TRADITIONAL KNOWLEDGE TO TREAT MATERNAL AND CHILD HEALTH ILLNESS IN RUNTIGADHI RURAL MUNICIPALITY, ROLPA DISTRICT, LUMBINI PROVINCE, WESTERN, NEPAL

A THESIS

SUBMITTED FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE MASTER'S DEGREE IN BOTANY

BY:

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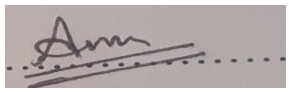
August, 2023

DECLARATION

I, Anisha Bhandari, hereby declare that this dissertation entitled "**Traditional Knowledge To Treat Maternal and Child Health Illness in Runtigadhi Rural Municipality, Rolpa District, Lumbini Province, Western Nepal**" is my original work, and all other sources of the information used are duly acknowledged. I have not submitted it or any of its parts to any other universities for any academic award.



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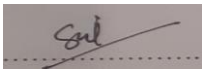

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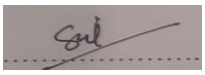

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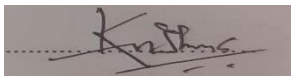

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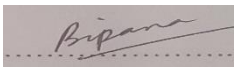

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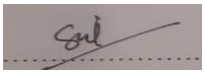

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LIST OF ABBREVIATIONS AND ACRONYMS

B.C.:	Before Christ
CBS:	Central Beaurea of statistics
CP:	Citation Percentage
ENT:	Ear Nose Thorat
Fig.:	Figure
FC:	Frequency of citation
Gm:	Gram
IUCN:	International Union for Conservation of Nature and Natural Resources
KPK:	Khyber Pakhtunkhwa
Ml:	Millimetre
MP:	Medicinal plants
No.:	Number
N.C.	No collection
PA:	Prefernce analysis
PP:	Postpartum Period
PRA:	Paticipataory Rural Appraisal
Sp:	Species
TCM:	Tarditional Chinese Medicine
TK:	Traditional Knowledge
VDC:	Village Development Committee
WHO:	World Health Oraganization
WIPO:	World Intellectual Property Organization

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ABSTRACT

The present study was conducted in Runtigadhi Rural Municipality Ward No.-05, Rolpa District where the people are rich in traditional knowledge. Traditional knowledge can be defined as the knowledge, skills, practices and experiences refined by people from ancient time and passed to their closed ones from generation to generation within a community. The systematic random sampling method was used in the study and interviews were taken to collect the required data. The group discussion was conducted for further information about the plants and their uses by using semi-structured questionnaire and Participatory Rural Appraisal (PRA). The collective data were analyzed by using Microsoft Office Excel Program (2013) and using the data, frequency of citation (FC) and preference analysis (PA) were calculated to find use value and efficiency of the particular medicinal plants. In the present study a total of 166 species were recorded which belongs to 145 genera and 72 families and 2 species of pteridophytes was found to be used in health related problems. Out of which 75 species were used for maternal health ailments belonging to 68 genera and 42 families. Likewise, 99 species were recorded for child health ailments and these species belongs to 91genera and 54 families. On the other hand, out of total plants 29 plant species were found to be used in other health ailments which belongs to 29 genera and 22 families.

Most of the species were found in nearby areas and herbs were the most used life form. Similarly, the most used plant parts were leaves and roots to treat different ailments. The analysis were made on the basis of plant parts used category, habit category, ailment category and multiple uses. The medicinal plants were listed with their ailments category, scientific name, common name, local name, family, parts used, remedies, mode of use and mode of application. From the study it was reported that the commonly used medicinal plants in treating various maternal and child health ailments are postpartum haemorrhage, breast milk production, menstruational disorder, skin infections, diarrhoea and dysentery, urine burn, dental anomalies, etc.Women had rich knowledge in comparision to other people from the study area. Besides, pharmacological studies need to be conducted on the documented medicinal plant species of the study area. Also, there is need to be assured that they are medically safe to be used in the future. The threatened plant species should be conserved and the people living overthere should be made aware about their importance.

Keywords: Traditional knowledge, Frequency of citation, Percentage analysis.

CHAPTER 1: INTRODUCTION

1.1 Background

Traditional knowledge can be defined as the knowledge, skills, practices and experiences refined by people from ancient time and passed to their closed ones from generation to generation within a community. It extends beyond the mere utilization of plants and animal resources, encompassing spiritual beliefs like witchcraft and the divine (Singh *et al.,* 2012). This invaluable wisdom is predominantly transmitted orally and preserved through songs, art, rituals, folklore, legends, and stories, safeguarding traditional cultures, biodiversity, and laying the groundwork for future medicine development (Pei, 2001). Traditional healing systems, such as Ayurveda, Traditional Chinese Medicine (TCM), Unani, and Tibetan Amchi medicine, are integral components of this knowledge (Ji-Sheng, 2011).

The use of medicinal plants to prevent, treat, diagnose, and manage various health issues is widespread, bridging both developed and developing nations. This preference arises from their accessibility, affordability, and ease of use, particularly in regions where allopathic medicine is scarce. Rooted in research, practice, experience, and oral transmission across generations, knowledge of medicinal plants is deeply ingrained in communities. Indigenous populations, in particular, possess extensive expertise in utilizing plants for medicine, food, fodder, fuel, and shelter (Rajbhandari and Wrinkler, 2015).

Nepal, blessed with abundant plant diversity, hosts around 2,000 species of medicinal plants, with 143 of them holding trade value (Bhattarai and Ghimire, 2006). The lower sub-tropical regions, situated between 1000-1500 meters, harbor the highest concentration of these medicinal plants (Ghimire *et al*., 2006). The local population, especially in rural areas, has a historical reliance on herbal medicines due to their ready availability, minimal side effects, and cost-effectiveness compared to allopathic alternatives (Acharya and Acharya, 2009).

Nepal's diverse physiographical regions, from the Terai to the Tibetan marginal mountain region, harbor a wealth of traditional knowledge related to plants. The country, characterized by its multi-ethnic, multi-lingual, and multi-cultural makeup, boasts 26.5 million people belonging to 125 different caste or ethnic groups speaking 123 distinct languages (CBS, 2013). These ethnic groups serve as repositories of plant knowledge, diligently transferring their expertise to subsequent generations

(Acharya and Acharya, 2009). However, the utilization of medicinal plants varies across ethnic groups and traditional healers (Shrestha and Dhillion, 2003).

In addressing maternal and child healthcare, it is imperative to acknowledge the challenges faced, especially in developing nations like Nepal. Maternal health care, encompassing pregnancy, childbirth, and the postpartum period, is vital, extending to family planning, preconception, prenatal, and postnatal care. Sadly, over 500,000 women and girls worldwide succumb to complications arising from pregnancy and childbirth annually, with developing countries, including Nepal, bearing the brunt. Furthermore, for every maternal death, 20 to 30 more women and girls grapple with enduring disabilities, including obstetric fistula and pelvic inflammatory disease. Nepal continues to grapple with an unacceptably high maternal mortality rate, with an estimated 6,900 Nepali women and girls losing their lives to pregnancy-related complications annually. An additional 138,000 to 207,000 Nepalese women and girls experience disabilities due to pregnancy and childbirth complications each year (Silwal, 2011).

Pregnancy introduces a myriad of physiological changes, often accompanied by discomfort such as nausea, constipation, and heartburn. Pregnant women, especially in Nepal, turn to herbal medicine to alleviate these discomforts (Abdillahi and Van Staden, 2013). Additionally, medicinal plants are harnessed to address maternal concerns like difficulty in childbirth, menstrual disorders, postpartum bleeding, retained placenta, and induced labor (Kunwar and Bussman, 2008).

The health of both the mother and the child is profoundly influenced by the care they receive during the pre and post-delivery periods. Unfortunately, challenges such as limited healthcare facilities, lack of awareness, and the use of medicinal plants without scientific validation can result in significant health issues for both mothers and children. Children, particularly those in impoverished circumstances, grapple with low immunity, rendering them susceptible to various bacterial, viral, and fungal infections. Common childhood ailments, including kidney disorders, gastrointestinal problems, respiratory issues, and more, persist globally (Poffenberger, 1992). Nutritional deficiencies and poverty contribute to weakened immune systems. As a result, diverse medicinal plants are deployed to address a range of childhood ailments, from anemia to diarrhea, dysentery, fever, and typhoid (Trotter and Logan, 2019). However, it is essential to emphasize the importance of scientific validation and healthcare access to ensure the well-being of mothers and children alike.

1.2 Justification of the study

In the study area, the majority of the local people have knowledge abouts plant resources. Limited research has been conducted in this area. However, this study provides valuable insights into the traditional uses of plants, highlighting both familiar and unfamiliar medicinal plants used to address maternal and child-related illnesses. The data collected on these medicinal plants will serve as a valuable source of information for chemists, pharmacologists, and herbal medicine practitioners.

It is crucial to note that many important medicinal plants in the area are at risk due to factors such as overexploitation, deforestation, poor economic conditions, and a lack of awareness. Consequently, conducting a comprehensive study on medicinal plants in the selected area is essential. Proper documentation and identification of various medicinal plants used for maternal and child health illnesses should be carried out in Runtigadhi Rural Municipality, Ward No. 05, situated in the hilly region of Rolpa district.

This study aims to document the traditional knowledge of the local community, which may otherwise disappear if not documented and passed on to future generations. Furthermore, it will aid in the conservation of these plants, particularly if they are currently being exploited. Therefore, conducting proper documentation and identification of different medicinal plants used to treat maternal and child health illnesses in the study area is imperative. This study will help preserve the traditional knowledge of locals, which may disappear from our community very soon if we don't document it or pass it on to the next generation.

1.3 Research questions

- How does ethno-medicine has influenced local community in Runtigadhi 05 Rolpa District to cure different maternal and child illness?
- How does these communities are using the medicinal plants to cure different maternal and child health illness?

1.4 Objectives

1.4.1 General objectives:

- To investigate and document plant species which are used for the treatment and prevention of various health problems related to maternal and child health illnesses in the proposed study area.

1.4.2 Specific objectives:

• Collection and identification of plants used by people for health purpose especially in child and maternal illness.

• To document all traditional beliefs and knowledge system that promote conservation oriented practices and sustainable utilization of local resources.

• Enumerate the plant species found in the study area.

1.5 Limitations of the study

- This study has been carried out in only one rural municipality of Rolpa district i.e. Runtigadhi-5 so, the present findings cannot be generalized throughout the Rolpa district.
- A detailed study was not possible due to limited time and budget.
- The conduction of interview and visit to each household was difficult beacause of the scattered nature of settlements, lack of transportation facilities and steep slopes.
- Collection of some of the plant species were not possible due to unreachable habitats and danger of poisonous as well as wild animals (bear, tiger, etc.)

CHAPTER 2: LITERATURE REVIEW

2.1 Traditional knowledge and healing practices

Traditional knowledge is one of the oldest forms of medicine developed through experiences, beliefs, skills and practices having its own assumptions and ideology. The traditional knowledge of local people helps in the conservation of different cultures, biodiversity and promote to develop allopathic medicines as well (Pei, 2001). All other healing system like Graeco-Arabic medicine**,** Chinese medicine and modern Western medicine were inspired from traditional medicinal practices. Traditional healing system has always been an important part of semi-nomadic and tribal societies and the data in relation to archeology dates back to around 6000 B.C. (Ramashankar and Sharma, 2009).

Traditional healing system comprises of mind, body and soul of individuals, their families and communities as well to treat the sick person. About 80% of population depend on traditional medicines for the treatment of ailments because of expensive western pharmaceuticals and health care (Muller and Steyn, 2002)). Traditional medicinal plants are chosen by most of the people living in developing countries from a cultural and spiritual aspects. Traditional medicinal practices are mainly followed in developing countries where there are problems of transportation and modern health care facilities (Susandarini, 2021).

Traditional healer is the person who provide health care remedies based on his/her knowledge, social and cultural beliefs and practices using different plant, animal and mineral resources (Ramashankar and Sharma, 2009). They are utilizing their varying training to cure different ailments (physical, mental and spiritual) and provide a broad chain of treatment method. Traditional healers derive the knowledge, practices and experience of medicinal plants from their close family relations. Traditional healers are known as social identity, cultural heritage, also they establish and preserve the society and accepted laws (WIPO Publication; 2001). They are specific body of knowledge developed by local indigenous communities culturally and regionally which are developed according to the requirements of the society. The common goal of all the healers is to cure different type of ailments and improving human health. (Kala, 2005).

In most of the communities of Nepal, there are representative number of traditional healers who are available affordably and provide reliable services to the local people (Bhattarai *et al*., 2006). The

practices followed by healers help in curing different ailments, provide economic benefits and conserve cultural practices which can be beneficial for the coming generations.

2.2 Knowledge of medicinal plants

There is a deep history on the use of plant resources for the treatment of ailments in a traditional way and preferred to be used by most of the people as they have no side-effects, easy availaibility and being economical as well (Acharya *et al*., 2009). Of the total population residing in rural parts of Nepal, about 85% of people depend on traditional medicinal system (CBS, 2002). The treatment of diseases using medicinal plants are common in Nepal. There are about 7000 plant species harboured by the country out of which only 500 are recognized to be of medicinal use (HMG/IUCN, 1986).

People from historic period, depend upon plant resources for the care of their health and treatment of illnesses and the use of valuable plant species also increased with the increasing population. Local healers are considered to be skilled on their work because of the beliefs on their traditions, practices and experiences. There is a close relation between the Nepalese people and the medicinal plants which is referred as "Jadibuti" (Limbu, 2008). The treatment of the diseases can be done by different parts of the plants like root, stem, bark, leaves, flower, fruit, etc. These types of knowledge are transferred orally from generations to generations (Manandhar, 2002). Plants are the main source of food and medicine from the starting of the human society. Human use plants to cure illness to be free from suffering which is called medicinal plants.

2.3 Maternal health care

Maternal health can be defined as the physical wellness of a mother in relation to her pregnancy which includes prenatal and postnatal care upto the age of five years (Fadeyi, 2007). They are many problems faced by the mothers after postpartum period (PP) like maternity blues, depression and stress, postnatal bleeding, postpartum haemorrhage and postpartum depression are the leading reasons for the deaths of women. Most of the women dies every minute due to complications faced during childbirth. Haemorrhage, infection, hypertensive disorders of pregnancy and unsafe abortion causes 80% of deaths of mothers (Monaghan *et al.*, 2015). In the world, 216 maternal deaths of the total 100000 live births, there is risk of death to every 1 among 180 (WHO, 2015). Globally, it has been reported that maternal mortality rate is highest in Nepal which is 539 per 100000 live births (Pradhan, 1996).

In Nepal, the Ministry of Health has reported that 4500 women die every year because of pregnancy related difficulties, lack of skilled birth attendants, lack of emergency services and proper equipments in rural areas of Nepal (Irinnews, 2005). From many studies done in the past, it has been shown that the main obstacles regarding the use of health care facilities are poor geographical conditions, changing political system, lack of appropriate resources, lack of education among females, poor communication skills and lack of efficient health practioners (Sharma, 2004).

2.3.1 Medicinal plants used to treat maternal health ailments

Medicinal plants are extensively used mostly among the people of rural areas which are also used to treat maternal health illnesses. Medicinal plants are being used to treat the problems related to pregnancy, childbirth and postpartum in many countries which has been reported by (Ali-Shtayeh *et al*., 2015) in Palestine.

The fundamental aim of using medicinal plants during pregnancy, childbirth, and postpartum period (PP) are to build stamina, production of milk, wound healing, reduction of postpartum bleeding and protection of baby from inflammation (Silalahi and Nisyawati, 2019) improvement in the baby's health status and ease the labor during delivery and solve the complication related to menstruation (Teoh *et al*., 2013).

Maternal health ailments are prevented by the use of traditional medicinal system in an efficient way. Most of the medicinal herbs are not clinically tested, whereas some of them can be used safely for different pregnancy related complications according to the prescription of traditional healers (Abdillahi and Van Staden, 2013). The reason that women are more active in the usage of medicinal plant resources are lack of health care facilties and unaffordabililty (Ahmed *et al*., 2018).

2.4 Child health Care

Child health can be defined as the physical, mental, emotional and social-well being of children from infancy to adolescence. It cpmprises of proper nitrition, growth and development, immunization, prevention and treatment of illness and injuries, mental health and well-being and social environmental factors that impact a child health. A child health is an important aspect of public health and ensuring the health development of children is crucial for their future, well-being and success.

Children are the most susceptible to various types of viral diseases and infectious due to low immune system. There are many diseases which are common in children worldwide such as gastrointestinal, respiratory, urinary, kidney disorders, liver, ear nose throat disease (ENT), eye infection, and dental anomalies. Immune system diseases as a result of nutrition deficiency are the key element for child diseases. Different parts of the world most of the plant species are used for the treatment of anemia, malaria and diarrhea among children (Bicer *et al*., 2012).

According to World Health Organization, approximately one in four children lacks proper nutritional facilities and that accounts for 63% of total child deaths worldwide (Onis *et al*., 2004). Undernutrtion and inflammation causes negative impacts on growth, development and survival, also hampers on reproductive performance, working capacity, competitive functioning and sound health throughout their life. Out of total 10 deaths, seven was caused by acute respiratory infections, diarrhoea, measles, malaria, malnutrition or a combination of the above (WHO, 1997).

2.4.1 Medicinal plants used to treat child health ailments

Different medicinal plants are used in a traditional way to treat many diseases of early childhood. Early childhood is the period between 2 to 7 years age groups and is a major phase for the development of physical and mental growth which is the base for their coming future (Long *et al*., 2017). In rural areas, most of the parents rely upon traditional medicine system to cure different ailments. People choose to use medicinal plants for a healthy life and due to increasing expenses of doctor's fees and allopathic medicines. As medicinal plants are easily available, cost- effective, almost no side-effects, people are showing their interests in using medicinal plants for the treatment of their children's ailments. It has already been documented that herbal medicines were an important source of anti-diarrheal drugs and beneficial plant compounds with antimicrobial properties (Gram *et al*., 2002).

In the rural areas, most people are careless about the children's health and the problems like wounds arising from bruises, cuts and scratches can be treated at initial stage which remains untreated. In many cases, children hide about their problems from their parents which can be treated with the help of medicinal plants if shown (Grierson and Afolayan, 1999).

2.5 Use of medicinal plants reported from Nepal

Dangol and Gurung (1991) reported 71 plants that was used to treat a range of diseases includings headache, diarrhoea, and problems associated with menstruation and pregnancy in the Tharu Tribe of Chitwan District, Nepal. Acharya and Pokharel (2006) reported 98 species to be ethno-medicinally important used by Bantar for the treatment of stomachache, piles, skin disease and scabies from Bhaudaha Morang, Nepal.

Bhattarai *et al.* (2009) studied identified 94 ethno-medicinal plant species in Nawalparasi district, Central Nepal. Sigdel and Rokaya (2011) recorded altogether 85 plant species from the study area of Dang district. They were used as food, fodder, in construction, in religious purposes and even in yielding dyes. They mentioned 73 plant species were found to be medicinal in properties for treating 144 different ailments. Thapa (2012) recorded 75 species of medicinal plants which were used for the treatment of 39 different ailments used by Magar community of Salija Village Development Committee from Parbat District in the central mid-hills of Nepal.

Singh and Hamal (2013) reported 60 plant species of 43 families were documented in this study. These medicinal plants were used in the treatment of skin disease used by Tharu and magar communities of Western, Nepal. Malla *et al*. (2015) reported 132 ethnomedicinal plant species used by ethnic people in Parbat district of western Nepal. In this study plants are used to treat various diseases and disorders, grouped under 12 disease categories. The highest fidelity level (FL) value was recorded for *Paris polyphylla* followed by *Bergenia ciliata* confirms that these plants are the best plant species with medicinal properties.

Singh (2016) reported seventeen climber species from Parsa district of Nepal. Researcher found that the extraction and decoction made from the leaves of *Cissampelos pareira* were used to treat problems related to female reproductive system and it also it helps in maintaining hormonal balance, prevents miscarriage, eases child birth and reduces problems of menstruation, excessive bleeding and uterine hemorrhage in females. Singh (2017) also reported from Parsa district that powder of aerial root of *Ficus benghalensis* is given to females to cure sterility. Two or three ripened fruit of *Ficus racemosa* were taken with sugar or jaggery three times a day to prevent excessive bleeding during menstruation or miscarriage.

Gubhaju and Gaha (2019) reported 94 plants of medicinal use to heal 51 ailments like diarrhea, skin diseases, stomach problem, gastric, fever, cough and cold, headache, etc. Eldery people were found to have more knowledge on plant use in Mityal, Nisdi Rural Municipality - 4 Palpa, District. Buddha Magar *et al*. (2020) found a total of 82 medicinal plant species out of 175 useful species from Rolpa district, Nepal.

Pangeni *et al*. (2020) reported 40 medicinal plants, out of 58 ethnobotanically plant species used by Magar Ethnic Community of Palpa District of Nepal. The "Informant Consensus" (Fic) value was found to be high for treatment of maternal ailment, followed by eye irritation rheumatism and urinary ailments. Thapa (2020) studied ethnomedicinal uses of plants by Tharu community in Rupandehi and Nawalparasi districts. Researcher reported 74 plant species used as ethnomedicine for the treatment of various ailments. Among them, one species was pteridophyte, 15 spp. were cultivated, and 58 spp. were harvested from the wild.

2.6 International documentation of medicinal plants for maternal and child health

Dlisani and Bhat (1999) reported 27 medicinal plants used by Transkei with special emphasis on maternal and child health in South Africa. Agunu *et al*. (2005) documented *Acacia nilotica, Acanthospermun hispidum, Gmelina arborea, Parkia biglobosa* and *Vitex doniana* plant species used in diarrhoeal treatment in Kaduna State, Nigeria. Bussmann and Sharon (2006) reported 510 plant species used for medicinal purposes. The highest number of species was used for the treatment of "magical/ritual" ailments, respiratory disorders, Problems of the urinary tract, Infections of female organs, liver ailments, inflammations, stomach problems and rheumatism.

Mugisha and Origa (2007) reported 75 medicinal plant species and one fungus species mainly toadstool mushrooms were documented as being used in inducing labour during childbirth. They studied about the use of herbs to maintain pregnancy, induce labour and aid the childbirth process. Sidhu and Kaur (2007) documented plants were used by rural women to treat different disease like inducing fertility, skin diseases, cough and cold, etc. Plant products like Jaggery, Turmeric, Black myrobalan, Black pepper, Indian Lilac and Dry ginger and Areca nut were recorded. Ogbe *et al.* (2009) reorted 27 plants belonging to 20 families used in treating 16 female reproductive health and gynaecological conditions in Oredo Local Government Area, Benin City, Nigeria. Maliwichi (2010) reported a total 57 plant

species, 21 plant species used to cure for pregnancy-related cases, 5 plant species for child and 30 for curing general illnesses.

Abdillahi and Staden (2013) identified 84 plant species to be used for the treatment of infer- tility and related problems, 20 plant species are used during pregnancy, 26 plant species are used to ease childbirth, 9 plant species for postpartum healing and any problems after childbirth were recorded in South Africa. Shosan *et al*. (2014) studied 63 plant species to be used in curing cold, malaria, fontanel, diarrhoea, typhoid, chicken pox, measles and small pox ailments in infants in Abeokuta South Local Government Area of Ogun State, Nigeria. The study also showed that quite a number of plant parts especially the leaves, roots and stem barks have been found to be efficient in the management of various vdiseases in infants in the Local Government Area.

Mainasara *et al*. (2017) reported 11 species of medicinal plants used by women to treat a number of reproductive health problems, such as menstrual problems, infertility, discomforts and dysfunctions of pregnancy, labor and menopause. They found all the plants were efficient and shown a positive result. Shaheen *et al.* (2017) documented 55 plant species used as ethno-medicines to identify the preparations and uses of the medicinal plants to cure children diseases in District Bannu, Khyber Pakhtunkhwa, Pakistan, the highest use value was reported for species *Momordica charantia and Raphanus sativus* and highest Informant Consensus Factor was observed for cardiovascular and rheumatic diseases categories. Most of the species were used to cure gastrointestinal diseases. Asmare *et al.* (2018) conducted a study in Ethiopia related to traditional medicinal plants used to treat maternal and child health illnesses. This study found that the most common maternal illnesses treated by medicinal plants were the expulsion of placenta, lactation, and diarrhea.

Balamurugan *et al.* (2018) studied medicinal plants that were traditionally used to cure children's diseases in the Perambalur district of Tamil Nadu, India. They documented that the majority of species being used to treat gastrointestinal diseases, followed by fever, liver disorders, respiratory disorders, dermatological problems, ENT problems, etc. They found out that the Perambalur district had a rich plant diversity, and the people possessed a broad indigenous knowledge of their role in curing children's diseases. Deora and Rathore (2018) reported 55 plant species that were used to treat different types of maternal and child ailments. They also collected information about the plants and their parts

that were used for nutritional purposes during the lactation period of the mother and for improving the health of both the mother and child.

