

**ADDIS ABABA UNIVERSITY**  
**SCHOOL OF GRADUATE STUDIES**  
**COLLEGE OF NATURAL SCIENCES**  
**DEPARTMENT OF ZOOLOGICAL SCIENCES**



**THE KNOWLEDGE OF PREPARATORY SCHOOL STUDENTS ON MEDICINAL  
PLANTS; A CASE STUDY OF MENELIK II PREPARATORY SCHOOL**

**ADDIS ABABA ETHIOPIA**

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## ABSTRACT

Ethiopia is one of African nation in the world with rich source of traditional medicinal plants (800 species) and the knowledge is transferred orally from generation to generation.

An ethnobotanical information based on semi structured questionnaire among 210 (68 males and 142 females) grade 11 students of Menelik II Preparatory School in Addis Ababa were carried out to assess their knowledge or understanding of traditional medicinal plants .

A total of nineteen (19) plants were identified by students mostly that belongs to family of Lamiaceae contain three, Asteraceae and Rutaceae which consists of two species each and the rest consists of one species only. The respondents mention their vernacular names in Amharic language and the ailment they treat (cure) such as influenza with damakassie, gunfan with nechshinkurt and stomach ache with tenadam. The oral route of administration is the most common application of medicinal plants with 38%, out of the plant part used for treatment the most commonly used by patients is leaf 28%. The medicinal plants are given in the form of crushed, decoction, infusion, steam and smoke bath. However the most common is crushed part of the plant with 32%, herbs are the most common used part of the plants with 47.4% and *Ocmium lamifolium* is preferable plant to treat mitch with 78%.

This study demonstrates that there is some importance of traditional medicine in the treatment of human diseases and plays a basic role in healthcare systems community. However students have limitations in their knowledge and the use of traditional plants, so there have to be much efforts to introduce and familiarize the young generation with traditional medicinal plants by integrating into the school curricula.

Key word: **Traditional medicinal plants, Students, Addis Ababa, Ethiopia.**

## **ACRONYMS / ABBREVIATIONS**

BMC Vet Res	Biomed Central Veterinary Research
EHNRI	Ethiopia Health and Nutritional research institute
IBCR	Institute of Biodiversity Conservation Research
SNNPR	South Nation Nationalities People Republic
STD	Sexually Transmitted Disease
TMP	Traditional Medicine Practices
VOL	Volume

## 1. INTRODUCTION

Traditional medicine was once again redefined in 2008 as the sum total of knowledge skills and practices based on the theories beliefs and experiences, indigenous to different cultures that are used to maintain health as well as to prevent, diagnose, improve or treat physical and mental illness (Giday *et al.*, 2003; Megerssa *et al.*, 2013).

Ethiopia is believed to be home for about 6500 species of higher plants with approximately 12% of endemism and one of the six plant biodiversity rich countries of Africa and one of the 12<sup>th</sup> vavilovian centers of origin/ density for domesticated crops and the wild relatives (Bekele, 2007).

Ethiopia has significant position of two of the world 25 biodiversity rich area hot spot. The Eastern afro-montane biodiversity hot spot and horn of Africa biodiversity hot spot, these hot spots were home of many medicinal plants (Bekele, 2007).

About 1000 identified medicinal plant species are reported in Ethiopia flora, 300 species are frequently mentioned in many resources. The greater concentration of medicinal plants is found in south and south western Ethiopia (Bekele, 2007).

Ethiopian medicinal plants written on parchments in the classical geez language have documented part of the indigenous knowledge on utilization of medicinal plants, most of the documents are lost due to damage, theft and illegal selling for foreign plant collectors, so Ethiopian medicinal plants are originated from medico religious writings (Gedif and Hahn, 2002; Lulekal *et al.*, 2013).

These traditional medicines are used throughout the world as it is dependent locally available plants, which are easily accessible and capitalizes on traditional wisdom repository of knowledge, it is simple to use and affordable (Awas and Demissew, 2009; Teklehaymanot, 2009; Tollossa *et al.*, 2013).

Ethiopia is close to losing much of this rich diversity due to deforestation, land degradation, lack of documentation of species, engage the younger generation who may no longer be interested in learning the traditional method, More women know about the application of the

herbs, shrubs that have traditionally been used in the home to treat family sickness (Avigdor *et al.*, 2014).

Traditional healers may be from the religious tradition of Cushitic medicine regional Arabic Islamic medical system or the Semitic Coptic medical system practiced by orthodox Christian traditional healers (Avigdor *et al.*, 2014).

## 1.1. LITERATURE REVIEW

The term ethnobotany was for the first time used by Harshberger in 1895. Harshberger defined ethnobotany as ‘the use of plants by aboriginal peoples’ yet during the century which has intervened, considerable attention has focused not only on how plants are used, but also on how they are perceived and managed, and on the reciprocal relationships between human societies and the plants on which they depend. There has been an ever increasing interest of botanists, anthropologists and explorers of the world to document the potential uses or economic potential of plants used by indigenous societies (Cotton, 1996). As the number of expeditions and scholarly communication became wider, there has been an intensified and continuous search by researchers in different fields to identify traditional use of plants in different parts of the world by indigenous societies (Balick, 1996; Cotton, 1996).

The Study of folklore medicine falls within the discipline of ethnobotany. The term folklore medicine refers to healing practices and ideas of body physiology and health preservation known to a limited segment of the population in a culture, transmitted informally as general knowledge, and practiced or applied by anyone in the culture having prior experience. There is worldwide interest in folklore uses of medicinal plants which leads to new sources of drugs. Folklore medicine is taken to mean knowledge and practice that have survived through only traditions in certain human societies, particularly among the primitive and rural societies.

Much of traditional medicine today has its origins in early discoveries. Tribal people because of lack a writing system and education, generally record their experiences and history with medicine in oral traditions handed over from one generation to the next. Tribal and rural societies today have inherited ancient knowledge through oral folklore, and some still depend totally or largely on this knowledge and the practices based on it. Many renowned drugs of today would have gone into wider use decades ago, if the folklore and traditions of tribal people concerning certain plants had been taken seriously.

According to (Martin, 1995), ethnobotanical studies are mainly useful in documenting, analyzing, and disseminating of knowledge on the interaction between biodiversity and human

society, and how biodiversity is valued in different societies as well as how it is influenced by human activities. This in turn shows that ethnobotany is interactive and dynamic field of study.

Ethnobotanical data collection requires a systematic approach and information can be collected through actual field observation and interviews or questionnaires depending on the particular objective of the research (Martin, 1995). Also stated that ethnobotanists collect information on the indigenous knowledge not only to preserve them but also to perceive their relevance to development and conservation.

In general, ethnobotany is the scientific investigation of plants as used in indigenous cultures in food, medicine, rituals, building, household utensils and implements, musical instruments, fire wood collection, pesticide, clothing, shelter and other purposes. Ethnobotany is also useful to define local community plant resource needs, utilization and management.

Therefore, the conservation of ethnobotanical knowledge as part of living cultural knowledge and practices between communities and the environment is essential for biodiversity conservation (Martin, 1995; Cotton, 1996; Balick and Cox, 1996).

## **1.2. WHAT IS INDIGENOUS KNOWLEDGE OF MEDICINAL PLANTS?**

Indigenous knowledge refers to the accumulation of knowledge, rule, standards, skills, and mental sets, which are possessed by local people in a particular area. It is the result of many generations' long years' experiences, careful observations and trial and error experiments (Martin, 1995).

