moraceae</i> | <i>Morus australis</i> | Kimbu (N)/Toont(R) | Tree | Antihelminthic |
| 55 | <i>Musaceae</i> | <i>Musa paradisiac</i> | Kera(N)/ Kela (R) | Tree | Retain placenta, control body heat |
| | <i>Myrtaaceae</i> | <i>Cleistocalyc operculatus</i> | Kemuno(N)/Bhukijabu(R) | Tree | Nose bleeding, sinusitis |
| | <i>Myrtaaceae</i> | <i>Syzygium cumini</i> | Jamuno (N)/ Jemuno(R) | Tree | Diarrhoea, dysentery |
| | <i>Myriaceae</i> | <i>Myrica esculenta</i> | Kafal(N)/Kafla(R) | Tree | Cholera, diarrhoea |
| | <i>Myristicaceae</i> | <i>Myristica fragrans</i> | Jaifal (N/R) | Tree | Prevent from cold |
| | <i>Myristicaceae</i> | <i>Psidium guajava</i> | Belauti (N/R) | Tree | Diarrhoea |
| | <i>Nyctaginaceae</i> | <i>Mirabilis jalapa</i> | Malati phool(N)/Lankafool(R) | shrub | Ulcer, constipation, stomach disorder |

| | | | | | |
|--|----------------------|--------------------------------|-------------------------------------|------------------|--|
| | <i>Orchidaceae</i> | <i>Orchid spp.</i> | <i>Bandar kera (N)/Gumatela (R)</i> | <i>Epiphytic</i> | <i>Fracture</i> |
| | <i>Oxalidaceae</i> | <i>Oxalis ocrniculata</i> | <i>Chariamilo(N/R)</i> | <i>Herb</i> | <i>Control body heat</i> |
| | <i>Piperaceae</i> | <i>Piper nigrum</i> | <i>Marich (N/R)</i> | <i>Shrub</i> | <i>Prevent from cold, cough</i> |
| | <i>Poaceae</i> | <i>Eleusine caracana</i> | <i>Kodo (N)/ Kodi (R)</i> | <i>Grass</i> | <i>Diarrhoea, cold</i> |
| | | | | | |
| | <i>Poaceae</i> | <i>Saccharum officinarum</i> | <i>Ukhu (N/R)</i> | <i>Grass</i> | <i>Jaundice</i> |
| | <i>Poaceae</i> | <i>Thaysanolaena maxima</i> | <i>Amriso (N/R)</i> | <i>Shrub</i> | <i>Labour pain, snake bite</i> |
| | <i>Poaceae</i> | <i>Hordeum vulgare</i> | <i>Jau (N)/Kas (R)</i> | <i>Grass</i> | <i>Constipation, antiseptic</i> |
| | <i>Poaceae</i> | <i>Imperata cylindrica</i> | <i>Siru (N)/Sirau(R)</i> | <i>Herb</i> | <i>Deworming, antihelmenthic</i> |
| | <i>Poaceae</i> | <i>Eulaliposis binata</i> | <i>Babio (N)/ Banghas (R)</i> | <i>Grass</i> | <i>Cut wound</i> |
| | <i>Poaceae</i> | <i>Bambusa arundinaceae</i> | <i>Bans (N)/ Paa (R)</i> | <i>Tree</i> | <i>Micturation control, boils wound</i> |
| | <i>Poaceae</i> | <i>Oriza sativa</i> | <i>Dhan (N/R)</i> | <i>Grass</i> | <i>Retain placenta</i> |
| | <i>Pteridaceae</i> | <i>Cheilanthes dalhousidae</i> | <i>Rani sinka (N/R)</i> | <i>Fern</i> | <i>Antiseptic</i> |
| | <i>Rosaceae</i> | <i>Rubus ellipticus</i> | <i>Ainselu (N/R)</i> | <i>Shrub</i> | <i>Tonsillitis, labour pain, fever</i> |
| | <i>Rosaceae</i> | <i>Rosa indica</i> | <i>Gulab(N)/Gulabi(R)</i> | <i>Shrub</i> | <i>Cholera</i> |
| | <i>Rutaceae</i> | <i>Citrus limon</i> | <i>Kagati (N/R)</i> | <i>Tree</i> | <i>Vomit control, dandruff</i> |
| | <i>Rutaceae</i> | <i>Murraya koenigii</i> | <i>Asare(N/R)</i> | <i>Tree</i> | <i>Skin diseases, eye diseases</i> |
| | <i>Saxifragaceae</i> | <i>Bergenia ciliate</i> | <i>PakhanbedN/R)</i> | <i>Herb</i> | <i>Menstrual haemorrhage, fracture, renal calculus</i> |

