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Assessment of Traditional Medicinal Plants Used for Treatment of Human Diseases in Oromia Region, West Shewa Zone: Jeldu Woreda, Ethiopia

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Authors' contribution

This work was carried out in collaboration between all authors. Author CD designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the manuscript. Authors TN and GB managed the analyses of the study. All authors read and approved the final manuscript.

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ABSTRACT

Most of the information regarding traditional medicinal plants are still in the hands of traditional vendors, and knowledge of vendors is either lost or passed orally from generation to next generation. This study aimed to survey and document the currently used plants by herbalists in Jeldu Woreda and record their medicinal usage and mode of preparation. Due to most of the vendors of traditional medicinal plants in Jeldu Woreda are alliterated, the data was gathered by supported questionnaire from both vendors and the users of this traditional medicinal plants. The study was limited to traditional medicinal plants which used to treat diseases related to skin, digestive system and circulatory system. The technique used to select the sample from the

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traditional medicinal plant venders was available sampling since the number of venders in the selected site is not large in number. Thus all the traditional medicinal plant venders in Jeldu Woreda were the respondents of the study. From selected research site about 21 medicinal plants vendorsand 47 users were participated in the study. The finding of the study concluded that there were some plants used to treat some human disease in *Jeldu Woreda*. Therefore, this research tried to document some medicinal plants used to treat human gastrointestinal, skin and other diseases by including the mode of preparation and how to apply. In this research about 68 respondents have participated. Out of those respondents, 21 were vendors of medicinal plants while 47 were users of medicinal plants. According to data from the medicinal plant vendors and users total of 26 plant species were identified with an identification of the plants' part with medicinal value. Also, the modes of preparation and mode of application were described in this research. Among this plants species, more than half of them used to treat digestive system disease. From the 26 plant species about half of those plants were recorded for their ability to treat skin disease. The application of the prepared medicine on the skin is mostly by painting the liquidified medicine from plant on infected skin.

Keywords: Digestive system disease; Jeldu Woreda; medicinal plants; skin disease.

ACRONYMS

WHO : World Health Organization
SPSS : Statistical Package for Social Sciences
IUCN : International Union for Conservation of Nature
UNEP : United Nations Environment Program
THPs : Traditional health practitioners

1. INTRODUCTION

1.1 Background

The usage of medicinal plants presents a significant aspect of the traditional medicine which is imbedded in the culture of people of developing countries [1,2]. In many developing countries, medicinal plants have not been well studied, tested, or documented. Most of the information is still in the hands of traditional healers and knowledge of healers is either lost or passed to next generation by word of mouth [3, 4]. The extent of the experience of traditional medicine practice based on medicinal plants should be documented through botanical surveys [5]. Botanical collection and documentation of the associated ethnobotanical knowledge should be carried out before such rich heritages are lost due to various anthropogenic and other natural causes [6]. Awareness creation among the traditional healers and community at large is essential to preserve the indigenous medicinal plant species and for conservation and sustainable use of medicinal plants in the area [7].

Recently, traditional medicine is recognised throughout the world as a credible healthcare resource and about 80% of the world's population depends on traditional medicine for the treatment of different ailments [8,9]. The World Health Organization (WHO) considers that traditional medicine is an important contributor to its health goals and has been encouraging its development through testing herbs' toxicities and improving methods of herb collection, drying and conservation [10,11].

This study aimed to survey the currently used plants by herbalists in Jeldu Woreda and record their medicinal usage and mode of preparation. Due to most of the collectors of traditional medicinal plants in Jeldu woreda are alliterated the data will be gathered by interview, questionnaire and online survey for the users of this traditional medicinal plants from Jeldu Woreda. In this study, the research limited to traditional medicinal plants which are used to treat diseases related to skin, digestive system and nervous system.

