

# Ethnobotanical knowledge transfer in Kumal community of Gorkha district

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## Abstract

221 plant species are documented. Out of total 221 plants species 92 species belong to herbs, 26 species belong to shrubs, 78 species belong to tree and only 25 species belong to climbers. Sources are received through the wild, cultivated, and purchased plants. Primary data was collected, using ethno-botanical tools like structured and open questionnaires with key informants, farmers, local healers, teachers, and students and field observation. Plants are categorized into medicinally important, food, fodder, timber and firewood, fruits and vegetables and religious. Among them only 88 plant species are medicinally important. Medicinally important plant species have been described along with their short description and local uses and use method. Recorded plant species are classified into 74 families. Students learn indigenous ethnobotanical knowledge from healers, parents, teachers and through self-practices. Local healers play significant role to transfer of indigenous knowledge to students, which is followed by parents, and self-practices. Teachers have fewer or no significant roles to transfer indigenous ethnobotanical knowledge to students.

*Keywords:* Ethnobotany, Indigenous Knowledge, Healers, Ethnic groups, Medicinal plants

## Introduction

Ethnobiology is the innovative branch of science. It is an interrelationship between human beings and the biological resources in the given region (Manandhar, 2002). Indigenous knowledge refers to the empirical knowledge of a group of inhabitants of a specific location, and the principles underlying the generation, organization, meaning and diffusion or transfer of that knowledge (Senanayake, 1983). Ethnobotany investigates the relationship between human societies and plants, how humans use plants- as food, in technology, medicine, and in ritual contexts, how they interpret and understand them, and their symbolic and beneficial role in a culture (Manandhar, 2002). It is proved that every society of the world uses plant as a source of the medicines from ancient time to present day. In recent trends, ethnobotanical works focused on the understanding of and transfer of indigenous knowledge. Traditional medical treatment is supported mainly by the use of medicinal plants and represents the main alternative

method, which has its own basis on indigenous knowledge, gained from ancestral experience (Manandhar, 1998).

Ethnobotanical knowledge is inherited from generation to another generation Gautam et al (1994). Transmitted ethnobotanical knowledge empower the public to conserve the biological diversity. It is not static but dynamic in nature, as it is generally transmitted orally, and it provides the basis practices done by elders. (Senanayake, 1983).

Kumal tribes are sheltered in inner terai, in the bank of rivers and beshi and tar of the hilly region of Nepal (Sharma, 1998). Socioeconomically they are classified as marginalized janajati (Sharma, 1998). In Nepal, there are over 142 different ethnic/caste groups and majority of them live in remote rural areas (CBS, 2021). The Kumals have regarded as one of the ancient indigenous ethnic group of peoples/nationalities of Nepal. They are scattered in number of districts including Gorkha, Dhading, Palpa, Arghakhanchi, Syngjha, Kaski, Lamjung, Parbat, Gulmi, Nawalparasi, Chitwan etc. More than 50 types of ethnic groups are found in Gorkha district. Among them Kumals are one of the ethnic groups sheltered around the bank of rivers and plain lands, having total population 1, 29,702 (0.44%) of the total population of Nepal. Among them 2518 (0.0086%) are live in Gorkha municipality (CBS, 2021).

The traditional occupation of Kumals is known to making clay pots, However, Kumals of study area do not involve in making clay pots. They are dependent on agriculture, foreign employment, governmental job and animal husbandry. They worship their family god, Saame (god of beasts), snake gods and goddesses, or gods and goddesses of forests, and others (Kumal, 1996).

Indigenous knowledge inherits from one generation to another generation (Senanayake, 1983). According to social constructivists (Vygotsky and Gergen date please), all knowledge is socially constructed and knowledge exists in the form of collective knowledge within a particular culture or indigenous society (Ahamad, 2009; Davar, 2012). Social constructivism focuses that new generation or students gain knowledge from more knowledgeable people of the society through the social interaction and collaborative activities of the society. Knowledge is inherent in the community of learners (individuals) that creates it and is distributed among members of the community and the various environmental affordances available to the group (Ahamad, 2009). Because each person constructs his or her own understandings, the knowledge they acquire is unique. Communities and cultures are composed of individuals with common understandings, and these groups provide opportunities for new members (e.g., children) to construct similar knowledge of the world through schools and/or a variety of informal activities.

