Ethnobotanical study of medicinal plants used to treat human ailments in Oda-Bultum district, west Hararghe zone of Oromia region, Ethiopia

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Research

Abstract

Background: Traditional medicinal plants of Oda-Bultum district in west Hararghe, Ethiopia were studied.

Methods: Medicinal plants and socio-demographic features were obtained through semi-structured interviews, group discussion and guided onsite observations. Informant consensus factor, preference ranking and fidelity level were employed for the data analysis. Moreover; descriptive statistics, t-test, analysis of variance and linear regression were used to reveal the effects of socio-demographic factors on respondents' traditional medicinal knowledge.

Results: Totally 161 species distributed among 68 families were enumerated for the treatment of 70 human ailments. Asteraceae and Lamiaceae were species rich families. Leaves were the most frequently (41.43%) reported plant parts for the preparation of remedies. Crushing, or pounding was the principal approach of remedy preparation. Oral administration was frequently (66.3%) used route of application. The highest (0.45) ICF was observed for Gastro-intestinal related ailments category. *Alysicarpus rugosus* and *Phytolacca dodecandra* scored 100% of FL for Cough and Gonorrhea, respectively. In PR, *Carica papaya* was ranked first to treat typhoid. The tested socio-demographic features including age, occupation and educational level significantly ($p< 0.05$) affected the traditional knowledge on medicinal plants possessed by the study population. Analysis of multiple regression also suggested these factors are determinants of the ethnomedicinal knowledge of the people of the study district.

Conclusions: From this study, we conclude that, besides allopathic medication the indigenous people of Oda-Bultum district depend on traditional medicine of plant origin. Therefore, plants of the district and associated local medicinal knowledge should be given due attention for conservation and further pharmacological investigation.

Keywords: Ethnomedicine; Ethnobotanical indices, Herbal medicine; Indigenous knowledge, Medicinal plants; Oda-Bultum, Traditional healing practices

Background

Traditional medicine (TM) has a long history of use in health maintenance and practiced almost in every country in the world (Rayan 2014). The World Health Organization (WHO) estimates that about 60% of people in the world use TM, and up to 80% of the population living in Africa depend on it for some aspects of healthcare need (WHO 2000). Particularly, for many rural communities in Africa, TM is the major and in some cases the only available source for healthcare provision (Antiwi-Baffour *et al*. 2014). So far, modern healthcare system has never been adequate to provide equitable health services in Ethiopia due to financial limitations of the country (Hunde *et al*. 2006, Bogale *et al*. 2023). Therefore, TM medicine that mainly based on plant resources is an alternative healthcare system in most rural areas. World Health Organization has recognized that TM sector is crucial in ensuring people's access to preventative, curative and rehabilitative healthcare services with minimal financial input. Hence, in order to promote widespread health coverage, countries should attempt to integrate TM services into conventional healthcare services (WHO 2013).

Indigenous people develop their local-specific knowledge (Indigenous knowledge) on the use and management of plants including medicinal plants through long years of interactions with them in their surroundings (Gebeyehu *et al*. 2014). Indigenous knowledge on TM involves collection of raw materials, preparation of remedies, traditional diagnosis and prescription of remedies to patients. These practices may vary with locality within a given country and/or region due to socio-cultural influence, historical background and availability of medicinal resources (WHO 2013). Difference in indigenous knowledge may also exist within the same ethnic group based on variation in gender, age, social standing, profession and intellectual capabilities (Agize *et al*. 2013).

Plants are the major components in TM system that have formed the basis of healthcare throughout the world since the earliest days of humanity (Gebeyehu *et al*. 2014, Silva & Fernanandes 2010, Megersa *et al*. 2013, Yassin *et al*. 2015). They have played a central role in combating many human and livestock ailments in many indigenous communities of Africa including Ethiopia. Traditional healers, particularly herbalists, have detailed knowledge base of traditional medicine (Kuma *et al*. 2015). Knowledge in TM does more than providing raw materials used in traditional remedy. They serve as valuable guidance in selecting and obtaining plant material of potential therapeutic interest for modern drug development (Samuel *et al*. 2015). In the face of newly emerging infectious diseases, growing multidrug resistance by pathogenic microorganisms and the proliferation of degenerative diseases, indigenous knowledge on TM is of paramount importance in new drug discovery from plants.

Of about 250,000 identified vascular plant species of the globe, 50,000-80,000 are reported to have medicinal use. About 15,000 of these plant species are endangered to extinction due to anthropogenic and natural factors. As a result, our planet, earth, is losing at least one potential major drug every two years (CBD 2008). The loss of medicinal plant may also result in the loss of associated indigenous knowledge (Andarge *et al*. 2015). Therefore, medicinal plants and associated indigenous knowledge are under big threats nowadays. Thus, botanical collection and documentation of associated knowledge should be carried out before such rich heritages are lost (Yirga 2010a, Yirga 2010b). Most available literatures indicate that ethnobotanical studies on medicinal plants are carried out in south, southwest, central, north and north-west part of Ethiopia. However, such studies are scanty in eastern part of the country (Belayneh *et al*. 2012) including Oda-Bultum district in West Haraghe zone, Ethiopia. Majority of the indigenous people living in Oda-Bultum district belong to *Oromo* ethnic group, i.e., the dominant ethnic community in Ethiopia (Kuma *et al*. 2015). The *Oromo* ethinic community has been governed by a longstanding traditional social structure called *Gada* System. The *Gada* system establishes regulatory mechanisms to help the community preserve natural resources, maintain social, political and cultural systems (Yineger *et al*. 2008). *Oromo* people possess highly accumulated indigenous knowledge on natural resources of their surroundings, and rely much on them for various purposes. Particularly, they have acquired a rich traditional medicinal knowledge on using plants of their vicinity to treat human and livestock ailments. In spite of their conscious positive attitude to preserve plant diversity, medicinal plants and associated indigenous knowledge are under threat because of growing human population size and related factors. Therefore, the objective of this study was to document ethnomedicinal practices of the indigenous people for the treatment of various human ailments.

Materials and Methods

Description of the Study Area

The study was carried out in Oromia Region, West Hararghe Zone in Oda-Bultum district (8^{O}10' & 9^{O}0' N and 40^{O} 50' & 41^{O}21' E), Ethiopia. The district is found at about 361 km to the east of Addis Ababa, the capital of Ethiopia. The altitude of the district ranges from 840-2920 m.a.s.l. (Western Hararghe Zone Rural Land Administration Office: SPM, 2016) (Figure 1). The

study district has a bimodal rainfall pattern with high rainfall between June and September, and small amount between March and May. Annual average rainfall ranges from 900-1200 ml. The dry season usually extends from October to February. The annual average temperature of the district ranges from 22-29 ^{o}C (Oda-Bultum Agricultural and rural Development Office, 2014).

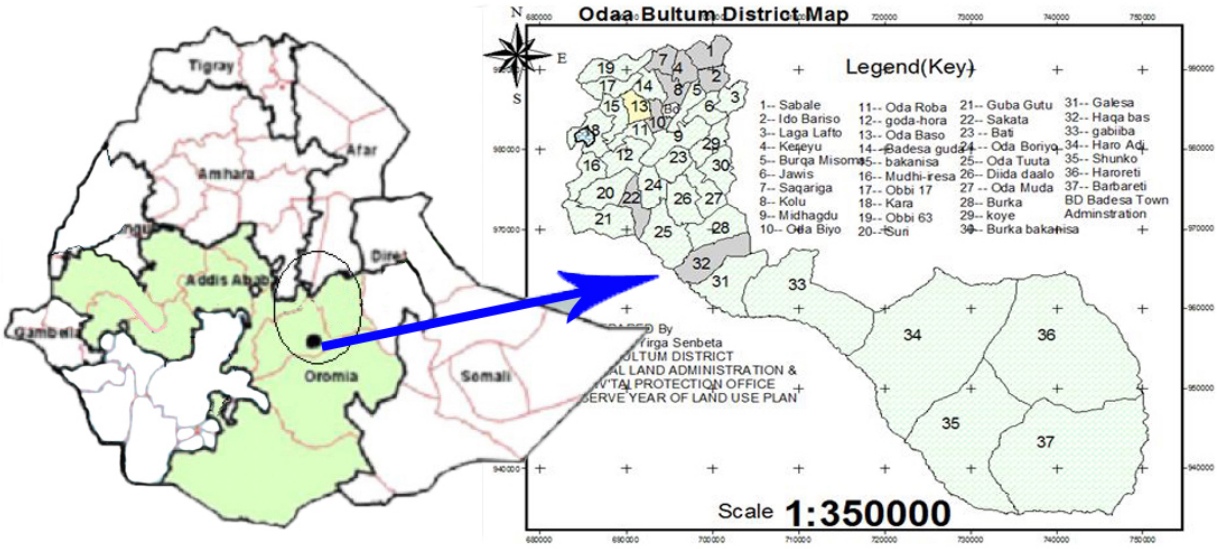

Figure 1. Map of Oda-Bultum district

Selection of study site and respondents

Reconnaissance survey was made to identify potential study *kebeles* (*kebele* is smallest administrative unit). Out of 39 *kebeles* of the district, six *kebeles* were purposively selected based on the availability of traditional medicine practitioners with guidance of experts of the district's Agricultural and Rural Development and Health Offices. These *kebeles* were Sebale (1800-2920 m.a.s.l.), Obbi (1960-2280 m.a.s.l.), Bate (1990-2060 m.a.s.l.), Surri (1860-1920 m.a.s.l.), Hake-Bas (1380-1660 m.a.s.l.) and Gebiba (1380-1660 m.a.s.l.). Prior to ethnobotanical data collection, respondents were picked from the selected *kebeles*. Totally, 395 respondents of which 348 are ordinary (non-key-informants) residents and 47 key informants (traditional herbalists) have participated in the study. Non-key-informants were selected randomly, whereas key informants were selected purposively based on the information gathered from the local people such as *kebele* administrators, development agents, elders and health extension workers. The total population size of the six *kebeles* was estimated to be 31225. The sample size was determined using Yemane's (1967) formula, which was then apportioned to the *kebeles* based on their population share.