Jeldu Woreda is the mountainous district located between about 9°.05' – 9°.25' N Latitudes and37°.40' – 38°11' E longitudes in Ethiopia. Jeldu Woreda is the mountainous district lies between about 9°.05' – 9°.25' N Latitudes and37°.40' – 38°11' E longitudes in Ethiopia. **Jeldu** is one of the woredas in the Oromia region part of the West Shewa Zone, Jeldu is bordered on the south by Dendi Woreda, on the southwest by Ambo Woreda, on the north by Gindeberet Woreda, on northeast by Abuna Gindeberet, on the east by Meta Robi Woreda, and on the southeast by Ejerie Woreda. Towns in Jeldu include Chobi, Gojo, Osole, Shukute, Boni, Guto, Bicho and Geba Senbeta. Jeldu woreda plant biodiversity contains trees and shrubs.

2. RESEARCH METHODOLOGY

2.1 Descriptions of the Study Area

The study was conducted in Jeldu Woreda, West Shewa Zone, Oromia region which located at about 119 Km Western of Addis Ababa, the capital city if Ethiopia. The following map indicates the geographical location of Jeldu Woreda. Jeldu Woreda is the mountainous district located between about 9°.05' – 9°.25' N Latitudes and 37°.40' – 38°11' E longitudes in Ethiopia. Jeldu Woreda is the mountainous district lies between about 9°.05' – 9°.25' N Latitudes and 37°.40' – 38°11' E longitudes in Ethiopia. **Jeldu** is one of the woredas in the Oromia region part of the West Shewa Zone, Jeldu is bordered on the south by Dendi Woreda, on the southwest by Ambo Woreda, on the north by Gindeberet Woreda, on northeast by Abuna Gindeberet, on the east by Meta Robi Woreda, and on the southeast by Ejerie Woreda. Towns in Jeldu include Chobi, Gojo, Osole, Shukute, Boni, Guto, Bicho and Geba Senbeta. Jeldu woreda plant biodiversity contains trees and shrubs. (*taken from Google map).*

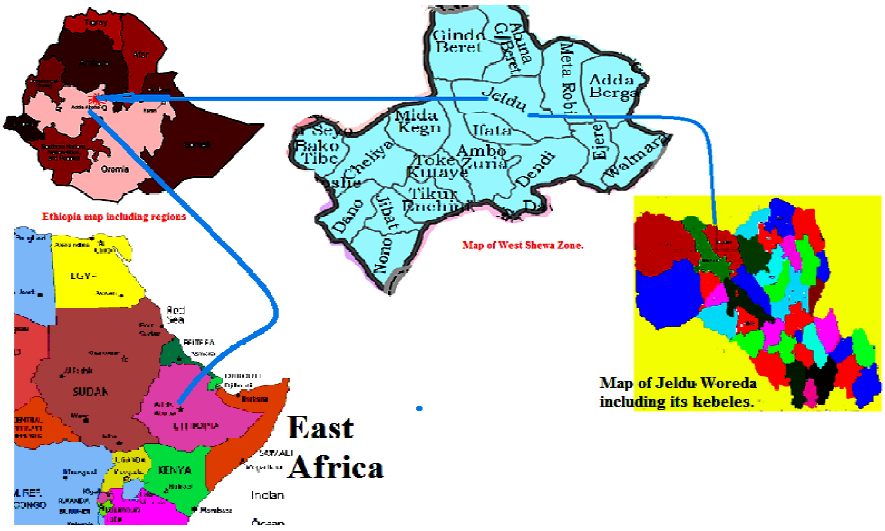

Fig. 1. Map of the study area
Source: Disaster risk management and food security sector