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|----|----------------------|-----------------------------|---------------------------------|--------------|--|
| | <i>Solanaceae</i> | <i>Solanum capsicoides</i> | <i>Kantakari (N)/R</i> | <i>Shrub</i> | <i>Rabies</i> |
| | <i>Solanaceae</i> | <i>Datura metel</i> | <i>Dhaturo (N/R)</i> | <i>Shrub</i> | <i>Swelling body, cough in cattle, rabies</i> |
| | <i>Solanaceae</i> | <i>Solanum nigrum</i> | <i>Kalikamai (N)/Khakani(R)</i> | <i>Herb</i> | <i>Insomnia, indigestion</i> |
| | <i>Solanaceae</i> | <i>Solanum tuberosum</i> | <i>Aalu (N/R)</i> | <i>Herb</i> | <i>Burnt skin</i> |
| 83 | <i>Sapotaceae</i> | <i>Diploknema butyracea</i> | <i>Chiuri (N)/ Chiurya (R)</i> | <i>Tree</i> | <i>Diarrhoea, dysentery</i> |
| 84 | <i>Umbelliferae</i> | <i>Centella asiatica</i> | <i>Ghodtapre(N/R)</i> | <i>Herb</i> | <i>Jaundice, control body heat</i> |
| 85 | <i>Umbelliferae</i> | <i>Anethum sowa</i> | <i>Samphu(N/R)</i> | <i>Herb</i> | <i>Back pain, body pain</i> |
| 86 | <i>Umbelliferae</i> | <i>Carum copticum</i> | <i>Jawano (N/R)</i> | <i>Herb</i> | <i>Cold infestation, lactation enhancer</i> |
| 87 | <i>Utricaceae</i> | <i>Utrica dioca</i> | <i>Sisnu (N)/ Sisni(R)</i> | <i>Shrub</i> | <i>Labour pain, retain placenta, high blood pressure</i> |
| 88 | <i>Zingiberaceae</i> | <i>Curcuma caesia</i> | <i>Haledo(N/R)</i> | <i>Shrub</i> | <i>Retain placenta, burning urination</i> |
| 89 | <i>Zingiberaceae</i> | <i>Curcuma longa</i> | <i>Besar (N/R)</i> | <i>Herb</i> | <i>Cough, antiseptic</i> |
| 90 | <i>Zingiberaceae</i> | <i>Curcuma zeodaria</i> | <i>Kachur(N/R)</i> | <i>Herb</i> | <i>Indigestion, heart disease, joint pain, antihelmenthic</i> |
| 91 | <i>Zingiberaceae</i> | <i>Zingiber officinale</i> | <i>Adhuwa(N)/Adang(R)</i> | <i>Herb</i> | <i>Indigestion, cough, throat pain, high altitude sickness</i> |

(Note: N= Nepali Name; R= Raji Name)