Transfer of indigenous knowledge or construction of ethnic knowledge in students of Kumal is studied with reference to knowledge of elder people, healers as well as teachers. According to Lev Vygotsky's Social constructivism, new generation or students gain knowledge from more knowledgeable people of the society through the social interaction and collaborative activities of the society. All new learning is based

on previous learning, which includes various concepts of the concerned subjects such as biological or scientific concepts. In this study, local healers, farmers, housewives and parents are the more knowledgeable people, who transfer indigenous ethnobotanical knowledge to their young generations. Students increase indigenous knowledge through the more knowledgeable people of the community (MKO).

### **Statement of the problem**

Ethnobiological and indigenous knowledge is vital for sustainability of natural resources, including forests, water and agro-ecosystems across landscape from households through farms, village and wilderness (Ghimire, 2001). About 80-90% of people residing in rural areas have close relationship with natural resources. They possess knowledge about the traditional use and possess the knowledge transfer systems too (Bhattarai, 1992). Because of the scarce livelihood opportunities, people of such areas are linked to their surrounding vegetation for the supply of food, medicine, firewood, and fodder needed for their daily life. Ethnobotanical work is needed to explore and preserve their indigenous knowledge of several ethnic groups.

Indigenous knowledge is the local knowledge that is unique to a culture or society. This knowledge is passed from generation to generation, usually by word of mouth and cultural rituals, and has been the basis for agriculture, food preparation, health care, education, conservation and the wide range of other activities that sustain societies in many parts of the world (UNESCO, 2010). Indigenous people have a broad knowledge of how to live sustainably. However, formal education systems have disrupted the practical everyday life aspects of indigenous knowledge and ways of learning, replacing them with abstract knowledge and academic ways of learning (UNESCO, 2010). Today, there is a great risk that much indigenous knowledge is being lost and, along with it, valuable knowledge about ways of living sustainably. Therefore, this study find out ways that indigenous knowledge may be integrated into education (comparing knowledge among students and teachers of the same ethnic groups). It also encourages teachers and students to gain enhanced respect for local culture, its wisdom and its ethics, and provides ways of teaching and learning locally relevant knowledge and skills. Ultimately, such study is helpful in the conservation of local knowledge and resources for the future generation.

### **Objective of the study**

The overall aim of the research is to explore the ethnobotanical knowledge of kumal community of Gorkha municipality. The specific objective of the study is “To assess the transfer of ethnobotanical knowledge in kumal community “.

### **Transfer of indigenous knowledge**

According to Lev Vygotsky’s Social constructivism theory, new generation or students gain knowledge from more knowledgeable people of the society through the social interaction and collaborative activities of the society. Therefore, in this study the transfer of knowledge or construction of knowledge in students of Kumal

are studied with reference to knowledge of elder people as well as teachers or more knowledgeable others, which can be significant study on knowledge transfer studies. In this study, local healers, farmers, housewives and parents are the more knowledgeable people, who transfer indigenous ethnobotanical knowledge to their young generations. Students increase indigenous knowledge through the more knowledgeable people of the community.

Senanayake, (1983) in his study describes that Indigenous knowledge inherits from one generation to another generation. According to social constructivists (Vygotsky and Gergen), all knowledge is socially constructed and knowledge exists in the form of collective knowledge within a particular culture or indigenous society (Ahamad, 2009; Davar, 2012). Social constructivism focuses that new generation or students gain knowledge from more knowledgeable people of the society through the social interaction and collaborative activities of the society. Each person constructs his or her own understandings, the knowledge they acquire is unique. Communities and cultures are composed of individuals with common understandings, and these groups provide opportunities for new members (e.g., children) to construct similar knowledge of the world through schools and/or a variety of informal activities.

## Methodology

Gorkha municipality from Gorkha district were selected purposively on the basis of occurrence of kumal tribe. Data were collected from the students, teachers, aged people of the study area and local healers were the key respondents of the research work and obtained information using a schedule. Students, teachers, farmers, local healers, old people were interviewed mainly concerning their knowledge on food, fodder, medicine from the plants and their parts, local names, with miscellaneous uses etc. Socio economic information of kumal was also obtained from the same informants with separate schedule. Field visit, open questionnaires, key informants interview are the tools of data collection.

