



## ETHNO MEDICAL SURVEY AMONG RESIDENTS OF NEKEMTE TOWN, EAST WOLLEGA ZONE, OROMIA REGIONAL STATE, ETHIOPIA

\*Dinka Dugassa (B. Pharm), Ginenus Fekadu (B. Pharm, MSc), Chaltu Hinkosa (BSc N.), Habte Gebeyehu (B.Pharm, MSc), Firomsa Bekele (B. Pharm, MSc)

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\*Corresponding Author

Dinka Dugassa (B.Pharm)

Nekemte, Ethiopia.

[dinkaphar@gmail.com](mailto:dinkaphar@gmail.com).

### ABSTRACT

**Background:-** Traditional uses of ethno pharmacological plant or medical plants descended from one generation to the next generation in our country Ethiopia orally without sufficient documentation. There should be an enthusiastic initiative to identify locally available medicinal plants and list them in order to pass (hand over) to the next generation so that these plants escape extinction from urbanization, drought, deforestation and losses due different other destructions. Therefore, this study was conducted to document locally available medicinal plant used by the study area Nekemte town. **Objective:-**To conduct ethnomedical survey on resident of Nekemte town, East Wollega zone, West Oromia, Ethiopia. **Methods:-** a cross-sectional ethnopharmacological survey of medicinal plants was conducted in Nekemte town, eastern Wollega zone, Oromia, west Ethiopia to document commonly used medicinal plants used to treat disease/ailments. The study was conducted from February to march 2014 using systemic sampling method. A semi-structured questioners were used to record the interviewee information on personal data of respondents, their traditional medicinal knowledge and on medicinal plants. The results were analyzed, compiled and documented. **Result and discussion:-** sixty (60) medicinal plants were collected and identified which were used for the treatment of different kinds of diseases as single species prescription. Only 9 often were used as poly-herbal prescription. List of the plants together with an ethnopharmacological survey was presented. The study indicated that leaves (43.4%) are the most commonly used roots, (20.0%) followed by fruits (8.0%) as a source of medicine. Majority (62.2%) of them had a single for their use. The rest (38.3%) of the collected medicinal plants species had more than one part of the plant parts as a source of medicine. Few (29.9%) needed other ingredients either for test preference or as a portion of medicine while most (70.1%) were used without additive.

**KEYWORDS:** Ethnomedical, ethnopharmacological, ingredients.

## 1. INTRODUCTION

### 1.1 Background of study

Ethnomedicine is the cross- cultural study of how people derive medicine from plants, animals, microorganism and mineral. Hitherto, the field has focused mostly on developing drugs based on the medicinal use of plant by indigenous people. The “discovery” that indigenous knowledge about medicinal plants may hold clues for curing “western” disease has become one of the most widely used augments for conserving cultural and biological diversity.<sup>[1]</sup>

The use of plants as medicines predates leviathan in man history and almost all countries in the world have a body of expertise concerning with the therapeutic properties of the local flora and other traditional knowledge's.<sup>[2]</sup> Plants are still indispensable sources of medicaments in the contemporary health care delivery system. The majority

of the population of in developing countries still religion herbal preparations to help enhance health.

This is also true for Ethiopia where the great majority for the population still rely in plant for their healing action in various health problems on one hand and the in sufficiency of modern health care coverage on the other hand played the major role in the observed utilization of more accessible and affordable medicinal plants by the majority of the people. Ethiopian traditional medicine is composed of a number of specific skills namely the use of plants, animal products and minerals as well as magic and superstition.<sup>[4]</sup> The main body, however is based on the use of ethnobotany.<sup>[5]</sup>

The Ethiopia flora is estimate to contain between 6500 to 7000 species of higher plant, of which about 12% are endemic. The country is well known for its significant geographical diversity which favored the formation of

different habitat and vegetation zone. Ethiopia is also a home of many languages, cultures and beliefs which in turn have contributed to the high diversity of traditional knowledge and practices of the people which among others include the use of medicinal plant.<sup>[6]</sup>

Knowledge about traditional medicine is transferred from generation to generation orally especially in countries like Ethiopia where there is little accessibility to written document and records on medicinal plants. The knowledge of medicinal plant use is yet incomplete because there has not been a total inventory of medicinal plants that have been traditionally known to indigenous people.<sup>[5]</sup>

This is a challenge to ethno medicinal investigations. Therefore, ethnobotanical surveys are useful in documenting, analyzing and disseminating knowledge on the relationship between medicinal plant and human society. In order to facilitate the sustainable utilization of medicinal plants and indigenous knowledge, there is a need for coordinate worldwide activities including phytochemical screening of ethnobotanical pharmacopoeia clinical evaluation of traditional health practices practitioners in many parts of the world.<sup>[7]</sup>

Today, the continued deforestation and environmental degradation of habitats in many parts of the country has brought about the depletion of medicinal plants collected also passes a serious thrust to the survival of the species.<sup>[8,9]</sup> Loss of knowledge has been aggravated by the expansion of modern education which has made the young generation underestimate its traditional values. Migration of the people from rural to urban areas as well as resettlement from drought- struck region to fertile over's has also resulted in the deterioration of traditional practices. In Ethiopia where there are no adequate health facilities and formally trained doctors, where traditional medicine practice is not well practiced national PHC will be greatly affected.<sup>[8,9]</sup>

### 1.2. Statement of the Problem

Medicinal plant research is a must. The AIDS virus the crisis of bacterial resistance to antibiotics and other recent development have increased the value of indigenous medicinal plant knowledge, which may over for solving these deadly problems. Indigenous medicinal plants knowledge is also critical because synthetic chemical processes have proved inadequate for dealing with the rapid evaluations of pathogens. Unfortunately many opponents of medicinal plant research that involves indigenous people have chosen to ignore the fact that "western medicine" relies on plants and traditional knowledge for clues to cure for worst diseases.<sup>[1]</sup> In addition, plants species are disappearing and many indigenous people have decreased transferring traditional medical knowledge to their generation. In many places, the current generation represents their last chance to find way that indigenous people can benefit from their knowledge instead of simply liquidating their

biological resources to join a global economy in which they are at serious disadvantage including not being able to afford western medicines. practitioners of scientific medicine have always tended to avoid contact with traditional healers. WHO a awareness of the complete impossibility of providing enough physicians trained in scientific medicine to care the world's population has adapted to the revolutionary approach of exploring in which scientific medicine can work together to solve the worlds health problem.<sup>[11]</sup>

Despite its significant contribution to the society, traditional medicine has experienced very little attention in modern research and development and less effort has been done to upgrade the practice. It is only recently that the Ethiopian health has known interest to promote and develop it.<sup>[12]</sup>

Few studies have been conducted in our country and on ethnomedical survey of medicinal plants. Recently there are some works done in the country to record medicinally important plants and traditional medical practices. Compared with the huge knowledge of medicinal plant and endogenous medical in the country, very little information is so far collected and documented.