Socio-demographic and ethnobotanical data collection

Socio-demographic and ethnomedicobotanical data were gathered on three field trips made to the sites. Preceding to data collection, permission was sought from the study district Administrative Office. This office communicated with chiefs of the selected *kebeles* through official letters to let us collect data in the villages. Upon arrival to the villages, we explained the objective of the research to the selected informants, and obtained their oral consent to share information on ethnomedicinal practices. First respondents were interviewed separately on socio-demographic data including gender, age, educational level, marital status, religion and occupation. Then, ethnobotanical data were collected through semi-structured interviews, group discussions and field visits with key informants for observations. Respondents were interviewed individually to mention about the local names of plants they use to treat diseases, diseases treated, part(s) of plants used, methods of preparation of remedies, route of application of remedies and dosage. Interview questions were prepared in English and translated to *Afaan Oromo*, the local language. After interview, we made discussions with 6-9 key informants based on the prepared checklist and went to the field with them for onsite observation of the plants and specimen collection. Voucher specimens were collected and prepared as per herbarium procedure for identification. Some common species were preliminarily identified in the field by using a hand book prepared by Tesemma (2005). In addition, further identification of all specimens was done by comparing with authentic specimens, illustrations and taxonomic keys from different volumes of Flora of Ethiopia and Eritrea, and with the assistance of experts of Haramaya University Herbarium. The identified specimens were deposited in Haramaya University Herbarium.

Data analysis

Descriptive statistical method was used to analyze qualitative data. Quantitative ethnobotanical indices including informant consensus factor (ICF) and fidelity level (FL) were computed. Informant consensus factor is a value that shows extent of agreement between people on the medicinal values of plants for the cited illness. In order to calculate this index, we first broadly classified the reported ailments into 8 categories (Table 2). ICF value was determined as follows:

$$\mathrm{ICF} = \frac{\mathrm{nur} - \mathrm{nt}}{\mathrm{nur} - 1}$$

Where, nur = is number of use citations for each ailment, nt= is the number of species used for the ailment category (Rodringo 2005, Teklehaymanot & Gidey 2007).

FL, which shows a tendency of using a given plant to treat single ailment was computed by following the equation used by Rodringo (2005) as follows:

$$\mathrm{FL}(\%) = \frac{\mathrm{NP}}{\mathrm{N}} * 100$$

Where, FL**=** fidelity level, Np = the number of informants that claim the use of a plant species to treat a particular disease, N = the number of informants that use the plants as a medicine to treat any given disease.

Preference ranking was also done for one of the most cited life threatening human diseases, Typhoid. Eight medicinal plants were cited to treat typhoid, and ten key informants were selected to take part in a preference ranking to rank the cited plants according to their perceived efficacy by assigning the highest number (10) for the most effective and 1 for the least effective plant.

Impacts of socio-demographic features on ethnomedicinal knowledge of the respondents were also analyzed by independent t-test and one-way ANOVA. Multiple regression analysis was ran to identify socio-demographic factor(s) that predicted respondents' ethnomedicinal knowledge. For statistical analyses, we used SPSS version 16, and statistical differences were considered significant at $p<0.05$.

Results and Discussion

Reported medicinal plants

A total of 161 medicinal plant species distributed among 68 families were recorded from the six *kebeles* of Oda-Bultum district to treat about 70 human ailments (Table 1). Documentation of quite large number of medicinal plants shows that Oda-Bultum district harbors diverse flora and wide utilization of traditional medicine of plant origin. Among the reported human ailments, body swelling, ailments caused by intestinal parasites, gonorrhea, febrile illness, typhoid, wound, kidney problem, tonsillitis and cough/common cold were among top ten cited important ailments. This may suggest the commonness of these ailments in the study district so that a large number of community members have well recognized them. Assessment of familial species richness showed that Asteraceae with 13 species was the richest family followed by Lamiaceae (12 spp.); Fabaceae (11 spp.); Solanaceae and Euphorbiaceae (6 spp. each); Brassicaceae, Rutaceae, Malvaceae and Poaceae (5 spp. each); Cucurbitaceae and Myrtaceae (4 spp. each); and Verbenaceae, Apiaceae, Minispermaceae, Rosaceae, Anacardiaceae and Rhmnaceae (3 spp. each). Most of these families were reported in previous surveys (Usman *et al*. 2022, Desalegn *et al*. 2022) made in different parts of Oromia region, Ethiopia showing a wide ecological distribution of these families and agreement among *Oromo* ethnic group of different localities on their medicinal values. According to Ricklefs & Renner (1994) successful ecological adaptations support familial species richness with which the local people be familiarized and explored their medicinal properties through time. Popularity of these families for medicinal use suggests production of diverse secondary compounds. For example, some species under Asteraceae are known to produce sesquiterpene lactones (Chadwick *et al*. 2013) and phenolic compounds (Jaiswal *et al*. 2011, Petropoulos *et al*. 2019). Moreover, a study conducted by Tesfaye *et al*. (2021) showed anticancer activity of extracts from species under Asteraceae. Similarly, antidiabetic and antimicrobial properties were reported by Gyang *et al*. (2004), Sasikumar *et al*. (2005) and Teka *et al*. (2015). Studies also show that members of Lamiaceae family possess a variety of essential oil contents such as terpenoids, flavonoids, phenolics and alkaloids that have pharmacological importance (Poonkodi 2016). Therefore, these families deserve closer attention to explore the active principles for the treatment of reported ailments. The rest 51 families had 2 or 1 species.

Table 1. List of medicinal plants collected from the study area

Voucher Number	Scientific name, habit	Family name	Local name	Disease treated	Part(s) used, method of preparation and application
SOB-22-091	*Achyranthes aspera* L., Herb	Amaranthaceae	Darguu-daalattii	Wound/skin burn	Fresh **Leaves** will be crushed to smear the extract on the affected body part
				Back pain	Fresh **Root** will be crushed, boiled with milk and drunk
				Febrile illness	Fresh **Leaves** will be crushed and squeezed to drink the extract
				Tooth ache	Fresh **Leaves** will be crushed and held on the affected tooth
				Gonorrhea	Fresh **Root** will be pounded, mixed with water and drunk
SOB-22-082	*Acokanthera schimperi* (A.DC.) Schweinf., Tree	Apocynaceae	Qaraaruu	Gonorrhea	Fresh **Root** will be pounded together with root of *Euclea racemosa, Alysicarpus rugosus* and *Gomphocarpus fruticosus,* mixed with water and drunk
SOB-22-073	*Justicia schimperiana* (Hochst.ex Nees) T. Anderson, Shrub	Acanthaceae	Dhumugaa	Jaundice	Fresh **Root** will be pounded together with the root of *Ehretia cymosa,* mixed with water and drunk
				Gonorrhea	Fresh **Root** will be pounded together with the root of *Euclea racemosa* mixed with water and drunk
				Typhoid	
				Lymph node swilling, Wound	Fresh **Leaves** will be crushed and soaked in water to wash the affected body part
				Rabies, Amoebiasis	Pounded fresh **root** is mixed with water and drunk
SOB-22-017	*Agave sisalana* Perrine, Shrub	Agavaceae	Algee	Ear disease	Fresh **Leaf** will be heated and squeezed to drop its extract in to the ear
SOB-22-020	*Allium cepa* L., Herb	Amaryllidaceae	Shunkurtii diimtuu	Impotence	**Bulbs** will be pounded together with rhizomes of *Ginger officinale* and boiled with seeds of *Cicer arietinum* to eat
				Heartburn	**Bulbs** will be chewed and swallowed
SOB-22-157	*Allium sativum* L., Herb	Alliaceae	Qulubbii-adii	Febrile illness	**Bulbs** will be chewed with seeds of *Lepidium sativum* and swallowed
				Dyspepsia/ Bloating	**Bulbs** will be chewed then swallowed
				Intestinal parasite	**Bulbs** will be chopped, boiled in water and drunk
				Wound	**Bulbs** will be pasted and smeared on the wound
				Toothache	**Bulbs** will be crushed and held on the tooth
				Common cold	**Bulbs** will be chopped and concocted with honey to eat
				Typhoid	Chopped **Bulbs** & rhizome of *Ginger officinale* will be concocted in water and drunk
				Throat infection, Nerve problem (paralysis)	**Bulbs** will be crushed, mixed with honey and eaten
SOB-22-108		Aloaceae	Hargisa	Hypertension	Fresh **Leaves** will be crushed, mixed with water and to drink

	Aloe bertemariae Sebsebe and Dioli, Herb			Diabetes	
				Gonorrhea	Fresh **Root** will be pounded, soaked in water and drunk
				Kidneys disease	
				Impotence	Fresh **Leaves** will be crushed, mixed with water and sugar to drink
				Diarrhea	
				Ear disease	Fresh **Leaves** will be crushed and squeezed to drop the extract into the ear
				Typhoid	Fresh **Leaves** will be crushed, mixed with water and sugar to drink
				Nerve problem (paralysis)	Crushed fresh **Leaves** will be used to massage patient's body
				Skin warts	**Latex** will be heated and creamed on the affected area
SOB-22-127	*Aloysia citrodora* Palau, Shrub	Verbenaceae	Naanaa	Cough/ Common cold	Fresh **whole** plant will be boiled with goat milk and drunk
				Uvula infection	Fresh **whole** plant will be crushed and squeezed for gargling and swallowing the extract
SOB-22-018	*Alternanthera sessilis* (L) DC., Herb	Amaranthaceae	Mararree-furdoo	Eczema	Fresh **entire** plant part will be roasted, powdered, and mixed with butter or oil to smear on the affected area
				Hemorrhoid	Fresh **entire** plant will be pounded mixed with oil of *Olea hochstetteri* to apply on the anus
SOB-22-025	*Alysicarpus rugosus* (Willd.) DC., Herb	Fabaceae	Alii-hanqaa	Impotence	Fresh **Root** will be crush and mixed with water to drink
				Gonorrhea	Pounded fresh **Root** will be concocted with that of *Gomphocarpus fruticosus, Acokanthera schimperi* and *Euclea racemosa* in water and drunk
				Cough	Fresh **Root** will be crushed, boiled with tea and drunk
SOB-22-023	*Anethum foeniculum* L., Herb	Apiaceae	Shish	Diabetes	**Fruits** and **seeds** will be pounded mixed with water and drunk
				Intestinal worms	
SOB-22-159	*Anthemis tigreensis* J.Gay ex A. Rich., Herb	Asteraceae	Zar-nab	Cough	Pounded fresh **seeds** and **leaves** together with the leaves of *Otostegia integrifolia* and concocted with coffee to drink
SOB-22-035	*Aristolochia bracteolata* Lam., Herb	Aristolochiaceae	Foroorree	Intestinal worms	Fresh **Root** will be crushed, boiled with coffee and drunk
SOB-22-032	*Artemisia afra* Jacq.ex Willd., Herb	Asteraceae	Saakayyee-adii	Typhoid	Fresh **Leaves** will be crushed, mixed with water and drunk
				Hiccups	
SOB-22-031	*Asparagus africanus* Lam., Shrub	Asparagaceae	Saaritee-adii	Urine retention	Fresh **Leaves** will be pounded, mixed with water and drunk
				Diarrhea	