Henri *et al.* (2020) studied the use of medicinal plants to treat early childhood disease by the local community of South Bangka Regency. The research reported 55 plant species from 35 families and the most common families were Euphorbiaceae, Fabaceae, Poaceae, Zingiberaceae and Lamiaceae from the study area most widely used plant was Shallot plants (*Allium cepa*) . Petran *et al.* (2020) reported 153 medicinal plants belonging to 52 families were identified as having ethnopediatric relevance half of the species (49.67%) used in Romanian traditional medicine to treat children diseases belong to seven families: Asteraceae, Lamiaceae, Apiaceae, Rosaceae, Fabaceae, Ranunculaceae and Brassicaceae. Susandarini *et al*. (2021) reported 34 plants species used traditionally by the Malayas communities in Kampor Kiri Hulu for various purposes of maternal health cure like, during pregnancy, child delivery, postpartum recovery, and traditional health care for newborn babies.

CHAPTER 3: MATERIAL AND METHODS

3.1 Study area

The study was done in Runtigadhi Rural Muncipality Ward No. - 05, Rolpa district. It lies in Lumbini province in the Mid-Western part of Nepal, and it is located 520.1 kilometers from the capital, Kathmandu. Its geographical location lies between 28.194598°N latitude and 82.506488°E latitude. The geographical location of district is 28.301648°N latitude and 82.634457^{o}E longitude, with altitudinal range of 701-3639 m. The district is surrounded by Rukum to the North, Baglung and Pyuthan to the East, Salyan to the West and Pyuthan and Dang to the South. There are mixed type of Communities residing over here like Brahmin, Chettri, Kami, Magar, etc. mainly Nepali language is spoken in this area.

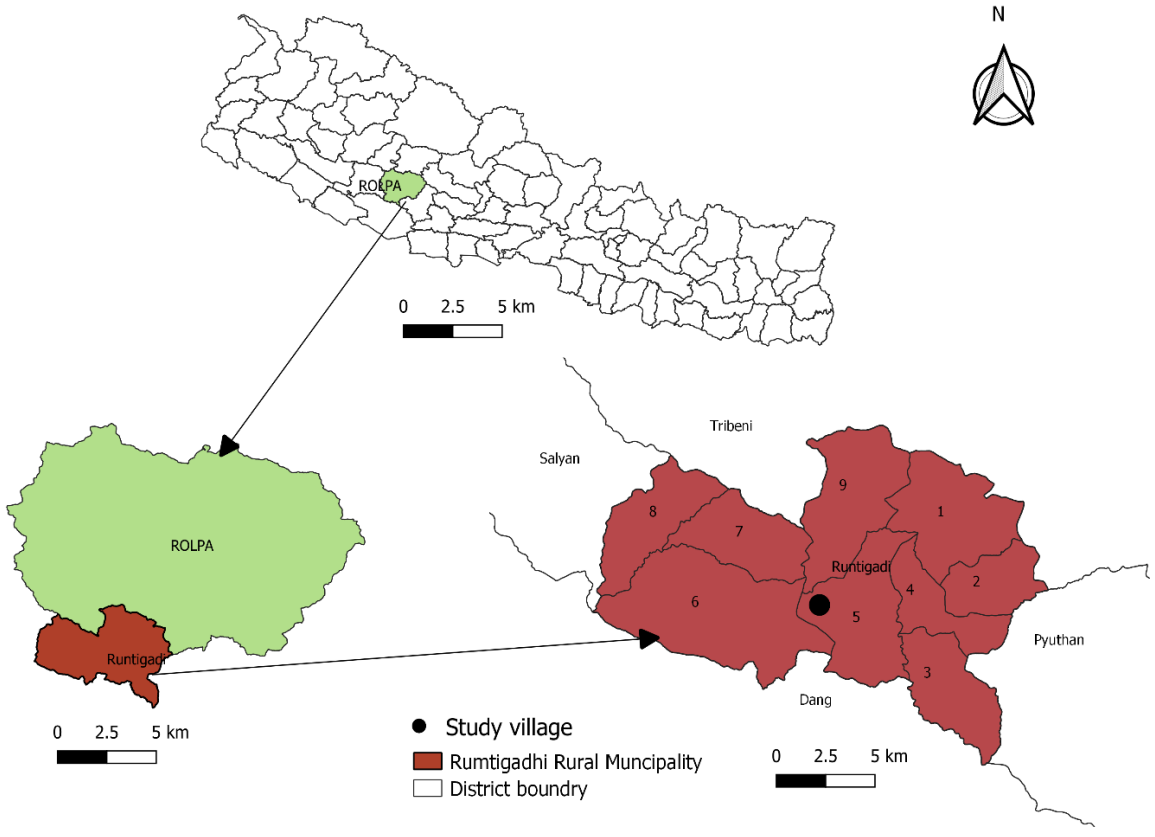
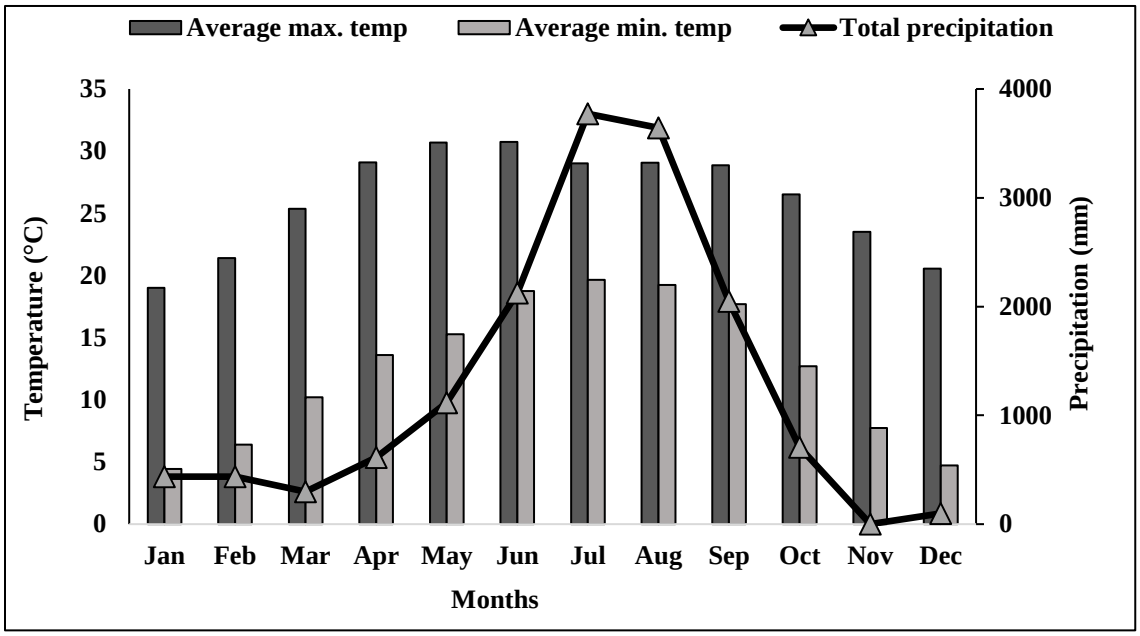


Figure 1: Location map of the study area.

3.1.1 Climatic data

The climatic data of the nearest metrological station were obtained from the Department of Hydrology and Meteorology, Government of Nepal for the period from 2012 to 2022. The climatic data were recorded from a weather station i.e. Liwang village, Rolpa district.



Source: DHM (2012-2022)

Figure 2: Climatic data of average minimum and maximum temperature, and precipitation

The maximum annual average temperature of Rolpa district near station liwang village was 26.152 ºC and the minimum was 12.535 ºC. The annual precipitation was 15298.6 mm. The maximum temperature was recorded in the month of June (30.753) ºC while the minimum was in the month of January (4.447) ºC. The highest precipitation was recorded in the month of July (3771.7) mm while least in the month of November (0.4) mm and followed by December (97.4) mm and March (299.4) mm.

3.1.2 Vegetation

The vegetation of the study area ranges from tropical to sub- tropical type and dominated by *Pinus roxburghii, Myrica esculenta, Rhododendron arboretum. Pinus roxburghii* is the most dominating species in this area, with other species such as, *Diploknema butyracea, Quercus semecarpifolia, and Alnus nepalensis*. Mainly shrubs like *Berberis aristata, Rubus ellipticus, and Ageratina adenophora* are found. Herbs like *Cynodon dactylon*, *Hieracium* sp., *Artemisia indica*, *Centella asiatica, Achyranthes bidentata*, *Imperata cylindrica*, *Cirsium* sp. are commonly found in the

study area. Climbers like *Cuscuta reflexa*, *Tinospora cordifolia*, *Clematis buchananiana*, *Bauhinia vahlii* are commonly found. The common types of crops cultivated in the study area are *Oryza sativa*, *Triticum aestivum*, *Zea mays*, *Pisum sativum*, *Glycine max* etc.

3.2 Field visit

Before starting the work, permission was obtained from both the Rural Municipality and the forest district office. The study was conducted in Runtigadhi Rural Municipality Ward No.05, Rolpa district, from January 1st to January 10th, 2022. The second field visit, specifically aimed at collecting seasonal plants, occurred from June 18th to June 21st, 2022.

3.2.1 Household survey

The total population of the study area was 4573, which included 2277 males (50%) and 2296 females (51%). The total number of households in the study area was 814 (CBS, 2021). Out of these total population, only 47 key informants were included in this study depending upon the traditional knowledge of the residing people of the study area. Among them, 22 were involved in traditional agriculture, 17 were houseworkers, 5 were jhakris (2 females and 3 males), and 3 were ayurveda practitioners (Appendix II). There was mixed type of Communities residing over there like Brahmin, Chettri, Kami, Magar, etc. mainly Nepali language is spoken in this area.

The informants were categorized into six different age groups, ranging from 30 years to over 80 years. According to the findings of the study, the 50-60 age group had demonstrated higher level of knowledge about medicinal plants (Figure: 3).

Out of all the informants, a staggering 91.48% were illiterate, while the remaining 8.51% were of literate.

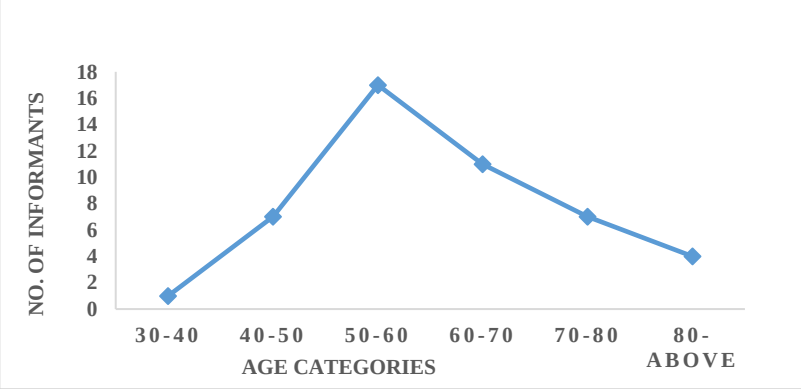


Figure: 3 No. of informants of various ages

3.2.2 Key informant interview

Interviews were conducted with Guruwas, Dhami- jhakri and Baidayas, who were traditional healers and elderly individuals having extensive knowledge, about the local area. The purpose of these interviews was to gather more information about the uses of plants for treating maternal and child health problems. The interviews aimed to obtain information about the local names of plants, their habits and habitats, the specific plant parts used for therapeutic purposes, the mode of administration, the methods of preparing various medicines, and the appropriate dosages.

During the interviews, all the gathered information was carefully collected and noted down. Additionally, the collected plant specimens were presented to other local people to confirm their identities in terms of vernacular names, information, and other uses (Martin, 1995).

3.2.3 Focus group discussions

The focus group discussion was conducted among 4-25 elderly individuals who possessed skills and extensive experience in different age groups. The purpose of the discussion was to gather further information about medicinal plants and their applications in treating various maternal and child health ailments, as well as their diverse local uses. The discussions took place at a local venue. During the interviews, the conversations were conducted in the Nepali language

3.2.4 Field note:

Field observation was written in field notebook including collection number, date of collection, locality, habitat distribution, local name/scientific name, color of flower and fruits, special character and flowering and fruiting time was noted.

3.3 Specimen collection:

The medicinal plants were collected and tagged to identify species from nearby forests and near their house with no repetition of plant specimen with the help of using different equipment like; Plant cutter, knife, shovel, collection bags, tissue paper, camera, notebook, pen, marker, tags, paper pocket and the plants were only collected if they are in group or population, single plant was not collected because they will be vanished from their habitat, in that case, better and clear photography was taken. Non- infected plant specimen was collected according to local communities (respondent**).** Plants were listed along with their utilization by local inhabitants including their local name and locality. Furthermore, for precision in documentation of information modern tools were used like photography.

Informants were made aware about the purpose of our study so that their answers and our objectives get match. (Alexiades, 1996; Martin, 1995)

3.4 Herbarium preparation and Identifications

In the process of herbarium preparation techniques (Bridson and Forman, 1998**)**, soil and excess water from the collected plants were removed. Great care was taken to ensure that no parts of the plant leaves were folded when they were placed between sheets of newspaper to maintain their integrity. To maintain the quality of these specimens, the paper sheets were changed daily for a minimum of three days. After the preparatory phase, the plants were identified by comparing them with herbarium department specimens at Tribhuvan University, Amrit Campus, Lainchour, Kathmandu, Nepal. Reference materials like "Flora of Nepal," "Flora of China," "Flora of Bhutan," "World flora online," and the website www.kath.gov.np were also used for accurate identification.

3.5 Data interpretation

The data were put on excel sheet to identify and distinguished their various proportions like maternal, child and others health problems of medicinal plants. Their botanical name, plant families, habit, Parts used as medicine, method of preparation, mode of use. Citation percentage and preference index was calculated by following formula;

3.5.1 Frequency of citation

Frequency of citation reflects the preference of people for a specific plant species to treat particular disease or ailments. It was calculated by formula given by Tardìo and Pardo-de-Santayana, (2008)

$$\text{Frequency of Citation (\%)} = \frac{\text{No of informants who cited the species}}{\text{Total no.of informants interviewed}} \times 100 \ldots\ldots (1)$$

Where, N is the number of informants who cited the particular species as medicine and T is the total number of informants interviewed. The most popular or widely used species among the people will have the highest number for citation frequency.

3.5.2 Preference analysis

Preference analysis was done in order to find out the most preferred species in the study area used to treat common maternal and child health problems. In this method, the group of informants were shown the plants and asked them to give the number from 1 to 3 on the basis of their preference.

Rank 1 was given to the most preferred species and so on. The numbers given were summed up for all respondents and given overall ranking for species in ascending order (I, II, III and so on). The rank 'I' was considered as the most preffered species. During the household survey, people were asked about the most preferred medicinal plant species to treat different ailments. The preference level was recorded and preference index was calculated by formula given by Amatya *et al*., 1996.

$$\text{Preference Analysis} = \sum \frac{\text{Preference level} \times \text{Number of respondents}}{\text{Total no.of respondent}} \quad \ldots\ldots\ldots\ldots\ldots (2)$$

3.6 Categorization of mode of use

- **Paste:** plants paste are mashed by crushing with motar or pestle and added water or liquid to create a paste
- **Juice:** plants are pressed or sequeezed to extract liquid
- **Powder:** plants parts are dried and ground into fine powder
- **Decoction:** the plants part are prepared by boiling with water**.**
- **Raw:** plants parts are directly consumed in their natural form without any processing.
- **Cook:** plants parts are used in cooking on oil by adding little amount of salt
- **Milky latex:** plants produce a thick, sticky sap or latex.
- **Resin:** It is a sticky or viscous substance that is secreted by plants**.**
- **Oil:** plants are processed to extract oil from seed.

CHAPTER 4: RESULTS

4.1 Diversity of medicinal plants used in maternal and child health ailments

The present study documented 166 species that belonged to 145 genera and 72 families and were used by the local people of Runtigadhi Rural Municipality Ward No.-05 in Rolpa district for the treatment of various health ailments (Appendix IX). Among them, 2 species of pteridophytes were found to be used. Out of the total documented plants, 75 species were utilized for treating maternal health issues, encompassing 68 genera and 42 families (Appendix III). Similarly, 99 species were reported from the study area for the treatment of child health ailments which belongs to, 91 genera, 54 families (AppendixIII) and 29 species were also documented for their relevance to other health-related problems. These species belong to 29 genera and 22 families (Appendix XII).

In maternal health ailments the highest number of species belong to the family Asteraceae and Fabaceae (5 species of each) followed by Euphorbiaceae and Zigiberaceae (4 species of each), Cucurbitaceae, Malvaceae, Menispermaceae, Poaceae, Rosaceae, Rutaceae (3 species of each), Amaranthaceae, Betulaceae, Brassicaceae, Lamiaceae, Polygonaceae, Nyctaginaceae, (2 species of each) and the remaining families were represented by one families each. Above result shows that Asteraceae Fabaceae and Zingiberaceae family as the dominant family due to their wider distribution and richness in the study area (Appendix III).

Likewise, out of the total documented plants for the treatment of child health ailments, the highest number of species belongs to family Asteraceae and Lamiaceae (8 species of each) followed by Poaceae and Rosaceae (5 species). Rest of the family have few number species i.e. 4, 3, 2, and 1 respectivey of each which is shown in (Appendix III) out of the total plant species in the study area.

4.2 Diversity in growth habit of medicinal plants used for the treatment of maternal and child health ailments

Out of 75 medicinal plants used for maternal health ailments, the highest number of plant species belongs to herbs i.e. 34 plants (45.52%), followed by trees 20 plants (25.97%) and 14 are shrubs (18.18%), 7 are climbers (9.10%) (Figure: 6).

In a similar way, out of the 99 plant species identified for child health ailments, the highest number of species belongs to herbs, comprising 45 species (46.39%). Trees follow with 24 species (24.24%), while 19 species (19.53%) are shrubs, and 11 species (11.11%) are climbers (Figure: 7).

When comparing both cases, it is evident that herbs were preferred more for the treatment of different ailments. This preference might be attributed to their easy availability and higher effectiveness in treating ailments compared to other growth forms.

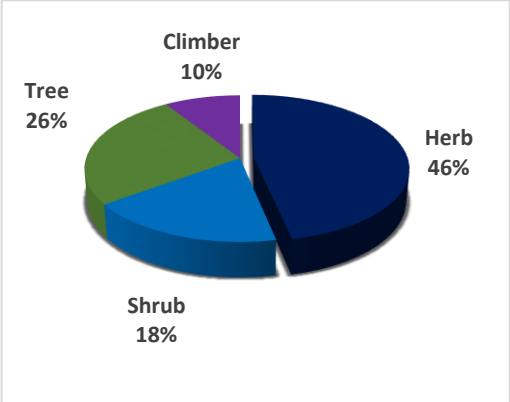


Figure: 6 Habit of medicinal plants used in Maternal health ailments

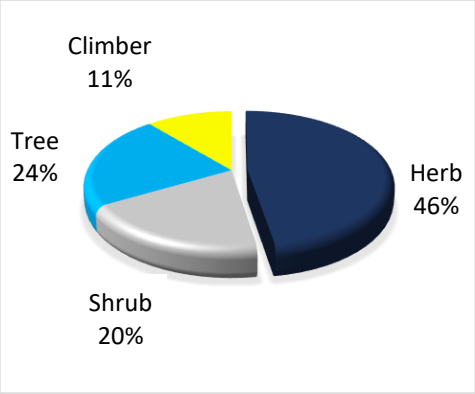


Figure: 7 Habit of medicinal plants used in Child health ailments

4.3 Medicinal plants used in multiple categories to treat maternal and child health ailments

Medicinal plant species recorded from study area have multiple ailments treatment. About 81.33% of species were found to treat one ailments i.e one use categories in maternal. Although one-use categories for maternal health ailments include 61 species (Appendix IV) of which 26 herbs, 9 shrubs, 18 trees and 8 climber species (Figure: 8). Similarly, two use categories represent 6 herbs, 2 trees and 2 climber species (Figure: 8).There were repetition of species in treatment of multiple ailments. For example, the whole parts of *Anethum graveolens* utilized to control bleeding after delivery. Additionally, its seeds are employed postpartum to provide essential nutrition and stimulate lactation in mothers for the well-being of their child. Similarly, fruits of *Zanthoxylum armatum* were used to treat lower abdomen pain, body pain, to cure sterility and it was also used during pregnancy time to get energy and prevent dizziness. In the same way, flowers, barks and stems of *Grewia optiva* used to treat urinary problems, lower abdomen pain and jaundice.

Out of 99 plant species recorded from the study area for the treatment of child health ailments, the highest were recorded for single use categories i. e. 78.78% represent 78 species (Appendix IV) of which 37 herbs, 17 shrubs, 14 trees and 10 climbers (Figure: 9).Similarly, 13.26% of two-use categories in which 7 herbs, 4 shrubs and 2 trees (Figure: 9), 7.14% of three use categories and 1.02% of four use categories (Appendix IV). There were repetition of species in treatment of multiple

ailments like, leaves and stem of *Rubus ellipticus* used to treat fever, marasmus, typhoid and diarrhoea. Similarly, whole part of *Euphorbia hirta* used to treat worms, teeth pain and indigestion. In the same way, leaves of *Sida cordata* used to treat wounds, cuts and Boils. Muller-Boker (1993), Chaudhary and Rajbhandari (2021) also reported similar findings from Chitwan and Nawalparasi districts respectively.

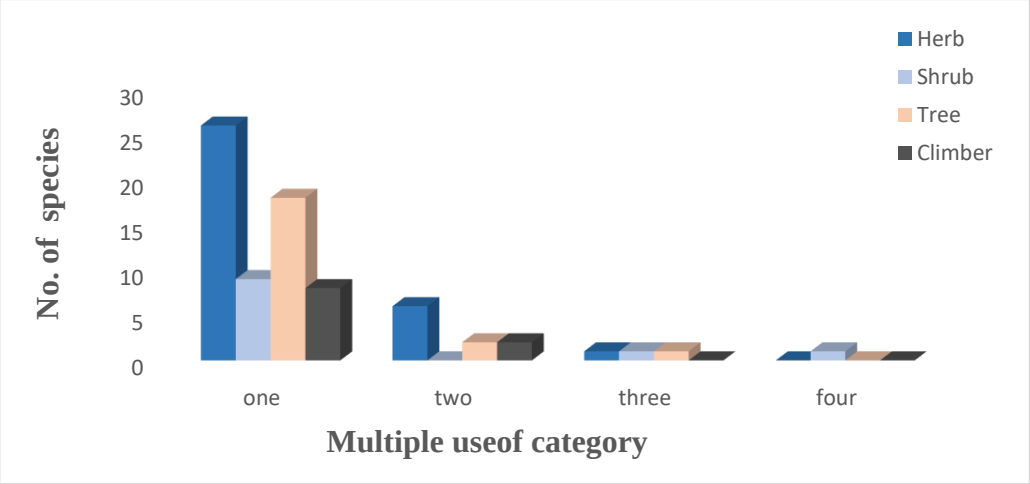


Figure 8: Medicinal plants use in multiple categories to treat maternal health ailments.

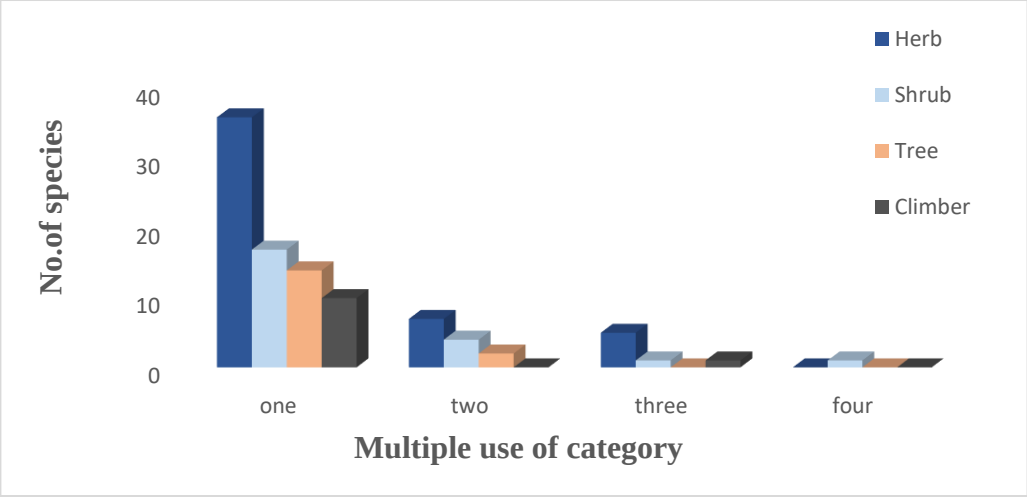


Figure 9: Medicinal plants use in multiple categories to treat child health ailments

4.4 Plants parts used in maternal and child health ailments.

According to the present survey, the most commonly used plant parts for treating maternal ailments were roots 12, whole parts 11, leaves 9, and fruit and bark 8, stem 6. Other plant parts such as rhizomes 4, flower, seed, and stem/leaves (3 for each), young tips, oil, and roots/fruit (2 for each), and resin and milky latex (1 for each) of plant species were also reported to be used (Fig: 10).

In the same way whole parts 23, leaves 16, fruits 11, roots and bark (9 for each) are mostly used plants parts for treatment of different ailment in child health problems (Fig: 11). Similarly, stem, leaves/stem (6 for each), flowers and seeds 4 plant species for each, milky latex and young tips (3 for each), kernel, bulb leaves/roots, fruits/leaves and oil (1 for each) (Figure: 11).The continuous use of plant parts without any awareness program, lack of well trained personnel and harvesting of immature medicinal plants may lead to decrease in population from their natural habitat and may get vanished in the near future.

