Ethnobotanical Study of Medicinal Plants Used for the Treatment of Human and Livestock Ailments in Dawe Kachen District of Bale Zone, Southeast Ethiopia

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Abstract
An ethnobotanical study of medicinal plants was carried out in Dawe Kachen district of Bale zone, southeast Ethiopia with the objectives to identify medicinal plants and to document the knowledge associated with the medicinal plants. Four Kebeles were selected for the study based on the vegetation cover and availability of the practices. Accordingly,80 informants were systematically selected. Recommendation from local leaders and elders was employed to select the key informants. Semi-structured interview and observation was used to collect the data from the traditional healers. The collected data was analyzed using Micro-soft Excel spreadsheet 2007 and summarized using descriptive statistical methods. A total of 42 medicinal plants (belonging to 36 genera and 23 families) used to cure different ailments in the area were recorded. Accordingly Euphorbiaceous followed by Asclepiadaceae dominated the families. Almost all medicinal plants were collected from the wild. Herbs (38.1%) followed by shrubs (30.9%), trees (28.6%) and climbers (2.4%) dominated the plant growth forms. Root (35.71%) is the most commonly harvested plant part in the area followed by leaf (19.05%), stem (14.28%), root & leaf (9.52%), latex (7.14%), bark (4.76%) and root & stem, leaf & stem, flower, seed (2.38%) each. Majority of the medicinal plants (76.19%) used for the treatment of human ailments. Most of the medicinal plants (61.9%), in the study area used in fresh form. Crushing (52.38%) followed by powdering (23.8%) was the most commonly used methods of preparation in the area. Oral administration is the dominant rout (45.20%), followed by dermal (38.10%),oral & dermal (9.50%),nasal (4.80%) and anal (2.38%). Of the five medicinal plants of preference ranking, the highest rank was given first for Cyphiaql and ulifera used for the treatment of abdominal pain. Gamphocarpus integer was also perceived as the most threaten medicinal plant in the area based on the priority ranking. A conservation measure for the medicinal plants in the area is recommended
Key words: *Traditional healer, Ethnobotany, Dawe Kachen, Ailments, Medicinal plants.*

Introduction

Since time immemorial, plants have been used in the health care systems of mankind (Khandel *et al.*,2012).Even today, plants remain the source for majority (80%) of people in developing countries to alleviate health problems (Maki, 2008). Despite the notable progress in the synthetic of organic chemistry, more than 25% of agreed medicine of developed countries is also directly or indirectly derived from plants (Hostettmann and Marston,

2002). Besides their use in preventing and curing various ailments, some medicinal plants are serving as export commodities, source of considerable income for farmers (Assefa and Abebe, 2014).

Ethiopia is believed to be home for about 6,500 species of higher plants of which 12% are endemic (UNEP, 1995) making the country among the most diverse floristic regions of the world (Bekele, 2007).Since Ethiopia is home to

several languages, cultures and beliefs (Gidey, 2001), several traditional knowledge and use of medicinal plant practices are highly expected (Getaneh and Girma, 2014). Studies show that, 80% human and 90% livestock in Ethiopia rely on traditional medicinefor their primary health care systems (Bekele, 2007; Maki, 2008; Yadav,2013). Not only Ethiopians but also around 60% of world population depends on traditional medicine (Khandel *et al*., 2012). In developed countries such as United States, plant drugs constitute as much as 25% of the total drugs, while in fast developing countries such as China and India, the contribution is as much as 80% (Joy *et al*., 1998).The reason for highly reliance on traditional medicine in developing countries particularly in Ethiopiais cultural acceptability, effectiveness against certain type of ailments, accessibility and affordability as compared to modern medicine (Awas and Demissew, 2009; Yirga, 2010; Megersa *et al*.,2013).

Regardless of its contribution to the society, traditional medicine has been given a little attention in modern research and less effort has been made to promote the practice in Ethiopia (Gidey, 2001).Due to natural and anthropogenic factors, the biodiversity as well as medicinal plants are being depleted in an alarming rate (Regassa, 2013).

The current loss of medicinal plants in the country links with the missing of valuable indigenous knowledge associated with the plants (Zenebe *et al*., 2012).knowledge of medicine has been passed orally from one generation to the next by priests and medicine men (Getahun, 1976).But, due to the cultural systems are highly fragile, the skills are likely to be lostin the transfer process (Getaneh and Girma, 2014). Furthermore, the local communities encounter cultural changes due to development activities in areas where these communities reside and both the medicinal plants and the associated indigenous knowledge could vanish forever (Belayneh *et al*. 2012).This also holds true in Ethiopia where written records in this field are almost absent (Agisho *et al*., 2014).

Therefore, identification, documentation and conservation of medicinal plants and the associated knowledge is calling an immediate solution in different areas of Ethiopia. This initiated the researchers to carry out a study in Dawe Kachen district of Bale zone. Since Ethiopia is known to have diverse socio-economic, ethnic, linguistic and cultural landscapes, the existence of rich indigenous medicinal plant use knowledge and practices in managing ailments might reasonably be expected (Yineger *et al*.,2008) and will have their own specific knowledge about use of plants (Bekele, 2007). However, conservation of these plants and knowledge of their use have generally been neglected since it was considered irrelevant in earlier times ((Maki, 2008;Yineger *et al*., 2008).