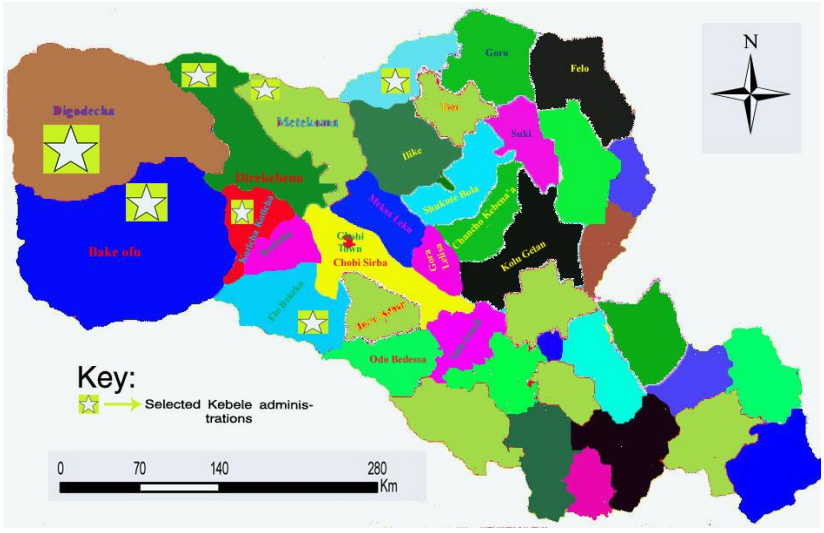

Fig. 2.Map of Jeldu Woreda including Kebeles, the study area
Source: Disaster risk management and food security sector

2.2 Sampling Site Selection

Purposely to get more practiced persons on medicinal plant only seven kebele administrations were selected from Jeldu Woreda.

2.3 Sampling Method

The technique used to select the sample from the traditional medicinal plant venders was available sampling since the number of venders in the town are not large in number according to pre gathered information from the elders. Thus all the traditional medicinal plant venders in Jeldu Woreda from the selected Kebeles, were the respondents of the study. From selected research site about 21 medicinal plants vendors and 47 users participated on the research.

2.4 Data Collecting Method

2.4.1 Questionnaire (open ended)

First questionnaire was developed in English and converted to Afaan Oromoo to investigate what types of medicinal plants were currently used by the practitioners in Jeldu Woreda for the treatment of various diseases. It included detailed information regarding the plant's name, disease it can cure, part(s) used, and mode of preparation.

2.5 Data Analyze

Based on the nature of the data both qualitative and quantitative method were used to analyze the data. Mostly qualitative method was used to detail expression of the data. The collected data checked and well organized before it is analyzed. The data was analyzed by using descriptive statistics such as percentage and frequency and presented by using graphs, tables and Pi-charts.

3. RESULTS

3.1 Data Processing and Presentation

3.1.1 Statistics of respondents

According to socio-demographic statistics of the respondents, the elders are more experienced toward the medicinal plants. More knowledge of traditional medicinal plants is in the hands of elders than the younger.

3.1.2 Lists of medicinal plants gathered from the respondents in brief

The following lists of medicinal plants were recorded. These medicinal plants are: Gaderi, Chickpea, Flax or linseed, Mukebu or mukumari, Fenugreek, Wild Laburnum, Ewuro, Mujonso, Hagenia, Kosso, Garlic, Ginger, Black-cumin, Broad-leaved croton, Dogwood, buckthorn , Yellow-berried Nightshade, Castor bean and Andoodee (Afaan Oromoo).

3.1.3 Medicinal plants used to treat disease related with human digestive system

For treatment of disease related with digestive system, traditional medicinal plants are given orally because the passage to digestive tract on only through mouth.

Table 1. Socio-demography of the respondents

Respondents	Character		Frequency	Percent
Traditional medicinal plant vendors	Sex	Male	13	61.9
		Female	8	38.09
	Age	16-23	0	0
		24-32	3	14.28
		33-40	8	38.09
		Above 40	10	47.61
	Literacy	Literate	7	33.33
		Illiterate	14	66.67
Traditional medicinal plant users	Sex	Male	18	38.29
		Female	29	61.70
	Age	16-23	5	10.63
		24-32	12	25.53
		33-40	14	29.78
		Above 40	16	34.04
	Literacy	Literate	28	59.57
		Illiterate	19	40.43