Traditional people around the world possess unique knowledge of plant resources on which they depend for food, medicine and general utility including tremendous botanical expertise (Martin, 1995). Over centuries, indigenous people of different localities have developed their own specific knowledge on plant resource use, management and conservation (Cotton, 1996).

Systematic application of indigenous knowledge is important for sustainable use of resources and sustainable development (Thomas, 1995). Various animal and mineral products contribute to human welfare; the plant kingdom is most essential to human well-being especially in

supplying basic human needs. Since ancient times, human beings have been using plants for the purpose of disease control and prevention. It was believed to be the result of many generations long year's experiences, careful observations and trial and error experiments that early humans acquired the knowledge on the utilization of plants for disease prevention and curative purposes (Sofowora, 1982; Martin, 1995).

So the knowledge and application of traditional medicine is one of the widely used indigenous knowledge systems.

This implies that humans are dependent on other organisms for their life. Since plants are easily accessible than other organisms this creates close interaction and dependency of humans on plants and studied under the field of ethnobotany. Such knowledge, known as ethnomedicinal knowledge involves traditional diagnosis, collection of raw materials, preparation of remedies and its prescription to the patients. The documentation of traditional knowledge, especially on the medicinal uses of plants, has provided many important drugs of modern day (Balick and Cox, 1996).

Indigenous knowledge on remedies in many countries including Ethiopia passes from one generation to the other generation verbally with great secrecy. Such secrecy makes indigenous knowledge or ethnomedicinal knowledge vulnerable to distortion and in most cases, some of the information is lost at each point of transfer; hence, there is a need for systematic documentation of such useful knowledge through ethnobotanical research and create awareness in the young generation.

### **1.3. THE ROLE OF MEDICINAL PLANTS**

According to (Tollosa, 2013), about 75-90 % of the rural population in the world (excluding western countries) relies on traditional medicines as their only healthcare system.

The majority of the populations in developing countries (for instance, 80% of the population in Africa) primarily rely on traditional medicinal plants for their healthcare (WHO, 2002). In northern Ethiopia, the major portion (87%) of the parts used in traditional medicine come from plant sources, while animal parts and minerals contribute only a small supply. More than 35,000 plant species are being used around the world for medicinal purposes and, in Ethiopia

there are 800 or more plant species employed as medicinal agents (Tanto *et al.*, 2002); which according to the data base of the National Herbarium has grown to 1000 and more will be added to the list as new studies bring a new medicinal plants from various cultures.

Traditional medicine remains the main resource for a large majority (80%) of the people in Ethiopia to treat their illnesses and veterinary diseases and maintain their health and a traditional medical services including the consumption of the medicinal plants has a much lower cost than modern medical attention (Debela *et al.*, 1999). However, this is not only because of poverty where people cannot afford to buy expensive modern drugs, but traditional systems are also more culturally acceptable and meet the psychological needs. So medicinal plants are the main source of traditional medicine for the rural population and are of high demand in the healthcare systems of this population when compared to modern medicine, ethnomedicine activities need special consideration and back-up.

Apart from their use in the traditional system of medical care at the local level, medicinal plants are currently used in the production of modern drugs as a source of direct therapeutic agents, as raw materials for the manufacture of complex semi-synthetic compounds and as taxonomic markers in the search for new compounds (WHO, 1978). Most pharmaceutical companies recently have developed mechanisms to involve indigenous people collect plant samples on the recommendation of traditional practitioners. This approach is reported to be more successful than random collection of sample of medicinal plants (Balick and Cox, 1996; Debela, *et al.*, 1999).

Medicinal plants have got special attention and regional offices were established by World Health Organization to coordinate basic and applied research activities on medicinal plants (WHO, 1978). This was linked to the establishment to record medicinal plants to improve accessibility and dissemination of information on medicinal plants (Gebre Mariam, and Asres, 2001).

#### **1.4. 1. MEDICINAL PLANTS IN ETHIOPIA**

Plants have played crucial role as a source of traditional medicine in Ethiopia from the time immemorial to combat different ailments of human sufferings (Debela, *et al.*, 1999). It was the

only system available for healthcare prior to the introduction of modern medicine for prevention, diagnosis and treatment of social, mental and physical illness (Abebe, 1986).

To date traditional medicine has become an integral part of the culture of the Ethiopian people due to its long period of practice and existence (Kaba, 1998).

The antiquity of the traditional use of medicinal plants in Ethiopia could never be disregarded (Pankhurst, 1990; Giday, 1999). Due to acceptability, accessibility and biomedical benefits there is a large magnitude of use and interest of medicinal plants in Ethiopia (Abebe, 1986). The long history of use of medicinal plants in Ethiopia is reflected in various medico-religious manuscripts produced on parchments and believed to have originated several centuries ago. Reviews of medical textbooks that have been written in Geez or Arabic between 17th and 18th centuries indicated that the majority of Ethiopians, with the exception of few privileged groups, starting from the time of the Italian occupation, have been depending almost entirely on the traditional medicine (Pankhurst, 1990).

#### **1.4. 2. MEDICINAL PLANTS IN HUMAN HEALTH CARE SYSTEM**

In Ethiopia, plants have been used as a source of traditional medicine for long period of time to combat different ailments and human sufferings (Debela, *et al*, 1999). Due to its long period of practice and existence traditional medicine has become an integral part of the culture of Ethiopian people (Pankhurst, 1990, Kaba, 1996). It is common for people living in rural and urban centres to treat some common ailments using plants available around them. For example, the flowers of *Hagenia abyssinica* used to expel tapeworm, *Ruta chalepensis* leaves used to treat various health problems (Abbink, 1995). The continued dependence on herbal medicine alongside modern medicine is largely conditioned by economic and cultural factors (Abbiw, 1996).

Modern healthcare has never been and probably never will provide for the foreseeable future adequate and equitable health service anywhere in Africa, due to the financial limitations related to rapid population growth, political instability and poor economic performance. Due to incomplete coverage of modern medical system, shortage of pharmaceuticals and unaffordable prices of modern drugs, the majority of Ethiopian still depends on traditional medicine. The

problem of ensuring the equitable distribution of modern healthcare has become more serious, as the gap between supply and demand has continued to widen. Hence, in present-day Africa including Ethiopia, the majority of people lack access to healthcare, and where available, the quality is largely below acceptable level (Abbiw, 1996).

It is also noted that since medicinal plants are often with an easy reach compared to modern drugs that are dispensed in remotely located health institutions most people in Ethiopia rely on the medicinal plants for their healthcare. Thus, medicinal plants continue to be in high demand in the healthcare system as components to the modern medicine (Cunningham, 1996). This indicates the need for in-depth investigation and documentation of plants of traditional value to rationally use and conserve the plant resources in indigenous knowledge (Abebe, 1986).

### **1.5. THREATS TO INDIGENOUS KNOWLEDGE ON MEDICINAL PLANTS AND CONSERVATION**

Traditional herbal practitioners are important custodians of indigenous knowledge on the utilization of medicinal plants. Moreover, as a result of their experience they are skilled 'botanists' and have a great talent for locating the correct plant among the many plants species found around them. But, many are less cooperative to show their knowledge and skill on traditional medicine to others. According to (Pankhurst, 1990), the knowledge on medicinal plants and method of use circulated mainly among practitioners and the beneficiaries of such practices. This has made the knowledge and skill on traditional medicinal plants and traditional medicine more hidden and less available to the public (Abbink, 1995).