The information about indigenous knowledge of local people on medicinal plants were documented during the regular field visit in the study area with the help of structured and open interview and set of standard questionnaires for local, prepared by following the guidelines of Martin(1995), Shrestha *et.al* (1998). The field work consists of two approaches i.e. exploratory technique and survey technique. In the exploratory technique included collection of plant specimens from the study area during field visit and identification of their local names, parts used and purpose of used etc. by local plant users and key respondents. In the survey technique included individual and in depth of interviews and focus group discussion among the local plant users, community members and traditional healers, leader of village etc. For the collection of information, following methods were followed. The collected data from field visit, interview, questionnaire, focus group interview were tabulated, processed, analyzed and interpreted with the help of MS-excel accordingly to meet the objectives of the research.

## Data collection

### a. Field Visit

Study area was visited frequently during the study period. 7 teachers, 15 farmers, 10 housewife's 30 Students, 5 traditional healers were interviewed mainly concerning their knowledge on food, fodder, medicine from the plants and their parts, local names, with miscellaneous uses etc.

### b. Open questionnaires:

For the ethnobotanical study informal open interviews is better to collect indigenous knowledge. Informal interviews are opened which help to understand the connection of people with the plant. More knowledgeable people of other ethnic group regularly linked with Kumal tribe are involved for these interviews. Teachers from the others caste and neighboring community members are also the informants of the open interview.

### c. Key informants interview

Key informants are those people who are born and grown up in the cultural schooling of particular Kumal community. Key informants are selected through the purposive sampling method. List of key informants are included in appendix II.

### d. Structured Interview

I was constructing a structured interview questionnaire for the study. More than 10 housewives, healers, farmers and aged people were the participants of interview through this questionnaire. Teachers, social workers, medicine men were consulted using an unstructured interview and a structured questionnaires that was basically focused on the history, culture, tradition, socio-economic and present condition of the study. Socio economic information about Kumals was obtained from the same informants with the help of separate schedule.

## Collection of Ethnobotanical Information

The information about indigenous knowledge of local people on medicinal plants were documented during the regular field visit in the study area with the help of structured and open interview and set of standard questionnaires for local, prepared by following the guidelines of Martin(1995), Shrestha *et.al* (1998). The field work consists of two approaches i.e. exploratory technique and survey technique (Martin, 1995, Cunningham, 2001). In the exploratory technique included collection of plant specimens from the study area during field visit and identification of their local names, parts used and purpose of used etc. by local plant users and key respondents. In the survey technique included individual and in depth of interviews and focus group discussion among the local plant users, community members and traditional healers, leader of village etc. For the collection of information, following methods were followed. The collected data from field visit, interview, questionnaire, focus group interview

were tabulated, processed, analyzed and interpreted with the help of MS-excel accordingly to meet the objectives of the research.

## Result and Discussion

### Identification of Plant Species used by kumal

The major plant resources used by Kumal community in Chhoprak, Khoplang and Gorkha municipality were surveyed. A total of 221 plant species were recorded. They are classified on the basis of habit (herbs, shrubs, tree and climbers). The habitat of the plant is shown in the (figure 1). All 221 plants species are classified into 4 habit i.e. herbs, shrubs, tree and climbers. Among total plant species, 92 plant species were herbs, 26 species were shrubs, 78 species were tree and only 25 were climbers. Among 221, recorded plants most of the plants, source were jungle, wild, and followed by cultivated and purchased. 131 plant species that were used by Kumal community obtained from wild, 80 plant species are cultivated and only 10 plant products were purchased by them (figure 2).