Therefore, this study is conducted for the documentation of locally available medicinal plants and local knowledge of traditional healers on commonly used medicinal plants for further phytochemical screening and to promote the cultivation and maintenance of medicinal plants before lost irretrievably. Also this study will served as a base line survey to large scale research.

## 2. LITERATURE REVIEW

### 2.1 Literature Review

Nature has been a source of medicinal plant for thousands of years and an impressive number of drugs have been isolated from natural resources many based on their use in traditional medicine.<sup>[21]</sup> For the current practice of drug discovery, an herb or herbal prescription is targeted from folk or clinical experiences. A major portion of the world's population depend, almost exclusively on herbal products as the primary defense against or treatment for various disease and organic disorders.<sup>[22]</sup> Plant have played crucial role in the prevention and treatment of disease since pre historical times. Medicinal herbs were found in the personal effects of an "ice man", whose body was frozen in the Swiss alps for more than 500 years. Since these herbs appear to have treated him for the parasites found in intestine, the desire to take medicines may signify a timeless quest for cure that flavors to day in the form of widely acclaimed new drugs.<sup>[23]</sup>

An ethno medicine survey has carried out to collect information on the use of seven medicinal plants in rural areas in the nearby regions of Bamako, Mali, West Africa by Adiaratuu T et al (2005). The plants were

*opilianceltiditolia, Anthodeistadialonensis, Erythrina Senegalesis, Heliotropiumindicum Trichilia emetic, Pirostigmathonningii and Cochlospermum Tinctorium.* About 50 medical indications were reported for the use of these plant in traditional medicine. The most frequent ailments reported were malaria, abdominal pain and dermatitis. The lithest number of usages were reported for the treatment of malaria (22%). The majority of the remedies were prepared from freshly collected plant material from the wild and from the single species only. They were mainly taken orally, but some applications were prepared with a mixture of plants or ingredients such as honey, sugar, salt, ginger and pepper. Decoction of the leaves was the main form of preparation (65%) and leaf powder was mostly used for the preparation of infusions (13%). The part of the plants most frequently used was the leaves. There was high degree of informant consensus for the species and their medicinal indications between the healers interviewed.<sup>[24]</sup>

In 1978, WHO officially launched an international program to promote traditional medicines, which included the promotion and development of basic and applied research in traditional medicine.<sup>[25]</sup>

Hence, over the past decades, herbal medicine has become a topic of increasing global importance, having repercussions on both world health and international trade. Recognition of the medical and economic benefits of plant based on medicines is growing in both developing and industrialized countries, although it varies from country to country.<sup>[26]</sup>

It has been estimated that some 80% of the world population rely chiefly on traditional herbal medicine for their PHC needs, and it can safely be assumed that the major part of traditional herbal medicine involves the use of plant or their active ingredients 70% of the population of third world countries uses traditional herbal medicine.<sup>[27]</sup>

Ayse E and Ersin O (2005) in their ethno medicine survey of medicinal plant in Turkey observed that 107 plant were used especially for intestinal digestive disorders of the GI tract (21-68%), respiratory tract system disorder (10-43), Heart blood circulatory system disorders (8.48%), Urinary tract system disorders (7.70%), Skin disorders (6.48%).<sup>[28]</sup>

Dawit A et al (2003) in their ethno medicine survey of poisonous medicinal plants in southern Ethiopia observed that 111 plants that are locally recognized as harmful to people and/or live stocks because of their use as herbal remedies, food or fodder and other reasons were documented.<sup>[29]</sup> Fava beans (*Vicia faba*), or horse beans, are grown commercially for use as food. Severe reactions occur occasionally following ingestion of fava beans or inhalation of the pollen of growing plants.

At last 8 case of fairs have been reported in the USA. Deaths have not been reported in the USA but have occurred in Italy. Fava beans induce agglutination and hemolysis in individuals who have a deficiency of the enzyme G6PD. The pathologic findings are hemolysis and hemoglobin precipitation in the kidneys. The beans contain dopamine.<sup>[30]</sup>

*Conium maculatum* and *Aethusacynopin* contain a number of piperidine derivatives, including coniine, which cause peripheral muscular paralysis similar to that from curare. Nicotine like ganglionic blockade also occurs.<sup>[31]</sup> *Amanita muscaria* contains in variable amounts, in atropine like alkaloid and a substance that causes narcosis, convulsions and hallucinations. Some mushroom contain the alkaloid muscarine, which produce the same effect as parasympathetic stimulation on smooth muscle and glands. *Veratrum* and *Zygadenus* spp. Contain nitrogenous compounds which slow the heart rate and lowers blood pressure by a vagus reflex that originates in recests in the heart and lungs. Larger doses raise the blood pressure by a direct effect on the vasomotor center in the brain.<sup>[32]</sup>

Erisenbergetal (1990-1997) reported that herbal use role from 2.5% in 1990 to 12% in 1997 in America.<sup>[33]</sup>

Plants have been used as a source of medicine in Ethiopia from time immemorial to treat different ailments. Abebe and Ayehu(1993) reported that 80% of the Ethiopian population still depend on traditional medicine for their health care practices. More than 95% of traditional medical preparations are of plant origin.<sup>[18]</sup>

Getachew et al. (2001) in their survey of traditional medicinal plants in Shirika district, Arsi zone, oromia region, Ethiopia collected that 58 traditionally used medicinal plants. Of these plants, 37 were identified scientifically at species level, 5 at generic level, while 16 were only known by their vernaculenames. List of the plants together with their ethno botanical informationis presented. The traditional remedies were prepared either from a single or more than one plant species, and the root was predominantly used for the preparation of remedies.<sup>[30]</sup>

Abbink (1993) in his ethnomedicine survey of medicinal plant on the mean people in south west Ethiopia, with an estimated population of about 51000 and with a relatively better vegetation cover, 52 species of medicinal plants were reported.<sup>[19]</sup>