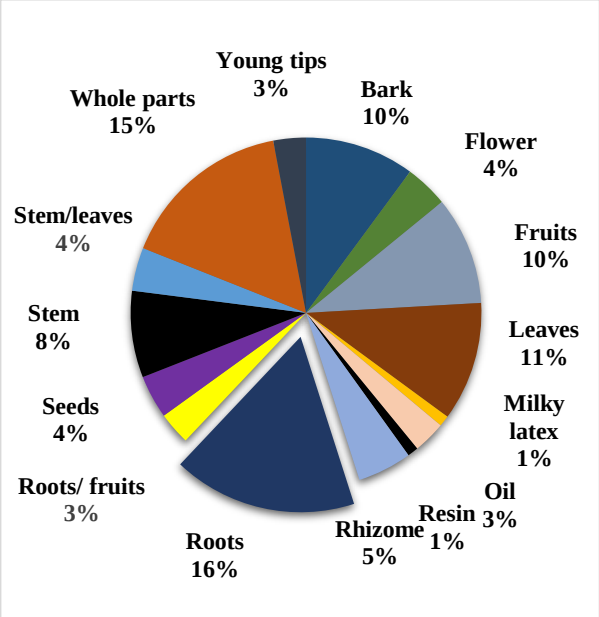


Figure: 10 Utilization pattern of different parts of plants in maternal health ailments

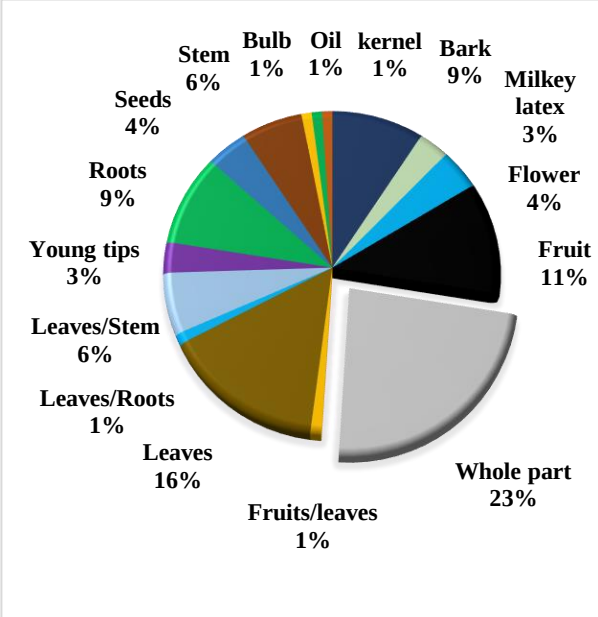


Figure: 11 Utilization pattern of different parts of plants in child health ailment

4.5 Mode of use and preparation methods of maternal and child health ailments

The preparation method of plant species used in various forms was used to treat different health ailments in the forms of medicine. They were prepared by people in the study area, such as juice, decoction, infusion, paste, raw, oil, heat, milky latex, resin, powder, and cook. Decoction was prepared by taking the required amounts of plant parts and boiling them in water, then extracting the drugs using muslin cloth by filtering. The juice was obtained by squashing the leaf or crushing the plant parts to extract the liquid. The paste was prepared by grinding plant parts with water. Infusion was the solution prepared by dipping plant parts in water. There were 11 types of preparation methods for maternal ailments and 9 preparation methods for child health ailments (Figure 12; Figure 13) respectively. The majority of medicinal plant (MP) species were used in maternal ailments, with the most common forms of usage being juice (22 species), followed by decoction (18 species), paste (17 species), infusion (5 species), heat (4 species), oil, raw form, milky latex (2 species each), and cook, resin, powder (1 species each) (Figure 12).

Similarly, in child health ailments, plant species were used in the form of juice (38), followed by decoction (21), paste (21), infusion (6), raw (5), milky latex (4), powder, cook and oil (1) (Figure 13).

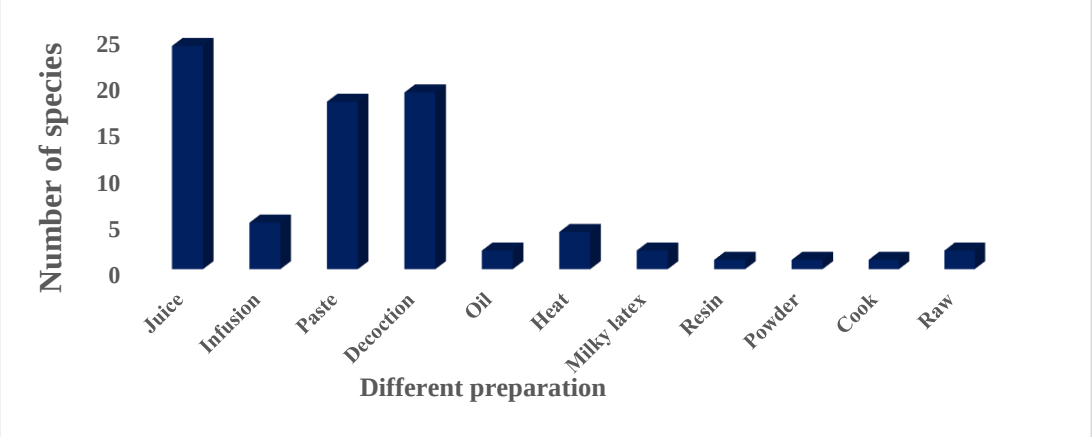


Figure 12: Preparation method of medicinal plants in maternal heath ailments

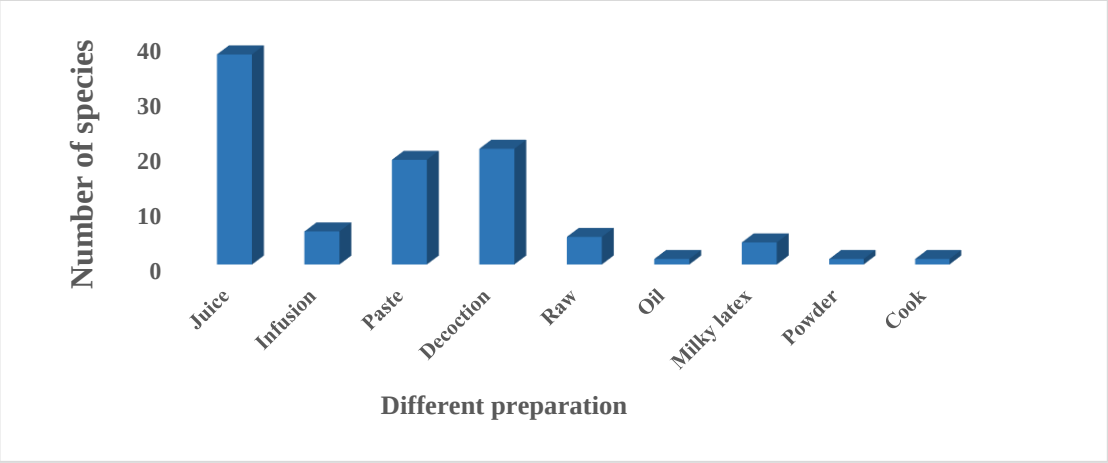


Figure 13: Preparation method of medicinal plants in child heath ailments

4.6 Most frequently used plants category bases on frequency of citation and preference analysis

4.6.1 Citation percentage analysis for maternal and child health ailments

A total of 47 key informants were included in the study to analyze the citation percenrage analysis for both maternal and child health illnesses.

The study focused on the utilization of medicinal plants in treating various maternal ailments. The Frequency of citation (CP) for maternal ailments ranges from 2.13%- 12.77%. The highest CP was found for *Justicia adhatoda* (12.77%) than other species which was used for the treatment of abortion. Following closely, was found for *Curcuma longa* and *Musa* sp. (10.68%) used for the treatment of over-bleeding and urine burn respectively. Species such as, *Brassica juncea, Curcuma angustifolia, Cucurbita pepo, Thymus vulgaris* and *Rheum austral* have the same CP (8.51%). They were used for induce labor pain, lower abdomein pain, clogged milk duct, lactation and providing relief from body pain, respectively. The species, namely *Ricinus communis, Asparagu officinali, Brassica juncea* and *Cuscuta reflexa was* (6.38%) and these species were used to treat like Swelling, lack of nutrition, to cure sterility and jaundice. *Aloe barbadensis* is used to cure womens suffering from menstruation disorder and species have (4.62%) of frequency of citation. The lowest CP (2.13%) was found in others species which is shown in (Appendix V).

Likewise, citation percenrage analysis for child health ailments ranges from 2.13% – 34.04%. The highest CP is found in species *Imperata cylindria* from the study area which is used for

the treatment of worms. 31.91% cp is found in the species *Berberis aristata* which is used to cure for eye infection. *Viola wightiana* and *Callicarpa macrophylla* species of medicinal plants have CP (17.02%) highest than others plant species used for the treatment of ear infection and tounge blister respectively (Table 4). CP (14.89%) is recorded in species *Centella asiatica* which is used in the treatment of fever. 12.77% of CP was found in one species *sida cordifolia* which is used to cure wounds which is shown in (Appendix VI)

4.6.2 Preference analysis for maternal and child health ailments

The medicinal plants were used to cure different ailments based on its ability. Prefrence analysis for maternal and child health ailments ranged from I – VII. For one disease, minimum 3 or 7 plant species were used for the treatment of ailments. According to the informants the most prefered species for maternal health care are *Curcuma longa* which is used for over bleeding, *Citrus limon* (to cure sterility), *Ricinus communis* (swelling), *Thymus vulgaris* (lack of lactation), *Aloe barbadensis* (mensturational disorder), *Justicia adhatoda* (abortion), *Brassica juncea* (to induce labour pain), *Curcuma angustifolia* (lower abdomen pain), *Cucurbita pepo* (clogged milk duct), *Asparagus officinalis* (lack of deficiency), *Cuscuta reflexa* (jaundice), *Rheum austral* (body pain). (Appendix VII).

In the same way, the most preferred species used for child health ailments from the study area are, *Centella asiatica* (fever), *Sida cordata* (wounds), *Viola wightiana* (Ear infection), *Acorus calamus, Raphanus sativus* (indigestion), *Lyonia ovalifolia* (allergy), *Terminalia chebula* (cough /cold), *Mentha spicata* (severe hot), *Imperata cylindrica* (worms), *Mentha arvensis* (typhoid), *Cuscuta reflexa* (jaundice), *Carica papaya* (constipation), *Brucea javanica* (diarrhoea), *Bulbophyllum careyanum* (sprain), *Solanum viarum* (teeth pain), *Berberis aristata* (eye infection), *Macrotyloma uniflorum* (pneumonia), *Rubus* sp. (marasmus), *Punica granatum* (urine burn), *Musa* sp. (boils/burn), *Bergenia ciliata* (to make baby healthy) (Appendix VIII).

Table: 1 Ailments categories with their common terms

Ailments categories	Common terms
Dermatological disorder	Wounds, Boil /Burnt, Allergy, Melasma
Gastro-intestinal disorder	Diarrhoea, Indigestion, Intestinal worms, Piles, Constipation, Marasmus, Lower abdomen pain
Respiratory diseases	Common cold, Cough, Fever,Typhoid, Pneumonia
Urino-genital disorders	Leucorrhoea, Menstrual disorder, Laboring ,Sterility cure, Abortion
Ear and thorat problems	Ear infection, Thorat problems
Oral and dental problems	Tooth infection, Tounge blister
Skeleto-muscular pain and swelling	Body pain, Sprain, Joint pain, Swelling
Heat illness	Severe hot
Post- hepatic	Jaundice
Corneal infection	Eye in fection
Dysuria	Burning sensation
Postpartum hemorrhage	Over –bleeding
Lactation	To stimulate milk, Clogged milk duct, Breast wounds

The different health problems documented from the study area, categorized according to health ailments and accompanied by their corresponding biomedical terms (Table 1). The ailment category with the highest number of biomedical terms is Gastro-intestinal disorders, followed by urino-genital disorders, respiratory diseases and fever, dermatological disorders, skeleto-muscular pain and swelling, lactaion, oral and dental problems, ear and throat problems, heat illness, post-hepatic issues, corneal infections, dysuria and postpartum hemorrhage. Additionally, a multitude of other ailment categories are also documented from the study area, encompassing issues such as sugar, hemoptysis, epistaxis, herpes zoster, dog bites, etc. (Appendix XII).

CHAPTER 5: DISCUSSION

5.1 Diversity of plant species used in maternal and child health ailments

In this study, it was revealed that similar medicinal plants had been documented previously, but this study recorded many medicinal plants, particularly their uses for maternal and child illnesses. A total of 166 medicinal plant species were documented in this study, with 75 species being used for maternal health, belonging to 68 genera and 42 families. The highest number of species belonged to the Asteraceae and Fabaceae family, with 5 species each, followed by Zingiberaceae and Euphorbiaceae (4 species of each).

For child health, 99 species were identified, belonging to 91 genera and 54 families. Notably, the Asteraceae and Lamiaceae families (8 species of each) followed by the Poaceae and Rosaceae families (6 species of each).

Additionally, 29 medicinal plant species were found in the study area, serving various health-related purposes. It was observed that 37 medicinal plant species were common and used for both maternal and child health purposes.

The present findings indicated that the Asteracea family was the most dominant family for both maternal and child health ailments in the study area. In contrast, Ahmed (2016) reported that the Lamiaceae family was the most dominant, while Bhattarai (2017) found that the Zingiberaceae family (n=6) was the most prevalent in their respective studies.

5.2 Plants parts used in maternal & child health ailments

In the study area, local people have traditionally relied on various plant parts for their medicinal properties, based on observation, experience, and traditional wisdom. Roots (16%) were predominantly used for women's health, likely due to the concentration of bioactive compounds in roots, making them a valuable source for medicinal purposes. Roots are known for absorbing water and nutrients, serving as the primary storage organs for plants, which makes them practical for medicinal use. This observation aligns with findings by Mahwasane *et al*. (2013) and Mashile *et al*. (2019).

For child health, leaves were the preferred choice, likely due to their easy availability and simple preparation methods. Using leaves for remedies is generally considered safe, with perceived fewer side effects compared to other plant parts. This practice supported plant health and sustainability.

The study's findings, emphasizing roots and leaves as commonly used parts in remedies, are consistent with Shrestha and Dhillion (2003). However, other studies have noted the adverse impact of excessive root use on plant life cycles and conservation (Bhattarai 2020).

5.3 Mode of preparation of medicines for maternal & child health ailments

In the study area, a variety of techniques were employed to prepare remedies using different medicinal plant (MP) species tailored to specific ailments, including conditions like overbleeding, lower abdominal pain, wounds, and fever, as documented by previous research (Budha Magar *et al*., 2020).

Most commonly, people in the study area used medicinal plants in a singular form, but some MP species were combined, such as mixing roots from *Quercus semecarpifolia*, *Rubus ellipticus*, and *Zanthoxylum armatum* to create a paste for treating women with body pain. Similar mixtures were used based on the wisdom passed down through generations (Khakurel *et al*., 2022).

The majority of MP species were employed in simple forms like juice, decoction, infusion, and paste, preferred over other techniques. For instance, for post-delivery overbleeding, *Aloe barbadensis*, *Curcuma longa*, and *Dendrophthoe falcata* were used as juices. *Acacia catechu* and *Bombax ceiba* pastes were used for pregnancy-related body swelling. Menstrual disorders were treated with decoctions of *Bougainvillea* sp., *Cheilanthes* sp., and *Mirabilis jalapa*. Oral administration was the most common method, followed by topical application, (Luitel *et al*., 2014). Water was frequently added to remedies to enhance their therapeutic properties.

5.4 Plant species based upon their habits

The present study showed that the most commonly used medicinal plants were herbs, which were predominant in both maternal and child health applications, followed by trees, shrubs, and climbers. This prevalence of herbs may be attributed to their widespread availability and accessibility, both in

the wild and through cultivation, making them easily grown in home gardens or found in natural environments.

Singh *et al*. (2012) conducted an ethnobotanical survey in the Terai forest of western Nepal and also found the highest number of medicinal plants to be herbs followed by trees shrubs and climbers. Similarly, Rana *et al*. (2015) reported that herbs were the most dominant life form among these plant species followed by shrubs and trees.

5.5 Preference analysis and Citation percentage analysis

The analysis aimed to identify the most preferred medicinal plant species among respondents for different categories of ailments. Out of 75 species, only 13 were highly preferred for maternal health ailments. The top preference in the study area was for *Justicia adhatoda* (12.77%), effective for treating abortion, followed by *Curcuma longa* and *Musa* sp. (10.68%), which were used for addressing overbleeding after delivery and urine burn problems, respectively, likely due to their easy availability. Other preferred species included *Thymus vulgaris* for stimulating mother's milk, *Brassica juncea* for inducing labor pain, *Curcuma angustifolia* for lower abdominal pain, *Rheum austral* for post-delivery body pain, *Ricinus communis* for swelling, and *Aloe barbadensis* for menstrual disorder.

Among 99 species for child health, 20 were most preferred for various ailments, with higher citation percentages. Notable choices included *Centella asiatica* for fever, Sida cordata for wounds, Viola wightiana for ear infections, and Imperata cylindrica for worms *Cuscuta reflexa* for jaundice.

Similar analysis were discussed by Singh (2020), who reported that shrub species like *Vitex negundo* had the highest preference index for treating digestive problems, while *Hibiscus rosa-sinensis* obtained the highest position for treating venereal diseases in Parsa District, Nepal. Paudel (2000) conducted a preference analysis among the Tharu community and found different preferred species for medicinal, fodder, firewood, and timber purposes, suggesting that local variations in topography and community practices influence plant preferences for local therapeutics**.**

5.6 Medicinal plants and their traditional use for maternal and child health ailments

The researchers have studied about lots of medicinal plants but few works have been documented related to maternal and child health ailments. Many rural areas still rely on traditional medicinal practices, as indicated by the respondents in this study (Bussman and Sharon, 2006).

Roots of *Urtica dioica* was found to be used for inducing labor pain in the present work. Jan *et al*. (2021) also mentioned *Urtica dioica* and others taxa to induce labour pain from Jammu and Kashmir, India. Budha-Magar *et al*. (2020) reported same plant for different ailment i.e. for dandruff and stomachache. Abdillahi and Staden (2013) reported *Cyrtanthus sanguineus, Gunnera perpensa, Merwilla natalensis, Rhoicissus tomentosa* plants species used to ease facilitate delivery and *Rhoicissus tridentate* species to induce labour pain from South Africa.

The leaves of *Euphorbia hirta* and roots of *Asparagus officinalis* are used to stimulate mother's milk (lactation). *Euphorbia hirta* was also used in children suffering from indigestion. Ambu *et al.* (2020) reported milky latex of *Euphorbia hirta* to cure skin wounds and joint trauma without bone fractures. Singh *et al.* (2021) repoted the use of whole parts to cure female disorders, cough and asthma.

In present study, the leaves of *Mimosa pudica* was found to be used to control over bleeding after delivery. Similarly, Singh and Hamal (2013); Rajbanshi and Thapa (2019) reported the use of roots of same plant to treat cuts, wounds and boils respectively. Singh (2017) reported the use of plants for gland tumor, to control sinus disorder, diarrhea, dysentery, to remove stone from any part of the body and neurological problems. Khanal *et al.* (2020) recorded the leaves of same plants to treat menstruational disorder. Studies conducted in different place revealed that the most used plant part was roots while in my work leaves were mostly preferred.

It was recorded that roots of *Amaranthus spinosus* are used to cure urine burn problems of pregnant women in the present study. Balami (2004) reported use plants for urinary trouble. Sonowal and Sonowal (2017) recorded the leaves and shoots of same plants for postpartum diet, also regularly taken as vegetable to prevent anemia and also increase the flow of mother's milk. Joshi *et al*. (2011) recorded the use of plants to control excessive menstruational flow.

Leaves of *Ricinus communis* was used for swelled body part of pregnant women in present study. Muller-Boker (1993) reported use of plants to relieve pain. Singh (2020) reported the use of same plants oil to induce labour pain and stimulate lactation.

It was recorded that the bark juice of *Berberis aristata* were used for the treatment of eye problems for child in my reaserch work. Use of *Berberis aristata* in eye conjunctivitis has been reported by Bhandrai *et al.* (2006). Luitel and Pathak (2013) also support present findings. Parajuli (2013) reported the use of root, bark and fruit used for skin diseases, jaundice and malarial fever.

Most preferred species was roots of *Imperata cylindrica* from present work to treat children suffering from worms. Henri *et al*. (2020) reported the use of plants for heartburn, tonsillitis in children. Shaheen *et al.* (2017) reported that the *Azadirachta indica, Mentha spicata* and *Momordica charantia* for the treatment of intestinal worms.

In present study the whole parts of *Centella asiatica* are utilized to cure fever, wounds and typhoid in children. Joshi *et al*. (2018) reported whole parts of plants for fatigue, anxiety, improving memory and intelligence. Rana *et al*. (2015) reported leaves to be used in cuts and wounds, whole plant was used in snakebites, skin diseases and severe headache.

In a study conducted by Silwal (2011) on the Raute community of Nepal, people were more dependent upon local traditional healers for maternal and child health care. These healers primarily used jhaarphuuk-based treatments rather than relying on medicinal plants. However, in the study by Subba (2015) on the Rajbanshi community of Nepal, a different approach was observed. In this community, traditional healers incorporated the use of plant species like *Ocimum tenuiflorum* and *Allium cepa* mixed with oil to ease the delivery process, which contrasts with the findings of the previous study.

Although *Swertia chirayta* and *Rheum australe* were not found in the study area but people buy and do treatment with these plants in jaundice of child and body pain in women. Some of the people conserve the valuable medicinal plant speices in their own gardens or agricultural land such as *Aloe barbadensis*, *Ocimum tenuiflorum*, *Curcuma angustifolia*, *Zanthoxylum armatum*, *Mentha arvensi*, *Mentha spicata*, *Tinospora cordifolia* and *Tinospora sinensis*.

On the basis of availability, most of the medicinal plants were found easily except some of the species like *Bergenia ciliata,* and *Bulbophyllum careyanum* needs to be conserved for future use. The species are under threat due to various reasons like *Bulbophyllum careyanum* (overharvesting by people coming from different places for trade and the reason was unknown), *Bergenia ciliata* (over harvesting and habitat destruction by the construction of unplanned road and also change in

climate). *Zanthoxylum armatum* are also under threat due to habitat destruction and over-exploitation.

Alongside maternal and child health ailments, the study identified 29 medicinal plants with specific uses. For instance, *Bauhinia variegata* was utilized for hemoptysis, *Cynodon* sp. for treating dog bites, and *Reinwardtia indica* for relieving pain from snake bites. *Albizia lebbeck* for compost manure. Notably, *Cinnamomum glanduliferum* emerged as the most popular product from the study area due to its high demand for oil production and medicinal purposes. Interestingly, local sellers primarily marketed the mature fruits of this plant, although their precise medicinal applications remained unclear.

In that area, although people had substantial traditional knowledge about medicinal plants, but are not active in conserving biodiversity or encouraging others to do so is a major issue overthere. The various information was gathered in this research work from senior dhamis/jhakris and mostly old age members of the community who still used and practiced medicinal plants in the traditional healing system. This study manifested that the senior members and traditional healers had much knowledge and great experience in utilizing medicinal plants located in their community compared to the younger generation. During present study, the younger generation showed less interest in traditional practices due to the easy availability of modern medicines and not proven scientifically, but they showed interest in preserving the knowledge that their forefathers followed. If properly documented and scientifically validated, they may show interest in preserving natural resources. There is an urgent need to address this issue which requires a multi-faceted approach that involves creating awareness, providing resources, respecting traditional knowledge, and promoting government support for biodiversity conservation.

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The present study provided a lot of valuable information about medicinal plants used by local informants for curing maternal and child health ailments in Rolpa District, Runtigadhi Rural Municipality-05. A total of 166 plant species were documented, with 75 for maternal health (belonging to 42 families), 99 for child health (belonging to 54 families), and 29 for other health concerns. Roots were commonly used for maternal health, while leaves were preferred for child health. Herbs were the predominant type of medicinal plants for both issues. Common maternal ailments treated included overbleeding and swelling post-delivery, while children's ailments included fever, cough/cold, worms, and diarrhoea.

Traditional preferences leaned towards medicinal plants such as *Justicia adhatoda, Curcuma longa*, *Thymus vulgaris*, and *Aloe berbasensis* for maternal health ailments like abortion, post-delivery bleeding, stimulating mother's milk and menstrual disorders. For child health ailments like fever, ear infections, allergies, worms, and diarrhoea, *Centella asiatica, Viola wightiana, Lyonia ovalifolia, Imperata cylindrica,* and *Brucea javanica* were commonly used.

Consequently, it is imperative to conserve and document the use of these medicinal plants to ensure their long-term survival and availability for future generations. This information can be used for developing new drugs, improving existing treatments, and understanding the relationships between plants and their healing properties.