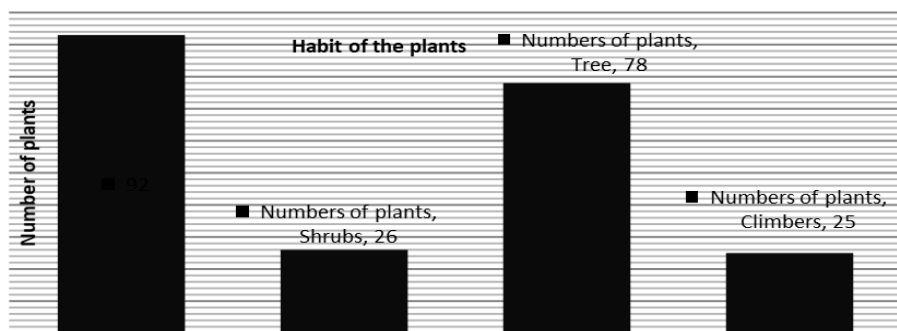


Figure1. Habit of plant species used by Kumal community

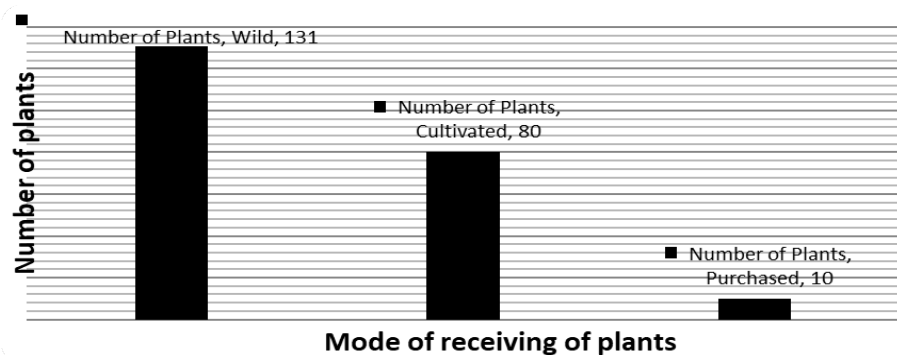


Figure 2 : Mode of receiving source of plant

### Use pattern of plants

Kumal community use plants for different purposes as in medicine, food, fodder, timber, fire wood, fruits and vegetable religious etc. most of the recorded plant species are used for medicine. In total of 221 plant species, it is found that 88 plant species are used in medicine, 21 plant species are used as food, 24 plant species as fodder, 36 plant species are used as timber and firewood, 45 plant species are used as fruits and vegetable and 7 plants are religiously important (Figure 3).

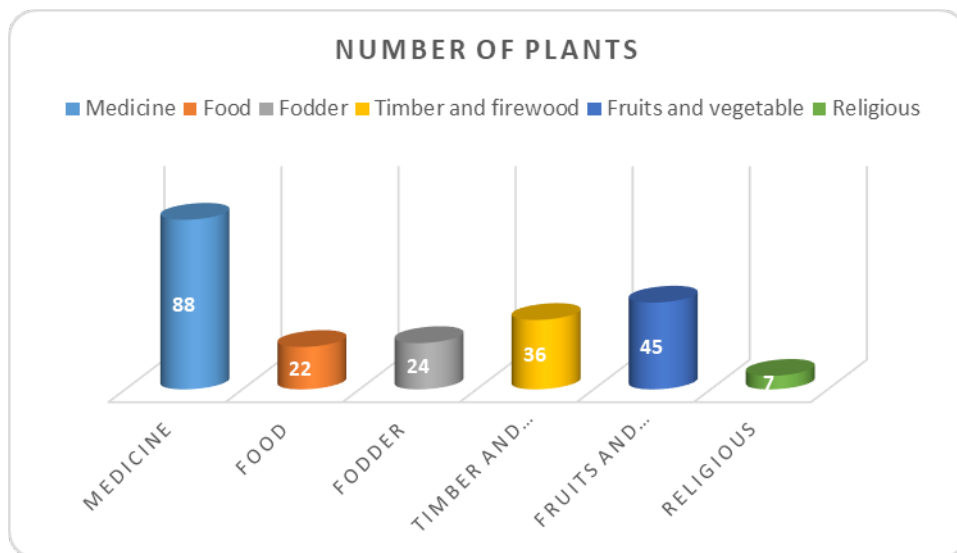


Figure 3: Use pattern of plants

More than 40 types of disease or disorders are treated by plant materials. A total of 18 plant species were reported to be commonly used for a common problem Fever and Heatstroke, 12 plant species is used for to treat common cold, 11 plant species are commonly used in Throat pain. In Gastritis 9 plant species were used and Cold is treated by 8 plant species. 7 plant species are used to cure the common problem Cough, Headache, Loss of appetite. 5 types of plant species are effective to cure Fracture, Jaundice, and Pneumonia. 4 plant species are used to treat Blood pressure, Diarrhoea, Intestinal worm, and Stomach pain. Three plant species are effective in Bleeding in delivered women, Burn, Cut, and Toothache. Allergy, Bleeding, Blisters, Body pain, Eye disease, Insecticides, Rheumatism, Scabies, Sinusitis, Swelling, Vitamin deficiency, Wounds are treated by 2 plant species. Abortion, Chicken pox, Dandruff, Dysentery, Indigestibility, Joint pain, Pain of waist, Stone of kidney, Tonsil, Typhoid, Urinary disorders, are treated by 1 plant species.