Table 4: Diseases treated by using plant species

| S.N | Name of ailments | Type of disease | Name of medicinal plant used |
|-----|-------------------------|------------------|---|
| 1 | Abdominal distension | Gastrointestinal | <i>Mangifera indica</i> , <i>Drymeria diandra</i> , <i>Lindra neesiana</i> , <i>Aloe vera</i> , <i>Cissampelos pareira</i> , <i>Tinospora cordifolia</i> , |
| 2 | Antihelminthic | Gastrointestinal | <i>Dioscorea bulbifera</i> , <i>Morus australis</i> , <i>Imperata cylindrica</i> , <i>Berberis aristata</i> , <i>Curcuma zedaria</i> |
| 3 | Anti lice | Integumentary | <i>Pogostemon armaranthoids</i> |
| 4 | Anticeptic | Integumentary | <i>Chelianthes dalhousidae</i> , <i>Hordeum vulgare</i> , <i>Curcuma longa</i> |
| 5 | Body pain and back pain | Musculoskeletal | <i>Anethum sowa</i> , <i>Lepidium sativa</i> , <i>Brassica compestris</i> |
| 6 | Blood purification | Not a disease | <i>Rhus javanica</i> , <i>Achyranthes bidentia</i> |
| 7 | Bloody stool | Gastrointestinal | <i>Bauhinia variegata</i> , <i>Bahunia vahlii</i> , <i>Calotropis gigantean</i> |
| 8 | Boils wound | Integumentary | <i>Bambusa arundinaceae</i> |
| 9 | Bone prick | Musculoskeletal | <i>Rhododendron arboretum</i> |
| 10 | Burnt skin | Integumentary | <i>Aloe vera</i> , <i>Solanum tuberosum</i> |
| 11 | Burning urination | Genitourinary | <i>Curcuma caesia</i> , <i>Periploca calophylla</i> |
| 12 | Cholera | Gastrointestinal | <i>Rosa indica</i> , <i>Myrica esculenta</i> , <i>Sapium insigni</i> , <i>Rhododendron arboretum</i> |
| 13 | Cold | Symptom | <i>Eleusine caracana</i> , <i>Carum coptica</i> , <i>Myristina fragrans</i> , <i>Dolichos biflorus</i> , <i>Piper nigrum</i> |
| 14 | Constipation | Gastrointestinal | <i>Embllica officinalis</i> , <i>Terminalia belirica</i> , <i>Terminalia chebula</i> , <i>Hordeum vulgare</i> , <i>Dioscorea deltoids</i> , <i>Cassia fistula</i> , <i>Mirabilis jalapa</i> |
| 15 | Cough | Respiratory | <i>Acorus calamus</i> , <i>Trigonella foenumgra</i> , <i>Carum coptica</i> , <i>Piper nigrum</i> <i>Curcuma longa</i> , <i>Datura metel</i> |
| 16 | Dandruff | Integumentary | <i>Cuscuta reflexa</i> , <i>Citrus limon</i> |
| 17 | Diarrhoea | Gastrointestinal | <i>Mangifera indica</i> , <i>Berberis aristata</i> , <i>Phoenix acaulits</i> , <i>Garuga pinnata</i> , <i>Phyllanthus urinaria</i> , <i>Myrica esculenta</i> , <i>Psidium guajava</i> , <i>Syzygium cumini</i> , <i>Eleusine caracana</i> , <i>Bauhinia variegata</i> , <i>Raphanus sativus</i> |
| 18 | Dysentery | Gastrointestinal | <i>Mangifera indica</i> , <i>Phoenix acaulits</i> , <i>Mallotus philippensis</i> |
| 19 | Eye diseases | Otorhinolaryngo | <i>Euphorbia spp.</i> , <i>murraya koenigii</i> |
| 20 | Fever | Symptoms | <i>Smilax aspera</i> , <i>Rubus ellipticus</i> |
| 21 | Fracture | Musculoskeletal | <i>Periploca calophylla</i> , <i>Orchid spp.</i> , <i>Dioscorea deltoids</i> , <i>Bergenia ciliate</i> , <i>Viscum articulatum</i> , <i>Chenopodium album</i> |