Table 2. Lists of medicinal plants recorded from the respondents' response

Plant's local name	Common name	Plants scientific name	Plants parts with medicinal value
Goodarree	Gaderi	*Colocasia esculenta*	Underground stem
Shumburaa	Chickpea	*Cicer arietinum*	Seeds
Talbaa	Flax or linseed	*Linum usitatissimum*	Seeds
Waddeessa	Mukebu or mukumari	*Cordia Africana*	Bark
Sunqoo	Fenugreek	*Trigonella foenugraceum*	Seeds
Ceekaa	Wild Laburnum	*Calpurnia aurea*	Leaf
Eebicha	Ewuro, Mujonso	*Vernonia amygdalina*	Leaf part
Heexoo	Hagenia, Kosso	*Hagenia abyssinica*	Bark, leaf
Waggartii			Leaf
Qullubbii adii	Garlic	*Allium sativum*	Bulb
Zijimbila	Ginger	*Zingiber officinale*	Underground stem
Abasuuda gurraacha	Black-cumin	*Nigella sativum*	Seeds
Biiftii			Bark, leaf
Bakkanniisa	Broad-leaved croton	*Croton macrostachyus*	Leaf, bark
Geeshee	Dogwood, buckthorn	*Bhamnus prinoides*	Leaf
Hiddii harree	Yellow-berried Nightshade	*Solanum virginianum*	Fruit juice
Buqqee			Leaf
Qobboo	Castor bean	*Ricinus communis*	Root, leaf
Andoodee	Andoodee (Afaan Oromoo)	*Phytolacca dodecandra*	Root, leaf
Arangamaa magariisa			Root
Kalaalaa			Leaf
Shuultii			Root, leaf
Hiddii hoolotaa			Fruit juice
Gambeela			Fruit
Adaamii		*Eurphobia*	Liquid from its bud
Botoroo			Bark, leaf
Asangira/Manjii/			

Table 3. Lists of plants used to treat disease related with digestive system

No.	Disease name	Plants used to treat (Local name)/ In Afaan Oromoo	Plants scientific name	Plants part which used as medicine	How to prepare the medicine from plants part	How to give the prepared medicine	The route of taking (i.e. oral, mouth,)
1.	Gastric	Shumburaa		Seed	By germinating it and eating its germinated seed for about a weak	By eating germinated seed of the plants.	Through mouth
		Goodarree	*Colocasia esculenta*	Tuber	By digging out the tuber of the plant and boiling it then cooling a day.	By eating the boiled and cooled the tuber for about a week	Through mouth i.e. by eating.
		Talbaa	*Linum usitatissimum*	Seed	By grinding the seeds	By drinking the solution of its powder	Oral
		Waddeessa	*Cordia africana*	Bark	By extracting the liquid part of the bark	By drinking the extracted liquid	Oral
2.	Amoebiasis	Sunqoo	*Trigonella foenugraceum*	Seed	By eating the seed	Simply taking the seed	Oral
		Ceekaa	*Calpura aurea*	Leaf part	By dissolving the grinded leaf	Drinking the prepared liquid	Oral
		Eebicha		Leaf part	By grinding the leaf	By drinking the liquid extraction	Oral
3.	Giardiasis	Sunqoo	*Trigonella foenugraceum*	Seed	By eating the seed	Simply taking the seed	Oral
		Ceekaa	*Calpura aurea*	Leaf part	By dissolving the leaf after it grinded.	By drinking the prepared liquid from the grinded leaf	Oral
4.	Tapeworm	Heexoo	*Hagenia abyssinica*	Seed. Leaf, cork	By taking the leaf, seed and cork part of the plant and grinding together.	By mixing in the water	Oral
		Waggartii		Leaf	By grinding it to get the liquid	Drinking the prepared liquid	Oral
5.	Abdomen pain	Qullubbii adii + Macaafata gurraacha + Zinjibila	Garlic + + Ginger	Bulb + seed + underground stem	By grinding all this together.	By dissolving those grinded parts together and then drinking it.	Oral

No.	Disease name	Plants used to treat (Local name)/ In Afaan Oromoo	Plants scientific name	Plants part which used as medicine	How to prepare the medicine from plants part	How to give the prepared medicine	The route of taking (i.e. oral, mouth,)
6.	Ascariasis	Waggartii		Leafy part	By grinding the leafy part	By drinking the liquid extracted.	Oral
		Biiftii		Leafy part, bark	By grinding the leafy part	By drinking the dissolved leaf part of the plant	Oral
		Bakkanniisa	*Croton macrostachyas*	Leaf	By boiling the leaf part to get liquid	By drinking the prepared liquid.	Oral
7.	Tonsillitis	Geeshee	*Bhamnus prinoides*	Leaf part	By grinding the leaf part.	By drinking the grinded plant part.	Oral
		Hiddii harree		Fruit juice	By taking fruit juice of the plant	By painting on the tonsillitis area gently.	Oral