Table 1: Plant species used in disease treatment.

Botanical Name	Disease treated
<i>Achyranthus parviflorus</i> (D.Don) Spreng	Bleeding in delivered women
<i>Amaranthus viridis</i> L.	Vitamin deficiency
<i>Amaranthus spinosus</i> L.	Urinary disorder
<i>Ananas comosus</i> (L). Merr.	Heatstroke ,
<i>Asparagus racemosus</i> willd.	Rheumatism
<i>Bauhinia vahlii</i> Wight and am.	Dysentery
<i>Benicasa hispida</i> (thumb). Cogn.	Heatstroke
<i>Callicarpa macrophylla</i> VahL.	Intestinal worm
<i>Carica papaya</i> L.	Jaundice
<i>Cassia fistula</i> L.	Diarrhoea
<i>Chenopodium album</i>	Seeds in body pain
<i>Cissampelos pareira</i> L.	Gastritis
<i>Costus speciosus</i> (Koenig) SM.	Heatstroke,
<i>Crateva unilocularis</i> buch. Ham.	Heatstroke
<i>Cuscuta reflexa</i> Roxb.	Jaundice
<i>Daucus carota</i>	Eye disease
<i>Drymaria diandra</i> blume	Common cold
<i>Duhaldea cappa</i> (Dc.)A.Anderb.	Heatstroke
<i>Equisetum arvense</i> L.	Joint pain
<i>Erythrina stricta</i> Roxb.	Heatstroke
<i>Fragaria nubicola</i> LindL. Ex.Lacaita	Pneumonia
Kachho simrik????	Fracture of bone
<i>Lysimachia alternifolia</i> WalL.	Sinusitis
<i>Macrotyloma uniflorum</i> (lam.) verdcourt	stone of kidney
<i>Mentha spicata</i> L.	Heatstroke
<i>Menthe spicata</i> L.	Heatstroke, loss of appetite
<i>Myristica fragrans</i> Houtt.	Throat pain
<i>Nerium oleander</i> Blanco.	Throat pain
<i>Nicotiana tabacum</i> L.	Killing the bedbugs and lice
<i>Osbeckia neplensis</i> Hook.	Intestinal worm
<i>Oxalis corniculata</i> L.	Fever
<i>Quercus lanata</i> Sm.	bleeding in delivered women
<i>Ribes takare</i> D.Don	Juice is use in eye disease
<i>Rubus elipticus</i> L.	Gastritis



<i>Rubus rogosus</i> SM.	Pneumonia
<i>Solanum nigrum</i> L.	Bleeding in early delivered women
<i>Thunbergia grandiflora</i> Roxb.	Allergy due to latex of plant
<i>Urtica</i> sp.	pain in waist
<i>Viscum articulatum</i> Burm.f.	Fracture, sprain
<i>Ageratina adenophora</i> L.	cut and wounds
<i>Calotropis gigantea</i> L.	fracture and sprain,
<i>Cannabis sativa</i> L.	Cold, Diarrhoea
<i>Chelidonium bicolour</i> (Forss K.) Kaulf.	gano, gastric
<i>Datura metel</i> L.	Cold, rheumatism
<i>Euphorbia royleana</i> Boiss.	swelling in joints of finger, abortion
<i>Gossypium herbaceum</i> L.	Sprain, fracture
<i>Hydrocotyle javanica</i> Thunb.	Jaundice, blood purifying agent
<i>Justicia adhatoda</i> L.	gastric, loss of appetite
<i>Musa balbisiana</i> Colla	Diarrhoea, gastritis
<i>Nephrolepis cordifolia</i> (L)PresL.	loss of appetite, heat stroke
<i>Ocimum tenuiflorum</i> L.	fever and Headache
<i>Origanum vulgare</i> L.	bleeding in wounds, cut
<i>Phyllanthus emblica</i>	Cough , Diarrhoea
<i>Piper nigrum</i> L.	coughing and common cold
<i>Pogostemon benghalensis</i> (Burm.f.) Kuntze	cold, fever
Ruk hadchure	fracture and sprain
<i>Solanum turvum</i> Swartz.	Fever, Headache
<i>Solanum surattense</i> Burm.f.	Fever, Headache
<i>Solena amplexicaulis</i> (Lam.) Gandhi.	Swelling of teats of buffalo and cow,
<i>Tactaria coadunata</i> WalL. Ex J. SM.)c.Chr.	Heatstroke, fracture,
<i>Tinospora sinensis</i> (Lour) Merr.	Stomach ache, heatstroke
<i>Urtica dioica</i> L.	vitamin deficiency Blood pressure,
Vis ???	fever and common cold
<i>Zizypus mauritiana</i> Lam.	Pneumonia, chicken pox
<i>Achyranthes aspera</i> L.	Pneumonia, heatstroke, stomach pain
<i>Achyranthes bidentata</i> Blume	Tooth ache, stomach ache, pneumonia,
<i>Elephantopus scaber</i> L.(S)	gastric, and fever, heatstroke
<i>Hypericum cordifolium</i> Coisy	Heatstroke, body pain, sprain
<i>Leucas cephalotes</i> (Roth) Spreng	fever, heatstroke and Jaundice