Balch A [2000] in his survey of medicinal plants used in traditional medicine in Jimma zone, Oromia region, south west Ethiopia collected and recognized 39 medicinal plants for treatment of various diseases. The plants are recorded with their vernacular names and associated information. Ultimately, the plants were described with their scientific names. The leaf parts were widely used, followed by roots and stems, fruit, bark and

flower in 42%, 18%, 12% 8% and 2%. Respectively as a means and source of medicine. Few plants (31%) needed other ingredient either for taste preference or as a portion of medicine. Then (25%) of the collected species consisted of more than one part of the plant parts as a source of medicine, while 29 [79.5%] of the had a single part for their use. Regarding the method of preparation, decoction and vegetable drug constituted 3.9% and 37%, followed by concoction and infusion in 22% and 2% respectively. The response of traditional healers towards collaborating with the researcher range from complete refusal to willing to work with all aspects. The major uses of medicinal plants ranged from pain killer to malaria and cancer treatment.<sup>[34]</sup>

Debela *et al.* (2003) in their survey of medicinal plants used to treat human disease in Sekachekorsa, Jimma zone, Oromiaregion, Ethiopia collected and recognized 53 medicinal plants for the treatment of 24 different kinds of diseases. 33 of them are used as poly herbal prescription and 20 are used as a single plant to treat diseases.

The study indicated that leaves are the most commonly used (58%), roots (11%), complete plants and fruit (9%), stem (2.6%) and bark (1.3%). Most of the medicines are taken orally (77%) followed by external application topically on skin bandaging or ointment (15.8%) and nasally inhaling (7%). Most of the plant are collected from the wild while very few are cultivated.<sup>[37]</sup>

## 2.2 Significance of the study

This survey will be conducted in Nekemte town, East wollega zone, Oromia region, West Ethiopia to identify and document locally available medicinal plants and empirical or indigenous knowledge of traditional medical practice. Nevertheless, the contributions in solving health problems and the scientific validity of these remedies needs further investigations namely phytochemical screening, efficacy, safety, etc, to be integrated into conventional medicinal and also needs commitment of the government for the applicability of the recommendation from the study results.

## 3. OBJECTIVES

### 3.1 General objective

To conduct ethnomedical survey on resident of Nekemte town , East Wolleg zone, West Oromia, Ethiopia.

### 3.2 Specific objectives

To identify plant parts used as a source of medicine.

To identify medicinal source of individual plant with one or more than one part.

To identify the preparation of medicinal plants, with or without additives.

To identify common route of administration of medicinal plants among practitioners. To identify the most common traditional medical practices.

## 4. METHODS AND MATERIAL

### 4.1 Study area

An ethnomedical survey of medicinal plants were conducted in Nekemte town, east Wollega zone, Oromia region, west Ethiopia 335km away from Addis Ababa. Nekemte town is bounded by AraddaGarii to the east, AraddaFayyinerra from west, Araddaa Kittessa from the north, AraddaAlami from south.

Topographically Nekemte town is located 9° 04' north latitude and 38° 30' east longitude, having an altitude of 1960m to 2170m above sea level. The long wet period extends from late may to early September, in addition February, March and April are months of "belg rain" and have the annual rain fall of 1500-2200mm. The average temperature of a year is 14c-26c.

### 4.2 Study design

A cross sectional survey were conducted by using semi structured questionnaires conducted to identify those plant species having medicinal values to human and document indigenous knowledge on medicinal plants for further use in Nekemte town from February to March, 2014.

### 4.3 Population

#### 4.3.1 Study population

The study population were all household members with local knowledge of medicinal plant used to treat common disease and traditional health practitioners (herbalists) in Nekemte town.

#### 4.3.2 Sample population

The sample population were selected from the study population by using systematic random sampling.

### 4.4 Sampling technique and sample size

All household members with local knowledge of medicinal plants used to treat common diseases and traditional health practitioners (herbalists) were included in the sample and the sample size were determined using the formula.

$$n = Z^2 p(1-p) / d^2$$

n = sample size

$$Z = 1.96 \text{ at } 95\% \text{ confidence}$$

p = Estimate of the prevalence of use of herbal medicine. Since no estimate is available.

$$P = 50\%$$

$$d = \text{tolerable error} = 0.05$$

$$n = \frac{(1.96)^2 (0.5)(1-0.5)}{(0.05)^2}$$

$$n = 384$$

#### 4.5 Study variables

##### 4.5.1 Dependent variable

Medicinal plants used in the health care, Type of preparations and mode of application of herbal remedies, Type of health problem treated by herbal remedies, Method of practices, types of practice.

##### 4.5.2 Independent variables

Religion, Ethnicity, Age, Sex, Occupation, Marital status, Literacy status, Income

#### 4.6 Data quality control

##### 4.6.1 Data collection tools

All preliminary preparation were completed for the data collection and permission data were collected format by the principal investigator.

##### 4.6.2 Data processing and analysis

The data were collected, analyzed and interpreted. The result were compared with the literature and were presented using table.

##### 4.6.3 Ethical consideration

Formal letter will be expected from pharmacy department to Nekemte town municipality so as to conduct the study.

##### 4.6.4 Limitation of study (problem of the study)

All possible responses to each question may not be covered by this questionnaire.

Population may lack confidentiality to express their ideas.

Unwillingness of traditional health practitioners to share their knowledge both to their family and interviewer.

##### 4.6.4. Operational definition

- 1. Ethnomedical:-** It is cross cultural study of how people derive medicines from plant, animal, fungi or other naturally occurring resources.
- 2. Herbalist:-** Are traditional healers whose specialization lies on the use of herbs to treat various ailments and one is expected to be highly knowledgeable in the efficacy, toxicity, dosage and compounding of herbs.
- 3. Medicinal plants:-** Any plant in which one or more of its parts contains substance that can be used for therapeutic purposes or which are the precursor for the synthesis of useful drugs.
- 4. Traditional healers/ Traditional medical practitioners:-** Are persons or individuals who are recognized by the community in the society as competent to provide health care by using vegetables and mineral substance and certain and other methods based in social, cultural and religions backgrounds as well as the knowledge, attitudes and benefits that are present in the community recording physical, mental and social well being and the cause of disease and disability.

**5. Traditional medicine:-** The total combination of knowledge and practice whether explicable or not, used in diagnosis, preventing or eliminating, a physical, mental or social experience or observation handed down from generation to generation orally or in written form.