Moreover, the attitude of the society towards the traditional medicine healers was negative and this forced healers to keep the knowledge secret (Yirga, 2010). Knowledge on traditional medicine generally transferred from generation to generation orally which makes the knowledge more fragile in the transfer process (Lulekal *et al*., 2008;Awas and Demissew, 2009; Megersa *et al*.,2013).Due to natural and anthropogenic causes, the medicinal plants and their associated knowledge are disappearing from time to time (D'avigdor *et al*., 2014). Therefore, the issue of medicinal plant conservation in Ethiopia today is calling documentation before the accelerated ecological and cultural transformation.

Bale zone with diversified natural resources is also share the problem. According to Belayneh *et al*. (2012), the studies concerning medicinal plants in Ethiopia so far concentrated in the south, southwest, central, north and western parts of the country while in the eastern part of the country such studies are rare. Studies conducted in Bale Mountains notational park (Yineger *et al*., 2008) and Mena Angetu district (Lulekal *et al*., 2008) documented 101 and 230 medicinal plants respectively showing Bale zone is rich in medicinal plants diversity. However, no related study has been conducted in study site. Therefore,

the present study focused on the documentation of medicinal plants and their use in treatment of human and livestock ailments in the study area. The study was aimed to (1) identify medicinal plants used for the treatment of different ailments (2) assess the status of medicinal plants in the area (3) identify the threaten medicinal plants.

Materials and methods
Study area description

The study was conducted in Dawe Kachen district of Bale zone, Oromia regional state. The area is situated 140kms far from Robe town the city of the zone and 570kms far from Addis Ababa. The study district covers 227335 hectares of land and is bounded by Guradamole in south, Raytu and Ginir in north, and Goro in west and Somalia region in east. The area has also an estimated population of 47509 of whom21265 are male and 26244are female. The total livestock (262184) of the study area comprised of89184 cattle,100725 goats,35563 sheep, 20289 Camel, 5647 donkey, 269 Mule, 35 Horse and 10472 Chicken (unpublished document from the district, 2014).The area is characterized with unevenly distributed rainfall with minimum 400 mm and maximum 700 mm. The common vegetation cover in the area is deciduous bush land and deciduous Acacia-Commiphora bush land (White, 1983). The people in the study district practiced pastoral and partial agro-pastoral life system. The farming system includes teff, sorgam, wheat, maize, sesame and spices.
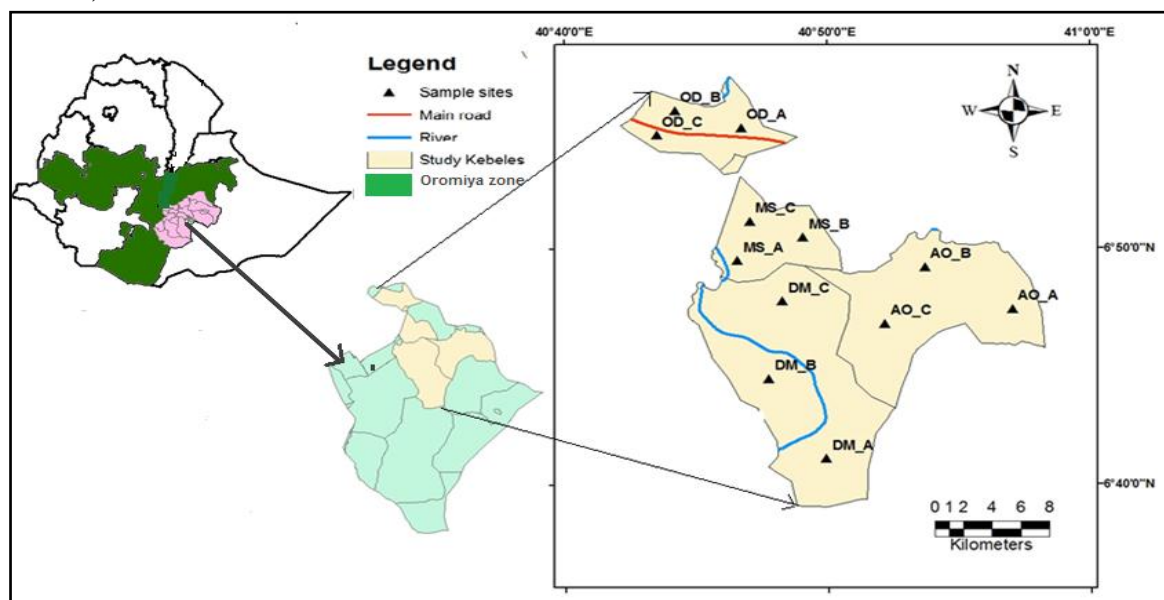

Fig. Map showing sampling sites in the study Kebeles Note: AO=Arda Oru,DM= Dibe Mole, MS= magalo Sarbo, OD= Oda Diibisa (Source Abdi B. and Feto H. 2016 survey

Methods

The study sites were selected purposively based on the availability of the practice on traditional medicine and availability of better vegetation cover following the recommendations of the local elders. Four Kebele (Oddadibisa, Magalo, Ardaoru, and Dibe mole) were selected out of the total 13 Kebeles in the study district. Informants were systematically selected from the four Kebeles (smallest administrative level in Ethiopia)for the general interview. The selected informants were also given a chance to recommend other healers. Accordingly, 80 (79 male and 1 female) informants (20 from each kebele) were selected for this study. The informants were aged between 18 and 65. Ten key formants that were believed to have a profound knowledge about traditional medicine by the local elders' were systematically selected for in-depth interview.