				Gonorrhea	Fresh **Leaves** will be pounded together with the leaves of *Catha edulis* and drunk
				Uvula infection	Fresh Leaves will be chewed to swallow the extract
				External parasite infestation	**Leaves** will be pounded together with the leaves of *Spilanthes mauritiana* and applied on the body
SOB-22-029	*Asparagus racemosus* Willd., Shrub	Asparagaceae	Saaritii-gurraatii	Urine retention	Fresh **Leaves** will be pounded, mixed with water and drunk
				Diarrhea	
				Gonorrhea	Fresh **Leaves** will be pounded together with the leaves of *Catha edulis*, mixed with water and drunk
				External parasite	Fresh **Leaves** will be pounded together with the leaves of *Spilanthes mauritiana* and rubbed on the affected body
SOB-22-004	*Asplenium aethiopicum* (Burum.f.) Becherer Shrub	Aspleniaceae	Bega-nagubdee	Skin burn	Fresh Leave will be crushed and then placed on the affected body part
SOB-22-009	*Balanites aegyptiaca* (L.) Del. Tree	Balanitaceae	Beddennoo	Uterus problem	Dry **stem** will be smashed together with stem of *Syzygium guineense* and *Zizyphus spina-christi* and fumigate the vagina with its smoke
SOB-22-057	*Bersama abyssinica* Fresen., Tree	Melianthaceae	Qillisaa	Ascariasis	Dry **fruits** and **seeds** will be powdered, mixed with water and drunk
				Taeniasis	
SOB-22-011	*Bidens pilosa* L., Herb	Asteraceae	Cogooggee	Fungal skin infection	Fresh **Leaf** will be crushed together with the leave of *Xanthium spinosum* then rubbed on the affected area
				Skin cut bleeding/wound	Fresh **Leaves** will be crushed and placed on the affected body part
				Febrile illness	Fresh **Leave** will be crushed, squeezed to drink the extract
				Nasal bleeding	Fresh **Leave** will be crushed and squeezed to drop the extract into the nostrils
SOB-22-146	*Brassica nigra* (L.) W.D.J. Koch, Herb	Brassicaceae	Sinaafiic	Throat infection	Dried **Seeds** will be roasted, pounded together with the bulb of *Allium sativum*, mixed with honey and eaten
				Intestinal parasite	Dried **Seeds** will be powdered, mixed with water and drunk
				Bone cancer	Dried **Seeds** will be powdered, boiled in water together with the root of *Gomphocarpus fruticosus* and drunk
				Common cold	Dried **Seeds** will be powdered and drunk with tea
				Asthma	Dried **Seeds** will be roasted, powdered together with the bulb of *Allium sativum*, mixed with honey and eaten
SOB-22-098	*Brassica carinata* A.Braun,	Brassicaceae	Midhaan-Raafuu	Dyspepsia	Dried **Seeds** will be chewed and swallowed

	Herb			Uterus problem	Dried **Seeds** will be roasted together with seed of *Trigonella foenum-graecum,* powdered and mixed with water to drink
				Malaria	Dried **Seeds** will be pounded together with bulb of *Allium sativum*, mixed with honey and eaten
				Typhoid	
				Common cold	Dried **Seeds** will be pounded, boiled together with honey and goat milk and drunk
SOB-22-005	*Brucea antidysenterica* J.F. Mill., Tree	Simaroubaceae	Buna-saree	Lymph node swilling	Fresh **Leaves** will be crushed, mixed with water to wash the body with
				Menorrhagia	Fresh **Leaves** and stem **bark** will be pounded together, mixed with water and drunk
SOB-22-099	*Caesalpinia decapetala* (Roth) Alston, Shrub	Fabaceae	Qajiimaa	Body swelling	Fresh **Leaves** will be crushed and placed on the affected part
				Tonsillitis	Fresh young **leaves** will be crushed, squeezed and to drink the extract
				Lymph node swelling	Fresh young **leaves** will be crushed and rubbed on the affected area
				Giardiasis	Fresh **Root** will be pounded, boiled with water to drink
SOB-22-010	*Clinopodium paradoxa* (Vatke) Ryding, Shrub	Lamiaceae	Xosinyoo/Xosiinee	Hypertension	Pounded fresh **leaves** will be boiled with tea and drunk
				Cough	Pounded fresh **leaves** will be concocted with leaves of *Otostegia integrifolia* in tea and drunk
				Common cold	Pounded fresh **leaves** will be concocted with leaves of *Otostegia integrifoli, Aloysia triphylla* in tea and drunk
				Diabetes	Pounded fresh **leaves** will be boiled with water and drunk
				Nerve problem (paralysis)	Entire plant part will be pounded together with the leaves of *Citrus limon; Citrus medica* and seed of *Ricinus communis* made into syrup to massage the body with
				Kidneys problem	Entire plant part will be boiled together with coffee and drunk
SOB-22-030	*Calpumia aurea* (Ait.) Benth., Shrub	Fabaceae	Ceekaa	Diarrhea	Fresh **Leaves** will be crushed together with the leaves of *Vernonia amygdalina* and *Psidium guajava,* and mixed with water to drink
				Jaundice	Fresh **Root** will be pounded, mixed with water and drunk
				Gonorrhea	
				Vomiting	
				Syphilis	
				Rabies	
				Poison detoxification	

				External parasite infestation (e.g., Lice and flea)	Fresh **Leaves** will be crushed, mixed with water and used to wash the body with
				Spider poison	
				Amoebiasis	Fresh **Leaves** will be crushed, mixed with water and drunk
SOB-22-036	*Capparis cartilaginea* Decne. Shrub	Capparaceae	Harangamaa-gurraacha	Body welling	Fresh **Leaves** will be crushed and rubbed on the swollen body part
SOB-22-028	*Capparis tomentosa* Lam., Shrub	Capparaceae	Harangamaa-dimaa	Body welling	
				Dyspepsia	Fresh **Root** will be pounded, mixed with water and drunk
SOB-22-016	*Capsicum annuum* L., Herb	Solanaceae	Mixmiixaa	Bloating	Fresh **Fruits** and seeds will be pounded, mixed with water and drunk
				Dyspepsia	Fresh young **leaves** will be pounded, mixed with water to drink
				Uvula infection	Fresh young **leaves** will be pounded and eaten
				Heartburn	
SOB-22-026	*Carica papaya* L., Tree	Caricaceae	Paapaayyee	Malaria	Fresh **Root** will be crushed and mixed with sugar and water to drink
				Typhoid	Fresh stem **bark** will be crushed, mixed with water and drunk
				Intestinal worms	Dried **Seeds** will be roasted, powdered and mixed with honey and tea to drink
				Dandruff	Fresh **Fruit** will be crushed, mixed with water to make a syrup to smear on the affected area
				Febrile illness	Fresh young **leaves** will be crushed and drunk with coffee
				Gastritis	Fresh **Leaves** will be crushed, mixed with water and drunk
				Body swelling	Fresh unripe **fruit** will be crushed and placed on the affected body part
SOB-22-015	*Carissa spinarum* L, Shrub	Apocynaceae	Agamsa	Gonorrhea	Fresh **Root** will be crushed, mixed with water and drunk
				Malaria	
SOB-22-014	*Casimiroa edulis* La Llave, Tree	Rutaceae	Asaamirroo	Kidney problem	Fresh **Fruit** will be smashed, mixed with water and drunk
SOB-22-109	*Catha edulis* (Vahl) Endl., Shrub/Small Tree	Celastraceae	Jimaa	Wound	Fresh **Leaves** will be pounded and applied on the wound
				Diarrhea	Fresh **Leaves** will be pounded, mixed with water and drunk
				Gonorrhea	Fresh **Leaves** will be crushed and boiled with water to drink
				Common cold	Fresh **Leaves** will be boiled with crushed rhizome of *Ginger officinale* and drunk
SOB-22-045	*Caylusea abyssinica* (Fresen.) Fisch. & C.A. Mey., Herb	Resedaceae	Chiif	Tonsillitis	Fresh **Root** will be crushed and squeezed to get the extract to drink
				Uvula infection	Fresh **Root** will be crushed and squeezed to get the extract to drink and gargle
				Urine retention	Fresh **Root** and leaves will be crushed and boiling with coffee to drink

SOB-22-013	*Cicer arietinum* L. Herb	Fabaceae	Shumburaa	Gonorrhea	Dried **Seeds** will be powdered, mixed with the latex of *Opuntia ficus-indica* and baked as bread to eat
				Impotence	Dried **Seeds** will be cooked together with crushed bulb of *Allium cepa* and mixed with honey to eat couple of hours before sexual intercourse
SOB-22-027	*Cissampelos mucronata* A. Rich., Climber	Menispermaceae	Muka-hadhaawaa	Diarrhea	Fresh **Root** will be crushed, mixed with water and drunk
				Snake poison	Fresh **Leaves** will be crushed and applied on the bitten body part.
SOB-22-153	*Cissampelos pareira* L., Climbinhg shrub	Menispermaceae	Baal-tokkee	Snake poison	Fresh **Root** will be crushed and mixed with water to apply the mix on the affected body part
				Dyspepsia	Fresh **Root** will be chewed to swallow its extract
				Diarrhea	Fresh **Root** will be crushed and mixed with water to drink
				Bone cancer	Fresh **Root** will be crushed and boiled in water with the seed powder of *Brassica nigra* to drink
				Toothache	Fresh **Root** will be crushed then held on the affected tooth
				Cough	Fresh **Root** will be crushed and boiled with the root of *Alysicarpus rugosus* to drink the concoction
				Heart problem	Fresh **Root** will be chewed to swallow its extract
				Tumor	Fresh **Root** will be crushed, heated and put on the affected body part
				Typhoid	Fresh **Root** will be crushed, mixed with water and drunk
				Nose infection	Fresh **Leaves** will be crushed and squeezed to drop the extract into the nostrils
SOB-22-041	*Citrus limon* Osbeck, Tree	Rutaceae	Xuxxoo	Gum bleeding	Fresh **Fruit** juice will be drunk
				Febrile illness	Fresh **Fruit** peel will be crushed and smoked to inhale
				Vomiting	The juice of fresh **Fruit** will be drunk
				Bloating	
				Hiccups	
				Nausea	
				Common cold	
				Poison detoxification	
SOB-22-050	*Citrus medica* L Tree	Rutaceae	Turungaa	Hypertension	Fresh Fruit will be chopped and eaten
SOB-22-052	*Citrus paradisi* Macfad. Tree	Rutaceae	Samargeela	Gastritis	Fresh fruit peels will be chewed and swallowed
				Hypertension	
				Bloating	Fresh Fruit juice will be drunk