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| 22 | Gastritis and gano gako | Gastrointestinal | <i>Achyranthes aspera, Rhus javanica, lobelia pyramidalis, Woodfordia fruticosa, Cissampelos pareira, Tinospora cordifolia</i> |
| 23 | General weakness | Symptoms | <i>Asperagus racemosus</i> |
| 24 | Heart disease | Cardiovascular | <i>Curcuma zeodaria</i> |
| 25 | High altitude sickness | Respiratory | <i>Lindra neesiana, Zingiber officinale</i> |
| 26 | High blood pressure | Cardiovascular | <i>Utrica dioca</i> |
| 27 | Hotness of body | Not a disease | <i>Centella asiatica, Dioscorea bulbifera, Menthe spicata, Musa paradisiac, Pogostemon armaranthoids, Oxalis ocreniculata</i> |
| 28 | Indigestion | Gastrointestinal | <i>Curcuma zeodaria</i> |
| 29 | Insomnia | Symptoms | <i>Solanum nigrum</i> |
| 30 | Jaundice | Gastrointestinal | <i>Centella asiatica, Cuscuta reflexa, Menthe spicata, Equisetum debile, Carica papaya</i> |
| 31 | Joint pain | Musculoskeletal | <i>Curcuma zeodaria</i> |
| 32 | Labour pain | Not a disease | <i>Rubus ellipticus, Utrica dioca, Chenopodium album, Thayasanolaena maxima</i> |
| 33 | Lactation enhancer | Not a disease | <i>Chenopodium album, Carum copticum</i> |
| 34 | Leucorrhoea | Genitourinary | <i>Amaranthus spp.</i> |
| 35 | Loss of appetite | Symptoms | <i>Achyranthes aspera, Emblica officinalis, Terminalia belirica, Terminalia chebula</i> |
| 36 | Menstrual disorder | Reproductive | <i>Cissampelos pareira</i> |
| 37 | Menstrual haemorrhage | Reproductive | <i>Bergenia ciliate, Achyranthus bidentia</i> |
| 38 | Micturation | Genital urinary | <i>Bambusa arundinaceae</i> |
| 39 | Nausea | Gastrointestinal | <i>Achyranthes aspera</i> |
| 40 | Nose bleeding | Otorhinolaryngo | <i>Artemisa vulgaris, Cleistocalyc operculatus</i> |
| 41 | Piles | Gastrointestinal | <i>Justice adhatoda, Periploca calophylla, Tinospora cordifolia</i> |
| 42 | Pubic rashes | Integumentary | <i>Brassica compestris</i> |
| 43 | Rabies | Neruous | <i>Datura metel, Solanum capsicoides</i> |
| 44 | Removal of placenta | Reproductive | <i>Cuscuta reflexa, Artocarpus lakoocha, ficus semicordata</i> |
| 45 | Renal calculus | Genital urinary | <i>Dolichos biflorus, Carica papaya, Bergenia ciliate</i> |
| 46 | Retained placenta | Reproductive | <i>Utrica dioca, oriza sativa, Musa paradisiac, Chenopodium album</i> |
| 47 | Scabies | Integumentary | <i>Artemisa vulgaris</i> |
| 48 | Sinusitis | Otorhinolaryngo | <i>Cleistocalyc operculatus, Drymeria diandra, colebrookea oppositifolia</i> |
| 49 | Skin diseases | Integumentary | <i>Murraya koenigii</i> |
| 50 | Snake bite | Neruous/vascular | <i>Calotropis gigantean, Thayasanolaena maxima</i> |

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| 51 | <i>Sprain</i> | <i>Musculoskeletal</i> | <i>Calotropis gigantean, Brassica compestris</i> |
| 52 | <i>Stomach pain</i> | <i>Gastrointestinal</i> | <i>Smilax aspera, Mallotus philippensis</i> |
| 53 | <i>Swollen body</i> | <i>Renal/cardiovascular</i> | <i>Datura metel, Calotropis gigantean</i> |
| 54 | <i>Throat pain</i> | <i>Otorhinolaryngo</i> | <i>Emblica officinalis, Terminalia belirica, Terminalia chebula, Zingiber officinale</i> |
| 55 | <i>Tonsillitis</i> | <i>Otorhinolaryngo</i> | <i>Zingiber officinale, Acorus calamus, Rubus ellipticus</i> |
| 56 | <i>Tooth ache</i> | <i>Dental</i> | <i>Achyranthus bidentia</i> |
| 57 | <i>Ulcer</i> | <i>Gastrointestinal</i> | <i>Mirabilis jalapa</i> |
| 58 | <i>Vomit</i> | <i>Gastrointestinal</i> | <i>Citrus limon</i> |
| 59 | <i>Warts</i> | <i>Integumentory</i> | <i>Equisetum debile</i> |
| 60 | <i>Wound</i> | <i>Integumentory</i> | <i>Semicarpus anacardium</i> |

ANNEX 3:LIST OF PHOTOGRAPHS



Calotropis gigantea

Colocasia esculanta *Musca paradisiac*



Cucusctareflexa *Woodfordia fruticosa* *Curcuma zeodaria*



Artemisia vulgaris Raji Women in Rally

Raji Women



Raji Man



*Wooden Tunnel
(Khor) made by Raji*



A typical Raji House