Table 4. List of medicinal plants used to treat skin diseases

No.	Disease name	Plants used to treat (Local name)/ Afaan Oromoo	Plants scientific name	Plants part which used as medicine	How to prepare the medicine from plants part	How to give the prepared medicine	The route of taking (i.e. oral, mouth,)
1.	Tinea capititis (Baarilee)	Bakkanniisa	*Croton macrostachyas*	Plants bud	Taking the liquid part from bud of the plant.	By pouring the liquid on the skin infected by this disease	By painting on the skin.
2.	Ring worm	Asangira (Manjii)		Leafy parts	By liquid from the plants leafy part.	By painting on the skin infected with this fungus.	By painting on the skin.
		Buqqee kichuu,		Bud leafy part	By taking the liquid from the leaf.	Painting area of the skin with this infection.	Painting the skin.
3.	Anthrax	Qobboo	*Ricinus communis*	root	By grinding the root part	Drinking and painting after dissolving the grinded root part	Painting, drinking
		Andoodee		root	By grinding the root part	Drinking and painting after dissolving the grinded root part	
		Arangamaa magariisa		root	By grinding the root part	Drinking and painting after dissolving the grinded root part	

No.	Disease name	Plants used to treat (Local name)/ Afaan Oromoo	Plants scientific name	Plants part which used as medicine	How to prepare the medicine from plants part	How to give the prepared medicine	The route of taking (i.e. oral, mouth,)
		Kalaalaa Shuultii Hiddii hoolotoo		Root + leaf root root	By grinding those three plants together	Drinking if it is internal, suspending and drinking the grinded sample on the skin until it cure.	Oral if it is internal and painting +drinking if skin.
4.	Tinea pedis	Bakkanniisa		Leaf part	By boiling the leaf to get the liquid.	By washing the foot continually for certain days.	Washing the skin.
5.	Kintaarotii	Gambeela		fruit	By detaching the fruit from plant and heating it.	By touching disease with heated fruit.	Around the disease
6.	Kormammuu	Adaamii		Liquid from its stem	By detaching the bud of the plant to get the liquid	By painting on the skin.	Painting on skin
7.	Foroforii	Loomii		Its fruit juice	By taking the acidic liquid part from the fruit	By washing the hair with that acidic liquid repeatedly	Washing hair
8.	Snake beat	Qoricha bofaa		Liquid of leaf	By preparing the liquid from the leaf of plant	By painting the skin with the liquid.	Painting the skin.
		Ceekaa, + Niitii bofaa		Leaf + underground stem	By grinding those parts together	Drinking the grinded plants liquid and painting on the skin	Painting the skin and oral
9.	Afuuffaa buutii	Botoroo		Fleshy cork	By grinding the fleshy cork	By drinking and painting on the skin	Oral and painting the skin.
10.	Cophxoo	Andoodee	*Phytikacca dodecandra*	Leaf	By grinding the leaf	By drinking the dissolved grinded plant part and also painting	Oral, painting outer

Table 5. Lists of medicinal plants recorded from the respondents' response

Plant's local name	Common name	Plants scientific name	Plants parts with medicinal value
Goodarree	Gaderi	*Colocasia esculenta*	Underground stem
Shumburaa	Chickpea	*Cicer arietinum*	Seeds
Talbaa	Flax or linseed	*Linum usitatissimum*	Seeds
Waddeessa	Mukebu or mukumari	*Cordia Africana*	Bark
Sunqoo	Fenugreek	*Trigonella foenugraceum*	Seeds
Ceekaa	Wild Laburnum	*Calpurnia aurea*	Leaf
Eebicha	Ewuro, Mujonso	*Vernonia amygdalina*	Leaf part
Heexoo	Hagenia, Kosso	*Hagenia abyssinica*	Bark, leaf
Waggartii			Leaf
Qullubbii adii	Garlic	*Allium sativum*	Bulb
Zijimbila	Ginger	*Zingiber officinale*	Underground stem
Abasuuda gurraacha	Black-cumin	*Nigella sativum*	Seeds
Biiftii			Bark, leaf
Bakkanniisa	Broad-leaved croton	*Croton macrostachyus*	Leaf, bark
Geeshee	Dogwood, buckthorn	*Bhamnus prinoides*	Leaf
Hiddii harree	Yellow-berried Nightshade	*Solanum virginianum*	Fruit juice
Buqqee			Leaf
Qobboo	Castor bean	*Ricinus communis*	Root, leaf
Andoodee	Andoodee (Afaan Oromoo)	*Phytolacca dodecandra*	Root, leaf
Arangamaa magariisa			Root
Kalaalaa			Leaf
Shuultii			Root, leaf
Hiddii hoolotaa			Fruit juice
Gambeela			Fruit
Adaamii		*Eurphobia*	Liquid from its bud
Botoroo			Bark, leaf
Asangira/Manjii/			