6.2 Recommendations

- Deforestation and unplanned road construction have severe impact on plant species leading them to disappear before documentation. So, proper documentation & conservation of these plant resources is recommended.
- This study was conducted in the limited area of the Rolpa district. It should be done in another unexplored area for the documentation of the uses of medicinal plants.
- Although, many more research works have been done in the country based on ethnobotany, a specific study focused on maternal and child health problem should be conducted in other part of the country.

7: REFERENCES

Abdillahi, H. S. & Van Staden, V.J. (2013). Application of medicinal plants in maternal healthcare and infertility: a South African perspective. *Planta medica*, *79*(7), 591-599.

Acharya, E., & Pokhrel, B. (2006). Ethno-medicinal plants used by Bantar of Bhaudaha, Morang, Nepal. *Our nature*, *4*(1), 96-103.

Acharya, K. P., Chaudhary, R. P., & Vetaas, O. R. (2009). Medicinal plants of Nepal: Distribution pattern along an elevational gradient and effectiveness of existing protected areas for their conservation. *Banko Janakari*, *19*(1), 16-22.

Acharya, R., & Acharya, K. P. (2009). Ethno botanical study of medicinal plants used by Tharu community of Parroha VDC, Rupandehi district, Nepal. *Scientific world*, *7*(7), 8084.

Agunu, A., Yusuf, S., Andrew, G. O., Zezi, A. U., & Abdurahman, E. M. (2005). Evaluation of five medicinal plants used in diarrhoea treatment in Nigeria. *Journal of Ethnopharmacology*, *101*(1-3), 27-30.

Ahmed, S. M., Nordeng, H., Sundby, J., Aragaw, Y. A., & de Boer, H. J. (2018). The use of medicinal plants by pregnant women in Africa: a systematic review. *Journal of ethnopharmacology*, *224*, 297-313.

Ahmed, H. M. (2016). Ethnopharmacobotanical study on the medicinal plants used by herbalists in Sulaymaniyah Province, Kurdistan, Iraq. *Journal of ethnobiology and ethnomedicine*, *12*(1), 1-17.

Alexiades, M.N. (1996). Collecting ethnobotanical data: An introduction to basic concepts and techniques. In: Alexiades M.N. (Ed) Selected Guidelines for Ethnobotanical Research: A Field Manual. The New York Botanical Garden, Bronx, New York, pp. 53-94

Ali-Shtayeh, M. S., Jamous, R. M., & Jamous, R. M. (2015). Plants used during pregnancy, childbirth, postpartum and infant healthcare in Palestine. *Complementary Therapies in Clinical Practice*, *21*(2), 84-93.

Amatya, G. (1996). Ethno-medicinal use of plants of Bara district, Nepal. *Environment and Biodiversity in the context of South Asia, PK Jha; GPS Ghimire*, 260-263.

Ambu, G., Chaudhary, R. P., Mariotti, M., & Cornara, L. (2020). Traditional uses of medicinal plants by ethnic people in the Kavrepalanchok district, Central Nepal. *Plants*, *9*(6), 759.

Aryal, K. K., Dhimal, M., Pandey, A., Pandey, A. R., Dhungana, R., Khaniya, B. N. & Karki, K. B. (2016). *Knowledge diversity and healing practices of traditional medicine in Nepal*. Nepal Health Research Council.

Asmare, T. W., Yilkal, B. A., Mekuannint, T., & Yibeltal, A. T. (2018). Traditional medicinal plants used to treat maternal and child health illnesses in Ethiopia: An Ethno-botanical approach. *J Tradit Med Clin Natur*, *7*(277), 2.

Balami, N. P. (2004). Ethnomedicinal uses of plants among the Newar community of Pharping village of Kathmandu district, Nepal. *Tribhuvan University Journal*, *24*(1), 13-19.

Balamurugan, G., Karthick, A., & Sasikumar, K. (2019). Herbal plants for children diseases' cure in Perambalur, Tamil Nadu, India.

Bhandari, S. K., Shresthaa, P., Choudhurya, S. R., Sharmina, T., & Rashidb, M. A. (2006). Ethnomedical investigation on herbal drugs used in Dang district of Nepal. *J. Ethnobiol. Ethnomed*, *2*, e41.

Bhattarai, K. R. (2017). Ethnomedicinal practices of the Lepcha community in Ilam, East Nepal. *Journal of Plant Resources*, *15*(1), 31-44.

Bhattarai, K. R. (2018). Ethnobotanical study of plants used by Thami community in Ilam District, eastern Nepal. *Our Nature*, *16*(1)

Bhattarai, K. R. (2020). Ethnobotanical survey on plants used in Mai Municipality of Ilam district, eastern Nepal. *Banko Janakari, 30*(2), 11-35.

Bhattarai, K. R., & Ghimire, M. (2006). Commercially important medicinal and aromatic plants of Nepal and their distribution pattern and conservation measure along the elevation gradient of the Himalayas. *BankoJanakari, 16*(1), 3-13

Bhattarai, S., Chaudhary, R. P., & Taylor, R. S. (2006). Ethnomedicinal plants used by the people of Manang district, central Nepal. *Journal of Ethnobiology and Ethnomedicine*, *2*, 1-8.

Bhattarai, S., Chaudhary, R. P., & Taylor, R. S. (2009). Ethno-medicinal plants used by the people of Nawalparasi District, Central Nepal. *Our nature, 7*(1), 82-99.

Bicer, S., Col, D., Kucuk, O., Erdag, G., Giray, T., Vitrinel, A., (2012). Is there any difference between the symptomatology and clinical findings of viral agents that caused dehydration? *Archives of Disease in Childhood, 97*(l 2), 258-258.

Bridson, D., & Forman, L. (1998). The Herbarium Handbook Royal Botanic Gardens. *Royal Botanic Gardens, Richmond. 346*.

Budha-Magar, S., Bhandari, P., & Ghimire, S. K. (2020). Ethno-medicinal survey of plants used by Magar (Kham) community, Rolpa district, Western Nepal. *Ethnobotany Research and Applications*, *19*, 1-29.

Bussmann, R. W., & Sharon, D. (2006). Traditional medicinal plant use in Northern Peru: tracking two thousand years of healing culture. *Journal of ethnobiology and ethnomedicine*, *2*(1), 1-18.

CBS (2002). Population of Nepal: Village Development Committees/Municipalities population census 2001. His Majesty's Government of Nepal. National Planning Commission Secretarial, Central Bereau of Statistics, *United Nations Population Fund*.

CBS (2021). National Population and Housing Census, Central Bureau of Statistics, National Planning Commisssion Secretariat, Kathmandu, Nepal.

Chaudhary, C., & Rajbhandary, S. (2021). Ethnobotanical Study of Traditional Medicinal Plants of Tharu Community in Swathi Village, Nawalparasi District Nepal. *Ethnobiology of Mountain Communities in Asia*, 185-220.

Dangol, D. R., & Gurung, S. B. (1991). Ethnobotany of the Tharu tribe of Chitwan district, Nepal. *International journal of pharmacognosy*, *29*(3), 203-209.

De Onis, M., Garza, C., Victora, C. G., Onyango, A. W., Frongillo, E. A., & Martines, J. (2004). The WHO Multicentre Growth Reference Study: planning, study design, and methodology. *Food and nutrition bulletin*, *25*, 15-26.

Deora, G. S., & Rathore, M. S. (2018). Traditional Health Care (THC) and nutritional practices in Mother Child Health Care systems (MCHCs) in the tribal dominated areas of Rajasthan, India. *Annals of Plant Sciences*, *7*(2), 2047-2055.

DHM (2012- 2022). Climatological Records of Nepal, Department of hydrology and Meterology, Kathmandu, Nepal.

Dlisani, P. B., & Bhat, R. B. (1999). Traditional health practices in Transkei with special emphasis on maternal and child health. *Pharmaceutical biology*, *37*(1), 32-36.

Fadeyi, A. O. (2007). Determinants of maternal health care in Lagos, Nigeria. *Ife social sciences review*, *22*(1), 38-48.

Ghimire, S. K., Mckey, D., &Aumeeruddy-Thomas, Y. (2006). Himalayan medicinal plantdiversity in an ecologically complex high altitude anthropogenic landscape, Dolpo, Nepal. Environmental Conservation, 128-140.

Gram, L., Ravn, L., Rasch, M., Bruhn, J. B., Christensen, A. B., & Givskov, M. (2002). Food spoilage-interactions between food spoilage bacteria. *International journal of food microbiology*, *78*(1-2), 79-97.

Grierson, D. S., & Afolayan, A. J. (1999). An ethnobotanical study of plants used for the treatment of wounds in the Eastern Cape, South Africa. J. Ethnopharmacol. *67*, 327–332.

Gubhaju, M. R., & Gaha, Y. (2019). Ethnomedicinal uses of plants in Mityal, Palpa, Nepal. *J Plant Res*, *17*(1), 155-162.

Henri, H., Nababan, V., & Hakim, L. (2020). Ethnobotanical study of early childhood medicinal plants used by the local people in South Bangka Regency, Indonesia. *Biosaintifika: Journal of Biology & Biology Education*, *12*(3), 414-421.

HMG/IUCN (1986). Building on sources: The National Conservation Strategy for Nepal, HMG & IUCN Kathmandu.

Irinnews (2005). The conflict's dangerous impact on health services. Available at http://www.irinnews.org/webspecial/nepal/5 0549.asp the UN Office for the Coordination of Humanitarian Affairs. Access on 12-01-06.

Jan, M., Khare, R. K., & Mir, T. A. (2021). Medicinal plants used during pregnancy and childbirth in Baramulla District of Jammu and Kashmir, India. *Ethnobotany Research and Applications*, *22*, 1-19.

Ji-Sheng, P. (2001). Ethnobotanical approaches of traditional medicine studies: some experiences from Asia. *Pharmaceutical biology*, *39*(1), 74-79.

Joshi, A., Kalauni, D., & Bhattarai, S. (2018). Survey on usage of medicinal plants: a case from Chitwan district of Nepal. *SAARC Journal of Agriculture*, *16*(2), 129-141.

Joshi, K., Joshi, R., & Joshi, A. R. (2011). Indigenous knowledge and uses of medicinal plants in Macchegaun, Nepal.

Kala, C. P. (2005). Health traditions of Buddhist community and role of amchis in trans-Himalayan region of India. *Current Science*, 1331-1338.

Kamatenesi-Mugisha, M., & Oryem-Origa, H. (2007). Medicinal plants used to induce labour during childbirth in western Uganda. *Journal of ethnopharmacology*, *109*(1), 1-9.

Khakurel, D., Uprety, Y., Ahn, G., Cha, J. Y., Kim, W. Y., Lee, S. H., & Rajbhandary, S. (2022). Diversity, distribution, and sustainability of traditional medicinal plants in Kaski district, western Nepal. *Frontiers in Pharmacology*, *13*.

Khanal, D. P., Raut, B., & Magar, Y. T. (2020). Traditional Healing Practices Using Herbal Dosage Forms and Other Agents by Magar Community of Gulmi District, Nepal. *Journal of Manmohan Memorial Institute of Health Sciences*, *6*(1), 20-38.

Kunwar, R. M., & Bussmann, R. W. (2008). Ethnobotany in the Nepal Himalaya. *Journal of ethnobiology and ethnomedicine*, *4*, 1-8.

Laskar, Z. R., Dutta, B. K., & Ramashankar. (2009). Ethnobotanical study of some selected tribes/ethnic communities of Barak Valley, Assam. *Proceeding on traditional healing practices in North East India. Pasighat: North Eastern Institute of Folk Medicine (NEIFM)*, 31-7.

Limbu, D. (2008). Indigenous knowledge of Limbu on Ecology, Biodiversity and Ethnomedicine. *Lalitpur: SNV, Nepal*

Long, X., Benischek, A., Dewey, D., & Lebel, C. (2017). Age-related functional brain changes in young children. *Neuroimage, 155*, 322–330.

Luitel, D. R., & Pathak, M. (2013). Documentation of medicinal and aromatic plants of Dhorpatan hunting reserve, Western Nepal. *Plant Res J Dept Pl Res Nepal*, *35*, 36-43.

Luitel, D. R., Rokaya, M. B., Timsina, B., & Münzbergová, Z. (2014). Medicinal plants used by the Tamang community in the Makawanpur district of central Nepal. *Journal of Ethnobiology and ethnomedicine*, *10*(1), 1-11.

Mahwasane, S. T., Middleton, L., & Boaduo, N. (2013). An ethnobotanical survey of indigenous knowledge on medicinal plants used by the traditional healers of the Lwamondo area, Limpopo province, South Africa. *South African Journal of Botany*, *88*, 69-75.

Mainasara, M. M., Maishanu, H. M., John, P. B., & Sanusi, S. B. (2017). Medicinal plants used in traditional maternal health care delivery in five selected villages of Zango Kataf local government area of Kaduna State, Nigeria. *International Journal of Science and Healthcare Research*, *2*(2), 24.

Maliwichi-Nyirenda, C. P., & Maliwichi, L. L. (2010). Medicinal plants used for contraception and pregnancy-related cases in Malawi: A case study of Mulanje District. *Journal of Medicinal Plants Research*, *4*(20), 3024-3030.

Malla, B., Gauchan, D. P., & Chhetri, R. B. (2015). An ethnobotanical study of medicinal plants used by ethnic people in Parbat district of western Nepal. *Journal of ethnopharmacology*, *165*, 103-117.

Manandhar, N. P. (2002). *Plants and people of Nepal*. Timber press.

Martin, G.J. (1995). Ethnobotany. A “People and Plants” Conservation Manual. World Wide Fund for Nature. Chapman & Hall, London

Monaghan, T., Boyer, A., Moyo, G., & Landwehr, J. (2015). National Model United Nations.

Muller, A., & Steyn, M. (2002). Culture and the feasibility of a partnership between Westernized medical practitioners and traditional healers. Society, Health and disease: *A reader to health professionals.* Johannesburg: Ravan Press.

Müller-Böker, U. L. R. I. K. E. (1993). Ethnobotanical studies among the Chitawan Tharus. *Journal of the Nepal Research Centre*, *9*, 17-56.

Ogbe, F. M. D., Eruogun, O. L., & Uwagboe, M. (2009). Plants used for female reproductive health care in Oredo local government area, Nigeria. *Scientific Research and Essay*, *4*(3), 120-130.

Pangeni, B., Bhattarai, S., Paudyal, H., & Chaudhary, R. P. (2020). Ethnobotanical Study of Magar Ethnic Community of Palpa District of Nepal. *Ethnobotany Research and Applications*, *20*, 1-17.

Parajuli, R. R. (2013). Indigenous knowledge on medicinal plants: Maipokhari, Maimajhuwa and mabu VDCS of Ilam District, Eastern Nepal. *J Dept Plant Resour Nepal*, *35*, 50-8.

Petran, M., Dragos, D., & Gilca, M. (2020). Historical ethnobotanical review of medicinal plants used to treat children diseases in Romania (1860s–1970s). *Journal of ethnobiology and ethnomedicine*, *16*(1), 1-33.

Pie, S.J. (2001). Ethnomedicinal approaches of traditional medicine studies: some experiences form Asia. *Pharmaceuticals Biology*. *39*: 74-79.

Poffenberger M, McGean B, Khare A, Campbell L, (1992). Field Method Manual, vol. II. Community Forest Economy and Use Pattern: Participatory and Rural Appraisal (PRA) Methods in South Gujarat, India, New Delhi: *Society for Promotion of Wastelands Development*.

Poudel, S. K. (2000). Ethnobotanical Study of the Tharus Living in Central Part of Dang (Mid-Western Nepal).

Pradhan A, Aryal R, Regmi G, Ban B & Govindasamy P (1997). Nepal Family Health Survey 1996. His Majesty's Government, Nepal. *Ministry of Health, New ERA; Macro International Inc, Calverton, Maryland and Kathmandu.*

Rajbanshi, N., & Thapa, L. B. (2019). Traditional knowledge and practices on utilizing medicinal plants by endangered Kisan ethnic group of eastern Nepal. *Ethnobotany Research and Applications*, *18*, 1-9.

Rajbhandari, S. and D. Winkler (2015). Ethnobotany. In Nepal: An introduction to the natural history, ecology and human environment of the Himalayas (Miehe, G., C.A. Pendry and R. Chaudhary Eds.). *Royal Botanic Garden, Edinburgh*. pp. 271-285.

Ramashankar, S. D., & Sharma, B. K. (2009). Traditional Healing Practices of North East India. *Traditional Healing Practices in North East India*, *26.*

Rana, S. K., Oli, P. S., & Rana, H. K. (2015). Traditional botanical knowledge (TBK) on the use of medicinal plants in Sikles area, Nepal. *Asian Journal of Plant Science and Research*, *5*(11), 8-15.

Shaheen, S., Abbas, S., Hussain, J., Mabood, F., Umair, M., Ali, M., & Khan, A. (2017). Knowledge of medicinal plants for children diseases in the environs of district Bannu, Khyber Pakhtoonkhwa (KPK). *Frontiers in Pharmacology*, *8*, 430.

Sharma, B (2004) Utilisation of Antenatal Care Services in Nepal. *Nepal Population Journal, 11* (10) 79-97.

Shosan, L. O., Fawibe, O. O., Ajiboye, A. A., Abeegunrin, T. A., & Agboola, D. A. (2014). Ethnobotanical survey of medicinal plants used in curing some diseases in infants in

Abeokuta South Local Government Area of Ogun State, Nigeria. *American Journal of Plant Sciences*, *5*(21), 3258.

Shrestha PM, Dillion SS. (2003). Medicinal plant diversity and use in the highlands of Dolakha district, Nepal. *Journal of Ethnopharmacology. 86*(1): 81-96.

Shrestha, N., Shrestha, S., Koju, L., Shrestha, K. K., & Wang, Z. (2016). Medicinal plant diversity and traditional healing practices in eastern Nepal. *Journal of Ethnopharmacology*, *192*, 292-301.

Sidhu, K., & Kaur, R. (2007). Maternal health care through medicinal plants. *Ethno-Med*, *1*(2), 157-160.

Sigdel, S. R., & Rokaya, M. B. (2011). Utilization of plant resources in Dang district, West Nepal. *Banko janakari*, *21*(2), 45-54.

Silalahi M. Nisyawati (2019). An ethnobotanical study of traditional steambathing by *the Batak people of North Sumatra, Indonesia. Pac Conserv Biol 25* (3): 266-282.

Silwal, M. (2011). *Maternal health care practices among indigenous people of Nepal: A case study of the Raute community* (Master's thesis, Universitetet i Tromsø).

Singh, A. G., & Hamal, J. P. (2013). Traditional phytotherapy of some medicinal plants used by Tharu and Magar communities of western Nepal, against dermatological disorders. *Scientific World*, *11*(11), 81-89.

Singh, A. G., Kumar, A., & Tewari, D. D. (2012). An ethnobotanical survey of medicinal plants used in Terai forest of western Nepal. *Journal of ethnobiology and ethnomedicine*, *8*, 1-15.

Singh, B., Singh, S., Kishor, A., & Singh, B. (2021). Traditional usage of medicinal plants in humans and animal health care and their chemical constituents from hills and valleys of Jammu province, Western Himalaya.

Singh, S. (2016). Ethnobotanical study of some climbers of Parsa district forest of Nepal. *J Med Plants*, *4*, 6-10.

Singh, S. (2017). Ethnobotanical study of wild plants of Parsadistrict, Nepal. *Ecoprint: An International Journal of Ecology*, *24*, 1-12.

Singh, S. (2020). Indigenous medicinal practices of shrub species in the Western part of Parsa district, Nepal. World Journal of Pharmaceutical Research, *10(*2), 1491-1508

Sonowal, S., & Sonowal, (2017) R. Traditional Knowlede of Medicinal Plants used buring Pregnancy, Childbirth and Post- Partum Healing.

Subba, N. R. (2015). Traditional practices on mother and child health care in Rajbanshi Community of Nepal. *American Journal of Health Research*, *3*(5), 310-7.

Susandarini, R., Khasanah, U., & Rosalia, N. (2021). Ethnobotanical study of plants used as food and for maternal health care by the Malays communities in Kampar Kiri Hulu, Riau, Indonesia. *Biodiversitas Journal of Biological Diversity*, *22*(6).

Tardìo, J.; Pardo-De-Santayana, M. (2008). Cultural Importance Indices: A Comparative Analysis Basedon the Useful Wild Plants of Southern Cantabria (Northern Spain). *Econ. Bot. 62*, 24–39

Teoh CS, Aizul MHI, Suriyani WMWF, Ang SH, Huda MZN, Nor Azlin MI, Rohana J. 2013. Herbal ingestion during pregnancy and postpartum period is a cause for concern. *Med J Malays 68* (2): 157- 160.

Thapa, C. B. (2020). Ethnomedicinal practices by Tharu ethnic community in Rupandehi and Nawalparasi districts, Western Nepal. *Journal of Institute of Science and Technology*, *25*(2), 93-106.

Thapa, S. (2012). Medico-ethnobotany of Magar community in Salija VDC of Parbat district, central Nepal. *Our nature*, *10*(1), 176-190.

Trotter, R. T., & Logan, M. H. (2019). Informant consensus: a new approach for identifying potentially effective medicinal plants. In *Plants in indigenous medicine & diet* 91-112.

WHO, (1997). Integrated management of childhood illness: a WHO/UNICEF initiative. *Bulletin of the World Health Organization Supplement 75*, 128.

World Health Organization. (2015). Trends in maternal mortality: 1990-2015: estimates from WHO, UNICEF, UNFPA, *World Bank group and the United Nations population division*. World Health Organization.

World Intellectual Property Organization (2001). Intellectual Property Needs and Expectations of Traditional Knowledge Holders: WIPO Report on Fact-finding Missions on *Intellectual Property and Traditional Knowledge 768*.

Appendices

Appendix I: Questionnaire used for data collection

Name: Address: Gender: Age: Education:

Questions:

1) Do you utilize forest products from the nearby forests?

Yes No

2) What types of materials do you obtain from forests??

Fodder Logs Litters Leaves Flowers Fruits Others (specify)

3) For what purpose do you use forest products?

Timber Medicinal Aromatic Ornamental Fiber Edible Trade Religious

4) How frequently do you use forest products in your daily life?

More dependent less dependent Moderate

5) How do people in this area treat the diseases they suffer from?

Traditional way Modern way

6) If traditional, what are the different medicinal plants that are used?

……

7) What kind of diseases can be treated by using medicinal plants?

……

8) What are the most frequently used medicinal plants?

……

9) Are the medicinal plants effective to treat the diseases?

…….

10) Are any medicinal plants used to treat maternal illnesses? If so, what are they?

…….

11) What are the maternal illnesses being treated by these medicinal plants?

……..

12) Are any medicinal plants used to treat childhood illnesses? If so, what are they?

…….

13) Which child illnesses are being treated by these medicinal plants?

……..

Appendix II: Demographic characteristics of informants (Rolpa district)

Total Population	4573
Male	2277
Female	2296
Total household	814
Key informants interview	47

Age Categories	**No of informants**	**% of informants**
30-40	1	2.13%
40-50	7	14.89%
50-60	17	36.17%
60-70	11	23.40%
70-80	7	14.89%
80-above	4	8.51%
Gender		
Male	22	46.81%
Female	25	53.19%
Educational background		
Literacy rate	4	8.51%.
Iliteracy rate	43	91.48%
Occupation		
Agriculture	22	46.81%
Hoseworker	17	36.17%
Dhami/jhakri	5	10.64%
Ayurved	3	6.38%

Appendix III: Number of genera and species recorded for different maternal and child health ailments

Family	Maternal		Child	
	Genera	Species	Genera	Species
Acanthaceae	1	1	1	1
Acoraceae	-	-	1	1
Amaranthaceae	2	2	2	2
Amaryllidaceae	-	-	1	1
Anacardiaceae	2	2		-
Apiaceae	1	1	1	1
Araceae	1	1	-	-
Asparagaceae	1	1	1	1
Asphodelaceae	1	1	-	-
Aspleniaceae	1	1	-	-
Asteraceae	5	5	7	8
Athyriaceae	1	1	1	1
Berberidaceae	-	-	1	1
Betulaceae	2	2	-	-
Brassicaceae	2	2	1	1
Campanulaceae	-	-	1	1
Cannabaceae	-	-	1	1
Caricaceae	1	1	1	1
Caryophyllaceae	-	-	1	1
Combretaceae	-	-	1	1
Convolvulaceae	1	1	2	2
Cucurbitaceae	3	3	2	2
Dipterocarpaceae	1	1	1	1
Ericaceae	-	-	2	2
Euphorbiaceae	2	4	3	4
Fabaceae	5	5	4	4
Fagaceae	1	1	-	-
Gentianaceae	-	-	1	1
Lamiaceae	2	2	7	8
Lauraceae	1	1	2	2

Loranthaceae	1	1	1	1
Lythraceae	-	-	1	1
Malvaceae	3	3	2	2
Meliaceae.	-	-	1	1
Menispermaceae	2	3	1	2
Moraceae	1	1	2	4
Moringaceae	1	1	-	-
Musaceae	1	1	1	1
Myricaceae	1	1	1	1
Myristicaceae	1	1	-	-
Myrtaceae	1	1	2	2
Nelumbonaceae	-	-	1	1
Nyctaginaceae	2	2	1	1
Orchidaceae	-	-	1	1
Phyllanthaceae	1	1	-	-
Pinaceae	1	1	-	-
Piperaceae	-	-	1	1
Poaceae	3	3	5	5
Polygonaceae	2	2	2	2
Polypodiaceae	-	-	1	1
Portulacaceae	-	-	1	1
Pteridaceae	1	1	1	1
Ranunculaceae	-	-	2	2
Rhamnaceae	-	-	1	1
Rosaceae	2	3	4	5
Rutaceae	2	3	2	2
Sapotaceae	1	1	1	1
Saxifragaceae	-	-	1	1
Simaroubaceae	-	-	1	1
Solanaceae	1	1	2	3
Urticaceae	1	1	2	2
Violaceae	-	-	1	1
Vitaceae	-	-	1	1
Zigiberaceae	2	4	1	1
Total	68	75	91	99

Appendix IV: Medicinal plants used in multiple categories to treat maternal and child health ailments.