**6. Western medicine:-** Biomedicine or modern medicine.

#### 5. RESULT

A total of 60 medicinal plants were collected and identified for the treatment of different kinds of diseases as a single species prescription (Table-1) and Only 9 of them were used as a polyherbal prescription (Table-2). The result of the study revealed that among the medicinal plant parts prescribed as a single or polyherbal formulation, 43.4% were leaves followed by roots (20.0%) and fruit (8.0%) respectively (Figure 1). Of the collected medicinal plants, majority (66.2%) were with a single part of medicinal source while the rest (33.8%) were with more than one part of medicinal source (Figure-2). The greater part (70.1%) of the medicinal plants were used as a treatment without additive but a few (29.9%) needed other ingredients either for test preference or as a portion of medicine (Figure-3). Most of the plants remedies are prepared as decoction or infusion, skin banding and ointment by pounding boiling and/or squeezing the plant parts either individually or in some cases having a combination of the water is the major medicinal in which the decoction or infusion are made. Sometimes, other additives like honey, sugar, milk and butter are mixed while preparing plant remedies (Table-2). Most of the medicines are taken orally (60.6%), followed by external application (30.3%) and nasal (9.1%), respectively (Table-3). Majority (73.5%) of the collected medicinal plants were from wild while the rest (26.5%) were collected from cultivation (Table-5). Several (36.7%) of the medicinal plants were collected during the summer season followed by winter (22.4%) and spring (21.4%) (Table-5). Most of the remedies were prepared as decoction or infusion, skin bandaging and ointment by pounding, boiling or squeezing the plant parts either individually or by having combining them. Water was the major medium in which the decoction or infusion are made. Some additives like honey, milk or butter were mixed other than water while preparing plant remedies occasionally. Most of (60.6%) were taken orally followed by external application (30.3%). Regarding the season of collection of medicinal plants most (36.7%) were collected during the summer season followed by winter (22.4%) and spring (21.4%), respectively. About (73.5%) of the medicinal plants were collected from wild while the rest (26.5%) were collected from domestic area.

Table 1: List of plants used for the treatment of common diseases with single species, prescription, Nekemte town Feb- March, 2014.

S. no.	Local name	Botanic name	Family	Habitat	Plant parts used	Indigenous use	Season of collection	Method of preparation	Route of administration	Dose
1	Kulubiadi (O)	<i>Allium sativum</i>	Liliaceae	Herb (domestic)	Bulb	DM Athlete foot	Spring	The bulb is chopped and powder and eaten with burley porridge	oral topical	2 cup
2	Timijji (O)	<i>Rumexnapalensis</i>	Polygonaceae	Shrub	Leaf	dandruff	Summer	The hair is washed with freshly squeezed leaf juice	Topical	3 tsp once/day
					Root	Tonsillitis	Summer	A solution of powdered root is drunk mixed with melted butter	Oral	½ tsp twice daily
3	Damakase (O,A)	<i>Ocimumlamifolium</i> (hoechst-ex.Benth)		Herb (domestic)	Leaf	Cough and headache	Summer and winter	Infusion of fresh leaf in boiling water	Nasal	3 time / day
4	Kabaricho (O,A)	<i>Echinops longitoli</i> A.	Asteraceae	Tree (wild)	Bark, root	Headache, rheumatism and cough	Autumn	The bark and root is chopped and added to fire and the vapor infused	Nasal	
5	Bakkanisa (O)	<i>Croton macrastachyus</i>	Eupobiaceae	Tree (wild)	Sap	Leprosy	All season	The sap is applied on the affected area	Topical	
					Leaf	Malaria Retained placenta	All season	The leaf is infuse in boiled water	Oral	1 cup divided in 3 dose
6	Hudha (O)	<i>Ximeria Americana</i> L.	Olacaceae	Shrubs (wild)	Leaf Fruit	Rheumatism Coastiritis	Summer Summer	The fresh leaf is infused in boiling water The fresh fruit is eaten	Nasal Oral	
7	hiddafite	<i>Clematis longicaudasteud</i> ex. A. rich	Ranunculaceae	Parasitic Plant climber (wild)	Flower	Eye infection	Autumn	The eye is washed with decocted product	Topical	½ cup / day
					Seed	Tonsillitis	Autumn	The juice of freshly squeezed leaf is mixed with melted butter	Oral	2 tsppo bid
8	Tikurazmud (A)	<i>Negena sativa</i> L.	Ranunculaceae	Herb (domestic)	Seed	Leprosy	Summer	The squeezed oil of seed is rubbed to infected area	Topical	
9	Chiladema (O) Tenadam (A)	<i>Rutachalepensis</i> L.	Rutaceae	Herb (domestic)	Leaf Seed	Stomach Ear infection	All season	The fresh leaf is infused in coffee or tea	Oral Topical	2 cup tid
								The juice of squeezed		

								seed is applied		
10	Shifa (O)	<i>Lepidium sativum L.</i>	Brassicaceae	Herb (domestic)	Seed	Malaria	Spring	The seed is powdered and made as porridge with other grains	Oral	
11	Sotalloo (O)	<i>Milletia ferruginea (hochst. Bok)</i>	Fabaceae	Tree (wild)	Bark	Toothache	Winter	The bark is chewed or held between teeth	Buckle (topical)	
					Root	Coangrene	Summer	The powdered root is mixed with rancid butter	Oral Topical	2 tsp daily
12	Koso (O, A)	<i>Hagenia abyssinica J.F. gmelin</i>	Rosaceae	Tree (wild)	Flower	Taeniasis	All season	The flower is dried, crushed and boiled in water	Oral	2 cups stat
13	Ebicha (O) Girawa (A)	<i>Vernonia amygdalina</i>	Asteraceae	Shrub (domestic)	Leaf	Watery diarrhea	Summer	The decocted product drunk	Oral	Only 1 cup
						Alcohol addicts	Summer	The leaf is chewed	Oral	2 cup
14	Dhangago (O)	<i>Rumex abyssinica</i>	Polygonaceae	Herb (wild)	Root	Gonorrhoea	Winter	The root is powdered and mixed with honey	oral	
					Leaf	Lung TB	Winter	The dried leaf is smoked	Nasal (inhalation)	
15	Endode (O,A)	<i>Phytolacca dioica L. iter</i>	Phytolacaceae	Shrub (wild)	Root	Cutaneous leishmaniasis	Autumn	The root is powdered and pasted with butter	Topical	Only 2 cup
						Illegal abortion	Autumn	The squeezed root juice is drunk	Oral	BID for 3 days
16	Bargamoadi (O) Necibarzaf (A)	<i>Eucalyptus globules</i>	Myrtaceae	Tree (wild)	Leaf	Cough /cold	Autumn	The fresh leaf is decocted and the steam from is inhaled	Nasal	2-3 overnight
17	Metene (temenne) (O)	<i>Clauseria arisata Hook. F.</i>	Rutaceae	Shrubs	Leaf	Ascariasis	Autumn	The decocted leaf is drunk	Oral	2 cup stat
					Stem	Toothache	Autumn	The stem is held b/n teeth or rinsed by	Buccal	
18	Harargeesa (O)	<i>Aloe spp.</i>	Liliaceae	Shrub (wild)	Leaf	Wounds Dandruff	Winter	Sap is painted	Topical	
19	Birbirsa (O)	<i>Podocarpus gracilior</i>	Podocarpaceae	Tree (wild)	Bark	Diuretics	Summer	The bark is powdered and macerated in water	Oral	
20	Kereta (A)	<i>Osyris quadripartita Dec.</i>	Santalaceae	Herb (wild)	Leaf	PUD	Spring	The juice of freshly squeezed leaf is mixed with milk	Oral	2 cup in 3 divided dose
21	Mertes (O)	<i>Plumbago zeylanica</i>	Plumbaginaceae	Shrub	Root	Typhoid	Winter	The root powdered is	oral	