Because of the impact of modern education, increase in health coverage and urbanization, indigenous knowledge and usage of medicinal plants are being lost globally at a fast rate (WHO, 2002). The issue is being even more serious in developing countries where such important information is not recorded in writing but passed on from one generation to the other orally; few are available in written records. To make matters worse, the younger generations of today, unfortunately, often have different ambitions and priorities. As a result, this traditional skill is doomed to be lost even faster than the plants themselves (Sofowora, 1982).

Considering the role-played by plant-derived products in human and livestock health, the effective conservation of medicinal plants and associated indigenous knowledge, needs to be initiated as a matter of urgency.

### **1.5.1. CONSERVATION OF TRADITIONAL MEDICINAL PLANTS**

There is some conservation actions that have been undertaken around the world designed to protect threatened medicinal plants from further damage includes *insitu* and *ex-situ* conservation measures. Both *in-situ* and *ex-situ* conservation efforts are implemented to capture medicinal plant genetic resources.

*In-situ* conservation is conservation of species in their natural habitat. Some traditional medicinal plants have to be conserved *in-situ* due to difficulty for domestication and management (Asfaw, 2001).

Medicinal plants can also be conserved by ensuring and encouraging their growth in special places, as they have been traditionally this can be possible in places of worship (churches, mosques, grave yards, etc), scared grooves, farm margins, river banks, road sides, live fences of gardens and fields (Asfaw, 2001).

### **1.5.2. MEDICINAL PLANTS IN HOME GARDENS**

Large concentrations of the useful plants found in Ethiopia are located in home gardens. The home garden agro-ecosystem in Ethiopia maintains a wide range of taxa of perennial and annual crop plants. According to (Asfaw, 2001), Medicinal plants can be conserved using appropriate conservational methods in gene banks and botanical gardens. This type of conservation of medicinal plants can also be possible in home gardens, as the home garden is strategic and ideal farming system for the conservation, production and enhancement of medicinal plants. For poor rural people, medicinal plants represent affordable and locally available resources to address many diseases and health problems serves as a source of income.

## **1.6. ETHNOBOTANICAL STUDIES CONDUCTED IN ETHIOPIA**

In 1978, the World Health Organization (WHO) officially launched an international program to promote and develop basic and applied research in traditional medicine (WHO, 1978;

Gebremariam and Asres, 2001). Medicinal plants then got a focus of attention and regional offices were established to coordinate basic and applied research activities on such plants. There is a considerable global interest in tapping the accumulated knowledge of traditional medicine, and therefore, researches are being carried out in many countries with the aim of increasing the use of traditional medicine to the welfare of the human population. The same document also explains that basic and applied researches on medicinal plants are interconnected and the basic research is primarily important in realizing new knowledge and serving as bases for applied research.

Although plants have been used as source of medicine to treat both human and livestock ailments in Ethiopia, research and documentation on medicinal plants have been started only very recent. According to (Gebremariam and Asres, 2001), research programs in traditional medicine must be realistic and be based on the primary health care needs of the country, with an objective of developing safe, effective and quality phytotherapeutic preparation, which can supplement and or replace modern chemotherapy. Review of medicinal text books that have been written in geez or Arabic between the 17<sup>th</sup> and 18<sup>th</sup> century indicated that majority of Ethiopians with the exception of some starting from the time of Italian occupation have been depending on almost entirely on the traditional medicine (Tolossa, 2007).

The practice of traditional medicine in Ethiopia consists of the use of herbs, cupping, bleeding, steam bath, spiritual healing, holy water, bone setting and minor surgery. Most knowledge on traditional medicinal plants are orally transmitted, some of them are available in written records of religious books (Tolossa, 2007).

Many practitioners of traditional medicine widely use a large number of plants well known to them but many of them are less cooperative to show their knowledge and skill on traditional plants to others. In Ethiopia research and documentation on medicinal plants have been started only very recently limited number of papers dealt with specific sociocultural groups in specific areas when compared to the country's varied flora and socio cultural diversity the studies are incomplete (Tolossa, 2007).

Ethiopian traditional medicine is vastly complex and diverse and varies greatly among different ethnic groups and it dates back to 849 E.C. (period of Aba Yohannes head of Orthodox Church (Gall, *et al.*, 2009).

Formal recognition of traditional medicine was given in 1942 (proclamation 27) and it was reaffirmed in the 1943 and 1948 (pro -100) s. Registration and licensing was introduced in 1950 and the derg regime period 1970 – 80's. In 1978 the office for co-ordination of traditional medicine was established, 6000 traditional practitioners were registered and a monograph describing 260 medicinal plants were prepared.

Until now there is no training institute independently exists on traditional medicine (Getahun, 1976; Derby *et al.*, 2006; Mesfin *et al.*, 2013). There are some efforts to evaluate pharmacological and medicinal value of Ethiopian plants in different faculties (Biology Department, Agriculture and medical College) by individuals but it is not integrated to yield at a national level however fruitful efforts were carried out by health and nutrition institute (EHNRI), they grow medicinal plants and also evaluates their pharmacological and therapeutic value to standardize (Flatie *et al.*, 2009).

Among the research conducted on ethnobotanical study of medicinal plants in Ethiopia, swelling, rheumatism, spasm, snakebite, tooth pain and eye pain were among the human ailments treated with medicinal plants (Hunde, 2001), However, the finding indicated that leaves are the most widely used plant part (33%) followed by roots (28%). The findings of (Giday *et al.*, 2009) were in line with the above as the majority (71%) of the Bench medicinal plants were sought for their leaf part. Anthrax, wounds, lymphatic swelling and bloody urine in cattle, were among livestock diseases treated by medicinal plants in Boosat, Welenchiti area (Hunde, 2001). People use medicinal plant parts, to treat human or livestock ailments while they are fresh, dried or both. The study on Central Tigray revealed as some of medicinal preparation were used fresh or in dried state, as these plants are used in both forms, the chance of using the medicinal plants under different seasons of the year is increased and traditional healers preserve the plant that they could not find in dry season in different ways like hanging the plant material (Yirga, 2010).

Various studies conducted on ethnobotany stated that most medicinal plants are being obtained from the wild. The following authors documented the knowledge of indigenous people on medicinal plants from different parts of Ethiopia. These include: Getahun, 1976; Abebe, 1986; Hunde, 2001; Giday, 2003; Tollasa, 2007; Giday *et al.*, 2007; Teklehaymanot and Gidey, 2007; Giday *et al.*, 2009; Flatie *et al.*, 2009; Yirga, 2010. ; Giday, 2007; Tekehaymanot, 2009; Bekele, 2007; Awas and Demissie, 2009).

Ethnobotany has included students from different disciplines; it is from this multidisciplinary approach involving the various fields of botany, chemistry, pharmacology and anthropology that ethnoscientists derive information for different application and so its definition bears ambiguity due to interests of different disciplines. So ethnobotany constitutes a diverse field of study which examines an aspect of relationships between plants and traditional people through multi disciplinary approach (Kassa, 2009).

Medicinal plants are useful for primary health care systems and as a remedy for diseases and injury including plants used traditionally for food and drinks that are believed to be good for health (Flatie *et al.*, 2009; Giday *et al.*, 2009).

Medicinal plants play multipurpose role such as spices condiments and they have also ecological services, sources of wood and wood products as well as soil conservation (Getahun, 1976).