SOB-22-034	*Clerodendrum myricoides* (Hochst.) R.Br. ex Vatke, Shrub	Lamiaceae	Misiirichii	Body swelling	Fresh **Leaves** will be crushed with the leaves of *Commicarpus verticillatus, Premna schimperi, Croton macrostachyus, Rhus natalensis* to apply on the affected area
SOB-22-156	*Coleus edulis* Vatke., Herb	Lamiaceae	Shimbiir	Gum bleeding	Fresh **Stem** will be used to brush teeth
				Body swelling	Fresh **Leaves** will be crushed and rubbed on the affected body part
				Skin burn	Fresh **Leaves** will be crushed and put on the affected body part
SOB-22-065	*Commelina benghalensis* Forssk., Herb	Commelinaceae	Hoola-gabbis	Ring worms	Fresh **Stem latex** will be creamed on the affected area
				Skin warts	
SOB-22-059	*Commicarpus pedunculosus* (A.Rich.) Cufod., Shrub	Nyctaginaceae	Homacheysaa	Wound	Wound is smeared with crushed **fresh** leaves
				Skin burn	
SOB-22-038	*Commicarpus verticillatus* (Poir.) Standl., Herb		Biluu	Bleeding	Fresh **Leave** will crushed and then placed on the affected body part
				Body swelling	
				Wound	Wound is smeared with crushed **fresh** leaves
SOB-22-079	*Conium maculatum* L. Herb	Apiaceae	Shukaar	Typhoid	Dry **Seeds** will be powdered, mixed with water and drunk
				Tonsillitis	
				Bloating	
				Kidney problem	
				Gastritis	
				Heart problem	
SOB-22-047	*Corchorus olitorius* L., Shrub	Malvaceae	Soggidda-re'ee	Gonorrhea	Fresh **whole plant** will be crushed, mixed with water and drunk
				Tooth ache	Fresh **whole plant** will be crushed and put on the tooth
				Snake poison	Fresh **whole plant** will be crushed and applied on the affected area
SOB-22-071	*Cordia africana* Lam., Tree	Boraginaceae	Waddeessa	Wound	Dry **Leaves** will be roasted, powdered and mixed with butter or oil to smear on the wound
				Spider poison	
				Eczema	
				Placental retention	Dry **Leaves** will be roasted, powdered, and mixed with water to drink
				Dystocia	Dry **Leaves** will be roasted, powdered, and mixed with water then drunk when there is difficulty of delivery
				Amoebiasis	Dry **Bark** will be crushed and mixed with water to drink
				Skin rash	Dry Leaves will be roasted, powdered, and mixed with butter or oil then smeared on the infected body part
SOB-22-056	*Crinum abyssinicum* Hochst. ex A. Rich., Herb	Amaryllidaceae	Qulubbii-waraabeessaa	Breast cancer	Fresh **Bulb** will be crushed, covered with fresh leaf of *Cordia africana*, heated and placed on the breast
				Body swelling	Fresh **Bulb** will be crushed, heated and placed on the affected body part

				Gonorrhea	Fresh **Root** will be crushed, mixed with water and drunk
				Kidney problem	
				Scabies	Fresh Leave will be crushed and creamed on the affected body part
SOB-22-070	*Croton macrostachyus* Hochst. Ex Delile Tree	Euphorbiaceae	Bakkannisaa	Ringworm	Fresh young **leaves** will be cut to rub the exudate against the affected body part
				Bloating	Fresh **Leaves** will be crushed, mixed with water and drunk
				Body swelling	Fresh **Leaves** will be crushed together with the leaves of *Premna schimperi* then put on the affected body part
				Gonorrhea	Dry **Leaves** and stem **bark** will be pounded, mixed with water and drunk
				Febrile illness	Dry **Leaves** will be smoked
				Kidney problem	Dry **Leaves** and stem **bark** will be pounded, mixed with water and drunk
				Hemorrhoids	Dry **Leaves** will be smoked to fumigate the anus
				Uterus problem	Dry **Root** will be smoked to fumigate the vagina
				Tonsillitis	**Bark** powder will be mixed with water and drunk
				Eye disease	Fresh young **leaves** will be crushed and squeezed to drop the extract into the eye
				Intestinal worms	Fresh **Root** will be crushed, mixed with water and drunk
SOB-22-039	*Cucumis africanus* L. f. , Herb	Cucurbitaceae	Harree-googee	Heart problem	Fresh **Root** will be crushed, boiled with coffee and drunk
				Epilepsy	Fresh **Root** and **leaves** will be pounded, soaked in water for 2 days to drink the filtrate
				Jaundice	Fresh **Root** will be pounded, mixed with water and drunk
				Gonorrhea	Fresh **Root** will be pounded together with whole plant part of *Malva parviflora*, mixed with water and drunk
				Kidney problem	Fresh **Root** will be pounded, mixed with water and drunk
				Diarrhea	
				Hemorrhoid	Fresh **Fruit** will be heated and then placed in the anus
				Lymph node swilling	Fresh **Fruit** will be crushed and then placed on the affected body part
				Placental retention	Fresh **Fruit** will be chopped, soaked in the oil of *Olea hochstetteri* and put inside the vagina
				Nausea	Fresh **Leaves** will be chewed and swallowed
				Rabies	Fresh **Root** will be crushed, mixed with water and drunk
				Bloating	Fresh **Leaves** will be chewed to swallow its extract

				Wound	Fresh **Fruit** will be crushed and then put on the wound
				Body swelling	Fresh **Fruit** will be crushed, heated and placed on the body
SOB-22-096	*Cucumis ficifolius* A.Rich., Herb	Cucurbitaceae	Cuquun	Body swelling	Fresh **whole pant** will be crushed, mixed with water to wash the body
				Cough/ Common cold	Fresh **Leave** will be crushed together with the bulb of *Allium sativum* and boiled with coffee to drink
SOB-22-040	*Cucurbita pepo* L., Herb	Cucurbitaceae	Dabaaqulaa	Intestinal worms	Dry **seed** will be roasted and eaten
SOB-22-100	*Cussonia holstii* Harms ex Engl., Tree	Araliaceae	Buna-waraaboo	External parasite infestation	Fresh **Root** will be pounded, mixed with water to wash the body
SOB-22-150	*Cymbopogon citratus* (DC.) Stapf, Herb	Poaceae	Xajii-saar	Giardiasis	Fresh **Root** will be crushed, mixed with water and drunk
				Vomiting	
				Diarrhea	
SOB-22-063	*Cyphostemma digitatum* (Lam.) Desc., Climber	Vitaceae	Burii-udaan-mucaa	Bone cancer	Fresh **Root** will be pounded together with bulb of *Allium sativum* and heated with honey and eaten
SOB-22-048	*Datura stramonium* L., Herb	Solanaceae	Banjjii	Bloating	Fresh **Root** will be crushed and mixed with water to drink
				Rabies	
				External parasite infestation	Fresh **Leaves** will be pounded, mixed with water and rub the mix on a body
				Ear problem	Fresh young **leaves** will be crushed and squeezed to drop the extract into the ear
SOB-22-019	*Desmodium sp*.	Fabaceae	Xilloo	Wound	Fresh **Root** will be crushed and placed on the affected body part
				Gonorrhea	Fresh **Root** will be crushed, mixed with water and drunk
				Body swilling	Fresh **Root** will be crushed, mixed with coffee and drunk
SOB-22-066	*Digitaria velutina* (DC.) Hitchc., Herb	Poaceae	Buraana	Skin cut bleeding	Fresh **Leave** will be crushed and placed on the affected body part
				Heartburn	Fresh **entire plant** will be chewed and swallowed
				Vomiting	Fresh **entire plant** will be pounded together with the leaves of *Foeniculum vulgare, Ruta chalepensis* and root of *Eleusine jaegeri*, soaked in water and drunk
SOB-22-044	Dipcadi viride (L.) Moench, Herb	Hyacinathaceae	Ciccoo-bocoo	Breast cancer	Fresh **Bulbs** will be crushed, mixed with water to drink as well as to rub against the affected body part
				Body swilling	Fresh **Bulbs** will be crushed and then placed on the affected body part
				Skin warts	Fresh **Bulbs** will be crushed, mixed with water and rubbed against the affected body part
SOB-22-155	*Dodonaea angustifolia* L., Shrub	Sapindaceae	Ittacha	Gum bleeding	Fresh **Stem** will be used to brush teeth
				Fungal skin infection	Fresh **Leaves** will be crushed and rubbed on the affected body part

				Poison detoxification	Fresh **Leaves** will be crushed, mixed with water and drunk
				Scabies	Fresh **Leaves** will be crushed and rubbed on the affected body part
				Lymph node swilling	
				Body swilling	
				Eczema	Fresh **Leaves** will be roasted, powdered, mixed with butter and smeared on the body
SOB-22-068	*Dovyalis abyssinica* (A. Rich.) Warb., Shrub	Flacourtiaceae	Koshimoo	Jaundice	Fresh **Leaves** will be crushed and boiled with coffee to drink
				Hemorrhoids	Dry **Seeds** will be pounded and mixed with water then put inside the anus
				Fever	Fresh **Root** will be pounded together with the leaves of *Otostegia integrifolia*, boiled with tea and drunk
SOB-22-067	*Echinops kebericho* Mesfin, Shrub	Asteraceae	Qabariichoo	Intestinal worms	Fresh **Root** will be pounded, and mixed with water and drunk
				Tonsillitis	Fresh **Root** will be pounded, mixed with honey and eaten
				Bone cancer	Fresh **Root** will be crushed and boiled with coffee to drink
				Urine retention	Fresh **Root** will be crushed, concocted with edible oil and drunk
SOB-22-055	*Echinops longifolius* A.Rich., Herb	Asteraceae	Baal-waraantii	Kidney disease	Fresh **Root** will be crushed and mixed with water to drink
				Urine retention	
SOB-22-141	*Ehretia cymosa* Thonn., Tree	Boraginaceae	Ulaagaa	Body swelling	Fresh **Leaves** will be crushed together with the leaves of *Croton macrostachyus*, *Carissa spinarum,* and *Rhus natalensis* and applied on the affected body part
				Diarrhea	Fresh **Leaves** will be crushed, boiled with coffee and drunk
				Tooth ache	Fresh **Leaves** will be crushed and held on the tooth
				Skin rash	Fresh Leaves will be roasted, powdered, and mixed with butter or oil to smear on the affected body part
SOB-22-043	*Ekebergia capensis* Sparrm., Tree	Meliaceae	Biraa-hadiyyaa	Intestinal worms	Fresh or dried **Fruits** and **seeds** will be pounded, mixed with water and drunk
SOB-22-058	*Eleusine floccifolia* Spreng., Herb	Poaceae	Coqoorsa	Snake poison	Fresh **entire plant** will be pounded and applied on the affected body part
SOB-22-062	*Eleusine jaegeri* Pilg., Herb	Poaceae	Migra	Vomiting	Fresh **Root** will be crushed together with the leaves of *Ruta chalepensis*, *Foeniculum vulgare* and whole plant of *Digitaria velutina* and mixed with water to drink
				Diarrhea	Fresh **Root** will be crushed, mixed with water and drunk
SOB-22-061		Musaceae	Warqee	Dyspepsia	Fresh **Latex** will be squeezed from its stems and drunk