		<i>nica L.</i>		(wild)		Anthrax		dispersed in water		
22	Buketana (O)	<i>Logeniaabyssinica (hoof. F.)c. Jeffrey</i>	Cucurbitaceae	Herb (wild)	Flower	DM	Summer	The powdered flower is dispersed in water	Oral	Too much
					Root	Rabies	Winter	Powdered root is mixed with food	Oral	
23	Ensela (O)	<i>Forenciumvulgarial</i>		Herb (domestic)	Leaf	Diuretics Laxative	Winter and spring	Boiled in tea or coffee or chewed	Oral	
24	Toosegn (O,A)	<i>Thymus serrnilotus (hoechst ex. Benth)</i>		Herb (domestic)	Leaf	Liver ailment	Spring	Decoction of fresh leaf	Oral	
25	Hiddiadi (O)	<i>Solonum spp.</i>	Solonaceae	Shrub (wild)	Leaf	Nose bleeding	Winter	The crushed fresh leaf is inhaled and the residual of crushed leaf is plugged in the nose	nasal	
26	Hiddiguracha (O)	<i>Solonum spp.</i>	Solomaceae	Shrub (wild)	Root	STD	Summer	The chopped fresh root is decocted	Oral	
27	Tambo (O)	<i>Nicotnaitobacum L.</i>	Solonaceae	Shrub (domestic)	Leaf	Snake bite	Spring	The leaf is decocted	Oral(nasal)	
28	Lafto (O)	<i>Acacia catecho</i>		Tree (wild)	Leaf	Stomachache	Winter	Decocted of fresh leaf	Oral	
29	Gatira (O)	<i>Juniperusproce rahochst</i>	Cupressaceae	Tree (domestic)	Root Bark	Lung TB Dry cough	Spring	Powdered root bark is mixed with honey	Oral	The dose is decrease in children and pregnant
30	Kuma(O)	<i>Withaniasomini fera L.</i>	Solonaceae	Herbs (wild)	Root	Typhoid Anthrax	Winter	The powdered root is dispersed in honey	Oral	
31	Gozu (O)	<i>Syzygiumquiee nse</i>	Mytacase	Tree (wild)	Bark	Diarrhea Stomachache	Spring	Decoction of bark powdered	Oral	
32	Bisinga (O)	<i>Sorghum bicolor (L) maerch</i>	Poaceae	Shrub (domestic)	Seed	Diarrhea	Winter spring	The seed is powdered and porridge with water	Oral	
33	Esemahane (A)	<i>Securidacalang egedunculata</i>	Polygola ceae	Shrub (wild)	Whole plant	Syphilis Gonorrhea Leprosy TB	Lung All season	Decoction of any part of the plant	Oral	
34	Hiddarefa (O)	<i>Zehneriascabra send</i>	Cucurbitaceae	Parasitic plant (wild)	Leaf	Diarrhea Headache Fever	Spring Autumn	The juice of fresh squeezed leaves is drunk	Oral (nasal)	
35	Dhumuga (O) Sensel(A)	<i>Adhatodaschim genia (hochst- ex nees)</i>	Acanthaceae	Shrub (wild)	Leaf	Scabies	Spring Summer	The fresh leaves are crushed, macerated in water, then the affected area washed with the macerate	Topical	

36	Qilxuu(O)	<i>Vernoniaoymenalepsis</i>		Tree (wild)	Leaf	tumor	Summer	Decocted leaf is drunk	Oral	
37	Iticha (O)	<i>Dodonaeaangu stifoliaL.f.</i>	Spindaceae	Shrub (wild)	Leaf	Herpes Liver ailments	Summer and spring	Paste of fresh leaf is painted Decoction of fresh leaf	Oral Topical	
38	Anfore (O)	<i>Buddleji Polyachyafrs.</i>	Loganaceae	Shrub (wild)	Leaf	Eye infection	Summer	The juice of fresh squeezed leafs is applied in small amount	Topical	
39	Abaye (O)	<i>Maesalanceataf rosk</i>	Myrsina	Shrub (wild)	Fruit	Psoriasis and taeniasis	Spring	Fruit powdered pasted with niger seed is eaten	Oral	1 cup
40	Seriti (O)	<i>Asparagus africanul com.</i>	Liliaceae	Herb (wild)	Root	Gout Arthritis	Winter	Fresh pulverized root are mixed with water	Oral	
41	Agamsa (O)	<i>Carissaedulisvehl.</i>	Apoltynaceae	Shrub (wild)	flower	coastritis	winter	That lower is dried and dispensed in milk	Oral	
					Root	Rabies	Summer	The root is powdered and mixed with food	Oral	
					Fruit	Ascariasis	Spring	The fruit is eaten	Oral	
42	Kerero (O)	<i>A cokantteraschr aperi (DC.) oliv.</i>	Apocynaceae (apocynaceae)	Tree (wild)	Root	Arrow poison	Spring	The root is powdered and pasted with butter	Topical	
					Fruit	Hemorrhoids	Summer	The squeezed fruit is made to juice	Oral	
43	Nana (O,A)	<i>Mentha X piperata L.</i>	Labiaceae	Herb (wild)	Leaf	Common cold	Summer	The fresh leaf is infused in boiling water	Nasal Oral	
						Hypertension		The juice of squeezed leaf is drunk		
44	Kechama (O)	<i>Myrsine Africana L.</i>	Myrsinaceae	Shrub (wild)	Flower	Ascariasis and taeniasis	Summer	The flower is dried, powder and boiled in water	Oral	
45	Buqee(O) Dubaa(A)	<i>Cucurbitapepo .L.</i>	Cucurbitaceae	Herb (domestic)	Seed	Taeniasis	Spring	The seed is roasted and chewed	Oral	Unfixed
46	Hulimayi (O)	<i>Clausenaarisata Hook. F</i>	Rutaceae	Shrub (wild)	Leaf	Ascariasis	Summer	The decocted leaf is drunk	oral	
					Stem	Toothache	Summer	The stem is held b/n teeth	buccal	
47	Temenahy (O)	<i>Acokentlerasch imperivatike</i>	Apocyanaceae	Tree (wild)	Bark	Headache		The bark is chopped and added to burn fire then the smoke inhaled	Nasal	
					Root	Herpes	Summer	The root is powdered and pasted with butter	Topical	
48	Adami(O)	<i>Euphorbia Amplaphyllaa Fax.</i>	Euphorbiaceae	Shrus (wild)	Sap	Cutaneoulei shmaniasis	All season	The sap is directly on the affected area	Topical	
49	Buna (O,A)	<i>Coffee Arabicana L.</i>	Rubiceae	Shrub (domestic)	Fruit	Amoebic dysentery	All season	The roasted fruit powdered citified with	Oral	