Lindera cubeba (lours. ) Pers.	common cold, throat pain, and cold
Mimosa pudica L.	Boil, fever, heatstroke
Pteris biaurita L.	Cut, blisters, wound
Terminalia bellarica (Gaertn) Roxb.	Fever, cough , Throat pain,
Thespesia lampas (Cav.) Daltz. And gibs.	Boils, jaundice fracture,
Tinospora cordifolia (Willd.) Miers	Heatstroke, fever Headache
Acorous calamus L.	intestinal worm, common cold, toothache, pesticides
Allium sativum L.	Gastric, worm common cold, skin allergy
Aloe vera (L.) Burm. F.	Heatstroke, boils, gastric, loss of appetite
Artemisia indica Willd.	gastric, and loss of appetite, skin disease, scabies
Azadirachta indica A. Juss.	fever, Headache, throat pain, blisters
Citrus aurantium L.	Loss of Appetite, fever, headache , dandruff,
Syzygium aromaticum (L.) Merr. And Perry	Common cold, Throat pain, toothache, cold
Terminalia chebula L. Retz.	Fever, Common cold, heatstroke, pneumonia
Amomum aromaticum Roxb.	Toothache, cold, heat stroke, headache, blood purifying agent
Vitex negundo L.	Cough, fracture, common cold, Typhoid, sinusits.
Zanthoxylem acanthopodium DC.	Throat pain, gastric, loss of Appetite, tonsil, Cough
Zingiber officinale	Cough, common cold, gastric, Throat pain, fever
Zanthoxylum armatum DC.	Cough, common cold, gastric, Throat pain, fever, Stomach ache

88 plant species are used as medicine by Kumal community of Gorkha district. Among them some of the plant species are more valuable which are used in more than one disease or disorders, they are preferred for many disease by Kumals healers, these plant species are discussed below with some illustrations.

*Zanthoxylum armatum* is one of the most important plant species which is frequently used by Kumal community to cure six types of disease or disorders Cough, common cold, gastric, throat pain tooth ache, fever and stomach ache which was supported by research of Malla B. & Chhetri R. B. (2009), Bhattraai *et.al* (2006) and Rai S.K. (2004).

*Azadirachta indica* has high medicinal value. It is used to treat four types of diseases fever, headache, throat pain and blisters. Some previous research have already

explained about medicinal value of *Azadirachta indica*. It is use in skin diseases like scabies, blisters, scabies sores eczema, leprosy, piles, boils by Bhatatrai (1993b), Siwakoti and Siwakoti (1998), Maheshari (1981), Oli (2001). Similarly, Siwakoti and Verma (1996), Sen and Batra (1997), Oli (2001), Malla (1994), Tiwari and Joshi (1990), Adhikari (2002) reported its used as antihelmintic and antiseptic. Manandhar (1990b) Oli(2001), Acharya(1996) and Dongol(2002) have reported that is used as to cure fever and headache.

A total of four plant species (*Amomum aromaticum*, *Zanthoxylum acanthopodium*, *Zingiber officinale* *Vitex negundo*) are used in treatment of five types of disease or disorders. *Amomum aromaticum* is used in treatment of Toothache, cold, heat stroke, headache, blood purifying agent. *Vitex negundo* were used in treatment of Cough, fracture, common cold, Typhoid, sinusitis. Similarly, *Zanthoxylum acanthopodium* is used for treatment of Throat pain, gastric, loss of Appetite, tonsil and Cough. *Zingiber officinale* is used in Cough, common cold, gastric, Throat pain, fever which was supported by research of (Jamir *et. al.* 1999), Limbu 2008), Joshi 2008), Rai (2003 and Gurung *et. al.* 2008), (Malla B. and Chhetri R. B. 2009 ), Bhattraai *et.al* 2006), Rai S.K. 2004).