	Ensete ventricosum (Welw.) Cheesman, Herb			Hiccups	
SOB-22-072	*Eucalyptus globulus* Labill., Tree	Myrtaceae	Baharzaafii-adii	Common cold/ Cough	Fresh **Leave** will be crushed and boiled in water to sniff the vapor
				Febrile illness	
SOB-22-049	*Euclea racemosa* L., Shrub	Ebenaceae	Mi'eessaa	Toothache	Fresh **Root** will be pounded and held on the tooth
				Gonorrhea	Fresh **Leaves** will be pounded together with the roots of *Alysicarpus rugosus, Acokanthera schimperi and Gomphocarpus fruticosus* and mixed with water to drink
				Intestinal worms	Fresh **Root** will be crushed, mixed with water and drunk
				Tonsillitis	Fresh young **leaves** will be crushed, mixed with water and drunk
				Impotence	Fresh **Root** will be pounded, mixed with water and drunk
				Uvula infection	Fresh young **leaves** will be crushed and squeezed to drink the extract
				External parasite	Fresh **Leaves** will be crushed and rubbed on the body
SOB-22-047	*Euphorbia abyssinica* J.F. Gmel., Tree	Euphorbiaceae	Adaamii	Gonorrhea	**Latex** will be collected from stem, mixed with seed powder of *Cicer arietinum* baked as a bread to eat
				Skin warts	**Latex** from the stem will be smeared on the skin
				Hemorrhoid	
				Wound	
				Dandruff	
SOB-22-069	*Euphorbia hetrophylla* Desf., Shrub	Euphorbiaceae	Annanoo	Hemorrhoid	**Latex** from the stem will be smeared on the skin
SOB-22-003	*Euphorbia schimperiana* Hochst. ex A.Rich., Herb	Euphorbiaceae	Gurii	Ringworm	Fresh **Root** will be crushed and squeezed to smear on the affected area
				Hemorrhoid	Fresh **Root** will be crushed and squeezed to apply to the anus
SOB-22-081	*Euphorbia tirucalli* L., Shrub	Euphorbiaceae	Qinciba	Hemorrhoids	**Latex** will be collected and smeared on the affected area
				Gonorrhea	**Latex** will be collected from stem, mixed with seed powder of *Cicer arietinum* baked as a bread to eat
SOB-22-161	*Ficus vasta* Forssk., Tree	Moraceae	Qilxuu	Ear disease	**Leaves** will be crushed and squeezed to drop the extract into the ear canal
SOB-22-076	*Foeniculum vulgare* Mill., Herb	Apiaceae	Kamoona	Kidney disease	Fresh **Root** and **leaves** will be pounded and mixed with water to drink
				Urine retention	Fresh **Root** will be pounded and mixed with water to drink
				Hypertension	Fresh **Fruits** and **seeds** will be crushed and boiled together in water to drink

				Vomiting	Fresh **Root** will be pounded together with **root** of *Eleusine jaegeri*, **leaves** of *Ruta chalepensis,* and whole part of *Digitaria velutina*, mixed with water and drunk
				Dyspepsia	Fresh Fruit will be chewed and to swallow its extract
				Back pain	Fresh **Fruits** and **seeds** will be crushed and boiled in water to drink
				Intestinal worms	
				Placental retention	Fresh **Root** will be pounded together with the root of *Ricinus communis* and mixed with water to drink
SOB-22-083	*Galium aparinoides* Forssk., Herb	Rubiaceae	Laaleessaa	Giardiasis	Fresh **Root** will be crushed and boiled with water to drink
				Prevent abortion	
				Urine retention	
				Snake poison	Fresh **Root** will be crushed and put on the affected area
				Cough	Fresh **Root** will be crushed and boiled with coffee to drink
				Asthma	Fresh **Root** will be crushed and boiled with coffee and butter to drink
SOB-22-078	*Zingiber officinale* Roscoe, Herb	Zingiberaceae	Zinjibila	Common cold/ Cough	Fresh/dry **Rhizomes** will be crushed and boiled with tea to drink
				Tonsillitis	
				Hemorrhoids	Fresh/dry **Rhizomes** will be pounded together with bulb of *Allium cepa* and leaves of ***Raphanus sativus*** and put on the anus
				Intestinal worms	Fresh/dry **Rhizomes** will be crushed and boiled with tea to drink
				Impotence	Fresh/dry **Rhizomes** will be crushed together with the root of *Malva parviflora*, mixed with water and drunk
SOB-22-046	*Gloriosa simplex* L., Herb	Colochicaceae	Qorii-kuruphoo	Snake poison	Fresh/dry **Root** will be crushed then rubbed against the affected body part
				Bone cancer	Fresh **Root** will be crushed together with the bulb of *Allium sativum*, boiled with coffee and drunk
				Tumor	Fresh/dry **Root** will be crushed then placed on the affected body part
SOB-22-080	*Gomphocarpus fruticosus* (L.) W.T. Aiton, Herb	Asclepiadaceae	Harrii-hiiyyoo	Gonorrhea	Fresh **Root** will be crushed and mixed with water to drink
				Tuberculosis	Fresh **Root** will be crushed and boiled with butter to drink
				Impotence	Fresh **Root** will be crushed and cooked with seeds of *Cicer arietinum* to eat
				Ring worm	Fresh **entire plant** will be pounded and mixed with butter to smear on the affected body part
				Bone cancer	Fresh **Root** will be crushed and boiled with coffee to drink
				Tuberculosis	Fresh **Root** will be crushed and boiled with honey and butter to drink

SOB-22-074	*Gossypium barbadense* L., Shrub	Malvaceae	Jibrii-bukkee	Headache	Dry **Seeds** will be pounded and smoked to sniff
				Kidney problem	Pounded fresh **Root** will be mixed with water and drunk
				Urine retention	Fresh/dry **Root** will be pounded, boiled with water and drunk
				Intestinal worms	Dry **Seeds** will be pounded and consumed
				Ear disease	Fresh flower will be heated and squeezed to drop the extract into the ear canal
SOB-22-002	*Grewia villosa* Willd. Shrub	Tiliaceae	Ogobbii/ Ogobdii	Menorrhagia	Fresh **Leave** will be crushed and mixed with water to drink
SOB-22-077	*Guizotia abyssinica* (L.f.) Cass. Herb	Asteraceae	Nugii	Cough/ Common cold	**Seed** will be roasted, pounded and boiled with honey to drink
				Asthma	
				Tuberculosis	
SOB-22-084	*Hagenia abyssinica* (Bruce) J.F.Gmel., Tree	Rosaceae	Heexoo	Taeniasis	Dry **Seeds** will be pounded and eaten with banana fruit
				Dyspepsia	Fresh **Leaves** will be crushed and mixed with water to drink
				Ameobiasis	Fresh **Seeds** will be pounded and mixed with water to drink
				Back pain	Fresh **Seeds** will be pounded and cooked with meat to eat
SOB-22-107	*Hordeum vulgare* L., Herb	Poaceae	Garbuu	Gastritis	Dry **Seeds** will be roasted, powdered and mixed with sugar to eat
				Bone fracture	Dry **Seeds** will be roasted, powdered and made into porridge to eat with milk, butter or honey
SOB-22-086	*Juniperus procera* Hochst. ex Endl., Tree	Cupressaceae	Gatirraa-abashaa	Diarrhea	Fresh **Leave** will be crushed and mixed with water to drink
				External body parasite infestation	Fresh **Leave** will be pounded and rubbed against the body
				Uterus problem	Dry **Seeds** will be pounded and mixed with water to drink
SOB-22-112	*Kalanchoe marmorata* Baker, Herb	Crassulaceae	Phiphii	Ear disease	Fresh **Leaves** will be heated and squeezed to drop the extract into the ear canal
				Jaundice	Fresh **Root** will be pounded and boiled in water to drink
				Asthma	Fresh **Root** will be pounded together with that of *Ximenia americana* and boiled in water to drink
				Rabies	Fresh **Leaves** will be crushed and mixed with water to drink
SOB-22-119	*Kalanchoe lanceolata* (Forssk.) Pers., Herb	Crassulaceae	Burii-furdoo	Breast cancer	Fresh **Root** will be crushed and mixed with water to drink
				External parasite infestation	Fresh **Leaves** will be crushed and mixed with water to rub against the skin
				Uvula infection	Fresh **Leaves** will be crushed and squeezed to drop the extract into the throat