According to Martin (1995), semi-structured interview was used to collect the data from the

informants. The objective of the research was presented for each informant in order to convince them. A semi-structured checklist was prepared in advance. The interview prepared in English was translated in to local language **AfaanOromo,** language of the local people and was held by the researchers. After the researchers obtain an oral permission from each informant, information concerning the traditional healers was recorded. Information such as local name of the plant, disease treated, plant part used, preparation, methods of administration, habit of the plant, status (degree of scarcity), condition (dry or fresh),and other uses of the medicinal plants was recorded from the informants. At the end of each interview, researchers together with the traditional healers and local assistant carried out field observation. During the field observation, the plants reported as medicinally important by the informants was collected from their habitat. The specimens collected during field observation were pressed, dried and identified using different volume Flora books of Ethiopia and Eritrea.

Data analysis

The collected data was entered into Micro-soft Excel spreadsheet 2007 and summarized by using descriptive statistical methods to report the result. Preference ranking (Martin, 1995) was made using key informants on common medicinal plants used to treat a common disease (abdominal pain) in the study district. Five medicinal plants used to treat abdominal painwas listed and asked the informants to arrange the plants based on their level of efficacy. The medicinal plant believed by the key informant as effective to treat abdominal pain was given the highest value (5) and the other with least effectiveness was given the lowest value (1).Then ranking was determined by summing up of the scores of each species.

Priority ranking exercise (Martin, 1995) was also conducted to observe the level of threat of the medicinal plants in the study district. This was done by key informants on medicinal plants believed to be in scarce and listed by them. A highest value (6) was given to the scarcest medicinal plant and the lowest value (1) to the least scarce one. Finally, the total score of each species was summed and ranked.

Result

Diversity of medicinal plants

A total of 42 medicinal plants representing 23 family and 36genera used to treat human and livestock ailments in the study area were recorded. *Euphorbiaceae* represented by 6 species (14.3%) dominated the medicinal plants followed by *Asclepiadaceae* with 4 species (9.5%) and *Fabaceae* with 3 species (7.14%) in the area (Table 1). Out of the medicinal plants recorded, only one medicinal plant (*jatrophacarcus*) was collected from home garden and the rest medicinal plants were collected from the natural habitat (field).

Table 1. Family and plant species diversity of the medicinal plants

Family	Number of species	%	Number of genera	%
Euphorbiaceae	6	14.3	5	13.9
Ascelpediaceae	4	9.5	4	11.1
Fabaceae	3	7.1	2	5.6
Solanaceae	2	4.8	1	2.8
Asteraceae	2	4.8	2	5.6
Burseraceae	2	4.8	1	2.8
Capparidiaceae	2	4.8	1	2.8
Celastreaceae	2	4.8	2	5.6
Lamiaceae	2	4.8	2	5.6
Malvaceae	2	4.8	2	5.6
Vitaceae	2	4.8	2	5.6
Olaceae	2	4.8	1	2.8
Others	11	26.19	11	30.6
Total	42	100	36	100

Habit of the plants

Of the total medicinal plants reported by the local informants, 38.1% were herbs,31% shrubs, 28.6% trees and 2.4% climbers respectively (Figure2).
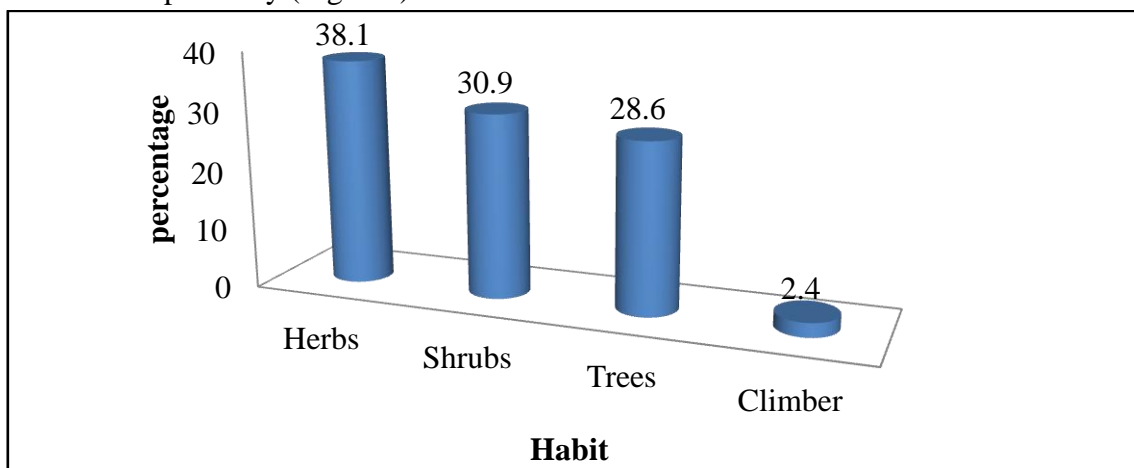