								honey		
50	Suruma (O)	<i>Pileabambusteti</i>	Urtacaceae (urtacaceae)	Shrub (wild)	Leaf	Fracture	All season	The juice of freshly squeezed leaf is mixed with milk	Oral	
51	Boloqe(O)	<i>Kalanchoelanceolana</i>	Cresulaceae	Herb (wild)	Root Leaf	Tumors Hemorrhoids	Winter	The juice of freshly squeezed root and leaf is drunk on concoction	Oral	2-3 tsp TID for 3 days
52	Akalkaraha (O)	<i>Portulacaquadrifida L.</i>	Portulacaceae	Parasitic plant (domestic)	Whole plant	PUD/GERD Hepatitis Renal infection	Summer	The whole plant is chopped and powdered and dispersed in water well spiced and eaten with porridge	Oral	
53	Asangira (O)	<i>Dafurastranoni um L.</i>	Soloceae	Herbs (wild)	Seed	Asthma Teeth ache	Summer	Chewed /held b/n teeth	Buccal Nasal	
					Leaf	Hypertension	Summer	The dried leaf is smoked	Intra nasal	
					Root	DM	Winter	Leaf decocted over night	Oral	
54	Kortebi (O)	<i>PlantagoLanceolata L. P. major L.</i>	Plantaginaceae	Herb (wild)	Leaf	Herpes, wound, PUD	Spring	The juice of freshly squeezed leaf is pasted with butter	Topical	
55	Dergu (O)	<i>Achyranthespera L.</i>	Amaranthaceae	Herb (wild)	Leaf	Nose bleeding	All season	The juice of fresh leaf in water medium is mixed with milk	Nasal	
56	Tobiaw (A)	<i>Calotrisprocera (ait) Ait T.</i>	Asciptiadaceae	Herb (wild)	Latex Seed	Heamoehid	Winter	-The white latex is directly applied as ailment	Anal	
								- the seed is powdered with butter		
57	Armaguse (O)	<i>Ajujaremta (Buch. Herm )</i>		Herb (domestic)	Leaf	Hypertension	Spring	The leaf is decocted or the squeezed leaf is made to juice	Oral	
58	Kalala(O)	<i>Stephensiaabys sinica coil. And rich ) wol P</i>	Menispermaceae	Parasitic plant (wild)	Root	Hemorrhoid	Spring	The dried root is powdered and pasted with butter	Ailment	
						Breast cancer	Summer	The juice of freshly squeezed root is mixed with honey	Oral	
					Leaf	Goats, Snake bite	Summer	The fresh leaves are decocted in water	Oral	
59	Wadessa (O)	<i>Cordial Africana Lam.</i>	Boreginaceae	Tree (wild)	Leaf	Streptothrecasis	Winter	Fresh leaves are powdered, little butter is added then applied on	Topical	

								the skin surface		
60	Aleltu (O)	<i>Salix sub serrata(O)</i>	Salicaceae	Tree (wild)	Leaf	Rabies	Summer	Leaves are powdered and dried and the boiled, the decoction is take while cold	Oral	2-3 cup for 2 days

Table 2: list of plants used for the treatment of common disease with poly herbal prescription, Nekemte town, Feb- March, 2014.

S. no.	Local name	Botanic name	Family	Plant Parts used	Indigenous use	Season of collection	Method of preparation	Route of administration	Dose
1	Karero(O) Kulubiadi (O)	<i>Acokontherasc hiuperiX.alv</i> <i>-Allium sativum</i>	- Apocynaceae	-Root -Bulb -Sap	Gonorrhea	Spring	The root and bulb are powdered and macerated in honey, then little	Oral	2 cups
	Adami(O)	<i>L.-Euphorbia amplophyllaPax</i>	-Liliaceae Euphobiaceae				amount of sap is added		
2	Shinfa (O) Kulubiadi (O)	<i>Lepidium sativum L.</i> <i>-Allium sativum</i>	-Brassicaceae - Liliaceae	-Seed -Bulb	Elephantiasis	Winter	The powdered seed and bulb in macerated in honey	Oral	2 cup
3	Kobbosinbira (O) Buqesatana	<i>Ricinus communis L.</i> <i>Lageneria abyssinica Hook</i>	Eupharbiaceae Cucubitaceae	-Root -Root	Hemorrhoid	Spring	The root are powdered and pasted with butter	Oral	
4	Dhumuga (O) Asangira (O)	<i>Justicia schimperinghochst ex nees</i> <i>Datura stramonium L.</i>	Acanthaceae Solanaceae	-Root -Root	Hepatitis	Summer	The root are chopped, crush and boiled with water over night and cold decocted product	Oral	
5	-Sotallo (O) -Homi (O)	<i>Milletia ferruginea</i> <i>-Prunus Africana</i>	Fabaceae Rosaceae	-Bark -Bark	Gangrene		The powdered bark macerated in melted butter	Oral	
6	Shinfa (O) Wadesa (O)	<i>Lepidium sativum Cordial</i> <i>Africana Lam</i>	Brassicaceae Boraginaceae	-Seed -Leaf	Sever stomachache		The crushed seed is macerated in water and together with decocted leaf is taken	Oral	
7	Dhangago(O) Akalkaraha (O)	<i>Rubxabyssinica Jcf. ortulacaquadrifida L.</i>	Polygoneceae Portulacaceae	Aarel pots	Hepatitis and DM		The area parts are powdered and then decocted	oral	
8	Hudha (O) Alkalkaraha (O)	<i>Ximena Americana L. Portulacaquadrifida L.</i>	Olacaceae Portulacaceae	Fruit Aerial part	Gastritis		The aerial part is powdered, and then taken when cold then the fruit is eaten	Oral	
9	Alelto(O) Kobo simbiro (O) Dhumuga (O)	<i>Salix subcerrata Picinus communis</i> <i>Rusticiaschimperina</i>	Salicaceae Euphorbiaceae Aconthaceae	Root Root Root	Rabies		The root are finely powdered and mixed with food	Oral	