A total of 8 plant species (*Artemisia indica*, *Aloe vera*, *Allium sativum* *Acorous calamus*, *Allium sativum*, *Artemisia indica*, *Citrus aurantium*, *Syzygium aromaticum*) were are in treatment of four types of disease or disorders. *Acorous calamus* is used in treatment of intestinal worm, common cold, toothache, pesticides. Similarly, *Allium sativum* is used for treatment of Gastric, worm common cold and skin allergy, *Aloe vera* is used in treatment of Heatstroke, boils, gastric and loss of appetite, *Artemisia indica* is used in treatment of gastric, loss of appetite, skin disease and scabies, Hasen *et,aL.* (2013) has documented it was used in fever and remove tapeworm. *Azadirachta indica* is used for treatment of fever, Headache, throat pain, blisters, Hasen *et,al.* (2013) documented that is used in toothache, headache, bad bredth, gum disease and astringent agent. *Citrus aurantium* is used for treatment of Loss of Appetite, fever, headache and dandruff. Similarly, *Syzygium aromaticum* are used for treatment of Common cold, Throat pain, toothache, cold *Terminalia chebula* is used for treatment of Fever, Common cold, heatstroke and pneumonia Hasen *et,aL.* (2013) documented it was used in cough, constipation and antispasmodic. All of the above which is supported by research of (Bhattraai *et.al.* 2009), (Rai 2003), (Malla B., & Chhetri R. B. 2009 ), (Manandhar 1990b).

## Discussion

### Transfer of indigenous knowledge

School is a mini society where students enhance their knowledge to develop their personality and socio-cultural practices. Teachers are those people of society who have so many experience, cultural knowledge and knowledge of rituals context. Therefore, teachers are the social transformer who shares their indigenous experience to their new generation. This study about ethnobotanical knowledge of Kumal community relates

with how Kumal community teachers implicate their indigenous knowledge in the classroom.

During this survey teachers from the Kumal community were also the key respondents, in a concern of how Kumal community children learn about the indigenous ethnobotanical medicinal knowledge. All the teachers was explain about the concern, any subject matter are not included in school level curriculum, which they teach. They suggest me Kumals children learn indigenous ethnobotanical and ethnomedicinal knowledge from the practices of society, which is done by their elders and healers.

In curriculum of lower secondary level science, some contents about medicinal plants, economically important plants and economically important animals are included but no any respondents teachers from Kumal community teach science subject in lower secondary level.

Result shows that students learn indigenoeus ethnobotanical knowledge from healers, parents, teachers and self-practices. Local healers keep significant role (41.09%) in transfer of indigenous knowledge in students, which is followed by parents (31.52 %), and self-practices (19.81%) like reading some related books and contents of course books. Teachers have fewer or not significant roles. They transfer only (8.21%) of indigenous ethnobotanical knowledge in students.

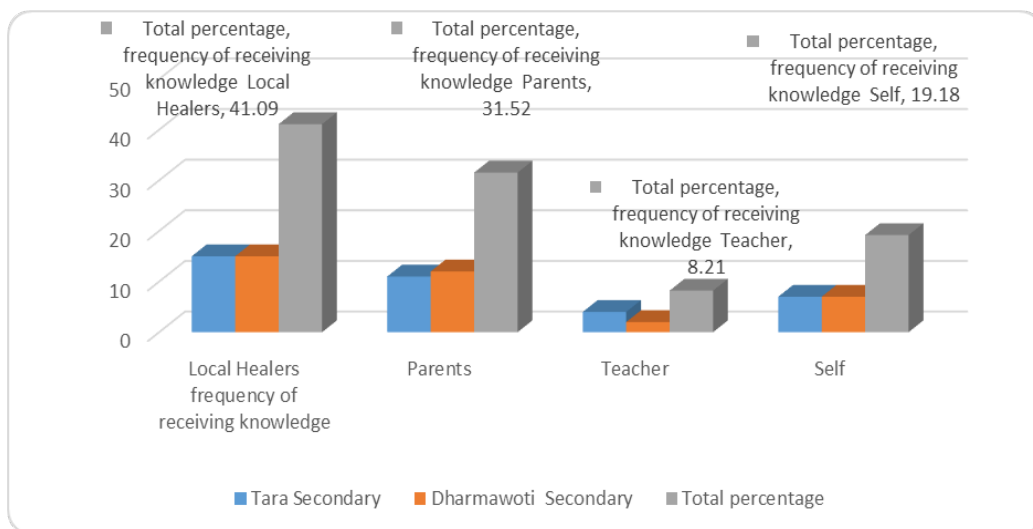


Fig. 5 Mode of receiving knowledge on the basis of number of respondents.