Figure 2. Habit of the medicinal plants in the study area

The purpose of medicinal plants

According to the informants, most of the medicinal plants (76.19%) used to treat human ailments, (7.14%) of the medicinal plants used for the treatment of livestock ailments and the other (16.67%) medicinal plants used for both human and livestock ailments (Figure3).
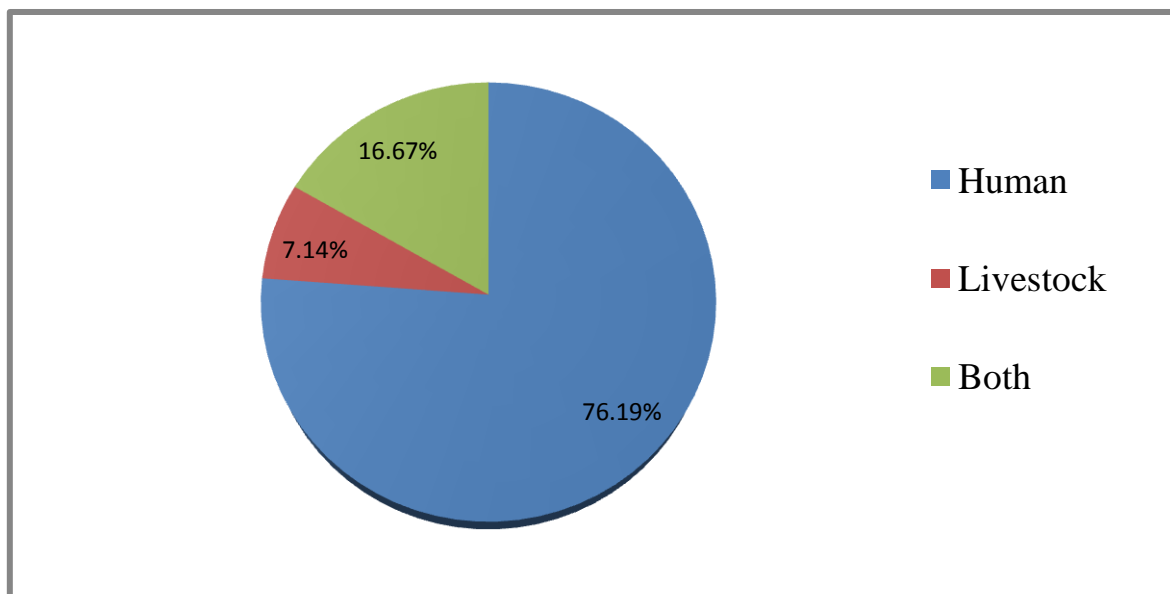

Figure 3. The purpose of medicinal plants in the study area

Plant parts used

As indicated in figure 4 below, root is the most plant part harvested for medicinal purposes in the area (15, 35.71%) followed by leaf (8, 19.05%), stem (6, 14.28%), root and leaf (4, 9.52%), latex (3, 7.14), bark (2, 4.76%) and root and stem, leaf and stem, flower and seed (1, 2.38%) each.
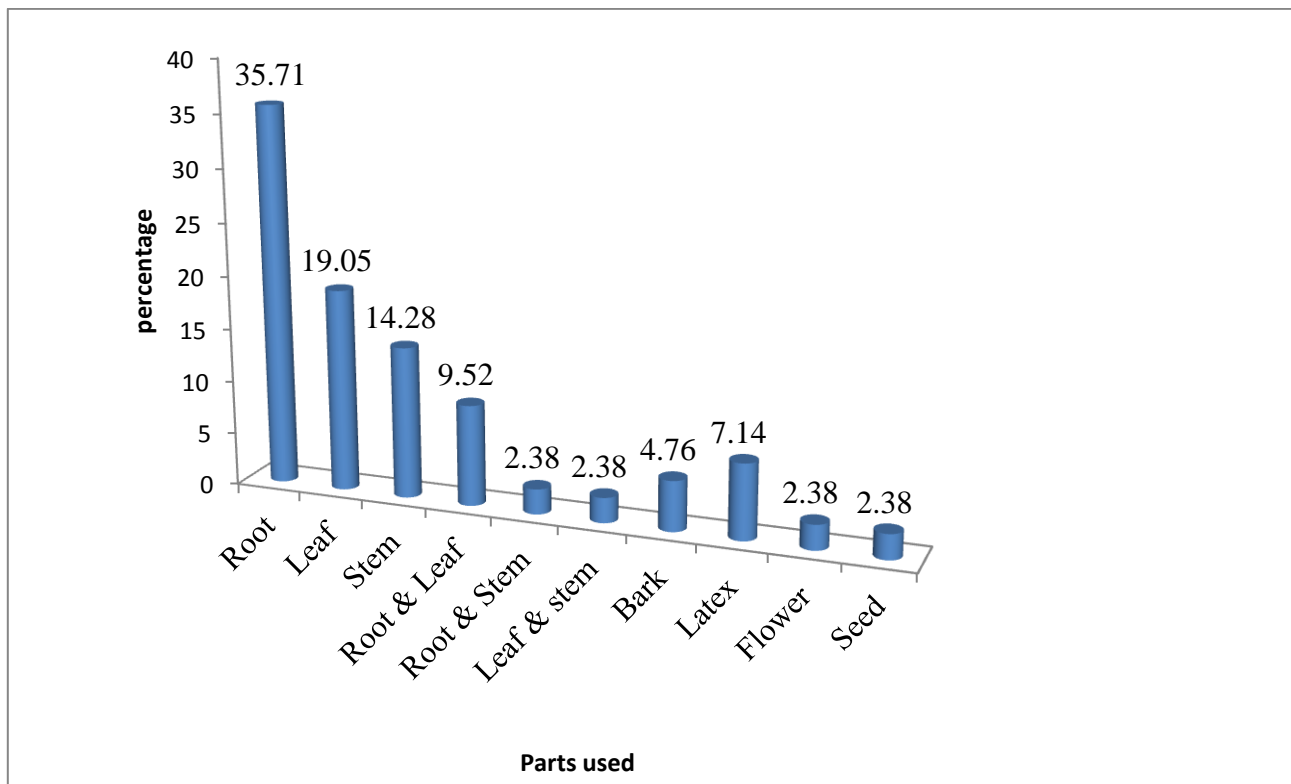
Figure 4. Plant parts used in the study area