O= afaanoromo

A= Amharic

**Table 3: Comparison of route of administration of medicinal plants, Nekemte town, Feb- Mar, 2014.**

Route of administration	No	Percent (%)
Oral	66	60.6%
External application	33	30.3%
Nasal	10	9.1%
Total	109	100

**Table 4: Comparison of site of growth of medicinal plants, Nekemte town, Feb-March 2014.**

Site of growth	No	Percent (%)
Wild	50	73.5
Domestic	18	26.5
Total	68	100

**Table 5: Comparison of season of collection of medicinal plants, Nekemte town Feb- March 2014.**

Season	No	Percent (%)
Summer	36	36
Winter	22	22.4
Spring	21	21.4
All season	12	12.2
Autumn	7	7.3
Total	98	100

**Table 6: Distribution of socio demographic characteristics of respondents, Nekemte town, Feb – Mar 2014.**

Socio demographic characteristics		Sex Male		Female		Total
		No	%	No	%	
Age	15-19	10	4.0	8	5.9	
	20-24	13	5.2	17	12.6	
	25-29	17	6.8	21	15.6	
	30-34	22	8.8	12	8.8	
	35-39	37	14.9	35	25.9	
	40-45	36	14.5	30	22.3	
	46+	114	45.8	12	8.9	
Total		249	100.0	135	100.0	384
Religion	Protestant	80	38.1	72	41.4	
	Muslim	39	18.6	34	19.5	
	Orthodox	60	28.6	62	35.6	
	Other	31	14.7	6	3.5	
Total		210	100.0	174	100.0	384
Ethnicity	Oromo	147	57.60	74	57.3	
	Amhara	85	33.3	33	25.6	
	Other	23	9.1	22	17.1	
Total		255	100.0	129	100.0	384
Status	Illiterate	12	4.3	10	9.8	
	Reading & write only	24	8.5	15	14.7	
	Literacy					
Literacy	Grade 1-8	35	12.4	10	9.8	
	Grade 9-12	32	11.3	37	36.3	
	Grade 12+	179	63.3	30	29.4	
Total		282	100.0	102	100.0	384
occupations	Civil	97	47.3	106	59.2	
	Merchant	32	15.6	29	16.2	
	Pensioned	46	22.4	37	20.7	
	Other	30	14.7	7	3.9	
Total		205	100.0	179	100.0	384

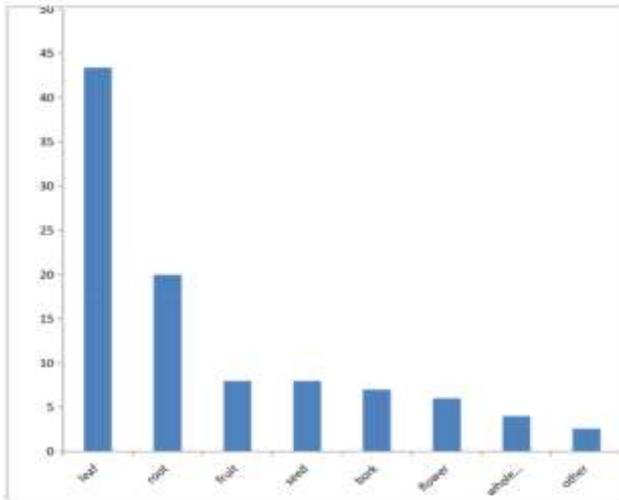


Figure 1: Comparison of plant parts used as a source of medicine, Nekemte town Feb-March 2014.

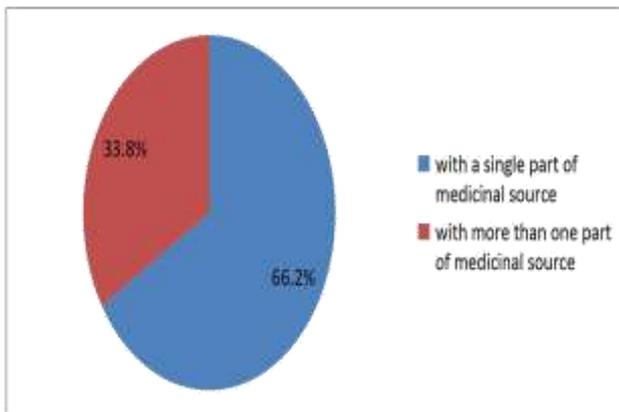


Figure 2: Comparison of medicinal source of individual plant with the or more than one parts, Nekemte town, Feb-March 2014.

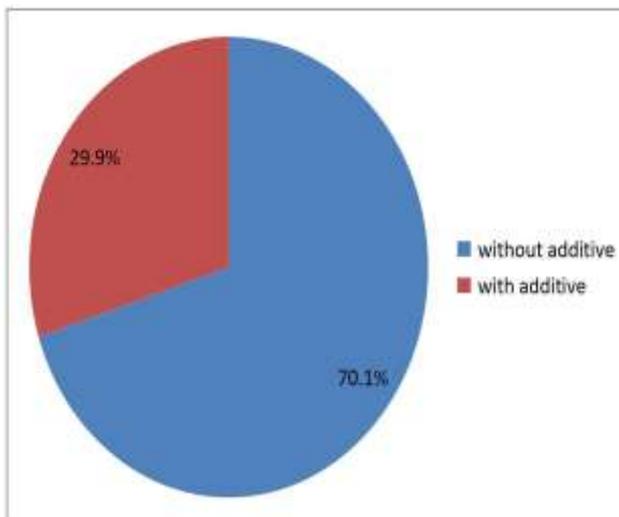


Fig. 3; Comparison of methods of preparation of medicinal plant with or without additive, Nekemte town, Feb-March 2014.