3.1.4 Medicinal plants used to treat disease related with human skin

After collecting the survey from medicinal vendors and users around the study area, the following lists of medicinal plants were recorded as traditional medicinal plants that can treat skin and skin related diseases. These plants are: *Croton macrostachyas, Ricinus communis, Phytikacca dodecandra, and Calpura aurea.*

4. DISCUSSION

Data regarding medicinal plants was collected from available vendors of medicinal plants in Jeldu Woreda. Many plants are being used to treat both skin condition as well as stomach problem. Study of Habibh et al. showed that herbal medicines of Dastena are mostly used to treat digestive and respiratory system disorders. Specific parts of the plants are used to develop such medicines experts in this regard show variegated respond in this respect [12]. The herbalist advised on the samples to be collected as the plant part being used for treatment. In respect to that study of Allur*iet. al* supports that brine shrimp bioassay is simple reliable and convenient method for assessment of bioactivity of medicinal plants and support lending for their use are much enriched in traditional medicine is done [10]. Same as of that Wubetu *et al,* the data collected include the parts of plants with medicinal value, if it is leaves, roots or stem bark [13]. Therefore in this study totally 68 respondents were participated. Out of this 21 respondents were medicinal plant vendors while 47 respondents were users of medicinal plant. According to data from the medicinal plant vendors and users total of 26 plant species were identified with identification of the plants' part which has medicinal value. Also the modes of preparation were included in this research.

Among this plants species more than half of them used to treat digestive system disease. According to Balcha Abera 49 plant species were identified as they can treat human ailment disease [14]. Among this most species were collected from wild while the rests from home garden. Therefore the recent research has relation with the pre-studied researches.

And also the surveys of medicinal plants regarding skin disease were collected and there were many identified plants. From the 26 plant species about half of those plants were recorded for their ability to treat skin disease. The application of the prepared medicine on skin is mostly by painting the liquidified medicine from plant on infected skin.

While using the traditional medicinal plants there is no standardized doze of the medicine. Same is true regarding this study. When the vendors asked about the doze the medicine they are giving they simply told approximately and the doze they practiced before. But this doze can affect some people with immunity problem, children and all other users of the medicine.

Regarding the blood related disease, even if the questionnaire was prepared and given for them the respondents responded that, as they have no enough practice of medicinal plant which can treat blood related disease.

5. CONCLUSION

This research concluded that there were some plants used to treat some human disease in Jeldu Woreda. The knowledge of using medicinal plants passed from generation to generation orally. This undocumented oral transfer of the knowledge from generation to generation can cause limitation of using medicinal plants. Therefore, this research tried to document some medicinal plants used to treat human gastrointestinal, skin and other disease by including the mode of preparation and how to apply. The research was done by using instruments; questionnaire and interview. In this research about 68 respondents were participated. Out of those respondents 21 were vendors of medicinal plants while 47 were users of medicinal plants. Study of traditional medicinal plants used to treat disease related to human digestive systemindicates that the study area is rich in its medicinal plant composition and the associated indigenous knowledge. The wide uses of these medicinal plants indicate that there is good consensus on the effectiveness of their medicinal properties. Traditional medicinal plants are harvested largely from wild plants and in small proportion from cultivated plants for various purposes. According to the data from respondents' plant parts which are serving as medicine are: leaf part, stem, root, their fruit and the liquid part from plants and there is also a time where two or more plants combined to serve as a medicine.