Plant forms used

Of the total medicinal plants reported by the informants, fresh with (26, 61.9%) dominated the plant forms. It was followed by fresh and dry (11, 26.2%) and dry (5, 11.9%) (Figure 5).
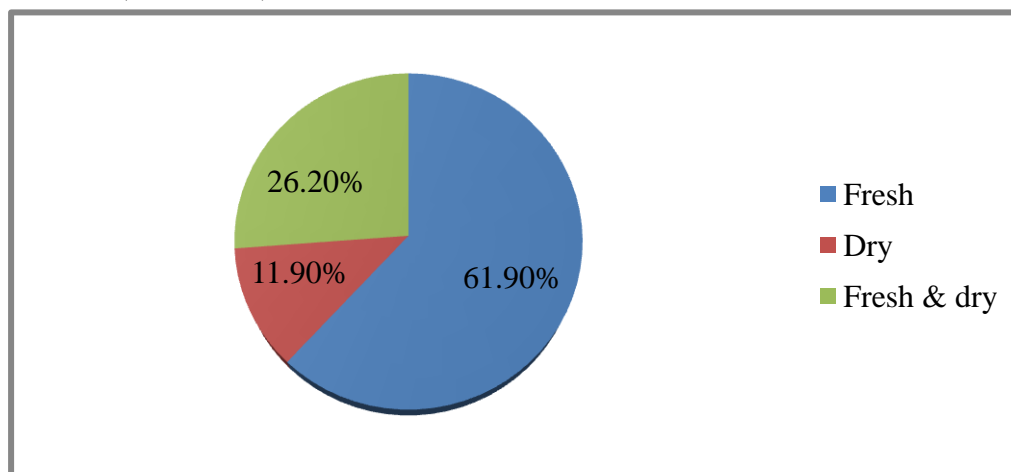

Figure 5. Plant forms used to treat different ailments

Methods of medicinal plant preparations

Most of the medicinal plants in the study area used by crushing (22, 52.38%) followed by powdering (10, 23.8%), dropping (5, 11.9%), chewing (3,14%) and smoking and brushing with (1, 2.38%) each (Figure 6).
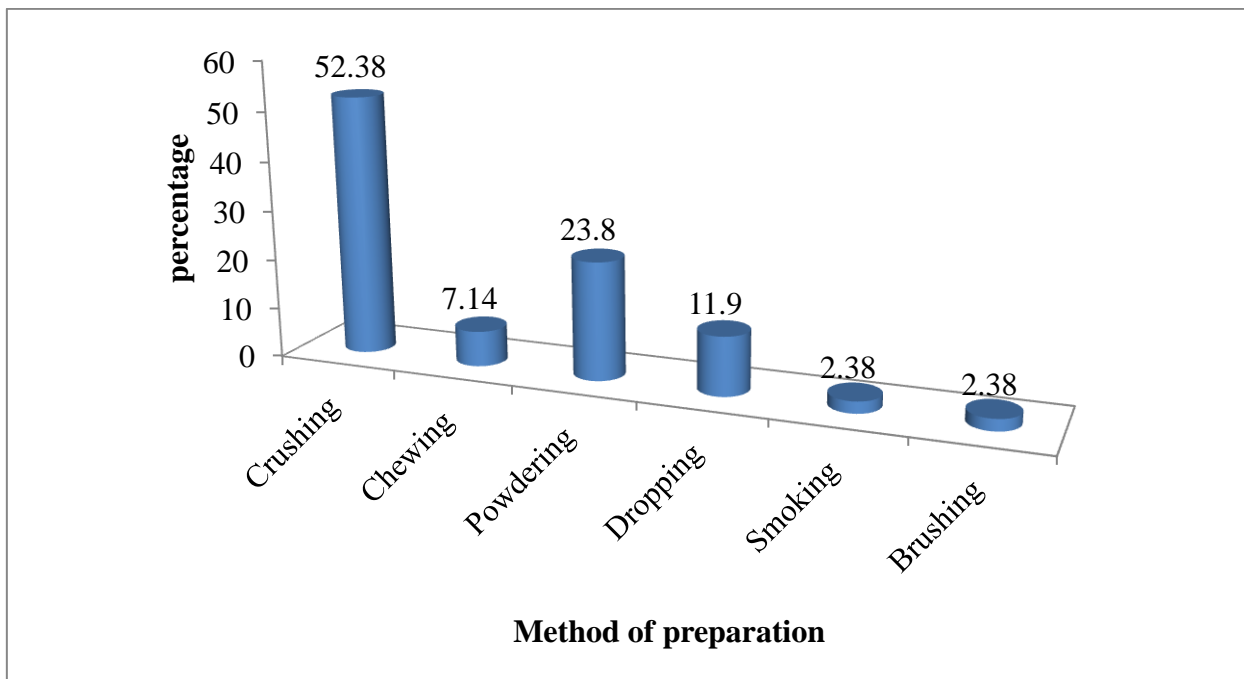
Figure 6. Methods of preparation