Maternal health ailments	One	Two	Three	Four	Total	Child health ailments	One	Two	Three	Four	Total
Herbs	26	6	1	0	33	Herbs	37	7	5	0	49
Shrubs	9	0	1	1	11	Shrubs	17	4	1	1	23
Trees	18	2	1	0	21	Trees	14	2	0	0	16
Climbers	8	2	0	0	10	Climbers	10	0	1	0	11
Total	61	10	3	1	75	Total	78	13	7	1	99
Percentage	81.33%	12.98%	3.06%	1.02%	100%	Percentage	78.78%	13.26%	7.14%	1.02%	100%

Appendix V: Medicinal plants with citation percentage analysis (CP) for different maternal health ailments

Ailments Category	Scientific name	Family	CP%
Over bleeding	*Aloe barbadensis* Mill.	Asphodelaceae	2.13%
	Achyranthes bidentata Blume	Amaranthaceae	2.13%
	Curcuma sp.	Zingiberaceae	2.13%
	Curcuma longa L.	Zingiberaceae	10.64%
	Dendrophthoe falcata (L.f.) Ettingsh.	Loranthaceae	2.13%
	Ficus benghalensis L.	Moraceae	4.26%
	Fragaria vesca L.	Rosaceae	2.13%
	Mimosa pudica L.	Fabaceae	2.13%
	Mirabilis jalapa L.	Nyctaginaceae	2.13%
	Rubus sp.	Rosaceae	2.13%
Burning sensation	*Amaranthus spinosus* L.	Amaranthaceae	2.13%
	*Citrus limon (*L.) Osbeck	Rutaceae	4.26%
	Cynodon dactylon (L.) Pers.	Poaceae	2.13%
	Grewia optiva J.R.Drumm. ex Burret	Malvaceae	2.13%
	Machilus odoratissima Nees	Lauraceae	2.13%
	Moringa oleifera Lam.	Moringaceae	2.13%
	Musa sp.	Musaceae	10.64%
	Tridax procumbens L.	Asteraceae	2.13%
Swelling	*Bombax ceiba* L.	Malvaceae	2.13%
	Brassica juncea (L.) Czern.	Brassicaceae	4.26%

	*Citrus limon (*L.) Osbeck	Rutaceae	2.13%
	Euphorbia royleana Boiss.	Euphorbiaceae	2.13%
	Pinus sp.	Pinaceae	4.26%
	Ricinus communis L.	Euphorbiaceae	6.38%
	Ricinus sp.	Euphorbiaceae	2.13%
	Shorea robusta C.F.Gaertn.	Dipterocarpaceae	2.13%
	Solanum nigrum Acerbi ex Dunal	Solanaceae	2.13%
Lactation	*Asparagus officinalis* L.	Asparagaceae	2.13%
	Colocasia esculenta (L.) Schott	Araceae	2.13%
	Euphorbia hirta L.	Euphorbiaceae	2.13%
	Rumex nepalensis spreng.	Polygonaceae	2.13%
	Taraxacum sp.	Asteraceae	2.13%
	Thymus vulgaris L.	Lamiaceae	8.51%
Mensturational problems	*Aloe barbadensis* mill.	Asphodelaceae	4.26%
	Bougainvillea sp.	Nyctaginaceae	2.13%
	Cheilanthes albomarginata C.B. Clarke	Pteridaceae	2.13%
	Malleuccia struthiopteris (L.) Tod.	Aspleniaceae	2.13%
	Mirabilis jalapa L.	Nyctaginaceae	2.13%
Abortion	*Achyranthes bidentata* Blume	Amaranthaceae	2.13%
	Carica papaya L.	Caricaceae	4.26%
	Hieracium sp.	Asteraceae	2.13%
	Justicia adhatoda L.	Acanthaceae	12.77%
To induce labour pain	*Achyranthes bidentata* Blume	Amaranthaceae	2.13%
	Brassica juncea (L.) Czern.	Brassicaceae	8.51%
	Rubus ellipticus Sm.	Rosaceae	2.13%
	Urtica dioica L.	Urticaceae	2.13%
Lower abdomen pain	*Cissampelos pareira* L.	Menispermaceae	2.13%
	Colebrookea oppositifolia G.Lodd.	Lamiaceae	2.13%
	Curcuma angustifolia Dalzell & A.Gibson	Zingiberaceae	8.51%
	Curcuma longa L.	Zingiberaceae	2.13%
	Myristica fatua Houtt.	Myristicaceae	2.13%
	Myrica esculenta Buch.-Ham.	Myricaceae	2.13%
	Phyllanthus emblica Gaertn	Phyllanthaceae	2.13%
	Syzygium cumini (L.) Skeels	Myrtaceae	2.13%
	*Tinospora cordifolia (*Willd.) Miers ex Hook.f. & Thomson	Menispermaceae	2.13%

Clogged milk duct	*Tinospora sinensis* (Lour.) Merr	Menispermaceae	2.13%
	Bambusa vulgaris Schrad.ex J.C.Wendl.	Poaceae	2.13%
	Cirsium glabrum DC	Asteraceae	4.26%
	Cucurbita pepo L.	Cucurbitaceae	8.51%
	Diploknema butyracea (Roxb.) H.J.Lam	Sapotaceae	2.13%
	Lagenaria siceraria (Molina) Standl.	Cucurbitaceae	2.13%
Deficiency/Nutrition	*Asparagus officinalis* L.	Asparagaceae	6.38%
	Citrus sp.	Rutaceae	2.13%
	Curcuma longa L.	Zingiberaceae	2.13%
	Myrica esculenta Buch.-Ham.	Myricaceae	2.13%
	Phyllanthus emblica Gaertn	Phyllanthaceae	2.13%
	Trigonella foenum-graecum L.	Fabaceae	2.13%
	Zanthoxylum armatum DC	Rutaceae	2.13%
To cure sterility	*Brassica juncea* (L.) Czern.	Brassicaceae	6.38%
	*Citrus limon (*L.) Osbeck	Rutaceae	2.13%
	Dendrophthoe falcata (L.f) Ettingsh	Loranthaceae	4.26%
	Mirabilis jalapa L.	Nyctaginaceae	2.13%
Jaundice	*Butea monosperma* (Lam.) Kuntze	Fabaceae	2.13%
	Cuscuta reflexa Roxb.	Convolvulaceae	6.38%
	Alnus nepalensis D.Don	Betulaceae	2.13%
Body pain	*Mangifera indica* L.	Anacardiaceae	2.13%
	Quercus semecarpifolia Sm.	Fagaceae	2.13%
	Rheum australe D.Don	Polygonaceae	8.51%

Appendix VI: Medicinal plants with citation percentahe analysis (CP) in different child health ailments

Ailments Category	**Scientific name**	**Family**	**CP%**
Fever	*Acorus calamus* L.	Acoraceae	2.13%
	Centella asiatica (L.) Urb.	Apiaceae	14.89%
	Drymaria cordata Willd. Ex Schult.	Caryophyllaceaae	2.13%
	Hieracium sp.	Asteraceae	2.13%
	Justicia adhatoda L.	Acanthaceae	2.13%
	Mentha arvensis L.	Lamiaceae	8.51%
	Ocimum tenuiflorum L.	Lamiaceae	4.26%
	Rubus ellipticus Sm.	Rosaceae	2.13%
	Tagetes patula L.	Asteraceae	2.13%

	Thalictrum foliolosum DC.	Ranunculaceae	2.13%
	*Tinospora cordifolia (*Willd.) Miers ex Hook.f. & Thomson	Menispermaceae	4.26%
Wounds	*Bauhinia* sp.	Fabaceae	2.13%
	Centella asiatica (L.) Urb.	Apiaceae	2.13%
	Jatropa curcas L.	Euporbiaceae	2.13%
	Polypodium sp.	Polypodiaceae	4.26%
	Sida cordifolia L.	Malvaceae	12.77%
	Trigonella foenum-graecum L.	Fabaceae	4.26%
Ear infection	*Allium sativum* L.	Amaryllidaceae	4.26%
	Colebrookea oppositifolia G.Lodd.	Lamiaceae	2.13%
	Hieracium sp.	Asteraceae	2.13%
	Tagetes erecta L.	Asteraceae	6.38%
	Viola wightiana wall.	Violaceae	17.02%
Indigestion	*Acorus calamus* L.	Acoraceae	8.51%
	Cannabis sativa L.	Cannabaceae	2.13%
	Euphorbia hirta L.	Euphorbiaceae	2.13%
	Raphanus sativus L.	Brassicaceae	4.26%
	Zanthoxylum armatum DC.	Rutaceae	2.13%
Allergy	*Artemisia vulgaris* Burm.f.	Asteraceae	4.26%
	Boehmeria sp.	Urticaceae	2.13%
	Diploknema butyracea (Roxb.) H.J.Lam.	Sapotaceae	4.26%
	Euphorbia hirta L.	Euphorbiaceae	2.13%
	Justicia adhatoda L.	Acanthaceae	2.13%
	Lyonia ovalifolia (Wall.) Drude	Ericaceae	8.51%
Cold /cough	*Cinnamomum tamala* T.Nees & Eberm.	Lauraceae	2.13%
	Hieracium sp.	Asteraceae	4.26%
	Momordiaca charantia L.	Cucurbitaceae	2.13%
	Ocimum tenuiflorum L.	Lamiaceae	4.26%
	Piper longum L.	Piperaceae	2.13%
	Terminalia chebula Retz.	Combretaceae	6.38%
	Zanthoxylum armatum DC.	Rutaceae	10.64%
Severe hot	*Euphorbia royleana* Boiss.	Euphorbiaceae	2.13%
	Mentha spicata L.	Lamiaceae	6.38%
	Musa sp.	Musaceae	2.13%
	Saccharum spontaneum L.	Poaceae	2.13%

	Solanum nigrum Acerbi ex Dunal	Solanaceae	2.13%
Worms	*Chenopodium album* L.	Amaranthaceae	2.13%
	Cirsium glabrum DC	Asteraceae	10.64%
	Imperata cylindrica (L.) P.Beauv.	Poaceae	34.04%
	Ipomoea sp	Convovulaceae	2.13%
	Mallotus philippensis (Lam.) Mull.Arg.	Euphorbiaceae	2.13%
	Taraxacum sp	Asteraceae	2.13%
	*Tinospora cordifolia (*Willd.) Miers ex Hook.f. & Thomson	Menispermaceae	4.26%
Typhoid	*Zea mays* L.	Poaceae	8.51%
	Achyranthes bidentata Blume	Amaranthaceae	2.13%
	Centella asiatica (L.) Urb.	Apiaceae	6.38%
	Ficus racemosa L.	Moraceae	4.26%
	Mentha arvensis L.	Lamiaceae	10.64%
Jaundice	*Butea monosperma* (Lam.) Kuntze.	Fabaceae	4.26%
	Cuscuta reflexa Roxb.	Convovulaceae	6.38%
	Nelumbo nucifera Gaertn.	Nelimbonaceae	4.26%
	Swertia chirayta (Roxb). Karst	Gentianaceae	2.13%
Constipation	*Boehmeria rugulosa* Wedd.	Urticaceae	2.13%
	Bombax ceiba L.	Malvaceae	2.13%
	Carica papaya L.	Caricaceae	4.26%
Diarrhoea	*Brucea javanica* Merr.	Simaroubaceae	8.51%
	Musa sp.	Musaceae	6.38%
	Portulaca grandiflora Hook.	Portulaceae	4.26%
	Psidium guajava L.	Myrtaceae	4.26%
	Rhododendron arboretum Sm.	Ericaceae	2.13%
	Syzygium cumini (L.) Skeels	Myrtaceae	4.26%
Sprain	*Bulbophyllum* sp.	Orchidaceae	8.51%
	Ficus semicordata Buch-Ham.	Moraceae	4.26%
	Rheum australe D.Don	Polygonaceae	2.13%
	Zizyphus mauritiana Lam.	Rhamnaceae	2.13%
	Jatropha curcas L.	Euphorbiaceae	2.13%
	Micromeria biflora Benth.	Lamiaceae	2.13%
	Solanum viarum Dunal	Solanaceae	6.38%

Teeth pain	*Vitex negundo* L.	Lamaceae	2.13%
	Zanthoxylum armatum DC	Rutaceae	4.26%
Eye infection	*Ampelocissus* sp.	Vitaceae	4.26%
	Berberis aristata DC.	Berberidaceae	31.91%
	Pyrus pashia Buch.-Ham. ex D.Don	Rosaceae	2.13%
	Rumex hastatus D.Don	Polygonaceae	4.26%
	Scutellaria sp.	Lamiaceae	2.13%
	Taraxacum sp.	Asteraceae	6.38%
Pneumonia	*Boehmeria rugulosa* Wedd.	Urticaceae	2.13%
	Curcuma angustifolia Dalzell & A.Gibson	Zingiberaceae	2.13%
	Diplazium esculentum (Retz.) Sw.	Athyriacea	2.13%
	Macrotyloma uniflorum (Lam.) Verdc.	Fabaceae	6.38%
Marasmus	*Bambusa* sp.	Poaceae	2.13%
	Hieracium sp.	Asteraceae	2.13%
	Rubus sp.	Rosaceae	4.26%
	Mirabilis jalapa L.	Nyctaginaceae	2.13%
Burning sensation	*Lobelia* sp.	Campanulaceae	2.13%
	Punica granatum. L.	Lythraceae	4.26%
	Cynodon dactylon (L.) Pers.	Poaceae	2.13%
Boils/burn	*Clematis* sp.	Ranunculaceae	2.13%
	Ficus benghalensis L.	Moraceae	2.13%
	Musa sp.	Musaceae	4.26%
Tounge blister	*Callicarpa macrophylla* Vahl.	Lamiaceae	17.02%
Immunity of child	*Asparagus officinalis* L.	Asphodelaceae	2.13%
	Bergenia ciliata (Haw.) Sternb	Saxifragraceae	4.26%
	Rosa sp.	Rosaceae	2.13%

Appendix VII: List of medicinal plants with their preference index and rating for maternal health ailments

Ailments Categoey	Scientific name	Family	Preference index	Rating
Over bleeding	*Achyranthes bidentata* Blume	Amaranthaceae	2.1	V
	Curcuma longa L.	Zigiberaceawe	1.7	I
	Ficus benghalensis L.	Moraceae	1.8	II
	Anethum graveolens L.	Apiaceae	2	IV
	Fragaria vesca L.	Rosaceae	1.9	III
Burning sensation	*Amaranthus spinosus* L.	Amaranthaceae	1.7	III
	Machilus odoratissima Nees	Lauraceae	2.1	V
	*Citrus limon (*L.) Osbeck	Rutaceae	1.6	II
	Moringa oleifera Lam	Moringaceae	2	IV
	Musa sp.	Musaceae	1.5	I
Swelling	*Bombax ceiba* L.	Malvaceae	2.2	VI
	Brassica juncea (L.) Czern.	Brassicaceae	1.7	II
	*Citrus limon (*L.) Osbeck	Rutaceae	1.9	IV
	Euphorbia royleana Boiss.	Euphorbiaceae	1.8	III
	Pinus sp.	Pinaceae	2	V
	Ricinus communis L.	Euphorbiaceae	1.6	I
	Shorea robusta C.F.Gaertn.	Dipterocarpaceae	2.3	VII
Lack of Laction	*Asparagus officinalis* L.	Asparagaceae	2	II
	Euphorbia hirta L.	Euphorbiaceae	2.2	III
	Rumex nepalensis spreng.	Polygonaceae	2.3	IV
	Thymus vulgaris L.	Lamiaceae	1.8	I
Mensturation disorder	*Aloe barbadensis* mill.	Asphodelaceae	1.5	I
	Bougainvillea sp.	Nyctaginaceae	1.9	IV
	Mimosa pudica L.	Fabaceae	1.6	II
	Mirabilis jalapa L.	Nyctaginaceae	1.7	III
Abortion	*Achyranthes bidentata* Blume	Amaranthaceae	2	IV
	Carica papaya L.	Caricaceae	1.5	II
	Hieracium sp.	Asteraceae	1.6	III
	Justicia adhatoda L.	Acanthaceae	0.8	I
To induce labour pain	*Achyranthes bidentata* Blume	Amaranthaceae	2	IV
	Brassica juncea (L.) Czern	Brassicaceae	0.8	I
	Rubus ellipticus Sm.	Rosaceae	1.7	III

	Urtica dioica L.	Urticaceae	1.6	II
Lower abdomen pain	*Cissampelos pareira* L.	Menispermaceae	2.1	V
	Curcuma angustifolia Dalzella & A.Gibson	Zingiberaceae	1.5	I
	Curcuma longa L	Zingiberaceae	1.7	III
	Myristica fatua Houtt.	Myristicaceae	2	IV
	Tinospora sinensis (Lour.) Merr.	Menispermaceae	1.6	II
Clogged milk duct	*Bambusa vulgaris* Schrad	Poaceae	1.9	II
	Cirsium glabrum DC.	Asteraceae	2.3	IV
	Cucurbita pepo L.	Cucurbitaceae	1.6	I
	Lagenaria siceraria (Molina) Standl	Cucurbitaceae	2.2	III
Deficiency/nutrition	*Asparagus officinalis* L.	Asparagaceae	2	I
	Citrus sp.	Rutaceae	2.2	II
	Myrica esculenta Buch.-Ham.	Myricaceae	2.3	III
To cure sterility	*Citrus limon (*L.) Osbeck	Rutaceae	1.8	I
	Dendrophthoe falcata (L.F) Ettingsh	Loranthaceae	2	II
	Mirabilis jalapa L	Nyctaginaceae	2.2	III
Jaundice	*Butea monosperma* (Lam.) Kuntze.	Fabaceae	1.6	II
	Cuscuta reflexa Roxb.	Convolvulaceae	0.8	I
	Alnus nepalensis D.Don	Betulaceae	2	III
Body pain	*Mangifera indica* L.	Anacardiaceae	2.2	II
	Quercus semecarpifolia Sm.	Fagaceae	2.3	III
	Rheum australe D.Don	Polygonaceae	1.9	I

Appendix VIII: List of medicinal plants with their preference index and rating for hild health ailments

Ailments Category	**Scientific name**	**Family**	**Preference index**	**Rating**
Fever	*Centella asiatica* (L.) Urb.	Apiaceae	1.6	I
	Hieracium sp.	Asteraceae	2.3	VII
	Justicia adhatoda L.	Acanthaceae	1.9	IV
	Mentha arvensis L.	Lamiaceae	2	V
	Ocimum tenuiflorum L.	Lamiaceae	1.7	II
	Tagetes patula L.	Asteraceae	2.2	VI

	*Tinospora cordifolia (*Willd.) Miers ex Hook.f. & Thomson	Menispermaceae	1.8	III
Wounds	*Bauhinia* sp.	Fabaceae	1.9	IV
	Centella asiatica (L.) Urb.	Apiaceae	1.6	II
	Jatropa curcas L.	Euporbiaceae	2	V
	Sida cordifolia L	Malvaceae	1.5	I
	Trigonella foenum-graecum L.	Fabaceae	1.7	III
Ear infection	*Allium sativum* L.	Amaryllidaceae	1.7	III
	Colebrookea oppositifolia G.Lodd.	Lamiaceae	2.1	V
	Ficus benghalensis L.	Moraceae	2	IV
	Tagetes erecta L.	Asteraceae	1.6	II
	Viola wightiana wall.	Violaceae	1.5	I
Indigestion	*Acorus calamus* L.	Acoraceae	1.7	I
	Cannabis sativa L.	Cannabaceae	2	V
	Euphorbia hirta L.	Euphorbiaceae	2.1	IV
	Raphanus sativus L.	Brassicaceae	1.8	II
	Zanthoxylum armatum DC.	Rutaceae	1.9	III
Allergy	*Artemisia vulgaris* Burm.f.	Asteraceae	1.7	III
	Boehmeria sp.	Urticaceae	2	IV
	Diploknema butyracea (Roxb.) H.J.Lam	Sapotaceae	1.6	II
	Justicia adhatoda L.	Acanthaceae	2.1	V
	Lyonia ovalifolia (Wall.) Drude	Ericaceae	1.5	I
Cough /cold	*Cinnamomum tamala* T.Nees & Eberm.	Lauraceae	1.8	III
	Hieracium sp.	Asteraceae	2.3	VII
	Momordiaca charantia L.	Cucurbitaceae	2.2	VI
	Ocimum tenuiflorum L.	Lamiaceae	1.7	II
	Piper longum L.	Piperaceae	1.9	IV
	Terminalia chebula Retz.	Combretaceae	1.6	I
	Zanthoxylum armatum DC.	Rutaceae	2	V
Severe hot	*Euphorbia royleana* Boiss.	Euphorbiaceae	1.9	IV
	Mentha spicata L.	Lamiaceae	1.6	I
	Musa sp	Musaceae	1.8	III
	Saccharum spontaneum L.	Poaceae	1.7	II
	Solanum nigrum Acerbi ex Dunal	Solanaceae	2	V

Worms	*Cirsium glabrum* DC.	Asteraceae	2	IV
	Imperata cylindrica (L.) P.Beauv.	Poaceae	1.5	I
	Tinospora cordifolia (Thunb.) Miers	Menispermaceae	1.7	II
	Zea mays L.	Poaceae	1.9	III
Typhoid	*Achyranthes bidentata* Blume	Amaranthaceae	2	IV
	Centella asiatica (L.) Urb.	Apiaceae	1.6	III
	Ficus racemosa L.	Moraceae	1.5	II
	Mentha arvensis L.	Lamiaceae	0.8	I
Jaundice	*Butea monosperma* (Lam.) Kuntze.	Fabaceae	1.7	III
	Cuscuta reflexa Roxb.	Convovulaceaea	0.8	I
	Nelumbo nucifera Gaertn.	Nelumbonaceae	1.6	II
	Swertia chirayta (Roxb). Karst	Gentianaceae	2	IV
Constipation	*Boehmeria rugulosa* Wedd.	Urticaceae	2.3	IV
	Bombax ceiba L.	Malvaceae	2.2	III
	Carica papaya L.	Caricaceae	1.9	I
	Machilus odoratissima Nees	Lauraceae	2	II
Diarrhoea	*Brucea javanica* Merr.	Simaroubaceae	1.5	I
	Musa sp.	Musaceae	1.7	II
	Psidium guajava L.	Myrtaceae	2.3	V
	Rhododendron arboretum Sm.	Ericaceae	1.9	III
	Syzygium cumini (L.) Skeels	Myrtaceae	2.1	IV
Sprain	*Bulbophyllum careyanum* spreng.	Orchidaceae	1.8	I
	Ficus semicordata Buch-Ham.	Moraceae	2	II
	Rheum australe D.Don	Polygonaceae	2.2	III
	Zizyphus mauritiana Lam.	Rhamnaceae	2.3	IV
Teeth pain	*Jatropha curcas* L.	Euphorbiaceae	1.7	III
	Micromeria biflora Benth.	Lamiaceae	2	IV
	Solanum viarum Dunal	Solanaceae	1.5	I
	Vitex negundo L.	Malvaceae	2.1	V
	Zanthoxylum armatum DC.	Rutaceae	1.6	II
Eye infection	*Ampelocissus* sp.	Vitaceae	1.8	II
	Berberis aristata DC.	Berberidaceae	1.7	I
	Pyrus pashia Buch.-Ham. ex D.Don	Rosaceae	1.9	III
	Rumex hastatus D.Don	Polygonaceae	2.1	V
	Scutellaria sp.	Lamiaceae	2	IV
Pneumonia	*Boehmeria rugulosa* Wedd.	Urticaceae	2.1	III

	Curcuma angustifolia Dalzell & A.Gibson	Zingiberaceae	2	II
	Diplazium esculentum (Retz.) Sw.	Athyriaceae	2.3	IV
	Macrotyloma uniflorum (Lam.) Verdc.	Fabaceae	1.9	I
Marasmus	*Bambusa* sp.	Poaceae	2.3	IV
	Hieracium sp.	Asteraceae	2.2	III
	Mirabilis jalapa L.	Nyctaginaceae	2	II
	Rubus sp.	Rosaceae	1.8	I
Burning sensation	*Cynodon dactylon* (L.) Pers.	Poaceae	1.6	III
	Lobelia sp.	Campanulaceae	2	IV
	Punica granatum. L	Lythraceae	0.8	I
	Tridax procumbens L.	Asteraceae	1.5	II
Boils/burn	*Clematis* sp.	Ranunculaceae	2.1	III
	Ficus benghalensis L.	Moraceaea	1.6	II
	Musa sp.	Musaceae	0.8	I
Immunity of child	*Asparagus officinalis* L.	Asphodelaceae	2	II
	Bergenia ciliata (Haw.) Sternb.	Saxifragaceae	1.8	I
	Rosa sp.	Rosaceae	2.2	IV

Appendix IX: List of all enumerated planst with voucher number

S.N	Scientific Name	Family	Local Name	Elevation range	Uses	Vaucher specimen
1	*Acacia catechu* (L.f.) Willd.	Fabaceae	Khayar		Maternal	N.C.
2	*Achyranthes bidentata* Blume	Amaranthaceae	Jamjitey	1320m	Maternal, child	A.B. 3
3	*Acorus calamus* L.	Acoraceae	Bojo		Child	N.C.
4	*Ageratina adenophora* (Spreng.) RM.King & H. Rob	Asteraceae	Kalojhaar	1215m	Child	A.B. 24
5	*Albizia lebbeck* (L.) Benth.	Fabaceae	Siris		Other ailments	N.C.
6	*Allium sativum* L.	Amaryllidaceae	Lasun		Child	N.C.
7	*Aloe barbadensis* Mill.	Asphodelaceae	Gheeuku mari		Maternal	N.C.