Even if there is knowledge of traditional plants in the people it was limited to some peoples and it is not helping all community where there are no healers of that medicinal plants. The results of this study would have significant contribution in recording and preservation of the knowledge of the Jeldu Woreda community on medicinal plants.

According to socio-demographic statistics of the respondents, the elders are more experienced toward the medicinal plants. Therefore, it needs to be recorded since they pass the knowledge orally from generation to generation. The loss of the elders with this knowledge can cause loss of the knowledge of medicinal plant. Therefore, this research tried to solve this problem by recording the medicinal plants in the selected site.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Kloucek P, Polesny Z, Svobodova B, Vlkova E, Kokoska L. Antibacterial screening of some Peruvian medicinal plants used in Callería District. J. Ethnopharmacol. 2005;99:309–312.
2. Nivo H. Rakotoarivelo, Fortunat Rakotoarivony, Aro Vonjy, Ramarosandratana, Vololoniaina H. Jeannoda, Alyse R. Kuhlman, Armand Randrianasolo, Rainer W. Bussmann, Medicinal plants used to treat the most frequent diseases encountered in Ambalabe rural community, Eastern Madagascar. J Ethnobiol Ethnomed. 2015; 11:68.
3. Taha D, Khouzama K, Zabta K. Survey of medicinal plants currently used by herbalists in Lebanon. Pak. J. Bot. 2013; 45(2):543-555.
4. Gidey Yirga. Assessment of traditional medicinal plants in Endrta District, South-eastern Tigray, Northern Ethiopia. African Journal of Plant Science. 2010;4(7):255-260.
5. Liliana De la Cruz-Jiménez, Marco Guzmán-Lucio and Ezequie lViveros-Valdez. Traditional medicinal plants used for the treatment of gastrointestinal diseases in Chiapas, México. World Applied Sciences Journal. 2014;31(4):508-515.
6. Amiri MS, Joharchi MR. Ethnobotanical investigation of traditional medicinal plants commercialized in the markets of Mashhad, Iran. Avicenna Journal of Phytomedicine. 2013;3(3):254–271.
7. Soeren Ocvirk†, Martin Kistler†, Shusmita Khan, Shamim Hayder Talukder and Hans Hauner. Traditional medicinal plants used for the treatment of diabetes in rural and urban areas of Dhaka, Bangladesh – an ethnobotanical survey. Journal of Ethnobiology and Ethnomedicine; 2013.
8. Ekor M. The growing use of herbal medicines: Issues relating to adverse reactions and challenges in monitoring safety. Frontiers in Pharmacology. 2013; 4:177.
   Available:http://doi.org/10.3389/fphar.2013.00177
9. World Health Organization. 'Guideline: Vitamin A supplementation in infants and children 6–59 months of age'. World Health Organization. 2011;1–25.
   DOI: ISBN 978 92 4 150176 7
10. Alluri V. Krishnaraju Tayi VN. Rao, Dodda Sundararaju, Mulabagal Vanisree, Hsin-Sheng Tsay, Gottumukkala V, Subbaraju. Assessment of bioactivity of indian medicinal plants using Brine Shrimp (Artemiasalina) Lethality Assay. International Journal of Applied Science and Engineering. 2005;3(2):125-134.
11. Shinwari ZK, Gilani SA, Khan AL. Biodiversity loss, emerging infectious diseases and impact on human and crops. PAK. J. Bot. 2012;44(SI):137-142.
12. Habib-allah Mohammadi, Seyed-Ebrahim Sajjadi, Mostafa Noroozi, Mahmoud Mirhosseini. Collection and assessment of traditional medicinal plants used by the indigenous people of Dastena in Iran. J Herb Med Pharmacol. 2016; 5(2):54-60.
13. Muluken Wubetu, Tefera Abula, and Getye Dejenu, Ethnopharmacologic survey of medicinal plants used to treat human diseases by traditional medical practitioners in Dega Damot district, Amhara, Northwestern Ethiopia, Published; 2017.
   DOI: 10.1186/s13104-017-2482-3

14. Abera B. Medicinal plants used in traditional medicine by Oromo people, Ghimbi District, Southwest Ethiopia. Journal of Ethnobiology and Ethnomedicine. 2014;10,40. Available:http://doi.org/10.1186/1746-4269-10-40

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