The history of plant use by humans for the treatment of various disease and other ceremonies is as old as the history of human species, humans had been looking to nature to provide them with remedies for their health problems most of which are derived from plant products this is due to the fact that plants have been used as a source of medicine in both developed and developing countries including Ethiopia since immemorial time (Giday *et al.*, 2003; Kassa, 2009).

Research concerned with ethnobotany involves recording the knowledge on the cultural interactions of peoples with plants, finding out how local peoples have traditionally used plants for various purposes and how they incorporate plants into their cultural tradition and religion (Tolossa, 2007).

The history of traditional medicine since ancient times human beings used plants for the purpose of disease control and prevention, physical evidence obtained from burial sites of Neanderthal man found in Iraq before 6000 years ago (Tolossa, 2007). Some ailments febrile, bone fracture and headache treated by medicinal plants and ingredients added mostly water are mentioned by Yirga, 2010 as indicated in table 1.

### Some common medicinal plants of Ethiopia

**Table 1: List of medicinal plants, diseases treated and ingredients added**

Species name	Diseases treated	Ingredients added	Other uses of the plant
<i>Acacia abyssinica</i>	Bone fracture	none	none
<i>Achyranthes aspera</i>	Tonsillitis		
<i>Aframomum corrorima</i>	Headache	water	spice
<i>Allium sativum</i>	Cleaning		
<i>Artemisia afra</i>	Uvulitis	none	pleasant odor
<i>Calotropis procera</i>	Wart	none	none
<i>Chenopodium ambrosioides</i>	Bone fracture	none	none
<i>Citrus limonum</i>		none	
<i>Cucumis dipsaceus</i>	Snake bite	none	none
<i>Datura stramonium</i>	Tinea capitis	none	none
<i>Eucalyptus globules</i>	Febrile	water	construction material
<i>Jasminum sambac</i>	Shegree (Leg Distortion)		
<i>Lepidium sativum</i>	Shegree (Leg Distortion).		
<i>Nigella sativa</i>	Head ache	water	spice
<i>Ocimum lamüifolium</i>	Febrile	water	
<i>Orobanche crenata</i>	Abscess	butter	none
<i>Piliostigm athonningii</i>	Infectious dermatitis	none	none
<i>Rhamnus prinoides</i>	Uvulitis	none	local beverage(Tela) preparation
<i>Ricinus communis</i>	Otitis media	none	none
<i>Rumex nervosus</i>	Scabies	none	none
<i>Ruta chalepensis</i>	Migraine headache	butter	spice
<i>Vicia faba</i>	Skin boils	none	food for humans
<i>Withania somnifera</i>	Febrile	water	none
<i>Woodsia neomexicana</i>	Mumps	honey	none
<i>Zehneria scabra</i>	Conjunctivitis	None	food for livestock
<i>Zingiber officinale</i>	Tooth ache	None	spice
<i>Ziziphus spinach rist</i>	Tinea capitis	None	fire wood

Adopted from Yirga, 2010.

## 1.7. WHY MEDICINAL PLANTS ARE USED WIDELY?

Knowledge could arise from scientific or traditional sources; traditional knowledge has been described as a cumulative body of knowledge, practice and belief evolving through adaptive process and handed over through generation by cultural transmission. Traditional medicine practice is used throughout the world as it is heavily dependent on locally available plant species and plant based products. The wide spread use of traditional medicine could be attributed to cultural acceptability, economic affordability and efficacy against certain type of diseases as compared to modern medicine (Giday *et al.*, 2007; Teklehaymanot and Giday, 2007; Lulekal *et al.*, 2013; Tollossa *et al.*, 2013; Yigezu *et al.*, 2014).

In the nature of medicinal plants, the role of food crops on which most human nutrition is based on the primary product of photosynthesis carbohydrates, proteins and triglycerides (fats and oils). In case of most drugs, herbs and ethnomedicine essential oils and cosmetics are derived from the secondary ( $2^0$ ) products of plant metabolism such as alkaloids, terpenoids and flavonoids or polyphenols, these substances are produced by plants for various reasons such as responses of plants to stress, predation and competition (Nuwachukwu *et al.*, 2010; Patel *et al.*, 2012).

According to the world health organization (WHO) about 65-80% of the world population in developing countries depends essentially on plants for their primary health care due to poverty and lack of access to modern medicine. In Africa up to 80% of the population uses traditional medicine for primary health care (Derbie *et al.*, 2006; Teklehaymanot *et al.*, 2007; Wondimu *et al.*, 2007; Bekele, 2008; Teklehaymanot, 2009; Maroyi, 2013; Mesfin *et al.*, 2013).

Traditional remedies are the most important and some time the only source of the therapeutics for nearly 80% of the Ethiopian population and 95% of the preparation are of plant origin.

In urban areas the use of traditional medicine particularly herbal drugs remains a major form of health care options hence health planners should give appropriate consideration to this sector, why are choosing herbal medicine as the first line medication option were dissatisfactory with the service of modern health institutions due to their time consuming nature, cost consideration and perceived efficacy. Due to incomplete coverage of modern medical systems, shortage of

pharmaceuticals and unaffordable prices for modern drugs the majority of Ethiopians still depends on traditional medicine, rapid population growth and poor economic growth this is also the problem of other African nations (Gedif *et al.*, 2002; Derbie *et al.*, 2006).

In 2003/04 at least 30% of the Ethiopian population did not have easy access to formal health services. A study of pharmaceutical drug use showed that 35% the patients did not obtain the prescribed drug due to lack of money, however most traditional medicines are delivered either free or with a relatively low cost (Macia *et al.*, 2005; Zerabruk and Yirga, 2012; Mussa and Woldie, 2013).

The value and role of these traditional health care systems will not diminish in the future because they are both culturally viable and expected to remain affordable while the modern health care systems is both limited and expensive (Derbie *et al.*, 2006).

Traditional knowledge of medicinal plants and their use by indigenous healers and drug development in the present are not only useful for conservation of cultural traditional and biodiversity resources but it is also helpful for community health care and drug development in the local people. Ethnobotanical research plays an important role for conservation and sustainable utilization of these medicinal plants (Abera, 2003; Mesfin *et al.*, 2013; Moravec *et al.*, 2014).

A major component of traditional medicine is that which uses medicinal plants. Plant based traditional medicine plays a key role in the development of modern studies by serving as a starting point for the development of novelties in drug discovery (Flatie *et al.*, 2009).

### **1.7.1. DOSAGES AND ANTIDOTES**

Most medicinal plants prescribed and given to patients are applied without any standardized doses. Approximate dosages were reported to be determined based on age, sex and physical appearance of patients.

Commonly used antidotes or additives are coffee, milk, honey, yoghurt, butter and dissolved powder of roasted barley (besso). Most medicinal plants are herbs because they are easily accessible than trees and shrubs (Abera, 2003; Yineger *et al.*, 2007).

### **1.7.2. DIAGNOSIS OF THE DISEASE**

Traditional healers carried out visual inspections and interviews prior to any herbal medicine prescription. Visual inspection of eyes, skin colour, tongues, throat status of sores, bleeding, infection and sensing body temperatures of their patients were the commonly reported diagnosis method in the society (Giday *et al.*, 2007; Teklehaymanot, 2009).