SOB-22-126	*Kleinia longiflora* DC. Shrub	Asteraceae	Huluqqoo	Nerve problem (paralysis)	Fresh/dry **Leaves** will be pounded together with whole part of *Ocimum basilicum,* leaves of *Citrus limon* and *Ruta chalepensis* and smoked to fumigate the patient
SOB-22-095	*Lagenaria siceraria* (Molina) Standl., Climber	Cucurbitaceae	Buqqee	Ear disease	Fresh **Leaves** will be crushed and squeezed to drop its extract into the ear canal
				Lymph node swilling	Fresh **Leaves** will be crushed and placed on the affected body part
SOB-22-001	*Lantana camara* L., Shrub	Verbenaceae	Bakka-argattee	Fungal skin infection	Fresh **Leaves** will be pounded to rub against the affected area
				Febrile illness	Fresh/dry **Leaves** will be smoked with the leaves of *Otostegia integrifolia*
SOB-22-143	*Lepidium sativum* L. Herb	Brassicaceae	Shifuu	Febrile illness	Dry **Seeds** will be smoked to fumigate the patient
				Bloating	Dry **Seeds** will be pounded, mixed with water and drunk
				Gastritis	
				Dyspepsia	Dry **Seeds** will be chewed and swallowed
				Ameobiasis	Dry **Seeds** will be roasted, powdered, mixed with water and drunk
				Bone cancer	Dry **Seeds** will be pounded together with the bulbs of *Allium sativum* and mixed with honey to eat
				Cough	
				Tonsillitis	
				Rabies	
SOB-22-115	*Leucas stachydiformis* (Benth.) Hochst ex. Briq., Herb	Lamiaceae	Muka-aroo	Spider poison	Fresh **Leaves** will be crushed then rubbed against the affected body part
SOB-22-134	*Leucas martinicensis* (Jacq.) R. Br., Herb	Lamiaceae	Bokuu-ferdaa	Dyspepsia	Fresh **Leave** will be crushed and mixed with water to drink
				Spider poison	Fresh **Leaves** will be roasted, powdered and mixed with edible oil or butter to smear on the affected body part
SOB-22-090	*Leucas minimifolia* Chiov., Shrub	Lamiaceae	Barbarreessaa	Urine retention	Fresh **Root** will be crushed and mixed with water to drink
				Uterus problem	
				Fever	
SOB-22-051	*Lippia abyssinica* (Otto &A.Dietr) Cufod., Shrub	Verbenaceae	Sukee	Fungal skin infection	Fresh **Leaves** will be crushed and mixed with water then rubbed against the affected body part
				Body swelling	Fresh **Leaves** will be roasted, powdered and mixed with butter or oil to smear on the affected body part
				Eczema	
				Snake poison	Fresh **Leaves** will be pounded and rubbed against the affected body part

SOB-22-102	*Lysimachia ruhmeriana* Vatke, Herb	Primulaceae	Muka-gergoo	Bed bug infestation	Fresh **entire plant** will be crushed and boiled in water, and applied onto the body to repel the bed bug
SOB-22-022	*Maesa lanceolata* Forssk., Tree	Myrsinaceae	Baal-adii	Bloating	Fresh Leave will be crushed and mixed with water then drunk
				Asthma	
				Typhoid	
SOB-22-024	*Malva parviflora* L., Herb	Malvaceae	Dobbii- qalloo	Gonorrhea	Fresh **entire plant** will be crushed and mixed with water to drink
				Impotence	
				Giardiasis	Fresh **Root** will be crushed and mixed with water to drink
				Eye disease	Fresh **Leaves** will be crushed and squeezed to drop the extract into the eye
				Intestinal parasite	Fresh **entire plant** will be crushed and mixed with water to drink
				Back pain	Fresh **Root** will be crushed and mixed with water to drink
SOB-22-053	*Melia azedarach* L., Tree	Meliaceae	Kiniin-zaaf	Intestinal parasite	Fresh **Leaves** will be crushed and mixed with water to drink
				Diarrhea	
				Typhoid	
				Kidney problem	
				Ameobiasis	
				Bloating	
SOB-22-101	*Mimusops kummel* Bruce ex A.DC., Tree	Sapotaceae	Bururrii	Urine retention	Fresh **Root** will be pounded, mixed with water and drunk
				Body swelling	Fresh **Leaves** will be crushed, mixed with water to apply on the affected body part
				External parasite infestation	Fresh **Leaves** will be crushed and mixed with water to wash the body
				Wound	Fresh **Leaves** will be crushed and placed on the affected area
				Intestinal parasites	Fresh **Leaves** will be pounded and mixed with water to drink
SOB-22-097	*Mirabilis jalapa* L. Herb	Nyctaginaceae	Harmal	Tonsillitis	Fresh **Root** will be pounded and mixed with honey to eat
				Breast cancer	Fresh **Root** will be crushed and mixed with honey and water to drink
				External parasite infestation	Fresh **Root** will be pounded and mixed with water to rub against the body
				Diarrhea	Fresh **Root** will be crushed and mixed with water to drink
SOB-22-129	*Moringa oleifera* Lam., Tree	Moringaceae	Shifarraa	Hypertension	Fresh **Leaves** will be chopped and boiled with water to drink
				Kidney problem	
				Jaundice	
				Diabetes	
				Heart problem	

				Febrile illness	
				Bone cancer	
				Nerve problem (Paralysis)	
				Diarrhea	Fresh Leaves will be chopped and cooked to eat with bread
				Intestinal worms	
SOB-22-123	*Musa paradisiaca* L., Herb	Musaceae	Muuza	Snake poison	Fresh **Leave** will be pounded and smeared on the affected area
SOB-22-160	*Myrsine africana* L., Shrub	Primulaceae	Qacama	Taeniasis	Dry **Seeds** will be pounded and mixed with water to drink
				Ascariasis	
				External parasite infestation	Fresh **Leaves** will be pounded and mixed with water then to apply on the body
SOB-22-142	*Myrtus communis* L. Shrub	Myrtaceae	Adas	Typhoid	Fresh **Leaves** will be pounded and mixed with water to drink
SOB-22-085	*Nicotiana tabacum* L.Herb	Solanaceae	Timboo	Tooth ache	Fresh Root will be crushed and held on the tooth
				External parasite infestation	Fresh **Leave** will be pounded and smeared on the body
				Snake repellent	Dry **Leaves** will be crushed and smoked around the house
SOB-22-007	*Ocimum basilicum* L., Herb	Lamiaceae	Mosolbaa	Typhoid	Fresh/dry **entire plant** will be pounded and mixed with water to drink
				Spider poison	Fresh **entire plant** will be crushed then rubbed against the affected body part
SOB-22-033	*Ocimum lamiifolium* Hochst.ex Benth., Shrub	Lamiaceae	Daamaa-kasee	Febrile illness	Fresh **Leaves** will be crushed and squeezed to drink the extract as well as rub the extract on the body
				Common cold	Fresh **Leaves** will be crushed and squeezed to drink the extract
				Eye disease	Fresh **Leaves** will be crushed and squeezed to drop the extract into the eye
				Body swelling	Fresh **Leaves** will be crushed and rubbed against the affected area
SOB-22-120	*Olea hochstetteri* Baker., Tree	Oleaceae	Ejeersa	Headache	Fresh/dry **Leaves** will be smashed and burned to fumigate the patient with the smoke
				Heartburn	Fresh young leaves will be chewed and swallowed
				Snake poison	Fresh young leaves will be crushed and applied onto the affected area
				Common cold	Dry **Stem** will be smashed and burned to fumigate the patient with the smoke
				Asthma	
				Cough	
				Scabies	Dry **Stem** will be smashed, boiled in water to extract its oil to smear on the body

SOB-22-113	*Opuntia ficus-indica* (L.) Mill., Shrub	Cactaceae	Tiinii	Dandruff	Fresh phylloclade will be crushed and mixed with water to wash the head
SOB-22-087	*Otostegia integrifolia* (Benth.) Scheen & V.A. Albert, Shrub	Lamiaceae	Xunjiitii	Cough	Fresh/dry **Leaves** will be crushed and boiled in water together with the leaves of *Eucalyptus globulus* to sniff the steam
				Febrile illness	
				Headache	
				Ameobiasis	Fresh **Leaves** will be crushed and boiled with water to drink
SOB-22-111	*Parthenium hysterophorus* L., Herb	Asteraceae	Farramsiis	Hemorrhoids	Fresh **entire plant** will be crushed and boiled with coffee to drink
SOB-22-128	*Pavonia serrata* Franch., Shrub	Malvaceae	Muka-onnee	Heart problem	Fresh **entire plant** will be crushed and boiled with coffee to drink
SOB-22-093	*Phytolacca dodecandra* L'Her., Climber	Phytolaccaceae	Handoodee	Gonorrhea	Fresh **Root** will be pounded and mixed with water to drink
				Rabies	
				Jaundice	
				Asthma	
				Syphilis	
				Intestinal worms	
SOB-22-133	*Plantago lanceolata* L., Herb	Plantaginaceae	Torba-utaal	Gland TB	Fresh **entire plant** will be crushed and then placed on the affected body part
SOB-22-122	*Plumbago zeylanica* L., Shrub	Plumbaginaceae	Marxas	Bone cancer	Fresh/dry **entire plant** will be crushed and boiled together with honey and coffee to drink
				Headache	Fresh/dry **Root** will be powdered and sniffed
				Heart problem	Fresh **Root** will be crushed and boiled together with coffee to drink
				Gonorrhea	Fresh **Root** will be crushed and boiled together with honey and coffee to drink
				Urine retention	Fresh **Root** will be pounded and mixed with water to drink
				Body Swelling	Fresh **Root** will be pounded and mixed with water to apply on the affected body part
				Breast cancer	Fresh **entire plant** will be crushed and boiled together with honey and coffee to drink
				Back pain	Fresh **Root** will be pounded and mixed with water to drink
SOB-22-154	*Afrocarpus falcatus* (Thunb.) C.N. Page, Tree	Podocarpaceae	Birbirsa	Insect repellent	Fresh **Leaves** will be crushed and then rubbed onto the skin
SOB-22-088	*Premna schimperi* Engl., Shrub	Lamiaceae	Urgeessaa	Body swelling	Fresh Leaves will be crushed together with the leaves of *Commicarpus verticillatus, Rhus natalensis* and *Ehretia cymosa* and applied onto the affected body part