Rout of application

In the study area, oral is the most dominant application method used by the local people (19, 45.20%) followed by dermal (16, 38.1%) and oral and dermal (4, 9.5%), nasal (2, 4.8%) and anal (1, 2.38%) (Figure 7).
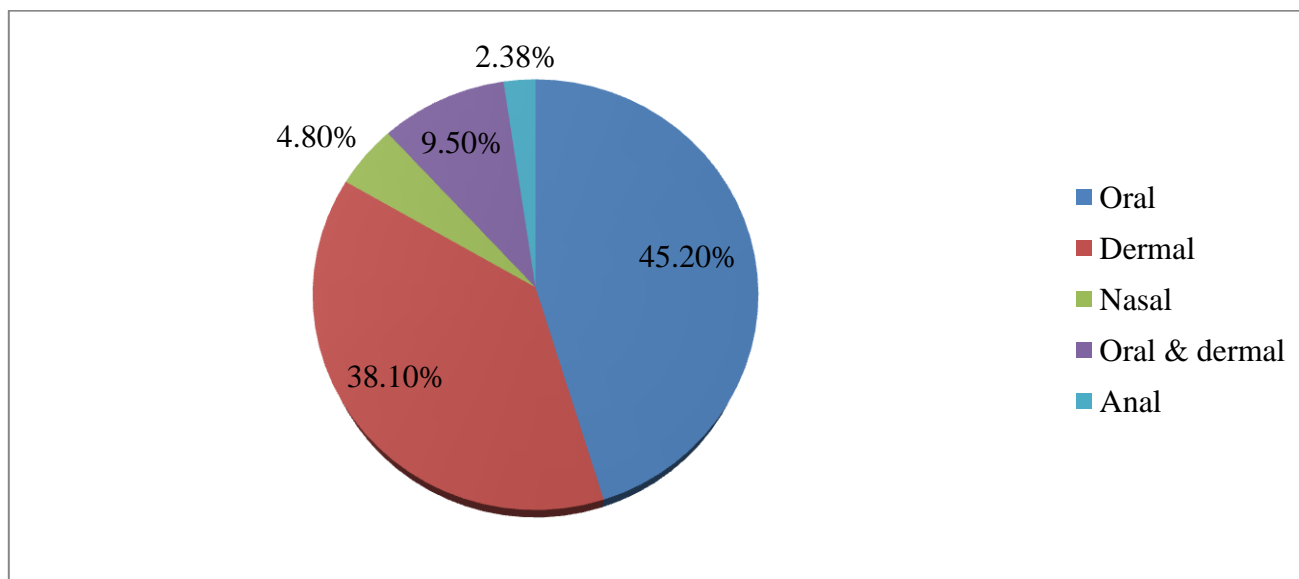

Figure 7. Rout of application

Table 2 . List of medicinal plants recorded from the study area (H=habit, Pu= part used, MP= method of preparation, Adm= administration method)

Scientific name	Local name (Or)	H	Disease treated	Pu	Mp	Adm
Moringarivae Chiov,	Boyii	T	Cattle disease	Root	Crushing	Oral
Cissusrotundifolia (Forsk.) Vahl.	Cophii	C	Bile, liver	Leaf	Chewing	Oral
Croton schimperianus Muell. Arg.	Makafta	H	Evil spirit	Root	Powdering	Dermal
Ocimumurticifolium Roth	Qorsamichii	H	Mich ,to remove skin infection	Root	Crushing	Dermal
Pyrenacanthamalvaifolia Engl	Burii	S	Malaria and source of water for cows	Root	Crushing	Oral
Ampelocissusabyssinica(Hochst. ex A. Rich.)	Qorsatiruu	S	Liver disease	Root	Powdering	Oral
With aniasomnifera (L)Dunal	Hunsoo	S	Mich	Root	Crushing	Dermal
Bosciasenegalensis Lam.ex.Poiret	Qalqalcha	S	Headache, cancer, to remove spine from animal	Root	Crushing and powdering	Oral and dermal
Cadabafarinosa Forssk	Barjeen	S	Abdominal pain	Root	Crushing &powdering	Oral
Ageratum conyzoides L.	Qondaala	H	To prevent Odor of dead body and for girls as a perfume	Flower	Crushing	Dermal
Hippocarteaafricana (Wild.) Loes.	Aadeeguratii	T	To remove the blood after birth	Leaf	Crushing	Oral
Kanahialaniflora (Forssk.) R. Br.	Jidda ananii	H	Itching &evil eye	Leaf & root	Crushing	Dermal
Euphorbia longetuberculosa Hochst. ex Boiss.	Ukukub	S	diarrhea	Stem	Crushing	Oral
Ipomoea cicatricose (Bark.) Hall. F.	Dhama'ee	H	Gonorrhea	Root	Crushing	Oral
Solanumincanum L.	Hiddiilonii	H	Sudden illness (Dingetegna)	Leaf &root	Crushing	Oral
Cyphiaglandulifera Hochst. ex A. Rich	Kurtee	T	Abdominal pain	Stem	Chewing	Anal
Carallumapenicillata (Defl.) N. E. Br	Halakuaje	H	Against boil for cattle	Latex	Dropped	Dermal
Jatrophacurcas	Habetalmuluku	S	Bile, stomach swell, vomiting	Seed	Crushing	Oral
Commiphora terebinthina	Baqsaahiyyoo	T	Wound	latex	Dropped	dermal
Acacia melliferaBenth,	Bilala(Quncee)	T	Eye problem	Bark	Crushing	Dermal
Gomphocarpus integer	Hormalaa	H	Headache,cough,evil, to discharge after birth	Stem& root	Powdering	Nasal
Euphorbia burgeriBoiss.	cirraa	T	Its milk cures the swell body part	Latex	Dropped	Dermal
Hypoesetesforskoalii (Vahl) Soland. ex Roem& Schultz	Heerayyaa	H	To kill worms from cattle	Leaf and stem	Powdering	Oral
*Garcinialivingstonei*T. Anders	Habuqurtoo	T	Tonsil/cough	Leaf &root	Smoke	Nasal
Combretummolle	Digdigisamichii	S	Michi	Leaf	Crushing	Dermal