## **1.8. THREATS OF MEDICINAL PLANTS AND CONSERVATION IN ETHIOPIA**

Medicinal plants species in Ethiopia are threatened by Environmental degradation is a result of the dynamic inter play of socio-economic, institutional and technological activities. Environmental changes may be driven by many factors including economic growth, population growth, urbanization, intensification of agriculture, rising energy use and transportation (Harte, 2007; Jenito *et al.*, 2008).

Population is an important source of development, yet it is a major source of environmental degradation when it exceeds the threshold limits of the support systems. Unless the relationship between the multiplying population and the life support system can be stabilized, Population impacts on the environment primarily through the use of natural resources and production of wastes and is associated with environmental stresses like loss of biodiversity (loss of medicinal plants), air and water pollution and increased pressure on arable land (Giday *et al.*, 2003; Harte, 2007).

Poverty still remains a problem at the root of several environmental problems, Poverty is said to be both cause and effect of environmental degradation. The circular link between poverty and environment is an extremely complex phenomenon. Inequality may foster unsustainability because the poor, who rely on natural resources more than the rich, deplete natural resources (medicinal plants) faster as they have no real prospects of gaining access to other types of resources. Moreover, degraded environment can accelerate the process of impoverishment, again because the poor depend directly on natural asset (Harte, 2007; Jenito *et al.*, 2008; Giday *et al.*, 2009).

The manufacturing technology adopted by most of the industries has placed a heavy load on environment especially through intensive resource and energy use; it is evident in natural resource depletion fossil fuel, minerals, timber, water, air and land contamination, health hazards and degradation of natural eco-systems (Harte, 2007), With high proportion fossil fuel as the main source of industrial energy and major air polluting industries such as iron and steel, fertilizers and cement growing, industrial sources have contributed to a relatively high share in air pollution. Large quantities of industrial and hazardous wastes brought about by expansion of chemical based industry has compounded the wastes management problem with serious environmental health implications leads to depletion of medicinal plants by indigenous people (Abera, 2003; Harte, 2007; Jenito *et al.*, 2008).

Direct impacts of agricultural development on the environment arise from farming activities, which contribute to soil erosion, land salination and loss of nutrients. The spread of green revolution has been accompanied by over exploitation of land and water resources, and use of fertilizers and pesticides have increased many fold. Shifting cultivation has also been an important cause of land degradation. Leaching from extensive use of pesticides and fertilizers is an important source of contamination of water bodies. Intensive agriculture and irrigation contribute to land degradation particularly salination, alkalization and water logging (Zerabruk and Yirga, 2012). Finally all the damage or the degradation of an environment is directly or indirectly is a loss to medicinal plants besides other factors.

Both *in situ* and *ex situ* conservations are two complementary conservation measures that are being practiced by the conservation strategy in Ethiopia. There are attempts to cultivate useful

medicinal plants species in field gene banks, it is a recent progresses in medicinal plants conservational measures (Kassa, 2009).

There are rituals and beliefs highly play a role for the preservation of medicinal plants and associated indigenous knowledge. Orthodox and Muslim religion plays a significant role in the conservation of remnant forests and island vegetation, these areas not only preserve and conserve the plant and animal diversity of the area but also preserve and conserve a wide range of indigenous and botanical information and cultural diversity (Tamene *et al.*, 2000; Gedif and Hahn, 2002; Giday *et al.*, 2007; Lulekal *et al.*, 2013).

Ethiopia's traditional medicine as elsewhere in Africa is faced with problems of continuity and sustainability. Nowadays herbal practitioners have to walk greater distances for herb collections that once grew in the vicinity of their homes. This is because of availability of plants in general and medicinal plants in particular have been affected by a dramatic decrease in areas of native vegetation (Cunningham, 1996). The primary causes of this problem are loss of taxa of medicinal plants, loss of habitats of medicinal plants and loss of indigenous knowledge. In support of this (Giday, 2003) found out that the practice of using plant remedies by Zay people to treat different ailments has been declining from time to time mainly as a result of continued deforestation in the area. In addition, (Asfaw, 2001) argues that medicinal plants are considered to be at conservation risk due to over use and destructive harvesting is root collection. The problem is further complicated by the fact that traditional knowledge on traditional medicine is also being lost at an alarming rate (GebreEgziabher, 1991).

There are two sources of threats to medicinal plants, i.e. human-made and natural causes. Rapid increase in population, the need for fuel, urbanization, timber production, overharvesting, destructive harvesting, invasive species, commercialization, degradation, agricultural expansion and habitat destruction are human caused threats to medicinal plants. Likewise, natural causes include recurrent drought, bush fire, disease and pest out breaks.

In addition to these, most of the medicinal plants utilized by Ethiopian people are harvested from wild habitats (Giday, 2003). Hence, this aggravates the rate of loss of taxa with related indigenous knowledge and loss of widely occurring medicinal plant species. The consequence is also bad in such a way that, when the plants that have been serving as the raw material for

the preparation of different remedies are being destroyed, the traditional practices associated with them would also diminish.

## **1.9. STATEMENT OF THE PROBLEM**

In preparatory schools until this study were conducted there are limited documented traditional knowledge of students on medicinal plants. Students have their own exposures since they came from different background of the community even some of them are child of traditional healer and they have access, so their knowledge of traditional medicinal plants should be documented.

## **2. OBJECTIVES**

### **2.1. GENERAL OBJECTIVE**

To make documentation of medicinal plants in their locality and create awareness on sustainable use of natural vegetations that can play a role in health care, poverty alleviation and environmental protection.

### **2.2. SPECIFIC OBJECTIVES**

1. To make learners aware of availability of useful herbs around them and their uses.
2. To encourage learners to utilize and preserve local wisdom such as herbal treatments.
3. Engage the younger generation who may no longer be interested in learning the traditional method.

### 3. MATERIALS AND METHOD

#### 3.1. STUDY AREA

The study was conducted in Menelik-II preparatory school, Arada sub-city Addis Ababa located at coordinates of  $9^{\circ}21'7''\text{N}$  and  $38^{\circ}45'51''\text{E}$ , found next to Addis Ababa university science faculty, it has a length of 0.5 km, the school was founded by emperor Menelik in 1908 is the first secondary school in Ethiopia and it is located in figure 1.

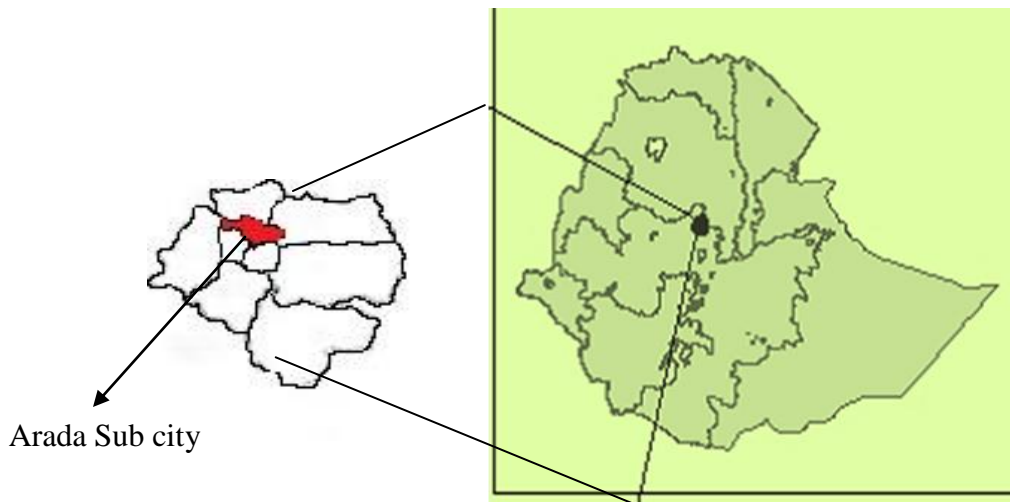


Figure 1. Map of Arada subcity, ADDIS ABABA ETHIOPIA.