## 6. DISCUSSION

### 6.1. Socio demographic data

Majority of (64.8%) are females, while males. Most of 80% of the study population are protestant. The most of (57.60%) ethnic group are Oromos. Above average (63.3%) male are grade 12+ while females (29.4%)

### 6.2. Medicinal plants and the associated knowledge

In the past in our country Ethiopia studies have shown that the utilization of traditional medicine for variety of health and personal problems continues to be high. This is true in rural much less developed and urban areas in which more development is seen. Nevertheless, documentation were not practiced as to this Ethnomedicinal plants. knowledge were is not transferred from generation to generation which remains a minimum levels.<sup>[36]</sup> The reported number of medicinal plants were 60 with identified botanical name as being used by Nekemte town people though there were a greatest of deforestation, degradation, accultuvization and urbanization in the past as it is used to be in the present. All the respondents have that more medicinal plants were in use in the past that these reported now. This situation gave way to the loss of some medicinal plants and the associated knowledge. However, most of the specialized traditional healers had a keen knowledge but were not voluntary enough to hand the knowledge to the next generation as they kept their knowledge in secret. Most of the knowledge is owned by the elders who mainly used it to keep the wellbeing of their relative family. But upon request, they occasionally render help to the community. Most of these knowledge able were men. This agrees with a study done which reported that the practice of traditional medicine in Ethiopia is dominated by them.<sup>[8]</sup>

The young generation is not willing to acquire knowledge because of the assumption that the practice is generally assumed and perceived to be traditional. Therefore efforts should be made to document this cultural heritage. The low number of women in the interviewed respondents might be due to the feat that herbalist knowledge is mostly acquired from family. Parents prefer to pass the knowledge move to son than daughters. The importance of family in the context of acquiring traditional healing practice was reported in other studies conducted in Africa.<sup>[36]</sup>

The feat that most of the medicinal plants are known by either A fan Oromo and Amharic name given a room to suspect that the major source of knowledge of the medicinal plants of Nekemte people are both Oromo and Amhara the most populated This does not mean that the Oromo people are using these medicinal plants exactly the same as they had been used by the Amhara people. Some modifications are expected to have happened in the process, as traditional knowledge itselfs dynamic and infact, it is observed that some changes in the way some medicinal plants are used in the area In the treatment of hemorrhoids, for instance, the Oromos

people. use the white latex of *C.procera*, whereas the Amhara people have been using powdered seed of *C.procera* remedy against the some ailments.

### 6.3. Preparation, dosage and route of administration

People of the study area use medicinal plants to cure human diseases and injuries. They have developed several method of application or administration of medicinal plants depending on the particular disease to be treated some of the administration of plant materials as practiced by the community of Nekemte include oral, intranasal and external application (ointment, bandaging over the surface of the skin).

In some cases fresh plants are chapped, dried, powdered and mixed with drinking water and other additives, like honey, milk, food, for instance silix sub-Eerrata leaf used in the treatment of rabies and are prepared in such a manner. They are also prepared as an ointment for skin disease, etc. leaf of *Cordia Africana* is prepared as an ointment for the treatment of Streptothricasis. Infusion made from *crotonmacrosatycus*, *ocumunlamifolumare* applied instantly for the treatment of malaria, laud headache respectively. The preparation of medicinal plants with additives demonstrates the different possible ways of preparation either to enhance the effectiveness of the healing system or to utility as flavoring agent. According to the traditional healers, additives like honey, sugar, milk are used for the outcome of normal taste of the mixtures. But most 70.1% of the medicinal plants were prepared without additives. In a similar study that was carried out in Jimma zone, Oromia, south west of Ethiopia most (69%) medicinal plants were prepared without any additives.<sup>[35]</sup>

Most of the recorded preparations in the over are drawn from a single plant, mixtures are used orally. In other parts of the country, the use of mixtures of plant species in treating a particular ointment is fairly common.<sup>[10]</sup> Synergistic iteration or potentiate effect of one plant on the other in prescription of multiple source is well recognized in Ethiopia ethnomedicinalpractice.<sup>[18]</sup>

In the other hand, traditional healers may intentionally use poly herbal prescriptions to disguise/ mask the potent plants and this can lead to unwanted side effects due to the varies constituent that the preparation contain. Lack of precision in the determination of doses has been noted in the area. This is an agreement with earlier study that revealed that the real draw back in traditional medicine stem mostly from lack of precision in dosage. The majority of the remedies are taken orally in agreement with an earlier study (18) that reported 42% in northern Ethiopia.

### 6.4. Origin of medicinal plants and parts used

The majority of plant remedies are obtained from shrubs and herbs. This might indicate that the people have started to rely on shrubs and herbs because they are relatively common in the area as compared to tree

species. It now takes much time and effort to harvest medicinal trees.

The most widely sought offer plant part in the preparation of remedies in the area is the leaf. Collecting leaf does not pose a greet danger to the existence of an individual plant when compared with the collection of underground part, stem, bark or whole part. Studies have shown that removal of up to 50% of tree leaves does not significantly affect the growth of species studied.<sup>[37]</sup> However, the popularity roots including bulbs and rhizomes, bark and stems have grave consequences from both ecological point of view and the survival of the medicinal plant species.<sup>[18]</sup> Moreover, the result of this study has indicated that, there was many individual medicinal plants consisting of two or more parts used for the treatment of the same or different diseases. Similar observation have also been reported in other studies.<sup>[3]</sup>

### 6.5. Habitat and status of medicinal plants

Most of the medicinal plants used by the Nekemte people are harvested from the wild is in many parts of the country. This is in agreement with earlier study that reported that 71% of the medicinal plants of the Bertha people in Western Ethiopia are obtained from the wild.<sup>[38]</sup> This earlier study reported that only 6% of the plants maintained in home gardens in Ethiopia are primarily cultivate the their medicinal value even though many other plants grown mainly for non- medicinal use turn out to be important medicines when some health problems are encountered. The fact that most of the remedies are only found in the wild poses a big threat to their existence as long as the mass destruction of their habitat continues. The continued cutting of plant for different reasons has resulted in exarcity of some medicinal plants in the over (eg. *Prunns Africana* and *podocarpusgracilior*).

## 7. CONCLUSION AND RECOMMENDATION

### Conclusion and Recommendation

The study shows that the information and identification of varieties and usage of medicinal plants in the study area. The scientific validity and contribution solving health problems of these remedies. However, needs for the investigation, Furthermore these ethnomedicinal plants need to be conserved for their sustainable utilization.

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