Partheniumhystrophorus L.	Ana malee	H	To clot a blood	Leaf	Crushing	Dermal
Aloe pubescens Reynolds	Hargiisa	H	Soriacis, itch, tobrust swell body part and magic	Leaf	Dropped	Dermal
Cucumisdipsaceus Ehrenb. ex Spach	kurerraa	H	Hemmoried, back pain	Root	Crushing	Dermal
Aloe trichosantha	Garbadheera	H	Camel disease Human bone disesase	Leaf	Crushing	Oral &dermal
Acacia bussie Harm ex Sjostedt	Halloo	T	Abdominal pain	Leaf	Crushing	Oral
Kalanchoelanceolata (Forssk.)Perr.	Bukoomsa		Camel disease	Root	Crushing	Oral
Plectranthusotostegioides (Gurke) Ryding	Barbarrisa	S	Tooth ache	Root	Crushing	Oral
Recinuscommunis L.	Qoboo	S	Tooth ache	Stem	Dropped	Dermal
Commiphoramyrrha (Nees)Engel.	Qumbii/kerbe	T	Blood cloting,wound,to deter snake	Stem	Crushing	Oral &dermal
Acalyphafruticosa	Tiir	T	For throat,bile,abdominal pain	Leaf and root	Powdering	Oral
Albiziaschimperiana Oliv.	Mukadhigaa/hiddiigaala	T	Wound	Stem	Crushing &powdering	Dermal
Cussoniaholstii Engel.	Luqoo	T	Oral hygiene	bark	As a brush	Oral
Abutilon figarianum	Gurbiimichii	H	Lack of appitite&mich	Root	Crushing	Oral
Embeliaschimperi Vatke	Hanqataa	S	Abdominal pain	Stem	Powdering	Dermal
Sidaovata Forssk	Baleenbulaa	H	To prevent Abortion	Root	crushing &Powdering	Oral &dermal
*Chathaedulis (*Vahl) Forssk. Ex Endl.	Jima	S	STD	Leaf	Chewing	Oral
Calotropisprocera	Qorsamaa	S	Teeth disease	Root	Crushing	Oral

Preference ranking

As indicated in table 3, *Cyphiaqlandulifera* stood first followed by *Acacia bussie* and *Cadabafarinosa* in the preference ranking conducted to see the efficacy of the medicinal plants to treat the abdominal pain as perceived by the key informants.

Table 3. Preference ranking of five medicinal plants to treat abdominal pain in the study area

Species	Respondents (R_1-R_{10})											
	R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8	R_9	R_{10}	Total	Rank
Cadabafarinosa	4	5	1	4	1	5	3	4	2	2	31	2nd
Cyphiaqlandulifera	5	4	3	5	5	4	5	5	1	3	40	1st
Acacia bussie	3	1	5	2	2	2	4	2	5	5	31	2nd
Acalyphafruticosa	2	3	2	3	3	3	1	3	4	1	25	3rd
Embeliaschimperi	1	2	4	1	4	1	2	1	3	4	23	4th

Priority ranking exercise

As shown in table 4 below, the medicinal plants in the study area were arranged by the key informants and ranked *Gamphocarpus integer* first (41) followed by *Moringarivae* (39), *Kanahialaniflora* (35), *Commiphoramyrrha* (34), *Crotonschimperianus*(32) and *Cucumisdipsaceus* (29).

Table 4. The priority ranking of the six medicinal plants in the study area

Species	Respondents (R_1-R_{10})											
	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	Total	Rank
Moringarivae	3	6	2	4	6	1	5	2	6	4	39	2nd
Croton schimperianus	5	2	5	2	3	3	3	1	5	3	32	5th
Kanahialaniflora	2	3	6	1	4	6	4	3	4	2	35	3rd
Gamphocarpus integer	6	4	4	6	5	4	6	4	1	1	41	1st
Commiphoramyrrha	4	5	1	5	1	2	1	6	3	6	34	4th
Cucumisdipsaceus	1	1	3	3	2	5	2	5	2	5	29	6th

Discussion

Diversity of medicinal plants

A total of 42 medicinal plants representing 23 family and 36 genera were used to treat human and livestock ailments in the study area. Out of the forty two medicinal plants in the study area, 10 species were mentioned in (Luelkal *et al*., 2008),13 species mentioned in (Tadesse,2006). Of the medicinal plants documented in the study area, almost all (97.62%) were collected from wild and this shows that the culture of medicinal plant conservation is poor in the area. The same result was also reported elsewhere in Ethiopia (Yineger *et al*., 2008; Yirga, 2010; Megersa, 2013). However, the study is in contrary with the study conducted in Alamata district by Yirga (2010) which documents most of the medicinal plants reported were from home garden. Only one plant species *Jatrophacurcas* was collected from the home garden in this study area. The plant species is used as a fence in the area and its presence in the home garden is not for the purpose of conservation.