In 2008 academic year, the school enrolls 2232 students for grade 11 and 12 in the regular programme and there are 435 night school students. The research was carried on 210 grade 11<sup>th</sup> regular students. Information was gathered from students based on semi structured questionnaires which asks their background of traditional medicinal plants knowledge.

A descriptive statistical method such as percentage and frequency were employed to analyze and summarize the data on medicinal plants, associated knowledge as well as use of the plant. The most useful information gathered on medicinal plants reported by students were medicinal value (therapeutic purpose), methods of preparation, route of application, disease treated, parts used were analyzed through descriptive statistical analysis.

### **3.2. DATA COLLECTION**

Ethnobotanical data were collected between January and March 2016 using questionnaires organized in the semi – structured form which asks their age, grade level, part of plants used most frequently as a remedy, the ailments treated by plants, the form of medicine taken by patients, such as decoction, powdered form, infusion, smoke, steam bath or in paste form and their known ledge of traditional medicine is from family, friends or neighbors (community), they were also asked what to do in the future to upgrade the use to traditional medicinal plants.

## 4. RESULTS

A total of 19 medicinal plant species were mentioned by the students, the most useful information reported local name of plants in Amharic, the part of plants used, the disease treated and the additives used. 210 grade 11 students were participating in the questionnaires there are 142 females and 68 males. In sharing the information most of the students were willing to work and fill the semi structured questionnaires but two students did not consent.

The most plant parts used are leaf and the least is the bark of the plant. The most mentioned plants are *Ocimum lamifolium* (dama kessie) leaves for gunfan and headache, *Zingiber officinale* (zingbil) rhizome for the treatment of stomach ache, *Ruta chalpensis* (tena adam) leaves for influenza, *Allium sativum* (nech shinkurt) bulbs for influenza and skin fungus and *Eucalyptus globules* leaves for influenza and fever. The least is *Rahmanus prinoides* (gesho) leaves that treat tonsilites and *Ajuga remota* leaves for blood pressure as indicated in table 2.

**Table 2. Medicinal plants mentioned by students used for the treatment of different ailments**

No	Species name	Local name in amharic	Family	Part of plant used	Additives or Methods	Major uses
1	<i>Ajuga remota</i>	armagusa	Lamiaceae	leaf	Tea, coffee	Stomach ache Blood pressure
2	<i>Allium sativum</i>	nechshinkurt	Amarryldaceae	bulbs	With food	Headache, influenza, skin fungus
3	<i>Citrus limon</i>	lomi	Rutaceae	Fruit juice	Tea	influenza
4	<i>Cucurbita maxima</i>	duba	Cucurbitaceae	seed	With food	Tapeworm expectorant
5	<i>Cucumis prophetatarum</i>	embway	Cucurbitaceae	root	decoction	For cattles
6	<i>Datura stramonium</i>	etsefaris	Solanaceae	leaf	Water, oil	Skin, wounds, wart, korekor
7	<i>Echinopus hispidus</i>	kebercho	Asteraceae	root	fumigation	Cold, repel snake
8	<i>Eucalyptus globules</i>	bahrzaf	Myrtaceae	leaf	Steam	Fever, influenza
9	<i>Lepidium sativum</i>	fetto	Brassicaceae	seed	With food	Stomach ache, fever
10	<i>Moringa stenopetala</i>	shiferaw	Moringaceae	leaf	With tea ,coffee	Cholesterol, blood pressure, stomach ache
11	<i>Nigella sativa</i>	tikurazmud	Rannuclaceae	Seed oil	With tea ,coffee	Headache ,influenza, fever
12	<i>Ocmium lamifolium</i>	dama kesse	Lamiaceae	Leaf	Coffee	Influenza, headache, fever
13	<i>Phytolaca dodecandra</i>	endod	phytolacaceae	Leaf	Add on water bodies	Kills snails(bilharziasis)
14	<i>Rahmanus prinoides</i>	gesho	Rahmannceae	Leaf bark	Tea, coffee	Tonsilites,
15	<i>Ruta chalenpensis</i>	tenadam	Rutaceae	leaf	Tea, coffee	Influenza, stomach ache
16	<i>Thymus schimperi</i>	tosgne	Lamiaceae	Leaf	Tea	Blood pressure
17	<i>Urtica simensis</i>	sama	Urticaceae	leaf	crushed	Nose bleeding
18	<i>Veronia amygdalina</i>	gawa	Asteraceae	Leaf	Water	Worm expectorant
19	<i>Zingber officinale</i>	zingbil	Zingberaceae	Root	With tea	Influenza, stomach ache

Most of the plants belong the family of Lamiaceae consists three, Asteraceae, Cucurbitaceae and Rutaceae which consists two species each but the remaining families have one species, there are 19 genera and 14 families, even though the rank is occupied by families of Lamiaceae, Rutaceae, Cucurbitaceae and Asteraceae the rest are also mentioned well, this indicate students knowledge of medicinal plant practices have some ground of indigenous basis, this is indicated in table 3.

**Table 3. List of some medicinal plants genera and families**

	Family name	Number of genera	Number of species	Percent of species
1	Amaryllidaceae	1	1	5.3%
2	Asteraceae	2	2	10.4%
3	Brassicaceae	1	1	5.3%
4	Cucurbitaceae	2	2	10.4%
5	Lamiaceae	3	3	15.78%
6	Moringaceae	1	1	5.3%
7	Myrtaaceae	1	1	5.3%
8	Phytolacaceae	1	1	5.3%
9	Rahmannaceae	1	1	5.3%
10	Rannuceceae	1	1	5.3%
11	Rutaceae	2	2	10.4%
12	Solanaceae	1	1	5.3%
13	Urticaceae	1	1	5.3%
14	Zingiberaceae	1	1	5.3%

The dominant growth forms among the reported medicinal plants are herbs (47.4%), the second groups are shrubs (36.8%) and the least is tree (15.8) as indicated in table 4.

**Table 4. Growth form of medicinal plants mentioned by students.**

Habit of plants	Number of species	percentage
herbs	9	47.4%
shrubs	7	36.8%
tree	3	15.8%
total	19	100%

According to informant consensus factor and description of most frequently used medicinal plants in the study indicated by students mentioned repeatedly as a remedy of various diseases *Ocmium lamifolium* was referred by 165 (78.6%) of students to treat mitch (fever), *Allium sativum* referred by 161 (76.7%) students to treat influenza (gunfan), *Eucalyptus globules* is referred by 124 (59.1%) of student to treat gunfan, *Zingber officinale* is referred by 120(57.1%) to treat influenza finally *Ruta chalpensis* referred by 118 (52.3%) to treat influenza, stomachache and *Nigella sativa* referred by 110 (52.3%) to treat headache the least is *Ajuga remota* with a one student to treat blood pressure, so value are indicated in the table 5.