8	*Alternanthera dentata* (Moench) Stuchl.	Amaranthaceae	Rato fool	1215m	Other ailments	A.B. 63
9	*Alnus nepalensis* D.Don	Betulaceae	Utish	1215m	Maternal	A.B. 78
10	*Amaranthus spinosus* L.	Amaranthaceae	Karey matey	1340m	Maternal	A.B. 74
11	*Ampelocissus* sp.	Vitaceae	Pureni		Child	N.C.
12	*Anethum graveolens* L.	Apiaceae	Samphu	1215m	Maternal	A.B. 70
13	*Arisaema* sp.	Araceae	Bako		Other ailments	N.C.
14	*Artemisia vulgaris* Burm.f.	Asteraceae	Titeypati	1215m	Child	A.B. 21
15	*Asparagus officinalis* L.	Asparagaceae	Kurilo	1340m	Maternal, child	A.B. 54
16	*Azadirachta indica* A. Juss	Meliaceae.	Neem		Child	N.C.
17	*Bambusa* sp.	Poaceae	Deurali bas	1320m	Child	A.B. 49
18	*Bambusa vulgaris* Schrad.ex J.C.Wendl.	Poaceae	Baas		Maternal	N.C.
19	*Bauhinia* sp.	Fabaceae	Koiralo kalo sano		Child	N.C.
20	*Bauhinia variegata* L.	Fabaceae	Koirala		Other ailments	N.C.
21	*Benincasa hispida* Cogn.	Cucurbitaceae	Kupindo		Child	N.C.
22	*Berberis aristata* DC.	Berberidaceae	Chutro	1225m	Child	A.B. 66
23	*Bergenia ciliata* (Haw.) Sternb.	Saxifragaceae	Dhunge fool	1280m	Child	A.B. 31
24	*Betula alnoides* Buch.-Ham.	Betulaceae	Saur		Maternal	N.C.
25	*Bidens pilosa* L.	Asteraceae	Sinkey kuro	1260m	Maternal	A.B. 1
26	*Boehmeria* sp.	Urticaceae	kharseti	1215m	Child	A.B. 80
27	*Bombax ceiba* L.	Malvaceae	Simal		Maternal, child	N.C.
28	*Bougainvillea* sp.	Nyctaginaceae	Bougainvelia	1250m	Maternal	A.B. 17
29	*Brassica juncea* (L.) Czern.	Brassicaceae	Tori		Maternal	N.C.

30	*Brucea javanica* Merr.	Simaroubaceae	Bhakimlo		Child	N.C.
31	*Bryophyllum pinnatum* (Lam.) Oken	Crassulaceae	Pathar chatta	1220m	Other ailments	A.B. 75
32	*Bulbophyllum careyanum* Spreng.	Orchidaceae	Halajor		Child	N.C.
33	*Butea monosperma* (Lam.) Kuntze	Fabaceae	Palash		Maternal, child	N.C.
34	*Callicarpe macrophylla* Vahl.	Lamiaceae	Ghoyeli	1240m	Child	A.B. 46
35	*Calotropis gigantea* (L.) Dryand	Apocynaceae	Aankh	1220m	Other ailments	N.C.
36	*Cannabis sativa* L.	Cannabaceae	Ganja		Child	N.C.
37	*Carica papaya* L.	Caricaceae	Mewa		Maternal, child	N.C.
38	*Catharanthus roseus* (L.) G.Don	Apocynaceae	Sadasundari	1210m	Other ailments	A.B. 10
39	*Centella asiatica* (L.) Urb.	Apiaceae	Ghodtapre y	1215m	Child	A.B. 5
40	*Cheilanthes albomarginata* C.B. Clarke	Pteridaceae	Dumin sinka	1350m	Maternal	A.B. 37
41	*Chenopodium album* Bosc ex Moq.	Amaranthaceae	Bethey sano		Child	N.C.
42	*Cinnamomum glanduliferum* (Wall.) Meis.	Lauraceae	Malgedi		Other ailments	N.C.
43	*Cinnamomum tamala* T.Nees & Eberm.	Lauraceae	Daalchini		Child	N.C.
44	*Cirsium glabrum* DC.	Asteraceae	Kachila	1215m	Maternal, child	A.B. 77
45	*Cissampelos pareira* L.	Menispermacea e	Badalpate y	1220m	Maternal	A.B. 45
46	*Citrus limon (*L.) Osbeck	Rutaceae	Kagati	1245m	Maternal, child	A.B. 13
47	*Citrus sinensis* (L.) Osbeck	Rutaceae	Suntala		Other ailments	N.C.
48	*Citrus* sp.	Rutaceae	Amilo		Maternal	N.C.
49	*Clematis buchananiana* Wall.	Ranunculaceae	Baghjunge y	1235m	Other ailments	A.B. 60

50	*Clematis* sp.	Ranunculaceae	Sano ba; jungey	1220m	Child	A.B. 57
51	*Cocos nucifera* L.	Arecaceae	Nariwal		Other ailments	N.C.
52	*Colebrookea oppositifolia* G.Lodd.	Lamiaceae	Dhurseuli	1310m	Maternal, child	A.B. 4
53	*Colocasia esculenta* (L.) Schott	Araceae	Papro		Maternal	N.C.
54	*Cordia dichotoma* G.Forst.	Boraginaceae	Bodhi		Other ailments	N.C.
55	*Cucurbita pepo* L.	Cucurbitaceae	Farsi		Maternal	N.C.
56	*Curcuma angustifolia* Dalzell & A.Gibson	Zingiberaceae	Kachhur		Maternal, child	N.C.
57	*Curcuma longa* L.	Zingiberaceae	Beshar		Maternal	N.C.
58	*Curcuma* sp.	Zingiberaceae	Harbu	1220m	Maternal	A.B. 79
59	Cuscuta reflexa Roxb.	Convolvulaceae	Akashbeli	1220m	Maternal, child	A.B. 34
60	*Cynodon dactylon* (L.) Pers.	Poaceae	Dubo		Maternal	N.C.
61	*Cynodon* sp.	Poaceae	Dubo seto		Other ailments	N.C.
62	*Cynoglossum zeylanicum* (Sw. ex Lehm.) Thunb. Ex Brand	Boraginaceae	Lesi kuro	1280m	Other ailments	A.B. 41
63	*Dendrophthoe falcata* (L.f) Ettingsh	Loranthaceae	Aijeru	1215m	Maternal, child	A.B. 2
64	*Diplazium esculentum* (Retz.) Sw.	Athyriaceae	Bhalulapte y		Maternal, child	N.C.
65	*Diploknema butyracea* (Roxb.) H.J.Lam	Sapotaceae	Chiuri		Maternal, child	N.C.
66	*Drymaria cordata* Willd. Ex Schult.	Caryophyllacea e	Abhijalo	1425m	Child	A.B. 43
67	*Elettaria cardamomum* (L.) Maton	Zingiberaceae	Alaichi		Other ailments	N.C.
68	*Eleusine coracana* Gaertn.	Poaceae	Kodo		Child	N.C.
69	*Euphorbia hirta* L.	Euphorbiaceae	Dudhey jhaar	1210m	Maternal, child	A.B. 12
70	*Euphorbia royleana* Boiss.	Euphorbiaceae	Siudi		Maternal, child	N.C.

71	*Ficus benghalensis* L.	Moraceae	Bar	1215m	Maternal, child	A.B. 19
72	*Ficus racemosa* L.	Moraceae	Timla	1300m	Child	A.B. 29
73	*Ficus semicordata* Buch.-Ham. ex Sm.	Moraceae	Khaney		Child	N.C.
74	*Fragaria vesca* L.	Rosaceae	Bhuikafal	1250m	Maternal	A.B. 48
75	*Grewia optiva* J.R. Drumm. ex Burret	Malvaceae	Parsey		Maternal	N.C.
76	*Hibiscus rosa-sinensis* L.	Malvaceae	Ghanti phool	1215m	Other ailments	A.B. 69
77	*Hieracium* sp.	Asteraceae	Neelpatey	1215m	Maternal, child	A.B. 76
78	*Hordeum vulgare* L.	Poaceae	Jamara		Other ailments	N.C.
79	*Imperata cylindrica* (L.) P.Beauv.	Poaceae	Siru	1215m	Child	A.B. 22
80	*Ipomoea carnea* Jacq.	Convolvulaceae	Ajambari	1220m	Other ailments	A.B. 73
81	*Ipomoea* sp.	Convolvulaceae	Bhujatra/tata	1340m	Child	N.C.
82	*Jatropha curcas* L.	Euphorbiaceae	Saijan		Child	N.C.
83	*Juglans regia* L.	Juglandaceae	Okhar		Other ailments	N.C.
84	*Juniperus chinensis* L.	Cupressaceae	Dhupi salla		Other ailments	N.C.
85	*Justicia adhatoda* L.	Acanthaceae	Asuro	1320m	Maternal, child	A.B. 15
86	*Lagenaria siceraria* (Molina) Standl.	Cucurbitaceae	Lauka		Maternal	N.C.
87	*Lannea coromandelica* (Houtt.) Merr.	Anacardiaceae	Dabdabey		Maternal	N.C.
88	*Lobelia* sp.	Campanulaceae	Eklobir		Child	N.C.
89	*Lyonia ovalifolia* (Wall.) Drude	Ericaceae	Ayer	1280m	Child	A.B. 52
90	*Machilus odoratissima* Nees	Lauraceae	Kaula		Maternal, child	N.C.

91	*Macrotyloma uniflorum* (Lam.) Verdc.	Fabcaceae	Gahat		Child	N.C.
92	*Malleuccia struthiopteris* (L.) Tod.	Aspleniaceae	Daurey		Maternal	N.C.
93	*Mallotus philippensis* (Lam.) Mull.Arg.	Euphorbiaceae	Sindurey		Child	N.C.
94	*Mangifera indica* L.	Anacardiaceae	Aap	1220m	Maternal	A.B. 28
95	*Melia azedarach* L.	Meliaceae	Bokaino		Other ailments	N.C.
96	*Mentha arvensis* L.	Lamiaceae	Babari	1215m	Child	A.B. 56
97	*Mentha spicata* L.	Lamiaceae	Pudina		Child	N.C.
98	*Micromeria biflora* Benth.	Lamiaceae	Pitik pitik jhaar	1360m	Child	A.B. 33
99	*Mimosa pudica* L.	Fabaceae	Chimkine jhaar	1225m	Maternal	A.B. 42
100	*Mirabilis jalapa* L.	Nyctaginaceae	Lanka	1220m	Maternal, child	A.B. 35
101	*Momordiaca charantia* L.	Cucurbitaceae	Titey karela		Maternal, child	N.C.
102	*Moringa oleifera* Lam.	Moringaceae	Sitalchini		Maternal	N.C.
103	*Morus alba L.*	Moraceae	Kimu		Child	N.C.
104	*Musa* sp.	Musaceae	Kera		Child	N.C.
105	*Musa* sp.	Musaceae	Kera malbok		Maternal	N.C.
106	*Myrica esculenta* Buch.-Ham	Myricaceae	Kafal	1340m	Maternal, child	A.B. 18
107	*Myristica fatua Houtt.*	Myristicaceae	Jaifal		Maternal	N.C.
108	*Nelumbo nucifera* Gaertn.	Nelumbonaceae	Kamalfull		Child	N.C.
109	*Nicandra physalodes* (L.) Gaertn.	Solanaceae	Fulangi	1220m	Child	A.B. 81
110	*Ocimum* sp.	Lamiaceae	Babari jasto jhaar	1280m	Other ailments	A.B. 71
111	*Ocimum tenuiflorum* L.	Lamiaceae	Tulsi		Child	N.C.
112	*Oxalis corniculata* L.	Oxalidaceae	Chariamilo	1320m	Other ailments	AB 64

113	*Phaseolus vulgaris* L.	Fabaceae	simi		Other ailments	N.C.
114	*Phyllanthus emblica* L.	Phyllanthaceae	Amala		Maternal	N.C.
115	*Pinus* sp.	Pinaceae	Salla		Maternal	N.C.
116	*Piper longum* L.	Piperaceae	Pipla	1425m	Child	A.B. 32
117	*Plumbago zeylanica* L.	Plumbaginaceae	Chitu	1235m	Other ailments	A.B. 16
118	*polypodium* sp.	polypodiaceae	Bilajor	1215m	Child	A.B. 82
119	*Portulaca grandiflora* Hook.	Portulacaceae	Dubefuul		Child	N.C.
120	*Pouzolzia rugulosa* (Wedd.)	Urticaceae	Githa	1240m	Child	A.B. 68
121	*Psidium guajava* L.	Myrtaceae	Belauti		Child	N.C.
122	*Punica granatum.* L	Lythraceae	Anar	1215m	Child	A.B. 27
123	*Prunus cerasoides* D.Don	Rosaceaae	Paiyau		Child	N.C.
124	*Pyrus pashia* Buch.-Ham. ex D.Don	Rosaceae	Male		Child	N.C.
125	*Quercus semecarpifolia* Sm.	Fagaceae	Baaj		Maternal	N.C.
126	*Raphanus sativus* L.	Brassicaceae	Mula		Maternal, child	N.C.
127	*Reinwardtia indica* Dumort.	Linaceae	Pyauli	1215m	Other ailments	A.B. 72
128	*Rheum australe* D.Don	Polygonaceae	Padamchaal		Maternal, child	N.C.
129	*Rhododendron arboretum* Sm.	Ericaceae	Laliguras	1360m	Child	AB 39
130	*Ricinus communis* L.	Euphorbiaceae	Arinjo	1220m	Maternal	A.B. 51
131	*Ricinus* sp.	Euphorbiaceae	Seto arinjo		Maternal	N.C.
132	*Rosa* sp.	Rosaceae	Karenji	1220m	Child	A.B. 30
133	*Rubus ellipticus* Sm.	Rosaceae	Ainselu	1220m	Maternal, child	A.B. 8
134	*Rubus* sp.	Rosaceae	Ainselu kalo		Maternal, child	N.C.
135	*Rumex hastatus* D.Don	Polygonaceae	Kappu	1210m	Child	A.B. 11
136	*Rumex nepalensis* spreng.	Polygonaceae	Halhaley	1225m	Maternal	A.B. 55
137	*Saccharum officinarum* L.	Poaceae	Ukhu		Maternal	N.C.

138	*Saccharum spontaneum* L.	Poaceae	Kaash		Child	N.C.
139	*Sapindus* sp.	Sapindaceae	Ritha		Other ailments	N.C.
140	*Saraca asoca* (Roxb.) Willd.	Fabaceae	Ashok	750m	Maternal	A.B. 65
141	*Scutellaria* sp.	Lamaceae	Akha ma halne jhaar	1215m	Child	A.B. 59
142	*Shorea robusta* C.F.Gaertn.	Dipterocarpaceae	Sal		Maternal, child	N.C.
143	*Sida cordata* (Burum.f.) Borss. Waalk	Malvaceae	Biskaprey	1205m	Maternal, child	A.B. 7
144	*Sida rhombifolia* L.	Malvaceae	Mirsing	1215m	Other ailments	A.B. 25
145	*Solanum viarum* Dunal.	Solanaceae	Karchina	1255m	Child	A.B. 23
146	*Solanum nigrum* Acerbi ex Dunal	Solanaceae	Kwai	1215m	Maternal, child	A.B. 26
147	*Swertia chirayta* (Roxb). Karst	Gentianaceae	Himali Titey		Child	A.B. 47
148	*Syzygium cumini* (L.) Skeels	Myrtaceae	Jamuna	1265m	Maternal, child	A.B. 9
149	*Tagetes erecta* L.	Asteraceae	Hajari		Child	N.C.
150	*Tagetes patula* L.	Asteraceae	Sayejari	1220m	Child	A.B. 38
151	*Taraxacum* sp.	Asteraceae	Katarey	1230m	Maternal, child	A.B. 6
152	*Terminalia chebula* Retz.	Combretaceae	Harro		Child	N.C.
153	*Thalictrum foliolosum* DC.	Ranunculaceae	Titey	1440m	Child	A.B. 44
154	*Thymus vulgaris* L.	Lamiaceae	Jwano		Maternal	N.C.
155	*Tinospora cordifolia (*Willd.) Miers ex Hook.f. & Thomson	Menispermaceae	Laharey gurjo		Maternal, child	N.C.
156	*Tinospora sinensis* (Lour.) Merr.	Menispermaceae	Ganey gurjo		Maternal, child	N.C.
157	*Tridax procumbens* L.	Asteraceae	Taukya jhaar	1235m	Maternal, child	A.B. 62
158	*Trigonella foenum-graecum* L.	Fabaceae	Methi		Maternal, child	N.C.
159	*Urtica dioica* L.	Urticaceae	Sisno		Maternal	N.C.

160	*Viola wightiana* wall.	Violaceae	Kaanpatey	1230m	Child	A.B. 40
161	*Vitex negundo* L.	Lamiaceae	Rukh sewali	1233m	Child	A.B. 36
162	*Xanthium strumarium* Lour.	Asteraceae	Vedey kuro	1350m	Other ailments	A.B. 50
163	*Zanthoxylum armatum* DC.	Rutaceae	Timur	1230m	Maternal, child	A.B. 58
164	*Zea mays* L.	Poaceae	Makai		Child	N.C.
165	*Zingiber officinale* Roscoe	Zingerberaceae	Aduwa		Maternal	N.C.
166	*Zizyphus mauritiana* Lam.	Rhamnaceae	Bayar	1215m	Child	A.B. 61

Note: A.Bhandari; N.C. = No collection

Appendix X: Plants used in maternal health ailments by local people of Rolpa District, Western Nepal

Ailments treated	Scientific name	Local name	Family	Parts used	Status	Life form	Recipes	Modes of Administration and Dosages	Previous finding
Over bleeding (Prasava pachi gambhir raktasrava)	*Aloe barbadensis* Mill.	Gheeukumari	Asphodelaceae	Leaves	C	H	5gm leaves paste is taken and mixed with half a glass of water.	Orally, half a glass of juice is taken for 1 week twice a day	
	Achyranthes bidentata Blume.	Jamjitey	Amaranthaceae	Roots	W	H	A paste of 10gm root is taken by adding 1 spoon of rock sugar, and then it is poured with 1 glass of hot water.	Half a glass of juice is given immediately twice a day for 5 days.	
	Anethum raveolens L.	Samphu	Apiaceae	Seeds	C	H	5 gm of seeds are taken and boiled with some paste of ginger in 100 gm of water for 5-7 minutes.	The decoction is given immediately.	
	Curcuma sp.	Harbu	Zigiberaceae	Stem/ leaves	W	H	The paste of leaves/stem is prepared, and some pieces of nutmeg are added. Then, the paste is cooked in ghee for 2 minutes.	2 spoons of paste are given orally with water twice a day regularly for 1 week.	
	Curcuma longa L.	Beshar	Zigiberaceae	Rhizome	C	H	The juice of rhizome is taken out by crushing.	half glass of juice is taken orally thrice a day until recovery	
	Dendrophthoe falcata (L.f) Etting.	Aijeru	Loranthaceae	Leaves	W	C	The juice is prepared by crushing the juice and mixed with half a glass of boiled water.	Juice is given to drink orally three times a day for 3 days.	
	Ficus benghalensis L.	Bar	Moraceae	Young tips	W, C	T	The young tips are crushed and mixed with one glass of whey.	The juice is given to drink once a day regularly for 1 week.	

	Fragaria vesca L.	Bhuikafal	Rosaceae	Whole part	W	H	50 gm whole parts of the plant are taken and crushed to obtain juice. The juice is then mixed with 1 glass of hot water.	1 glass of juice is taken orally for 5 days	
	Lannea coromandelica (Houtt.) Merr.	Dabdabey	Anacardiaceae	Whole part	W	H	The juice of whole part is taken out by crushing.	half cup of juice is taken orally once a day until recovery	
	Mimosa pudica L.	Chimkine jhaar	Fabaceae	Leaves	W	H	25 gm of fresh leaves are taken and boiled with 500ml of water until the water is reduced to half the liquid.	Half a glass of decoction is given to drink orally on an empty stomach for 3 days.	
	Mirabilis jalapa L.	Lanka rato	Nyctaginaceae	Stem	C	H	20 gm of fresh stem are taken and dipped with 250ml of hot water for the whole night, and the filtered infusion is given.	Half a glass of infusion is given to drink orally once a day for 3 days.	
	Rubus sp.	Kalo aiselu	Rosaceae	Leave/fruits	W	S	The leaves are crushed to obtain juice or fresh ripe fruits are given a chew.	Half glass of juice or 5-10 pieces of fruits are orally given.	
Burning sensation (Pisab Polne)	*Amaranthus spinosus* L.	Karey matey	Amaranthaceae	Roots	W	H	The fresh root is blended with 1 glass of hot water.	Half glass of juice is given orally once a day for 2-3 days.	
	Citrus limon (L.) Osbeck.	Kagati	Rutaceae	Fruits	C	S	The juice is extracted from fruits and mixed with 1 spoon of honey.	Half glass of juice is taken orally twice a day for 2 days.	
	Cynodon dactylon (L.) Pers.	Dubo	Poaceae	Whole part	W	H	About 30 gm of whole part of the plant is taken and crushed to obtain a paste.	Half spoon of the paste is taken with a glass of hot water once a day for 3 days.	Rana *et al*., 2015
	Grewia optiva J.R.Drumm. ex Burret	Fors/paparsey /bhimal	Malvaceae	Roots	W	T	The extract of fresh bark is boiled with half a liter of water for 10 minutes.	Half a glass of decoction is taken orally twice a day.	

	Machilus odoratissima Nees	Kaula	Lauraceae	Bark	W	T	The fresh bark juice is mixed with 1 tea spoon of lemon juice.	Orally, half a glass of juice is taken.	
	Moringa oleifera Lam.	Sitalchini	Moringaceae	Leaves	C,W	S	The extract of fresh leaves juice is being used.	1 glass of juice is taken, and it is taken three times a day.	
	Musa sp.	Malbok kera	Musaceae	Roots	C	S	The fresh roots paste is mixed with 1 liter of hot water.	1 glass of juice is orally consumed once a day.	
	Tridax procumbens L.	Taukya jhaar	Asteraceae	Whole parts	W	H	10 grams of whole parts paste are blended with cold water.	Half cup of juice is given to drink early in the morning.	
Swelling (Suniyako)	*Acacia catechu* (lL.F) Willd.	Khayar	Fabaceae	Bark	W	T	Fresh 50 grams of bark is crushed by adding 5 ml of water to obtain a paste.	The paste is applied on swelling parts with the help of cotton and is left for the whole night.	
	Bombax ceiba L.	Simal	Malvaceae	Bark	W	T	The inner soft bark is taken and crushed to make a paste.	Thick paste is applied over the swelling parts once a day, and the process is continued until it recovers.	
	Brassica juncea (L.) Czern.	Tori	Brassicaceae	Oil	C	H	Oil is taken and mixed with a few seeds of *T. foenum-graecum*, then lightly heated for 2 minutes.	The swelling part is regularly massaged with oil for 10 minutes at night.	
	Citrus limon (L.) Osbeck.	Kagati	Rutaceae	Fruits	C	S	The sliced fruit is gently heated.	The heated slice is squeezed and lightly rubbed on the affected parts thrice a week.	
	Euphorbia royleana Boiss.	Siudi	Euphorbiaceae	Stem	W	S	Fresh 25 ml of milky latex is being used.	Latex is applied over the affected part and is covered with cotton, then left for 2 hours.	Rana *et al*., 2015
	Pinus sp.	Salla	Pinaceae	Resin	W	T	Fresh resins are taken to be used.	Resin is applied on the affected area with the help of cotton and is then bandaged with nylon clothes for 3 days.	