Local healers play significant role in the transfer of indigenous knowledge in student. Reason behind the result may be Kumal community mostly depend upon the local healers in treating the disease or disorders, as every children directly or indirectly links with local healers to cure diseases. Some respondents express their experience with me at the time of field visits. “If our children suffer from diseases we should first meet with healers and go to hospital if they suggest”. Due to this reason every child has their faith on local healers. Indigenous knowledge inherits from one generation to

another generation (Senanayake, 1983) and is socially constructed. Knowledge exists in the form of collective knowledge within a particular culture or indigenous society (Ahamad, 2009; Davar, 2012). Social constructivism focuses that new generation or students gain knowledge from more knowledgeable people of the society through the social interaction and collaborative activities of the society. So these theories related to Social constructivism support the findings. According to Lev Vygotsky's Social constructivism, communities and cultures provide opportunities for new members (e.g., children) to construct similar knowledge of the world through schools and/or a variety of informal activities or from more knowledgeable people of the society through the social interaction and collaborative activities (Ahamad, 2009; Davar, 2012).

Kumal community inhabiting in Chhoprak, Khoplang VDCs and Gorkha municipality of Gorkha district are highly dependent on plant resources for various purposes like medicine, food, fodder, timber and firewood, vegetables etc. with their long practices and experience they have accumulated rich knowledge about the utilization of plant resources for various purposes. The study area is also rich in plant resources, particularly in medicinal plant and traditional knowledge system; they have their own type of ethnobotanical knowledge. The local healers and elder people are key sources of ethno medicinal knowledge. Teachers or educated person and political leaders have got least contribution in transferring indigenous ethno medicinal knowledge to the new generation.

A total of 221 plant species belonging to 74 families are recorded from this study. Top ten more used plant are family Leguminosae 21 Plant species followed by family Gramineae is 16 species, Solanaceae 10 species, Cruciferae and Lamiaceae is 9 species, Compositae, Cucurbitaceae, Moraceae, Rutaceae are 8 species and Family Euphorbiaceae, Rosaceae, Umbelliferae having 6 species. Among them 88 plant species are medicinally important. They are used to treat 44 types of disease or disorders, so these plant are most popular in this area. Maximum 18 types of plant species are used to treat heatstroke and fever disease. 12 types of plant species are used to treat common cold, 11 types of plant species are used to treat throat pain, 9 types of plant species are used to treat gastritis, 7 types of plant species are used to treat headache and loss of appetite. Most of the plant species that are documented for medicinal purposes have new use report, which was not reported in previous literatures. Similarly, 42 plants species are used as food, 40 plants species are vegetable, 12 plants species are used as spices and only 4 plants species are found to be used for used to pickle purposes.

There is a lack of continuation and flow of indigenous knowledge from elder to their young generations, so transfer of indigenous knowledge has diminished from elder's young generations. Young generation learn indigenous ethnobotanical knowledge from healers, parents, teachers and self-practices. Local healers play significant role in transfer of indigenous knowledge in students, which is followed by parents, and self-practices like reading some related books and contents of course books. Teachers have fewer or no significant role in transfer of indigenous ethnobotanical knowledge in students.

Due to weak economy and high faith in the traditional treatment system Kumal peoples dependent on traditional medicine in treating different kinds of serious diseases and disorders.

### Recommendation

The indigenous knowledge of the Kumal community has been documented in this dissertation. On the basis of findings of this study following recommendations are documented to conserve the natural vegetations and indigenous knowledge of the Kumal community. It is necessary to encourage the farmers to cultivate the medicinally important plant to transfer the indigenous knowledge to their younger generation's better traditional practices should be followed. Contents must include in local curriculum to emphasize the ethnobotanical knowledge. It is very fruitful to provide training related to ethnobotanical knowledge for local healers, teachers, and community members by Ayurveda medical person. Community should be trained about the need of conservation of resources and their sustainable utilization through the formal and non formal education programs. Primary healthcare by locally available medicine should be encouraged.

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