**Table 5. Number of students referred different plants.**

Botanical name	Number of students	percentage
<i>Ajuga remota</i>	1	0.47%
<i>Allium sativum</i>	161	76.7%
<i>Eucalyptus globules</i>	124	59.1%
<i>Nigella sativa</i>	110	52.3%
<i>Ocmium lamifolium</i>	165	78.6%
<i>Ruta chalpensis</i>	118	56.2%
<i>Zingber officinale</i>	120	57.1

The most plant parts used as a treatment by the respondents are the leaf 107 (28.7%) and the root was the second 95 (25.5%) the third is stem with 60 (16%) and the least is bark with respondents of 10 (2.7%) as indicated in table 6

**Table 6. Plant parts used for treatment.**

Part of plants	male	female	total	percentage
1.leaf	43	64	107	28.7%
2.root	39	56	95	25.5%
3.stem	24	36	60	16.3%
4.fruits	18	22	40	10.7%
5.seed	15	25	40	10.7%
6.flower	6	14	20	5.4%
7.bark	1	9	10	2.7%

preparation of medicinal plants form before it is given to patients vary from place to place mostly it is given in crushed (powder) form 190(31.8%) respondents followed by steam bath108(18.1%) respondents, the least preparative method is rubbed ointments 50(8.3%) as indicated in table 7.

**Table 7. Methods used and number of students referred medicinal plants preparation**

Method of preparation	male	female	total	Percentage
crushed	55	135	190	31.8%
Steam bath	41	67	108	18.1%
Smoke bath	34	61	95	15.9%
Cold infusion	27	53	80	13.4%
decoction	22	52	75	12.5%
Rubbed ointements	11	39	50	8.3%

The route of administration in herbal preparation, the respondents for oral application was 165 (38.2%), it is the leading route of application and which is followed by inhalation 104 (24.1%) respondents, the least is rubbing with 75 (17.3%) respondents as indicated in table 8.

**Table 8. The route of administration of the medicinal plants**

Route of administration	male	female	total	percentage
oral	44	121	165	38.2%
inhalation	39	65	104	24.1%
washing	24	64	88	20.4%
rubbing	25	50	75	17.3%

## **5. THE FOLLOWING MEDICINAL PLANTS WERE MENTIONED BY THE STUDENTS.**

### ***Allium sativum* L., Alliaceae (nechshinkurt)**

#### Descriptions

Herbs usually cultivated in home gardens, in small irrigated fields. Altitude ranges 1800-2800. Grown in all part of the world, used in the preparation of variety of food types (Amenu, 2007). Medicinal uses treats malaria, stomachache, common cold and intestinal parasites .bulb of this plant is used elsewhere in Ethiopia to treat cutaneous leishmaniasis , the curative ability this plant is due to steroidal compounds allin and allicin (Amenu, 2007).

### ***Datura stramonium* Solanaceae (etsefars)**

#### Descriptions

Habit habitat and distribution annual herb 1.50 m tall growing in wooded grass land, cropland road side and gardens. Grows in Altitude between 900-2350m. In Ethiopia it is found in Gojam, Shewa, Sidamo, Kefa, Gamogofa and Bale (Amenu, 2007).

Medicinal value Treats diarrhea malaria, headache, scabies and dandruff and leaves treat open sores (Getahun, 1976). Modern biomedical investigation and medical profiles of *Datura stramonium* indicates that the root part of a plant produces atropine and scopolamine that are used in anaesthesia (Amenu, 2007).

### ***Eucalyptus globules* Myrtaceae (bahrzaf)**

#### Descriptions

Ever green tree 40-70 m tall with straight massive trunk 0.6 -2m in diameter with narrow irregular crown of large branches and dropping aromatic, camphoraceous foliage (James, 1983). Root system is deep and spreading. bark smoothish, mottled gray, brown and greenish

or bluish, peeling in long strips at base becoming gray rough and shaggy, thick and finely furrowed; inner bark light yellow with in thin green layer. Leaves alternate, dropping on flattened yellowish petioles 1.5-4 cm long narrowly lanceolate, 10-30cm long, 2.5-5 cm wide mostly curved acuminate at the tip, acute at base entire glabrous, thick leathery with fine straight veins shiny dark green on both surfaces (James, 1983).

Flowers 1 (rarely 2-3) at leaf base more than 5cm across the very numerous white stamen 12mm long. Buds top shaped 12-15mm long and 12-15mm wide. Stamens many trade like white anthers oblong. Pistil with inferior 3-5 celled ovary and long stout style. Capsules are single at leaf base leaf. Seeds many irregularly elliptical 2-3mm long, dull black (James, 1983).

Habitat and distribution, abundantly found in in Portugal and Spain California Arizona and Hawaii. From cool temperate to wet sub tropical dry to moist forest life zones. Annual precipitation of 8-16dm and annual temperature 16-20<sup>0</sup>C.

Medicinal value, Febrifuge, expectorant, insect repellent, treat asthma, boils bronchitis, cold, cough, diabetes diphtheria fever, flu, inflammation, sores sorethroat, tuberculosis, tumors and wounds (James, 1983).

### ***Moringa stenopetala* Lam Moringaceae (shiferaw)**

#### Descriptions

Short slender, deciduous, perennial tree about 10 m tall, drooping branches, branches and stems brittle. Corky bark; leaves feathery, pale green, compound 30-60 cm long with many small leaf lets; flowers fragrant. Seeds dark brown main root thick fruit production in march– april (James, 1983).

Habitat and distribution, widely cultivated and naturalized in tropical Africa, India and Malaysia. Ranging from subtropical dry to moist zone of forests, tolerate annual precipitation of 4.8-40.3 dm and annual temperature of 18.7-28.5<sup>0</sup>C. Grows best on sandy soil and drought resistant (James, 1983).

Medicinal uses. Flowers, leaves and roots are used in folk medicine for tumours, leaves applied for sores, headaches and it has purgative properties (James, 1983).

***Nigella sativa* Rannunculaceae (tikur azmud)**

Descriptions

Erect annual herbs upto 70cm high with a well developed yellow brown tap root with many side roots, stem sub terate, rubbed light to dark green. Leaves alternate estipulate, petiole broadened at base light green. Inflorescence flowers terminal, solitary orange to brown coloured (Jansen 1981).

Calyx sepals 5 ovate. Corolla petals (6)-8-(11) nectariferous (Jansen, 1981). Androecium stamens in groups, gynoecium lobed it has fruits seeds (Jansen, 1981).

Habitat and distribution, It is hardy annual growing in all kinds of soil, in Ethiopia it is cultivated as rain fed crop in the high lands (1500-2500m). An insect pollinated flowers. found in Arssi, Bale, Begemdir (Gondar), Gojam, Harrerge, Illubabor, Kefa, Shewa, Sidamo, Tigray, Wollega and Wollo (Jansen, 1981).

Medicinal uses relieves headache, stimulate lactations, menstruations and urination, it has antihelminthic and carminative property (Jansen 1981).

***Ocimum lamifolium* Hochst Ex Benth Lamiaceae (damakessie)**

Descriptions

It is a sub shrub or shrub 0.7-3m tall common species of primary and secondary mountain forest and bush lands tall grass lands, rarely cultivated as ornamental.

Habitat and distribution altitude 1200-2900 m, in Ethiopia found in Gonder , Sidamo, Bale, Shewa, Tigray and Gamogofa. Medicinal value treats headache and eye disease (Alemayehu, 2010).