	Ricinus communis L.	Arinjo	Euphorbiaceae	Leaves	W	S	7-8 pieces of fresh leaves are taken and mustard oil is put on the leaves one by one, then they are gently warmed.	The prepared leaves are attached to the affected part once a day when problems appear.	
	Ricinus sp.	Seto arinjo	Euphorbiaceae	Leaves	W	S	7-8 pieces of fresh leaves are taken and mustard oil is put on the leaves one by one, then they are gently warmed.	The prepared leaves are attached to the affected part once a day when problems appear	
	Shorea robusta C.F.Gaertn.	Sal	Dipterocarpaceae	Leaves	W	T	7-8 pieces of fresh leaves are taken and mustard oil is put on the leaves one by one, then they are gently warmed.	The prepared leaves are attached to the affected part once a day when problems appear	
	Solanum nigrum Acerbi ex Dunal	Kwai	Solanaceae	Fruits	W	H	The dried fruit powder of *S. nigrum* is mixed with 1 teaspoon of mustard oil and thet are gently heat.	The swelling parts are lightly massaged once a day for 5 days.	
Lactation (Stanapana)	*Asparagus racemosa* L.	Kurilo	Asparagaceae	Roots	W, C	S	100 grams of fresh root are taken and mixed with half a liter of water, then boiled for 8 minutes.	A glass of filtered decoction is orally consumed once a day for 1 week.	Bhattarai, 2017; Ambu *et al.*, 2020
	Colocasia esculenta (L.) Schott.	Papro	Araceae	Stem/Leaves	C	H	The stem/leaves are cooked like spinach and are added to a pint of salt.	It is taken with rice twice a week.	Sonowal and Sonowal, 2017
	Euphorbia hirta L.	Dudhey jhaar	Euphorbiaceae	Leaves	W	H	The juice from about 10 grams of leaves of *E. hirta* is diluted with 250 ml of water.	Half a cup of juice is taken twice a day, which increases the lactation.	
	Anethum raveolens L. .	Samphu	Apiaceae	Seeds	C	H	5 gm of seeds are taken and boiled with some paste of ginger in 100 gm of water for 5-7 minutes.	The decoction is given immediately.	
	Rumex *nepalensis* spring.	Halhaley	Polygonaceae	Flower	W	H	25 grams of flower is taken and crushed with 100 ml of water to obtain juice.	1 cup of juice is taken orally once a day for 1 week.	

	Taraxacum sp.	Katarey	Asteraceae	Whole part	W	H	5 grams of whole parts of the plant are taken and soaked with 250 ml of water overnight.	Half glass of infusion is taken early in the morning before food for 1 week.	
	Thymus vulgaris L.	Jwano	Lamiaceae	Seeds	C	H	Boiling about 5 grams of seed of *T. vulgaris* and adding 2-3 spoons of turmeric, along with a little amount of salt, in 500 ml of water for 10 minutes.	A glass of decoction is given to be drunk for 2-3 days.	
Mensturational disorder (Mahinawari gadbadhi)	*Aloe barbadensis* mill.	Gheeukumari	Asphodalaceae	Leaves	C	H	2-3 matured leaves are taken and some amount of water is added to extract juice.	A glass of juice is taken regularly for 1 week.	
	Bougainvillea sp.	Boughambeli	Nyctaginaceae	Flower	C	S	15 grams of fresh flower are taken and 500 ml of water is added, then it is boiled for 10 minutes.	The decoction is recommended in the morning before food for 15 days.	
	Cheilanthes albomarginata C.B. Clarke	Dumin sinka	Pteridaceae	Whole part	W	H	The whole part paste is mixed with the root paste of *Malleuccia struthiopteris* and boiled with 1 liter of water until it is reduced into half.	Half a cup of decoction is given regularly once a day for 6 days.	
	Malleuccia struthiopteris (L.) Tod.	Daurey	Aspleniaceae	Whole part	W	H	20 grams of whole part paste is taken and mixed with 1 spoon of honey.	1 teaspoon of paste is given daily for 4 days.	
	Mirabilis sp.	Rati lanka	Nyctaginaceae	Roots	C	H	10 grams of root are boiled with half a liter of water, and the root is boiled until it becomes semi-solid.	The decoction is drunk in half a cup twice a day.	
Abortion (Garbhapatana)	*Achyranthes bidentata* Blume	Jamjitey	Amaranthaceae	Roots	W	H	15gm of root paste is mixed with half a spoon of honey.	It is taken orally in the morning for 10 days.	
	Carica papaya L.	Mewa	Caricaceae	Fruits	C	T	2-3 slices of ripe fruits are taken.	They are taken regularly for 1 week.	
	Hieracium sp.	Nilpatey	Asteraceae	Whole part	W	H	A whole part paste of 30 gm is made by adding some amount of water.	1 teaspoon of paste is taken with water once a day for 1 week.	

	Justicia adhatoda L.	Asuro	Acanthaceae	Roots	W	S	10 gm of roots are boiled with 100 ml of water.	Half cup of decoction is taken daily in the morning for 2 weeks.	
To induce labour pain (Prasava pida utpanna garaunu)	*Achyranthes bidentata* Blume	Jamjitey	Amaranthaceae	Roots	W	H	500ml of water is being boiled with 20gm of roots and 2-3 fruits of *Z. armatum* added to it.	Orally, 1 glass is taken during labour pain.	
	Brassica juncea (L.) Czern.	Tori	Brassicaceae	Oil	C	H	The oil is gently heated.	The body parts are massaged overall.	Subba, (2015)
	Rubus ellipticus Sm.	Aiselu	Rosaceae	Fruits	W	S	The dry fruits are being crushed in stone to obtain powder, using a motor or pestle.	1 spoon of powder is being given orally with hot water during laboring.	
	Urtica dioica L.	Sisno	Urticaceae	Roots	W	H	About 50 gm of *U.dioica* roots are boiled in 250 ml of water until it becomes half and then filtered.	The filtered decoction is given to be drank immediately.	
Lower abdomein pain (Pet dukheko)	*Cissampelos pareira* L.	Badalpatey	Menispermaceae	Roots	W	C	The fresh roots are boiled with half liter of water for 10 minutes.	Half glass of decoction is orally taken twice a day.	Bhandari *et al.*, 2006
	Colebrookea oppositifolia G.Lodd.	Dhurseuli	Lamiaceae	Leaves	W	S	The juice is extracted from about 100 gm fresh leaves of the plant.	Half a cup is taken orally three times a day.	Ambu *et al.*, 2020
	Curcuma angustifolia Dalzell & A.Gibson	Kacchur	Zingiberaceae	Rhizome	C	H	Boiling about 100 gm fresh rhizome in half litre of water for 10 minutes.	1 glass of decoction is taken orally to get relief from pain.	
	Curcuma longa L.	Beshar	Zingiberaceae	Rhizome	C	H	10 gm of rhizome paste and 5 gm of bark paste of *G. optiva* are mixed together and boiled in 500 ml of water for 15 minutes.	Half a cup of decoction is taken orally twice a day.	Bhandari *et al.*, 2006
	Grewia optiva J.R.Drumm. ex Burret	Forsa/bhimal	Malvaceae	Roots	W	T	The extract of fresh bark is boiled with half a liter of water for 10 minutes.	Half a glass of decoction is taken orally twice a day.	

	Myristica fatua Houtt.	Jaifal	Myristicaceae	Fruits	C	H	The fresh fruits are soaked into hot water overnight.	1 glass of infusion is taken in empty stomach.	
	Myrica esculenta Buch.-Ham.	Kaphal	Myricaceae	Bark	W	T	The bark paste is cooked with 2 spoons of ghee.	The paste is taken orally with water.	
	Citrus sp.	Amilo	Rutaceae	Fruits	C	S	Half a liter of hot water is mixed with 2 spoons of lemon juice.	It is drunk in an empty stomach.	Acharya and Acharya, 2009
	Syzygium cumini (L.) Skeels.	Jamuna	Myrtaceae	Bark	W	T	The inner soft bark is boiled with water at least 10 minutes.	Decoction is taken orally in empty stomach.	
	Tinospora cordifolia Thunb. Miers.	Lahareygurjo	Menispermaceae	Stem/leaves	C	C	The young part of the stem/leaves is boiled with water for 5 minutes.	Half glass of decoction is taken orally thrice a day.	
	Tinospora sinensis (Lour.) Merr.	Ganeygurjo	Menispermaceae	Roots	C	S	Juice is obtained by crushing fresh roots.	The juice is consumed orally.	Bhattarai, 2017
Clogged milk duct (Thunelo pareko)	*Bambusa vulgaris* Schrad.	Baas	Poaceae	Stem	W, C	T	The young stems are crushed with water and the obtained paste is applied.	The paste is applied twice a day on the infected part until it recovers.	
	Cirsium glabrum DC.	Kachila	Asteraceae	Roots	W	H	Fresh roots were taken and crushed using a mortar and pestle to make a paste.	The paste is applied on the periphery of the infected part once a day regularly until it recovers.	
	Cucurbita pepo L.	Farsi	Cucurbitaceae	Stem	C	C	2-3 pieces of fresh stem are taken and its milky latex is used.	The infected part is rubbed with milky latex daily for 5 minutes.	
	Diploknema butyracea (Roxb.) H.J.Lam.	Chiuri	Sapotaceae	Oil	W	T	The oil is gently heated.	The infected part is massaged with hot oil daily.	
	Lagenaria siceraria (Molina) Stand.	Lauka	Cucurbitaceae	Stem	C	C	The stems are crushed with water to obtain a paste.	A thick paste is applied in the periphery of the breast and left for 4-5 hours. It is regularly used for 15 days.	

Deficiency/Nutrition (Poshan ko kami)	*Asparagus racemosa* L.	Kurilo	Asparagaceae	Young tips	W,C	S	The fresh young tips are cooked like vegetables.	It is taken with rice twice a week or a soup is taken.	Rajbanshi and Thapa, 2019
	Anethum raveolens L.	Samphu	Apiaceae	Seeds	C	H	5 gm of seeds are taken and boiled with some paste of ginger in 100 gm of water for 5-7 minutes.	The decoction is given to drink.	
	Citrus sp.	Amilo	Rutaceae	Fruits	C	S	The slice of fruit is taken with salt or is directly squeezed to obtain juice.	It is taken once a week.	
	Myrica esculenta Buch.-Ham.	Kafal	Myricaceae	Bark	W	T	10 grams of bark are taken and poured with 250 ml of water, then left for 8-10 hours.	Half a glass of infusion is taken orally.	
	Phyllanthus emblica Gaertn.	Aamala	Phyllanthaceae	Fruits	W	T	Fresh or dried fruits are taken.	Fruits are kept in the mouth and are sucked like candy.	Bhandari *et al.*, 2006
	Trigonella foenum-graecum L.	Methi	Fabaceae	Seeds	C	H	5 grams of seed of *T. foenum-graecum* are soaked in 100 ml of hot water overnight.	The infusion is drunk in the morning before food.	
	Zanthoxylum armatum DC.	Timur	Rutaceae	Fruits	W,C	S	5 grams of fruits are boiled on 200 ml of water for 5 minutes.	The decoction is taken orally.	
	Zingiber officinale Roscoe.	Aduwa	Zingerberaceae	Rhizome	C	H	15 grams of rhizome are taken and cut into small pieces. They are boiled with half a liter of water by adding 2 spoons of honey.	The decoction is taken orally, 1 glass twice a day.	Mainasara *et al.*, 2017
To cure sterility (Bajhopan niko parne)	*Brassica juncea* (L.) Czern.	Tori	Brassicaceae	Oil	C	H	The oil is gently heated with some seeds of *F. vulgare.*	The lower abdomen parts are massaged twice a day until cured.	
	Citrus limon (L.) Osbeck.	Kagati	Rutaceae	Fruits	C	S	2-3 pieces of lemons are squeezed and the juice is added to 1 liter of water.	1 glass of juice is taken orally thrice a day.	

	Dendrophthoe falcata (L.f) Ettingsh.	Aijeru	Loranthaceae	Stem	W	C	The stem is boiled with half liter of water for 10 minutes.	Half glass of decoction is taken orally twice a day for 5 days.	
	Mirabilis jalapa L.	Seto lanka	Nyctaginaceae	Roots	C	H	10 gm roots paste is taken and 1 spoon of lemon juice is added. It is then boiled with 300 ml of soaked rice water.	Half cup of decoction is orally taken.	
	Saccharum officinarum L.	Ukhu	Poaceae	Stem	C	S	The juice of stem is taken out by crushing.	Half glass of juice is taken rally twice a day until recovery	
	Zanthoxylum armatum DC.	Timur	Rutaceae	Fruits	W,C	S	Fruits are soaked with 1 glass of water overnight, and the infusion is given.	Half glass of juice is taken orally twice a day.	
Jundice (Pyale rog)	*Butea monosperma* (Lam.) Kuntze.	Palash	Fabaceae	Flower	W	T	The flowers are soaked with 1 litre of water overnight.	An infusion is taken in an empty stomach for 15 days.	Bhandari *et al*., 2006
	Cuscuta reflexa Roxb.	Akashbeli	Convolvulaceae	Whole parts	W	C	250 gm of whole parts juice is extracted by squeezing.	Juice is taken orally, 1 glass twice a day for 2 weeks.	Bhandari *et al*., 2006
	Grewia optiva J.R.Drumm. ex Burret	Fors/paparsey /bhimal	Malvaceae	Roots	W	T	The extract of fresh bark is boiled with half a liter of water for 10 minutes.	Half a glass of decoction is taken orally twice a day.	
	Alnus nepalensis D.Don.	Utish	Betulaceae	Bark	W	T	The bark is cleaned and boiled for 10 minutes.	Half a cup of decoction is consumed twice a day (morning and evening) regularly for 15 days.	
Body pain (Sarir dukhnu)	*Acacia catechu* (L.f.) Willd.	Khayar	Fabaceae	Bark	W	T	10 gm of bark is taken and 5 ml of water is added by crushing to obtain a paste.	The paste is applied with the help of cotton and left overnight.	
	Betula alnoides Buch.-Ham.	Saur	Betulaceae	Bark	W	T	The bark is crusted with a pestle to obtain bark paste.	Thick paste is applied once a day	
	Mangifera indica L.	Aap	Anacardiaceae	Bark	C	T	The stems are crushed with 10 ml of water to obtain a paste, which is then applied.	The paste is applied on the affected part.	

	Quercus semecarpifolia Sm.	Baaj	Fagaceae	Roots	W	T	A paste is made by adding 20gm of roots of *Quercus* sp, 5gm of *R. ellipticus*, and *Z. armatum*.	The paste is applied with the help of cotton and left overnight.	Budha-Magar., 2021
	Rheum australe D.Don	Padamchal	Polygonaceae	Stem	W	H	The stem of *R. austral* is combined with some pieces of stem from *A. catechu* and *B. alnoides* to make their paste.	The paste is applied on the painful part and left overnight.	Thapa, 2012
	Zanthoxylum armatum DC.	Timur	Rutaceae	Fruits	W,C	S	Fruits are soaked with 1 glass of water overnight, and the infusion is given.	Half glass of juice is taken orally twice a day.	
Piles	*Bidens pilosa* L.	Sinkey kuro	Asteraceae	Whole part	W	H	Whole part paste is taken and mixed with some pieces of *T. sinensis* stem, then crushed together to obtain their paste.	1 spoon paste is taken with 1 glass of hot water regularly for 1 month.	
Leukorrhea (Seto pani bagnu)	*Curcuma angustifolia* Dalzell & A.Gibson	Kacchur	Zingiberaceae	Rhizome	C	H	A paste of 10 grams of rhizome is taken and mixed with 1 spoon of *T. foenum-graecum* powder, 250ml of water, and a little amount of salt. It is boiled for 10 minutes.	Decoction is taken, 1 soup bowl once a day.	
	Saraca asoca (Roxb.) Willd.	Ashok	Fabaceae	Leaves	W,C	T	20 gm of leaves are taken and added with 250ml of water.	A half glass of juice is taken regularly for 1 week.	
Melasma (Chaya poto)	*Aloe barbadensis* miller.	Gheeukumari	Lilaceae	Leaves	C	H	Leaf is taken and the inner jelly parts are obtained with the help of a spoon.	The paste is applied on the face, then left for 10 minutes or until it dries. It is used twice a week.	
	Diplazium esculentum (Retz.) Sw.	Bhalulaptey	Athyriaceae	Whole part	W	H	10 gm of whole part paste is taken.	It is applied on the clean face at night and left for 10 minutes and is used twice a week for 3 months.	

Blood pressure high (Raktachaap)	*Momordiaca charantia* L.	Titey Karela	Cucurbitaceae	Fruits	W	C	Juice is obtained by crushing the fruits.	Half glass of juice is taken in empty stomach regularly.	Aryal *et al*., 2016; Ambu *et al.*, 2020
Nausea and vomiting (Chakar wakwaki laugnu)	*Raphanus sativus* L.	Mula	Brassicaceae	Roots	C	H	One piece of clean and fresh raw root is taken.	It is eaten orally.	
Breast cancer (Isthanko cancer)	*Sida cordifolia* L.	Bishkaprey	Malvaceae	Whole parts	W	H		The outer parts of the infected area are applied with the paste once a day regularly and left for 4-5 hours.	

- **(Note:** In status where, W= wild, C= cultivated and Life form where, T= tree, S= shrub, H= herb, C= climber**)**

Appendix XI: Plants used in child health ailments by local people of Rolpa District, Western Nepal

Ailments treated	Scientific name	Local name	Family	Parts used	Status	Life form	Recipes	Mode of Administration and Dosage	Previous finding
Fever(Joro)	*Acorus calamus* L.	Bojo	Acoraceae	Roots	C	H	30 gm of A. calamus roots are boiled in 250 ml of water for 15 minutes.	5ml of decoction is given orally thrice a day for 3 days.	
	Azadirachta indica A. Juss.	Neem	Meliaceae	Leaves	C	S	20 gm of paste is soaked with half litre of water and the filtered infusion is given.	5ml of infusion is given orally.	Bhattarai, 2017; Joshi *et al*., 2018
	Centella asiatica (L.) Urb.	Ghodtapre	Apiaceae	Whole part	W	H	The whole part is boiled with 250 ml of water for 3 minutes.	5 ml of decoction is given orally once a day after meals until the fever is cured.	Bhattarai, 2018

	Drymaria cordata Willd. Ex Schult.	Abhijalo	Caryophyllaceaae	Whole part	W	H	15 gm of whole part is soaked in half litre of hot water overnight and the filtered infusion is given.	10 ml of infusion is given orally twice a day for 3 days	Bhattarai, 2017
	Hieracium sp.	Nilpatey	Asteraceae	Whole part	W	H	50 grams of whole parts are taken and squeezed to obtain the juice.	5 ml of the juice are given orally twice a day for 5 days.	
	Justicia adhatoda L.	Asuro	Acanthaceae	Young tips	W	S	A paste is obtained by crushing 5 grams of young tips.	A little amount of paste is orally administered once a day after the evening meal until the fever is cured.	
	Mentha arvensis L.	Babari	Lamiaceae	Leaves	C	H	10 gm of leaves is soaked with half spoon of lemon in 250 ml of hot water.	Orally, 5 ml of decoction is given thrice a day.	
	Ocimum tenuiflorum L.	Tulsi	Lamiaceae	Leaves	C	H	Juice is obtained by crushing the leaves.	Orally, once a day for 4 days, half a spoon of juice is given.	Rajbanshi and Thapa, 2019
	Rubus ellipticus Sm.	Aiselu	Rosaceae	Stem	W	S	The juice is extracted from the stem of R. ellipticus.	Orally taken 5 ml every 4 hours thrice a day.	
	Tagetes patula L.	Sayajari	Asteraceae	Stem/leaves	C	H	10 gm of Stem/leaves paste is mixed with 1 spoon hot water.	Half spoon of juice is given orally once a day.	Rajbanshi and Thapa, 2019
	Thalictrum foliolosum DC.	Titey	Ranunculaceae	Leaves	W	H	10 gm of leaves is poured with 500ml of water and boiled until the solution is half.	5 ml of decoction is given orally twice a day.	
	*Tinospora cordifolia (*Willd.) Miers ex Hook.f. & Thomson	Lahareygurjo	Menispermaceae	Stem/leaves	C	C	10 gm of stem/leaves is taken and crushed by adding a little amount of water to obtain a paste.	A little amount of paste is given orally once a day with hot water.	
Wounds (Ghau)	*Bauhinia* sp.	Kalo sano koiral	Fabaceae	Leaves	W	S	Leaves are crushed by using a mortar and pestle to obtain paste.	Thick paste is applied twice a day until it is cured.	

	Centella asiatica (L.) Urb.	Ghodtapre	Apiaceae	Whole part	W	H	The whole parts are squeezed to obtain the juice.	2 or 3 drops of juice are applied on infected parts daily.	Rana *et al.*, 2015
	Jatropa curcas L.	Saijan	Euporbiaceae	Milky latex	W	S	Fresh stem is taken and milky latex is used.	4-5 drops of milky latex are applied twice a day.	Bhattarai *et al*., 2009
	Polypodium sp.	Bilajor	polypodiaceae	Stem	W	H	10 gm of stem was taken and crushed by adding 5 ml of water to obtain paste.	Paste is applied and covered with cotton once a day until it covers.	
	Sida cordifolia L.	Bishkaprey	Malvaceae	Whole part	W	H	The juice is obtained by squeezing the whole parts.	The infected parts are daily applied with 2 or 3 drops of juice.	
	Trigonella foenum-graecum L.	Methi	Fabaceae	Seeds	C	H	The seeds are burned and the resulting ash is applied in the wounds.	A little amount of ash is applied on the infected parts.	
	Ageratina adenophora (Spreng.) RM.King & H. Rob	Kalo jhaar	Asteraceae	Whole parts	W	H	25 gm of whole parts are taken and crushed by using a motor and pestle to obtain a paste.	The paste is applied twice a day.	Budha-magar *et al.*, 2020
Ear infection (kan pakeko)	*Allium sativum* L.	Lasun	Amaryllidaceae	Rhizomes	C	H	Garlic pieces are being cooked on mustard oil until the garlic turns brown in color and is then squeezed, and the filtered oil is being used.	2-3 drops of oil are being put in the ear with the help of cotton twice a day until it recovers.	
	Colebrookea oppositifolia G.Lodd.	Dhurseuli	Lamiaceae	Young tips	W	S	The young tips are squeezed to obtain the juice.	2 drops of juice are put inside the ear with the help of droppers.	Rana *et al*., 2015
	Ficus benghalensis L.	Bar	Moraceae	Young tips	W,C	T	The young tips are squeezed to obtain the juice.	2 drops of juice are put inside the ear with the help of droppers.	
	Hieracium sp.	Nelpatey	Asteraceae	Whole part	W	H	The whole parts of the juice are used.	1-2 drops of juice are put in the ear with the help of cotton.	
	Tagetes erecta L.	Hajari	Asteraceae	Flowers	C	H	Fresh matured flowers are taken and squeezed to obtain juice	The infected ear is cleaned with hot water using cotton, and then 2	

								drops of juice are put in the ear in the morning and evening.	
	Viola wightiana wall.	Kanpatey	Violaceae	Whole part	W	H	The whole parts of the juice are used.	1-2 drops of juice are put in the ear.	
Indigestion (Apach)	*Acorus calamus* L.	Bojo	Acoraceae	Roots	C	H	The roots are boiled in one liter of water for 30 minutes.	The decoction is given 50 ml 2 times a day.	Rana *et al.*, 2015; Joshi *et al.*, 2018
	Cannabis sativa L.	Bhango	Cannabaceae	Leaves	W,C	S	The juice is obtained by squeezing the leaves.	Orally, 5 ml of juice is given once.	
	Euphorbia hirata L.	Dudhey jhaar	Euphorbiaceae	Whole part	W	H	The whole part is squeezed to obtain the juice.	5 ml of juice is administered orally once.	
	Raphanus sativus L.	Mula	Brassicaceae	Roots	C	H	Pieces of roots are boiled with 250 ml of water until the water is reduced by half.	10 ml of decoction is given orally once a day.	Bhandari *et al.*, 2006
	Zanthoxylum armatum DC.	Timur	Rutaceae	Fruits	W,C	S	2 or 3 pieces of fruits are boiled with 50 ml of water for 5 minutes.	5 ml of decoction is orally given.	Rana *et al*., 2015
Allergy	*Artemisia vulgaris* L.	Titeypati	Asteraceae	Leaves	W	H	Juice is being obtained by mixing 1 liter of cold water with 100 gm of leaves through squeezing.	The extract juice is applied on the whole body with the help of a cotton cloth and left for 4-5 hours, then washed with cold water.	Rana *et al*., 2015; Rajbanshi and Thapa, 2019
	Boehmeria sp.	Kharseti	Urticaceae	Leaves	W	S	A well-washed 50 gm of leaves paste is used.	The skin is directly rubbed with paste after using them for 1 hour, then the whole body is bathed with cold water.	
	Diploknema butyracea (Roxb.) H.J.Lam.	Chiuri	Sapotaceae	Oil	W	T	The oil is taken and gently heated.	The infected part is massaged with hot oil.	
	Justicia adhatoda L.	Asuro	Acanthaceae	Young tips	W	S	The paste of young tips is applied.	The paste is rubbed directly on the skin.	