				Ear disease	Fresh **Leaves** will be roasted, powdered, and mixed with butter or oil to drop the mixture into the ear canal
				Jaundice	Fresh **Leaves** will be crushed and mixed with water to drink
SOB-22-110	*Prunus persica* (L.) Batsch, Tree	Rosaceae	Kukii	Intestinal worms	Fresh **Root** and **leaves** will be crushed together and mixed with water to drink
				Diarrhea	Fresh **Leaves** will be crushed and mixed with water to drink
				Tonsillitis	Fresh **Leave** will be crushed and mixed with water to drink
SOB-22-124	*Psidium guajava* L., Tree	Myrtaceae	Zayituunaa	Typhoid	Fresh young **leaves** will be crushed and mixed with water to drink
				Ear problem	Fresh Leaves will be crushed and mixed with water to drop the extract in to the ear canal
SOB-22-117	*Punica granatum* L, Tree	Punicaceae	Rumaana	Cough	Fresh **Leaves** will be pounded, mixed with water and drunk
				Ameobiosis	
				Diarrhea	
				Cholera	
				Tape worm	Fresh **Fruit** and **seeds** will be crushed, boiled in water and drunk
				Hypertension	
				Kidney problem	Fresh young leaves will be crushed and boiled in water to drink
				Snake poison	Fresh **Leaves** will be pounded and mixed with water to apply on the affected body part
				Intestinal parasite	Fresh **Leaves** will be pounded together with *Allium sativum* bulbs and mixed with water to drink
SOB-22-104	*Coleus abyssinicus* (Fresen.) A.J. Paton, Shrub	Lamiaceae	Muka-ajoo	Febrile illness	Fresh **Leaves** will be crushed and squeezed to drink the extract
				Eye disease	Fresh **Leaves** will be crushed and squeezed to drop the extract into the eye
SOB-22-121	*Raphanus raphanistrum* L. Herb	Brassicaceae	Raafu-shimbirroo	Impotence	Dry **Seeds** will be pounded and mixed with water to drink
				Fungal skin infection	Dry **Seeds** will be pounded and mixed with water to wash the body
SOB-22-140	*Raphanus sativus* L., Shrub	Barassicaceae	Fujul	Snake poison	Fresh/dry **Seeds** will be pounded and put on the affected area
				Ear problem	Fresh **Leaves** will be crushed and squeezed to add its extract into ear canal
SOB-22-089	*Rhamnus prinoides* L'Her., Shrub	Rhamnaceae	Geeshee	Tonsillitis	Fresh Leave will be crushed and mixed with water to drink
				Intestinal worms	Fresh **Fruits** will be crushed and mixed with water to drink
SOB-22-008	*Rhus glutinosa* (Hochst.ex A.Rich.) Moffett, Shrub	Anacardiaceae	Xaaxeessaa	Body swelling	Fresh **Leaves** will be pounded together with the leaves of *Croton macrostachyus* and *Coleus edulis* then applied onto the affected area
				Diarrhea	Fresh **Leaves** will be crushed and mixed with water to drink

SOB-22-114	*Rhus natalensis* Bernh., Shrub	Anacardiaceae	Daboobeeyssaa	Body swelling	Fresh **Leaves** will be pounded and smeared to apply on the affected body part
				Snake poison	
SOB-22-103	*Rhus retinorrhoea* Steud.ex Oliv., Shrub	Anacardiaceae	Bubbissaa	Body swelling	Fresh **Leaves** will be pounded and smeared on the affected body part
				Wound/ Skin burn	Fresh **Leaves** will be crushed and put on the wound
				Jaundice	Fresh **Root** will be pounding together with the leaves of *Sida cuneifolia* and *Withania somnifera* , mixed with water and drunk
SOB-22-152	*Rhynchosia malacotricha* Harms., Shrub	Fabaceae	Ud-saliim	Intestinal worms	Fresh **Leaves** will be crushed and mixed with water to drink
				Heart problem	
				Breast cancer	Fresh **Leaves** will be crushed and boiled with coffee to drink
				External parasite	Fresh **Roots** and **leaves** will be pounded and mixed with water to wash the body
				Scabies	
SOB-22-135	*Ricinus communis* L., Shrub	Euphorbiaceae	Qobboo	Urine retention	Fresh **Root** will be crushed and mixed with water to drink
				External parasite	Fresh **Leaves** will be crushed and rubbed on the body
				Jaundice	Fresh **Root** will be pounded and mixed with water to drink
				Rabies	Fresh **Root** and **leaves** will be pounded together and mixed with water to drink
SOB-22-138	*Rosa abyssinica* R.Br.ex Lindl, Shrub	Rosaceae	Qajiimaa-adii	Gonorrhea	Dry **Seeds** will be pounded and cooked with meat and eaten
				Back pain	Dry **Seeds** will be pounded and boiled with honey in water to drink
SOB-22-116	*Rumex abyssinicus* Jacq., Shrub	Polygonaceae	Dhangosha	Body Swelling	Fresh **Leave** will be crushed and put on the affected area
				Bleeding	
				Gonorrhea	Fresh **Root** will be crushed and mixed with water to drink
SOB-22-094	*Rumex nervosus* Vahl, Shrub	Polygonaceae	Dhangaggo	Fungal skin infection	Fresh **Leave** will be crushed and put on the affected area
				Body Swelling	
				Diarrhea	Fresh **Leaves** will be crushed and mixed with water to drink
SOB-22-131	*Ruta chalepensis* L., Herb	Rutaceae	Xalasaan	Heart problem	Fresh **Fruit** will be chewed and swallowed
				Common cold	Fresh **Leaves** will be boiled with tea or coffee and drunk
				Typhoid	Fresh **Leaves** and **fruits** will be boiled in water together with the leaves of *Carica papaya* and *Psidium guajava* to drink
				Dyspepsia	Fresh **Fruits** will be chewed and swallowed
				Kidney problem	Fresh **Leaves** and **fruits** will be boiled with coffee and drunk
				Gastritis	Fresh **Fruits** will be crushed and mixed with water to drink
				Intestinal worms	

				Vomiting	Fresh **Leaves** will be pounded together with root of *Eleusine jaegeri,* whole part of *Digitaria velutina* and leaves of *Foeniculum vulgare*, mixed with water to drink
SOB-22-147	*Salvia nilotica* Juss. Ex Jacq., Shrub	Lamiaceae	Hool-gab	Bloating	Fresh **Leaves** will be crushed and mixed with water to drink
				Febrile illness	Fresh **Leaves** will be crushed and squeezed to drink the extract
				Spider poison	Fresh **Leaves** will be roasted, powdered, and mixed with butter to smear on the affected body part
				Eczema	
				Urine retention	Fresh **Root** will be crushed and mixed with water to drink
				Fever	Fresh **Leaves** will be crushed and mixed with water then drunk
				Wound	Fresh **Leaves** will be crushed then placed on the wounded body part
SOB-22-148	*Senecio nandensis* (S. Moore) C. Jeffrey, Herb	Asteraceae	Jiniiraas	Nerve problem (paralysis	Fresh Whole plant parts will be crushed with the leaves of *Ruta chalepensis* and bulb of *Allium sativum*, boiled and drunk
				Swollen body part	Fresh Leaves and stems will be crushed and then placed on the body
				Febrile illness	Fresh whole plant parts will be crushed and mixed with water to drink
				Urine retention	
				Tooth ache	Fresh Stems will be crushed and held on the affected tooth
				Spider poison	Fresh Whole plant parts will be crushed and mixed with water to drink as well as smear on the affected area
				Placental retention	Fresh whole plant parts will be crushed and mixed with water to drink
				Fungal skin infection	Fresh Leaves and stem will be pounded together with bulb of *Allium cepa* to apply on the skin
SOB-22-132	*Senna didymobotrya* (Fresen.) Irwin & Barneby, Shrub	Fabaceae	Shakamsaa	Snake poison	Fresh **Leaves** will be crushed and applied on the affected body part
				Body Swelling	Fresh **Leaves** will be crushed and placed on the affected body part.
				Diarrhea	Fresh **Leaves** will be crushed and mixed with water to drink
SOB-22-145	*Senna occidentalis* (L.) Link Shrub	Fabaceae	Muka-gurraacha	Snake poison	Fresh **Leaves** will be crushed put on the affected body part
				Wound	
				Typhoid	Fresh Root will be pounded and mixed with water then drunk.
SOB-22-125	*Sida cuneifolia* Roxb. , Shrub	Malvaceae	Rigaa-gaangee	Impotence	Fresh **Root** and **leaves** will be pounded together with the root of *Commelina benghalensis, Eleusine floccifolia* and *Achyranthes aspera* and mixed with water to drink
				Febrile illness	Fresh **Leaves** will be pounded together with the leaves of *Ocimum lamiifolium* and mixed with water to drink
				Uvula infection	Fresh **Leaves** will be crushed and squeezed to drink the extract
				Jaundice	Fresh **Root** will be crushed and mixed with water to drink
				Diarrhea	Fresh **Root** will be crushed and mixed with water to drink

SOB-22-064	*Silene macrosolen* (Steud. ex) A. Rich., Herb	Caryophyllaceae	Liiq	Heart problem	Fresh whole plant parts will be pounded and mixed with water to drink
				Intestinal parasite	
				Headache	Fresh whole plant parts will be pounded, squeezed to drop its extract into nostrils
				Diarrhea	Fresh whole plant parts will be pounded and mixed with water to drink
				Uvula infection	Fresh whole plant parts will be pounded and squeezed to drink the extract
				Cough	Fresh whole plant parts will be pounded and boiled with tea to drink
				Body Swelling	Fresh whole plant parts will be pounded and boiled with water to wash the body
				Tumor	Fresh whole plant parts will be pounded and rubbed against the affected body part
SOB-22-106	*Smithia aeschynomenoides* Welv.ex Baker, Shrub	Fabaceae	Hinnaa	Diarrhea	Fresh **Leaves** will be pounded and mixed with water to drink
				Wound	Fresh/dry **Leaves** will be pounded and mixed with the juice of *Citrus limon* to smear on the wound
				Fungal skin infection	
SOB-22-092	*Solanum incanum* L., Shrub	Solanaceae	Hiddii	Skin cut bleeding	Fresh **Leaves** will be crushed and put on the cut
				Tooth ache	Fresh **Leave** will be crushed and held on the tooth
				Nasal bleeding	Fresh **Leaves** will be crushed and squeezed to drop the extract into nose
SOB-22-151	*Solanum nigrum* L., Shrub	Solanaceae	Shaamaa-korboo	Uvula infection	Fresh **Leaves** will be crushed and squeezed to drink the extract
				Spider poison	Fresh **Leaves** will be pounded and rubbed against the affected body part
				Skin warts	Fresh Fruits will be crushed and rubbed against the affected body part
				Hemorrhoid	
SOB-22-139	*Sphaeranthus suaveolens* (Forssk.) DC., Herb	Asteraceae	Raasshedii	Anxiety disorder	Fresh whole plant parts will be crushed together with the seeds *Ricinus communis* then tied on head
SOB-22-021	*Spilanthes mauritiana* DC. ., Herb	Asteraceae	Gutiich	Tooth ache	Fresh **Leave** will be crushed and held the tooth
				Tonsillitis	Fresh **Flowers** will be chewed and swallowed
				Uvula infection	
SOB-22-136	*Stephania abyssinica* (Qu.-Dill., & A. Rich.) Walp., Climber	Menispermaceae	Kaalaalaa	Syphilis	Fresh **Root** will be pounded and mixed with water to drink
SOB-22-137	*Syzygium guineense* (Wild.) DC., Tree	Myrtaceae	Beddessaa	Uterus problem	Dry **Stem** will be smashed together with stem of *Balanites aegyptiaca* and *Zizyphus mauritiana* to fumigate vagina with smoke