Habit of the medicinal plants

The analysis of plant habit in the area indicated that, herbs with (38.1%) dominated the medicinal plants reported in the study area followed by shrubs (31%), trees with (28.6%) and climbers (2.4%). The same result was also documented in Kilte Awlalodistric of Tigrayregion by Teklay *et al*. (2013)where herbs dominated the total medicinal plants in the area. However, the finding is in disagreement with the study conducted in Babile by Belayneh *et al*. (2012) and a study conducted in Mena Angetu of Oromia region by Luelekal *et al*. (2008) in both of them shrubs were dominating followed by herbs.

The purpose of medicinal plants

Most of the medicinal plants(76.19%) document-ted in the study area are used to treat human ailments followed by human and livestock (16.67%) and livestock only (7.14%). This may be due to the fact that the local people give more priority for themselves and their knowledge on the medicinal plants to treat human ailments is higher than the knowledge for animal ailments. A study conducted in Awasa city by Regassa (2013) also documented the same result in which 85.5 % of the medicinal plants used against human diseases. Plant parts of medicinal plants used

As shown in figure 4 above, the most harvested plant part for medicinal purpose in the study area was root having (15, 35.71%). These was followed by leaf (8, 19.05%), stem (6, 14.28%), root and leaf (4, 9.52%), latex (3, 7.14), bark (2, 4.76%) and root and stem, leaf and stem, flower and seed (1, 2.38%) each. This finding is in agreement with the study conducted in Dega Damot district by Limenih *et al*. (2015) and a study conducted in BennaTsemay by Assefa and Abebe (2014) and a study conducted in Mena Angetu by Luelekal *et al*. (2008).However, the finding wasin contrary with the studies in Bale mountains national part by Yineger *et al*. (2008), Asgede Tsimbla by Zenebe*et al* (2012), Bench ethnic group by Gidey*et al*. (2009) in all studies leaf sought to be the most harvest plant part. Findings indicated that harvesting the root for medicinal value has a negative effect on the survival condition of the mother plant since root is the most important part for the whole plant.

Plant forms used

Of the total medicinal plants reported by the informants, most of the medicinal plants with (26, 61.9%) used in fresh. It was followed by fresh and dry (11, 26.2%) and dry only (5, 11.9%) (Figure 4). This may due to the presence of ample vegetation in the area and no need to keep the medicinal plant for future. During the interview, the informants indicated that only few medicinal plants which are seasonal and found far from their home are prepared in dry form. Several studies have also documented the same finding in Ethiopia (Yirga, 2010; Regassa, 2013). This is due to the fact that the traditional healers believe that plants have more curing capacity in fresh form than dry.

Methods of preparation

Crushing (22, 52.38%) followed by powdering (10, 23.8%), dropping (5, 11.9%), chewing (3, 14%) and smoking and brushing with (1, 2.38%) each were the methods of preparation in the study area (Figure 5).Similar result was reported elsewhere in Ethiopia (Maryo *et al*., 2015).

Rout of application

As indicated in Figure 6, oral is the most dominant application method used by the local people (19, 45.20%) followed by dermal (16, 38.1%) and oral and dermal (4, 9.5%) nasal (2, 4.8%) and anal (1, 2.38%). The same finding was also reported in other areas in Ethiopia (Yirga, 2010; Asefa and Abebe, 2014; Mayo *et al*., 2015).

Preference ranking

The preference ranking analysis in the study shows that, *Cyphiaql and ulifera* stood first followed by *Acacia bussie* and *Cadabafarinosa* when preference ranking was conducted to see the efficacy of the medicinal plants to treat the abdominal pain as perceived by the key informants. According to Trotter and Logan (1986), if plants are repeatedly used for the same purpose, it is assumed that they are more likely to be biologically active. Therefore, *Cyphiaql and ulifera* considered as the effective plant in the study area in treating abdominal pain as perceived by the key informants.

Priority ranking exercise

As perceived by the key informants, *Gamphocarpus integer* first (41) followed by *Moringarivae* (39), *Kanahialaniflora* (35), *Commiphoramyrrha* (34), *Croton schimperianus* (32) and *Cucumisdipsaceus* (29). This shows that, *Gamphocarpus integer* is the most threaten or scarce plant species in the area and needs more attention to prevent it from extinction from the area.

Conclusion and recommendation

Findings of the study indicated that, the area is rich in traditional medicine on use, preparation, application and associated knowledge which is owned by the local people in the study area. Euphorbiaceae was the most used plant family for the treatment of different ailments in Dawe Kachen district. Herbs stood first in the plant use for medicinal value in the study area. Root is the most harvested plant part in the study area. This indicated that this part will put the medicinal plants under pressure as root has huge effect on the mother plant survival. So it need prime attention for the conservation of the medicinal plants in an area. Most of the plants in the study area were collected from the wild environment and this shows that the culture of medicinal plants conservation is poor. Most of the medicinal plants in the area were used in fresh forms and this may show there is no problem of finding fresh plants in the study area. The presence of more plants for the treatment of human than livestock ailments may indicate the local people give more attention for themselves than their livestock. Since plants in the area are harvested for their root for medicinal purpose and this could negatively affect the plants survival, governmental and non-governmental bodies should take conservation measures to the medicinal plants in the study area.

Conflict of interest

No conflict of interest between the authors.

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