	Lyonia ovalifolia (Wall.) Drude.	Anger	Ericaceae	Leaves	W	T	The leaves are squeezed and filtered to obtain juice, and the remaining filter paste is also used.	The juice is used for bathing, and the paste is rubbed on the infected area.	Rana *et al.*, 2015; Bhandari *et al.*, 2006
Cough/cold (Rugha khoki)	*Cinnamomum tamala* T.Nees & Eberm.	Dalchini	Lauraceae	Leaves	W,C	S	The leaves are boiled with 4 glasses of water, and it is boiled until the decoction is halved.	Orally, half a glass of decoction is given from time to time.	Joshi *et al.*, 2018
	Hordeum vulgare L.	Jamara	Poaceae	Whole parts	C	H	The leaves are squeezed to obtain juice, which is then mixed with a pint of salt.	Orally, 5ml of juice is taken thrice a day until it is cured.	
	Hieracium sp.	Nelpatey	Asteraceae	Whole part	W	H	The whole parts are being crushed and made into a paste. A half spoon of paste is mixed with 1 glass of hot water and given as a dose.	Orally, 10ml of juice is given twice a day.	
	Momordiaca charantia L.	Titey karela	Cucurbitaceae	Fruits	C	C	Small pieces of fruits are kept in the mouth and sucked like candy.	It is given twice a day.	
	Ocimum tenuiflorum L.	Tulsi	Lamiaceae	Leaves	C	H	The leaves are soaked with water by adding half a spoon of lime and 2 or 3 pieces of garlic overnight.	Orally, 5ml of infusion is given thrice a day.	Aryal *et al.*, 2016; Joshi *et al.*, 2018
	Piper longum L.	Pipla	Piperaceae	Fruits	C	H	Fruits are given to be chewed.	One piece of fruit is given to be chewed once.	Shrestha *et al.*, 2016; Joshi *et al.*, 2018
	Terminalia chebula Retz.	Harro	Combretaceae	Fruits	W	T	Fruits are gently heated and cut into small pieces.	1-2 pieces of fruits are kept in the mouth and sucked like candy to cure cough problems.	Aryal *et al.*, 2016; Bhandari *et al.*, 2006
	Zanthoxylum armatum DC.	Timur	Rutaceae	Fruits	W,C	S	2 grams of fruits are soaked with 1 glass of	Orally, half a spoon of infusion is given once a day.	Shrestha *et al.*, 2016; Budha-

							water overnight, and the infusion is given.		Magar *et al.*, 2020
Sever hot	*Euphorbia royleana* Boiss.	Siudi	Euphorbiaceae	Milky latex	W	S	The milky latex is applied.	10 ml of latex is taken and applied on the periphery of the navel once a day.	
	Mentha spicata L.	Pudina	Lamiaceae	Leaves	C	H	Leaf juice is given.	Orally, 5 ml of juice is given thrice a day.	
	Musa sp.	Kera	Musaceae	Milky latex	C	S	The milky latex is applied.	A small amount of latex is used on the forehead and body parts.	
	Saccharum spontaneum L.	Kash	Poaceae	Whole part	W	H	The juice of the whole parts is taken.	Orally, half a glass of juice is given.	
	Solanum nigrum Acerbi ex Dunal	Kwai	Solanaceae	Leaves	W	H	The hand-crushed leaves paste is applied.	The paste is applied on the forehead.	
	Benincasa hispida Cogn.	Kupindo	Solanaceae	Fruits	C	C	Fruit juice is given to be consumed.	Orally, half a glass of juice is given.	
Worms (Juka paraeko)	*Chenopodium album* Bosc ex Moq.	Bethey sano	Amaranthaceae	Stem/leaves	C	H	The stem/leaves are boiled in water for about 5 minutes, and the filtrate is given to drink.	Orally, half a glass of decoction is given once a day.	
	Cirsium glabrum DC.	Kachila	Asteraceae	Roots	W	H	Roots juice is given to be consumed.	Orally, 5ml of juice is given to be consumed twice a day for 3 days.	
	Euphorbia hirata L.	Dudhey jhaar	Euphorbiaceae	Whole part	W	H	The whole part is blended to obtain juice.	Orally, 5ml of juice is given to be consumed twice a day for 3 days.	
	Imperata cylindrica (L.) P.Beauv.	Siru	Poaceae	Roots	W	H	The root is cut into small pieces and boiled for 10 minutes.	Orally, half a glass of decoction is given.	Gubhaju and Gaha, 2019
	Ipomoea sp.	Bhujatara/tata	Convolvulaceae	Seeds	W	C	Dried fruit is taken and crushed using a motor and pestle to obtain a fine powder.	Orally, half a spoon of powder is given with hot water on an empty stomach.	
	Mallotus philippensis (Lam.) Mull.Arg.	Sindurey	Euphorbiaceae	Fruits	W	T	5 gm of fresh matured fruits are being taken	2-3 fruits are given to be chewed on an empty stomach.	

	Taraxacum sp.	Katarey seto	Asteraceae	Whole part	W	H	The juice of the whole parts is given.	Orally, half a glass of juice is given once a day for 2 days.	
	Tinospora cordifolia (Thunb.) Miers.	Lahareygurjo	Menispermaceae	Stem/leaves	C	S	Fresh stems/leaves of plants are taken and some amount of water is added, then it is left covered overnight.	Orally, 5ml of infusion is given twice a day for 3 days.	
	Zea mays L.	Makai	Poaceae	Kernel	C	S	The kernel is gently heated for 3 minutes, and then the kernel ash is mixed with the roots paste of C. glabrum and given to be eaten with hot water.	Orally, 5 ml of juice is given thrice a day for 3 days.	
Typhoid	*Achyranthes bidentata* Blume.	Jamjitey	Amaranthaceae	Whole part	W	H	20 gm of whole parts are boiled with half a liter of water for 20 minutes.	Orally, half a glass of decoction is given once a day for 1 week.	
	Centella asiatica (L.) Urb.	Ghodtapre	Apiaceae	Whole part	W	H	The juice of the whole parts is given.	Orally, 5 ml of juice is given thrice a day.	Bhandari *et al*., 2006
	Ficus racemosa L.	Timla	Moraceae	Milky latex	W	T	The milky latex is used.	Daily, half a spoon of latex is given for 1 week.	
	Mentha arvensis L.	Babari	lamiaceae	Leaves	C	H	The leaves are crushed with water and the filtrate juice is used.	Orally, half a glass of juice is given twice a day for 5 days.	
	Morus alba L.	Kimu	Moraceae	Bark	W,C	T	Take 50 gm of bark to obtain juice	Orally, 5ml of juice is given to be consumed twice a day.	
	Rubus ellipticus Sm.	Aiselu	Rosaceae	Stem	W	S	The juice is being extracted from the stem of R. ellipticus.	Orally, 5 ml is given thrice a day.	
Jundice (Pyale rog)	*Butea monosperma* (Lam.) Kuntze	Palash	Fabaceae	Flowers	W	T	20 gm of flower is crushed by adding a little amount of water to obtain juice.	Orally, 10 ml of juice is given twice a day (morning and evening).	

	Cuscuta reflexa Roxb.	Akashbeli	Convovulaceaea	Whole parts	W	C	The juice of the whole parts is given.	Orally, 5 ml is given twice a day for 15 days.	Rajbanshi and Thapa, 2019; Bhandari *et al.*, 2006
	Nelumbo nucifera Gaertn.	Kamalful	Nelumbonaceae	Flowers	W	H	The flowers are boiled in water for about 5 minutes, and the filtrate decoction is used.	Orally, 5 ml is given twice a day (morning or evening) for 15 days, to cure jaundice.	Bhandari *et al.*, 2006; Khanal *et al.*, 2020
	Swertia chirayta (Roxb). Karst.	Himali titey	Gentianaceae	Whole Parts	W	H	The whole parts of the plant are taken and boiled with water for 5 minutes.	Orally, 5 mlof decoction is given twice a day for 15 days.	Budha-Magar *et al.*, 2020
Constipation (Kabjiyat)	*Boehmeria rugulosa* Wedd.	Githa	Urticaceae	Bark	W	T	Bark juice is given to cure constipation.	Orally, 5 ml is given twice a day (morning and evening) for 1 week.	
	Bombax ceiba L.	Simal	Malvaceae	Bark	W	T	5 gm of inner soft bark is boiled for 10 minutes.	Orally, 5 ml of decoction is given three times a day.	Gubhaju and Gaha, 2019
	Carica papaya L.	Mewa	Caricaceae	fruit	C	T	Ripe fruits are taken to crush juice.	Orally, half a glass is given from time to time.	Laskar *et al.*,2009
	Machilus odoratissima Nees	Kaula	Lauraceae	Bark	W	T	The bark is boiled in water for 2-3 minutes, and the filtrate is given as a decoction.	Orally, 5 ml is given twice a day (morning and evening) for 1 week.	
Diarrhoea (Pakhala)	*Brucea javanica* Merr.	Bhakimlo	Simaroubaceae	Fruits	W	T	Half a spoon of fruit powder is mixed with 1 glass of hot water.	Orally, half a glass of juice is given twice a day.	Aryal *et al.*, 2016; Budha-Magar *et al.*, 2020
	Musa sp.	Kera	Musaceae	Fruits	C	S	The unripe half banana is mashed with yogurt.	Given orally immediately.	Bhattarai, 2017; Gubhaju and Gaha, 2019

	Portulaca grandiflora Hook.	Dubeful	Portulaceae	Whole part	W	H	The whole parts are boiled, and the decoction is given for curing diarrhea.	Orally, half a glass of decoction is given once a day.	
	Psidium guajava L.	Belauti	Myrtaceae	Leaves	C	T	The infusion of leaves is given.	Orally, 5ml of infusion is given twice a day.	Aryal *et al*., 2016; Rajbanshi and Thapa, 2019
	Rhododendron arboreum Sm.	Laliguras	Ericaceae	Flowers	W	T	The flowers are soaked in warm water.	Orally, half a glass of infusion is given.	Bhandari *et al*., 2006; Pangeni *et al.*, 2020
	Syzygium cumini (L.) Skeels.	Jamuna	Myrtaceae	Bark	W	T	The leaves are squeezed and the extracted juice is mixed with a pint of salt.	Orally, 5ml of juice is given twice a day.	Bhandari *et al.*, 2006; Bhattarai *et al.*, 2009
	Rubus ellipticus Sm.	Aiselu	Rosaceae	Stem	W	S	The juice is being extracted from the stem of R. ellipticus.	Orally, half a glass is taken twice a day.	Bhattarai, 2018
	Tinospora sinensis (Lour.) Merr.	Ganeygurjo	Menispermaceae	Stem	C	S	The extract of the stem is crushed using a pestle and mortar to obtain juice, with a little amount of hot water added.	Orally, 10 ml of extracted juice is given from time to time throughout the day.	Shrestha *et al*., 2016
	Myrica esculenta Buch.-Ham.	Kaphal	Myricaceae	Bark	W	T	Bark juice is given to be consumed.	Orally, 5 ml of juice is given thrice a day.	Aryal *et al.*, 2016;
	Citrus limon (L.) Osbeck.	Kagati	Rutaceae	Fruit	C	S	Two spoons of lemon are extracted from the fruit and mixed with 25 ml of hot water.	Orally, half a glass of juice water is given once a day	
Sprain (Markako)	*Bulbophyllum careyanum* Spreng.	Halajor	Orchidaceae	Whole part	W	H	The whole part paste is used.	A thick paste is applied on the infected parts and covered with a muslin cloth, then left for 3 days.	
	Ficus semicordata Buch-Ham.	Khanyau	Moraceae	Bark	W	T	The bark paste is applied.	A thick paste is applied on the infected parts	

								and covered with a muslin cloth, then left for 3 days.	
	Rheum australe D.Don.	Padamchal	Polygonaceaea	Stem	W	H	A mixture of paste of R. austral stem and flour of Eleusine coracana is wrapped around the sprain part with the help of a bamboo clamp *(Bambusa vulgaris)*	It is kept immobilized for a week.	
	Zizyphus mauritiana Lam.	Bayar	Lamiaceae	Leaves	W	H	The leaves paste is applied.	The paste is applied over the infected parts and covered with cotton, then tied with a muslin cloth for 1 week.	
Teeth infection (Daat dukhako)	*Euphorbia hirata* L.	Dudhey jhaar	Euphorbiaceae	Whole part	W	H	50 gm of whole part is crushed to obtain paste.	The paste is rubbed in the infected part.	
	Jatropha curcas L.	Saijan	Euphorbiaceae	Stem	W	S	The stem juice is used.	The stem juice is rubbed on teeth gum twice a day.	Ambu *et al*., 2020
	Micromeria biflora Benth.	Pitik pitik jhaar	Lamiaceae	Whole part	W	H	5 gm of whole parts are being crushed with 5 ml of water to obtain the paste.	A pint of paste is being put inside the pain parts and kept for 15 minutes.	
	Solanum viarum Dunal.	Karchina	Solanaceae	Seeds	W	H	Dry seeds are crushed to obtain fine powder.	Seeds powder is sprayed on the infected parts twice a day (morning before breakfast and evening after a meal).	
	Grewia optiva J.R.Drumm.ex Burret.	Rukh sewali	Malvaceae	Flowers	W	S	5 gm of flowers are taken to make a paste.	Paste is put in the periphery of the pain part and kept for at least 10-15 minutes once a day.	

	Zanthoxylum armatum DC.	Timur	Rutaceae	Fruits	W,C	S	5 gm of fruits are blended by adding a few drops of water, and juice is obtained by filtering.	2 drops of juice are kept inside the painful parts for 5 minutes, and then they are washed with hot water.	Khanal *et al*., 2020
Eye infection (Akha pakako)	*Ampelocissus* sp.	Pureni	Vitaceae	Stem	W	C	The hollow stem of Ampelocissus sp is filled with pepper powder and blown into the eyes.	It is done twice a day for 3 days.	
	Berberis aristata DC.	Chotra	Berberidaceaea	Stem	W	S	10 gm of stem is boiled in 1 liter of water until the decoction turns into syrup.	1 drop of decoction is used once a day for 3 days.	Bhandari *et al*., 2006; Ambu *et al*., 2020
	Pyrus pashia Buch.-Ham. ex D.Don	Myale	Rosaceaea	Fruits	W	T	The mature raw fruit is taken and squeezed to obtain juice.	2-3 drops of juice are dropped in the infected eye once a day for 3 days.	
	Rumex hastatus D.Don	Kappu	Polygonaceae	Leaves	W	H	leaves of the plant are taken and crushed to obtain paste	2-3 drops of juice are dropped in the infected eye once a day.	
	Scutellaria sp.	Akha ma halne jhaar	Lamiaceae	Whole part	W	H	5 gm of whole parts of the plant are taken and crushed to obtain paste.	A thick paste is applied over the closed eyelids once a day.	
	Taraxacum sp.	Katarey	Asteraceae	Whole part	W	H	Whole parts of the plant are taken and crushed to obtain paste.	A thick paste is applied over the closed eyelids once a day.	
Pneumonia	*Boehmeria rugulosa* Wedd.	Githa	Urticaceae	Bark	W	T	The bark is boiled in one liter of water for 15 minutes.	Half a cup of decoction is taken twice a day for 7 days.	
	Curcuma angustifolia Dalzell & A.Gibson	Kachur	Zingiberiaceae	Rhizomes	C	H	The rhizomes are soaked with half a liter of water by adding half a spoon of lemon and then left overnight.	5ml of infusion is given orally for 1 week.	

	Prunus cerasoides D.Don	Paiyau	Rosaceaae	Bark	W	H	Whole parts are squeezed to obtain juice	The 5ml of juice is taken in the evening for 7 days	
	Diplazium esculentum (Retz.) Sw.	Bhalulaptey	Athyriaceae	Whole parts	W	H	5 gm of whole parts are squeezed to obtain juice.	The 5ml of juice is taken in the evening for 5 days.	
	Macrotyloma uniflorum (Lam.) Verdc.	Gahat	Fabaceae	Seeds	C	H	The seeds are cooked with water by adding salt for at least half an hour, and then the soup is taken.	Half a bowl of soup is given thrice a day for 1 week.	
Marasmus (Sukanas)	*Bambusa* sp.	Deurali bas	Poaceae	Roots	W	T	The fresh and clean 20gm root is soaked with 250ml of water.	5ml of infusion is given orally for 1 week.	
	Hieracium sp.	Nelpatey	Asteraceae	Wholr parts	W	H	The whole parts are taken and crushed to obtain juice.	2 spoons of juice are given orally once a day.	
	Mirabilis jalapa L.	Pahelo lanka	Nyctaginaceae	Stem/leaves	C	H	The stem/leaves are boiled with water for 10 minutes.	2ml of decoction is given orally twice a day for 1 week.	
	Rubus ellipticus Sm.	Aiselu	Rosaceae	Stem	W	S	The juice is extracted from the 10gm stem of R. ellipticus.	It is taken orally, 5 ml every 4 hours, thrice a day.	
	Rubus sp.	Kalo aiselu	Rosaceae	Leaves/roots	W	S	The leaves/roots are boiled with half a liter of water.	5ml of decoction is given orally once a day for 1 month.	
Burning sensation (Pisab polne)	*Lobelia* sp.	Eklobir	Campanulaceae	roots	C	H	20gm of roots are taken and 5ml of water is added by crushing to obtain juice.	Half a glass of juice is orally given twice a day.	
	Punica granatum. L.	Anar	Lythraceae	Leaves	C	S	20 gm of leaves are being soaked with 500ml of cold water overnight.	Half a glass of infusion is orally given twice a day.	
	Tridax procumbens L.	Taukey jhaar	Asteraceae	Whole parts	W	H	10 gm of whole parts are taken and crushed to obtain juice.	2 spoons of juice are orally given once a day.	

	Nicandra physalodes (L.) Gaertn.	Fulangi	Solanaceae	Fruits/leaves	W	H	Dried fruits/leaves are taken and crushed to obtain powder.	Half spoon powder is given with hot water twice a day.	
Boils (Pilo)	*Clematis* sp.	Sano bagh jungey	Ranunculaceae	Whole parts	W	C	10 gm of whole parts are taken and a little amount of water is added to them. Then, they are crushed to obtain a paste	The paste is applied on boils twice a day.	
	Ficus benghalensis L.	Bar	Moraceaea	Young tips	W,C	T	Young tips are being crushed to make a paste.	The paste is applied on boils twice a day.	
	Musa sp.	Kera	Musaceae	Milky latex	C	S	Fresh latex is directly used on the boils.	Latex is applied thrice a day until it is cured.	
Immunity of child (Sostha banaunu)	*Asparagus racemosa* L.	Kurilo	Asparagaceae	Stem	W,C	S	The stem is cut into small pieces and boiled with 1 liter of water for more than half an hour	Half a glass of decoction is orally given once a day for 3 days.	
	Bergenia ciliata (Haw.) Sternb.	Dhungey fool	Saxifragaceae	Whole parts	W	H	A paste of 15 gm whole parts is mixed with 1 glass of cow's milk and blended together	5ml of juice is given twice a day (morning and evening) for 1 week.	
	Rosa sp.	Karengi	Rosaceae	Stem/leaves	W	C	The stem/leaves juice is given.	Orally, 5ml of juice is given twice a day.	
Tounge blister (Jibro pakako	*Callicarpe macrophylla* Vahl.	Ghoyeli	Lamiaceae	Fruits	W	S	2-3 fruits are given to be chewed.	Fruits are kept in the mouth and sucked like candy.	

- **(Note:** In status where, W= wild, C= cultivated and Life form where, T= tree, S= shrub, H= herb, C= climber**)**

Appendix XII: Plants used in others health ailments by local people of Rolpa District, Western Nepal

S.N.	Scientific Name/	Local name	Family	Mode of use on ailments	Previous findings
1	*Arisaema* sp.	Bako	Araceae	It is cooked like vegetables and consumed to control high blood pressure and sugar problems.	
2	*Albizia lebbeck* (L.) Benth.	Siris	Fabaceae	Plants are used as compost manure.	
3	*Alternanthera dentata* (Moench) Stuchl.	Rato fool	Amaranthaceae	The juice is extracted from the whole part and used for cuts.	
4	*Bauhinia variegata* L.	Koiralo	Fabaceae	Leaves are drunk twice a week for the recovery from hemoptysis.	
5	*Bryophyllum pinnatum* (Lam.) Oken.	Pathar chatta	Crassulaceae	Daily, 5-6 pieces of leaves are chewed for the treatment of stone in urinary bladder.	
6	*Calotropis gigantea* (L.) Dryand.	Aankh	Apocynaceae	The milky latex is applied on the periphery of the knee joint pain regularly for 1 week.	Ambu *et al*., 2020
7	*Catharanthus roseus* (L.) G.Don.	Sadasundari	Apocynaceae	Flower paste is applied with the help of cotton to recover from cuts.	
8	*Cinnamomum glanduliferum* (Wall.)Meis…	Malgedi	Lauraceae	Fruits are being sold for medicinal purposes.	
9	*Citrus sinensis* (L.) Osbeck.	Suntala	Rutaceae	Decoction is regularly used in early morning for curing throat allergy.	
10	*Clematis buchananiana* Wall	Baghjungey	Ranunculaceae	A few drops of crushed leaves juice are put inside the nose to control sinusitis.	Bhattarai, 2018; Pangeni *et al*., 2020
11	*Cocos nucifera* L.	Nariwal	Arecaceae	Oil is used daily in herpes zoster.	
12	*Cordia dichotoma* G.Forst.	Bodhi	Boraginaceae	Young tips are used as vegetables.	
13	*Cynodon* sp.	Dubo seto	Poaceae	Whole part paste is applied on the infected area and then tied with a bandage to relieve pain from a dog bite.	
14	*Cynoglossum zeylanicum* (Sw. ex Lehm.) Thunb. Ex Brand.	Lesi kuro	Boraginaceae	Cuts are treated using the whole part.	Rana *et al*., 2015
15	*Elettaria cardamomum* (L.) Maton	Alaichi	Zingiberaceae	2-3 pieces of fruits are chewed daily for bad breath.	Bhandari *et al.*, 2006
16	*Hibiscus rosa-sinensis* "Brilliant".	Ghanti phool	Malvaceae	The flower juice is given to be drank orally early morning for the treatment of blood in stool.	
17	*Hordeum vulgare* L.	Jamara	Poaceae	A few drops of juice are put inside the nose for sinusitis	Bhandari *et al*., 2006
18	*Ipomoea carnea* Jacq.	Ajambari	Convolvulaceae	The stem paste is applied at night to treat foot fungal infection.	
19	*Juglans regia* L.	Okhar	Juglandaceae	At night, bark paste is applied on foot fungal infection.	

20	*Juniperus chinensis* L.	Dhupi salla	Cupressaceae	Resin is applied directly on infected parts for 1 month for the treatment of skin cancer.	
21	*Melia azedarach* L.	Bokaino	Meliaceae	Decoction of leaves juice is drunk to control sugar.	
22	*Ocimum* sp.	Babari jasto jhaar	Lamiaceae	The squeezed whole parts juice is directly applied in cuts to stop bleeding.	
23	*Oxalis corniculata* L.	Chariamilo	Oxalidaceae	Juice is squeezed from whole parts and applied in cuts to stop blood.	
24	*Phaseolus vulgaris* L.	Simi	Fabaceae	Leaves paste is ueed in ringworms	
26	*Plumbago zeylanica* L.	Chitu	Plumbaginaceae	The paste of the whole plant is applied on joint pain parts, covered with cotton, and left for the whole day.	
26	*Reinwardtia indica* Dumort.	Pyuali	Linaceae	The flower is crushed and used for snake bite to relieve from pain.	
27	*Sapindus* sp.	Ritha	Sapindaceae	A decoction of the fleshy inner part of the bark is used half cup daily for the treatment of ulcer.	
28	*Sida rhombifolia* L.	Mirsing	Malvaceae	Whole parts are used for the treatment of gastric	
29	*Xanthium strumarium* Lour.	Vedey kuro	Asteraceae	The fruit paste is used in cuts.	

PHOTOGRAPHS

Some photo graphs of the preferred species used for maternal health ailments:

Photo 1): Urtica dioica L.

Photo 2): *Euphorbia hirta* L.

Photo 3): *Frageria vesca* L.

Photo 4): *Asparagus racemosus* L.

Photo 5): *Mimosa pudica* L.

Photo 6): *Aloe barbadensis* Mill.

Some photographs of the preferred species used for child health ailments

Photo 7): *Berberis aristata* DC.

Photo 8): *Centella asiatica* (L.) Urb

Photo 9): *Imperata cylindrica* (L.) Raeusch.

Photo 10): *Bergenia ciliata* (Haw.) Sternb Photo 11): *Mentha specta* L. Photo 12): *Bulbophylum careyanum* Spreng.

Some pictures captured during a field visit and interview in Runtigadhi Rural Municipality, Ward 05, Rolpa, district.

Photo 13): Focus group discussion, Photo 14): Healer showcasing medicinal plants, Photo 15): Asking questions during an interview with dhami

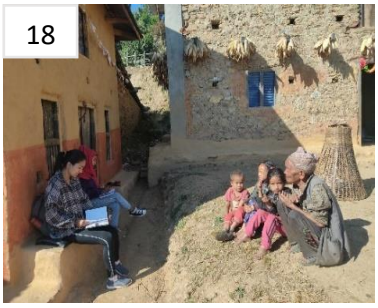


Photo 16): Collecting *Dendrophthoe falcate* Photo 17): The healer assists in collecting medicinal plants Photo 18): Old healer being interviewed.