***Phytolaca dodecandra* L. Herit Phytolacaceae (endode)**

Descriptions

Semi succulent scrambling shrub to 10 m tall or more, it grows in evergreen bush lands forest edges and distributed places in altitudinal range 1500-3000. Habitat and distribution , This plant distributed in Tigray, Bale, Gamogofa, Gonder, Wollo, Gojam, Wollega, Shewa, Illubabor, kefa, Arsi, Sidamo and Hararge region. In other countries Eritrea, Madagascar, in tropical and south Africa.

Medicinal value mollucides for the control of snails used to treat malaria and rabies (Alemayehu, 2010).

***Thymus schimperi* Labiatae (tosgne)**

Descriptions

Also related genera *Thymus serullatus*, a much branched perennial shrubby at the base with short decumbent pubescent stems leaves lanceolate sessile firm, acutely serrate 0.5-0.75 inch long , cuneate dotted with conspicuous black glands, whorls aggregated into dense globose terminal heads with leaves crowded at the base, calyx 0.16 inch long; tube oblong corolla twice as long as the calyx stamens exserted (Baker 1990).

Medicinal value, Antimicrobial, blood pressure, common cold.

***Vernonia amygdalina* Del Asteraceae (grawa)**

Descriptions

A shrub or small tree usually branched from near to the base 2-10 m high bark is rough longitudinally fissured, branch stems densely lenticellate leaves alternate, elliptic lanceolate flowers white to light purple with corolla densely sessile (Tolssa, 2007).

Habitat and distribution found in a wide range of habitat of wood and forests, 1200-3000 mt. found in Oromia, Amhara region and Southern Ethiopia. Commonly found near houses, along roadsides and in the farm field.

Medicinal uses treat filiarisis and ascarasis, for filiarisis affected skin parts washed by leaf and extracts. For ascariasis leaf extract is drunk . For menstruation pain, purgative, vermifuge, malaria, evil eye and diahoorea (Tollosa, 2007).

## 6. DISCUSSION

The study was conducted on 210 students 142 females and 68 males, the major use of different medicinal plants (19) for the treatment of different diseases are mentioned by students such as influenza, mitch, cold, stomach ache, snake repellants, blood pressure, headache and tapeworm expectorant, They were also mentioning additives serves as enhancer such as water, tea, coffee and honey, the method of preparations are decoction, cold infusion, crushing and steam bath. Most part of the plant used as a medicine is leaf, root, fruit and seed, the least is bark (Teklehaymanot *et al.*, 2007; Megersa *et al.*, 2013; Yegezu *et al.*, 2014; Abera, 2014).

The most plant parts used are leaf and the least is bark. The most mentioned plants are *Ocmium lamifolium* (dama kessie) for gunfan and headache, *Zingber officinale* (zingbil) for the treatment of stomach ache, *Ruta chalpensis* (tena adam)for influenza, *Allium sativum* (nech shinkurt) for influenza and skin fungus and *Eucalyptus globules* for influenza and fever. The least is *Rahmanus prinoides* (gesho) that treat tonsilites and *Ajuga remota* for blood pressure The most plant parts used as a treatment by the respondents are the leaf 107 (28.7%) and the root was the second 95 (25.5%) the third is stem with 60 (16%) and the least is bark with respondents of 10 (2.7%) (Teklehaymanot *et al.*, 2007; Yegezu *et al.*, 2014).

The route of administration in herbal preparation, the respondents for oral application was 165 (38.2%), it is the leading route of application and which is followed by inhalation 104 (24.1%) respondents, the least is rubbing with 75 (17.3%) respondents, this is in line with the findings made by (Tamene *et al.*, 2000; Abera, 2003; Tolossa, 2007). They were also mentioning that more women participate than men in traditional medical practices, since women are close to their family and take care of infants and elders then they have an access to medicinal plant, 174 students responds that traditional medicinal practices offered by women only 33 respondents saying male, more women give traditional plant treatments than men this line up with the findings made by (Abera, 2014).

Description of informant conscence value most frequently used medicinal plants in the study indicated as a result of respondents cited some plants repeatedly as a remedy of various diseases *Ocmium lamifolium* was cited by 165 (78.6%) of informants to treat mitch (fever), *Allium sativum* cited by 161 (76.7%) informants to treat influenza (gunfan), *Eucalyptus*

*globules* is cited by 124(59.1%) of student to treat gunfan, *Zingber officinale* is cited by 120(57.1%) to treat influenza finally *Ruta chalpensis* cited by 118(52.3%) to treat influenza, stomachache and *Nigella sativa* cited by 110(52.3%) to treat headache the least is *Ajuga remota* with a single informant to treat blood pressure (Yirga, 2010).

From the study knowledge of at least a single medicinal plants in their family members are common, the rank is occupied by families of Lamiaceae, Rutaceae, Cucurbitaceae and Asteraceae the rest are also mentioned well, this indicate students knowledge of medicinal plant practices have some ground of indigenous knowledge (Yirga, 2010).

Institutions or health service are found in a limited number that is not enough that offer traditional medicines services to the society were reported by 180 students and only 27 students inform that there are households known by the community which provides treatment using medicinal plants (Lulekal *et al.*, 2008).

## **7. CONCLUSION**

Traditional plant resources use and management should be strengthened by developing people's values and positive attitudes towards biodiversity. Traditional use of plants should be integrated into both formal and informal education system, integrating into school curricula could help in developing positive attitudes towards conservation of natural resources and indigenous knowledge.

Destruction of habitats, environmental degradation, urbanization, poverty and growth of population resulted in the rarity of most medicinal plants, consequently reduces in indigenous knowledge of plants of the area.

Since the knowledge of traditional medicine is transferred orally from generation to generation basic information on the use of the plants and parts used drug preparation methods and the disease treated and others may be lost and discarded in the knowledge transfer process therefore documentation of medicinal plants and the indigenous knowledge associated with them is important in order to pass to the next generation.

## **8. RECOMMENDATION**

This study is important to show how much the young generation is aware of traditional practices integrate to the modern science. If traditional knowledge integrated to school curricula or at least introducing the idea as an extracurricular school activity the lessons learned in creating awareness about the need for conservation of crop varieties are also important in preserving *in situ* both the medicinal plants associated botanical knowledge among students and establish *ex situ* botanical gardens in the school compound. Since acculturation of the young generation found to be the major treat to the continuation of traditional medical knowledge and practices.

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## APPENDIX

### In MInilike II Preparatory School check list questioners prepared

Gender                      Female                       Male

Age                              14 – 17

18 & Above

Grade 11<sup>th</sup>

1. Mention the name of medicinal plants that you know?
2. Have you seen peoples are using medicinal plants?
3. Which parts of the plant used mostly & give rank?

Leaf                       Root                       Seed

Stem                       Flower                       Bark

4. How does the medicinal plants applied or taken by the patient?

Food                       Washing

Drinks                       Dermal

5. Is there any member of your family /friend using traditional plants?
6. Is there any member of your family having traditional medicinal plants knowledge
7. What is your opinion if traditional knowledge is integrated to the school curricular
8. Do you believe medical plants treat human ailments?
9. Mention the disease treated by medicinal plants?
10. Are there institutions that can deliver traditional medicine services?

11. Mostly traditional medicine offered by male or female?
12. In traditional medical practice if you know disease treated effectively using medicinal plants mention i  
Name the plant \_\_\_\_\_ disease treated
13. How much percent of our people are using traditional medicinal plants?  
20%            40%            60%            80%
14. Mention diseases treated by medical plants.
15. What is your opinion to upgrade application of traditional medicinal plants in the community