SOB-22-158	*Tagetes minuta* L. Herb	Asteraceae	Ardi-fasaaz	Gastritis	Fresh **Root** will be chewed and then swallowed
SOB-22-054	*Tamarindus indica* L., Tree	Fabaceae	Rooqaa	Dyspepsia	Fresh **Fruits** will be crushed and mixed with water and sugar to drink
				Wound	Fresh **Leaves** will be crushed and mixed with butter to smear on the affected part
				Diarrhea	Fresh/dry **Seeds** and leaves will be pounded together and mixed with water to drink
				Fever	
				Intestinal worms	Fresh/dry **Fruits** and seeds will be pounded together and mixed with water to drink
				Bone cancer	**Root** and **leaves** will be crushed, boiled together with honey and coffee to drink
				Malaria	Fresh/dry **Fruits** and **seeds** will be pounded together with bulb of *Allium sativum* and mixed with honey and water to drink
SOB-22-144	*Trigonella foenum-graecum* L., Herb	Fabaceae	Abish	Dandruff	Dry **Seeds** will be soaked in water for 1-2 days to wash hair with
				Gastritis	Dry **Seeds** will be pounded and mixed with water and sugar to drink
				Amoebiasis	
				Uterus problem	
				Dystocia	
				Placental retention	
SOB-22-130	*Verbascum sinaiticum* Benth., Herb	Scrophulariaceae	Gurra-harree	External parasite infestation	Fresh **Leaves** will be crushed and mixed with water to drink
				Urine retention	Fresh **Root** will be crushed and mixed with water to drink
				Heart problem	Fresh **Root** will be chewed and swallowed
				Impotence	Fresh **Root** will be pounded together with the leaves of *Euclea racemosa* and rhizomes of *Ginger officinale* and boiled with water and honey to drink
				Nausea	Fresh **Root** will be chewed and swallowed
				Boil	Fresh **Leaves** will be crushed put on the affected area
				Placental retention	Fresh **Root** will be crushed and mixed with water to drink
SOB-22-037	*Vernonia amygdalina* Del., Tree	Asteraceae	Ebichaa	Intestinal parasite	Fresh **Leaves** will be crushed and mixed with water to drink
				Diabetes	
				Diarrhea	
SOB-22-118	*Vernonia stipulacea* Klatt., Herb	Asteraceae	Dhadhahoo	Febrile illness	Fresh whole plant parts will be crushed and mixed with water to drink
				Head ache	
				Uvula infection	Fresh **Leaves** will be crushed and squeezed to drink the extract

				Lymph node Swilling	Fresh whole plant parts will be crushed and mixed with water to smear on the affected area
SOB-22-060	*Withania somnifera* (L.) Dunal , Shrub	Solanaceae	Hiddii-budee	Headache	Fresh **Root** will be pounded and squeezed to drop the extract into the nostrils
				Heart problem	Fresh **Root** will be pounded together with root of *Silene macrosolen* and mixed with water to drink
				Bloating	Fresh **Root** will be pounded and mixed with water to drink
				Ear disease	Fresh **Leaves** will be crushed and squeezed to drop the extract into ear canal
				Spider poison	Fresh **Leaves** will be crushed and rubbed against the affected body part
SOB-22-042	*Xanthium spinosum* L, Shrub	Asteraceae	Araddoo	Fungal skin infection	Fresh **Leaves** will be crushed and rubbed against the affected body part
				Skin cut bleeding	Fresh **Leaf** will be crushed and put on the cut skin
SOB-22-006	*Ximenia americana* L., Shrub/small Tree	Olacaceae	Hudhaa	Jaundice	Fresh stem **Bark** will be crushed and boiled with coffee to drink
				Uvula infection	Fresh **Fruits** will be pounded and squeezed to drink
				Rabies	Fresh **Root** will be pounded, mixed with dough and baked to eat
				Tonsillitis	Fresh **Fruits** will be crushed and squeezed to drink the extract
SOB-22-149	*Zaleya pentandra* (L.) C. Jeffrey	Aizoaceae	Mararree- qal'oo	Eczema	Fresh whole plant parts will be roasted, powdered, and mixed with butter or oil to smear on the affected area
SOB-22-012	*Ziziphus mauritiana* Lam., Tree	Rhamnaceae	Qurquraa-gurraacha	Muscle stiffness	Fresh **Leaves** will be crushed and mixed with water to massage the affected area
				Tuberculosis	Dry **Seeds** will be pounded together with the bulb of *Allium sativum,* seeds of *Guizotia abyssinica* and mixed with butter to eat
				Bone cancer	Dry **Seeds** will be pounded together with the bulb of *Allium sativum* and boiled with butter to drink
				Diarrhea	Dry **Seeds** will be pounded and mixed with water to drink
				Body Swilling	Fresh **Leaves** will be crushed together with leaves of *Premna schimperi* and *Commicarpus verticillatus* put on the affected area
SOB-22-105	*Ziziphus spina-christi* (L.) Desf., Tree	Rhamnaceae	Qurquraa-adii	Body Swilling	Fresh **Leaves** will be crushed together with leaves of *Premna schimperi* and *Commicarpus verticillatus* put on the affected area
				Bone cancer	Dry **Seeds** will be pounded together with the bulb of *Allium sativum* and boiled with butter to drink
				Nerve problem(paralysis)	Fresh **Leaves** will be crushed with the whole part of *Senecio nandensis* and mixed with oil to smear on the affected body part and massage

	Impotence	Fresh **Leaves** will be pounded together with rhizome of *Ginger* and bulb of *Allium cepa*, and mixed with water to drink
	Muscle stiffness	Fresh **Leaves** will be crushed and mixed with water to massage the affected area
	Epilepsy	Fresh young leaves will be crushed and mixed with water to drink
	Tuberculosis	Dry **Seeds** will be pounded together with the bulb of *Allium sativum,* seed of *Guizotia abyssinica*, and mixed with butter tto drink
	Diarrhea	Dry **Seeds** will be pounded and mixed with water to drink

Herbaceous plants constituted the largest (39.6%) proportion of the reported medicinal plants followed by shrubs (35.1%), trees (21.4%) and climbers (3.9%). Our observation agrees with many ethnomedicinal studies conducted in different localities of Ethiopia (e.g., Bogale *et al*. 2023, Usman *et al*. 2022, Desalegn *et al*. 2022, Ahmed 2021, Gonfa *et al*. 2020, Meragiaw *et al*. 2016, Mukaila *et al*. 2021, Lulekal *et al*. 2008). The predominance of herbs and shrubs for medicinal use may be ascribed to their relative abundance in the study area. Most (81.37%) of the reported medicinal plants were not cultivated and collected from wild habitats such as forest, grass lands, roadsides, etc. Whereas 18.63% were being cultivated for other purposes including food (as vegetables and fruits), spice, fiber and construction apart from their use as medicine. Our observation accords with that of Bogale *et al*. (2023).

Remedy preparation and usage

The local people in the study district use different plant parts for remedy preparation. Leaf was, however, the popular plant part used followed by root, seed, the whole plant parts, fruit, bulb and latex. At times, combination of the main plant parts (e.g., leaf and root) of the same species was reported (Figure 2A). Recently, researchers such as Bogale *et al*. (2023), Usman *et al*. (2022) and Desalegn *et al*. (2022) reported similar results. Copiousness, easy availability and processing into remedy may be the reason to prefer leaves to other organs. As a result, through their long years of empirical observations, locals may have witnessed the better curative potential of leaves than other plant organs. Leaf is a plant organ where photosynthesis and important secondary metabolisms occur to contribute to production and accumulation of secondary metabolites, which are of therapeutic value. According to Muluye & Ayicheh (2020) leaves are vital reservoirs of most bioactive compounds like alkaloids, phenolics and terpenoids. Collecting leaves for medicinal purpose may not damage the plant, allowing for sustainable use (Usman *et al*. 2022).

Our study revealed that the local people of the study district principally use freshly harvested plant parts for therapeutic purpose followed by only dried plant parts. Use of plant parts in a fresh and dried state is also possible for some ailments (Figure 2B). Use of fresh plant parts as predominant state was reported previously by many researchers, for example; Bogale *et al*. (2003), Muluye & Ayicheh (2020) and Usman *et al*. (2022). This may be due to curative potential of freshly harvested plant organs. In most cases, most of the secondary compounds of therapeutic value exist unchanged in fresh plant parts (Megerssa & woldetsadik 2022). The preparation of remedies begins with physical processes like crushing and pounding the plant material to create fine particles. This allows for decocting extracts or mixing the material with various substances such as water, tea, coffee, milk, butter, or oil for use. Our results are in line with those of Bogale *et al*. (2023), Usman *et al*. (2022) and Desalegn *et al*. (2022). In the current study district remedies are applied in different ways and it depends on the type of ailments and site of illness. Oral route was reported as major way of administering remedies followed by dermal, nasal, ear canal, through eye and vagina (Figure 2C). This finding agrees with previous studies (e.g., Bogale *et al*. 2023, Yineger *et al*. 2008, Chaachouay *et al*. 2022, Agisho *et al*. 2014). During our survey, we elicited for information on remedy dosage. There was no general agreement among respondents on the dosage. Moreover, no precise measurement of the amount, which we noted as a weakness of traditional medicine system. Age and gender are parameters considered for dosage prescription.

Ethnobotanical indices

Informant Consensus Factor

The Informant Consensus Factor (ICF) is a quantitative approach of assessing the agreement among informants regarding their knowledge on the use of medicinal plants. Its value ranges from 0 to 1 with values approaching 1 indicates higher agreement among respondents (Kefalew *et al*. 2015). In this study, all cited ailments were grouped into 8 categories, and the ICF values ranged from 0.07 to 0.45 (Table 2). Relatively, Gastro-intestinal related ailments scored the highest (0.45) ICF value followed by Dermatological ailments, whereas sensory disorders scored the lowest value. Usman *et al*. (2022) previously reported similar result in their study conducted in Goro district, southeast of Ethiopia, which is close to the current study district. The relatively highest agreement on the treatment of gastrointestinal related ailments may show that they are well recognized by the local community of the study area for which people communicate among themselves on their remedy. Generally, however, ICF value of all categories of ailments was less than 0.5 compared to some previous studies in eastern and southeastern Ethiopia (Bogale *et al*. 2023, Usman *et al*. 2022). A low ICF value may show that individuals possess unique experience and their traditional knowledge on medicinal plants are held by a few informants and unshared. The current expansion of modern medication may also be a reason to give less attention to traditional medicine, hence, low ICF. Overall, less ICF suggests that deterioration of traditional knowledge that deserves a focus for documentation and sustainability.

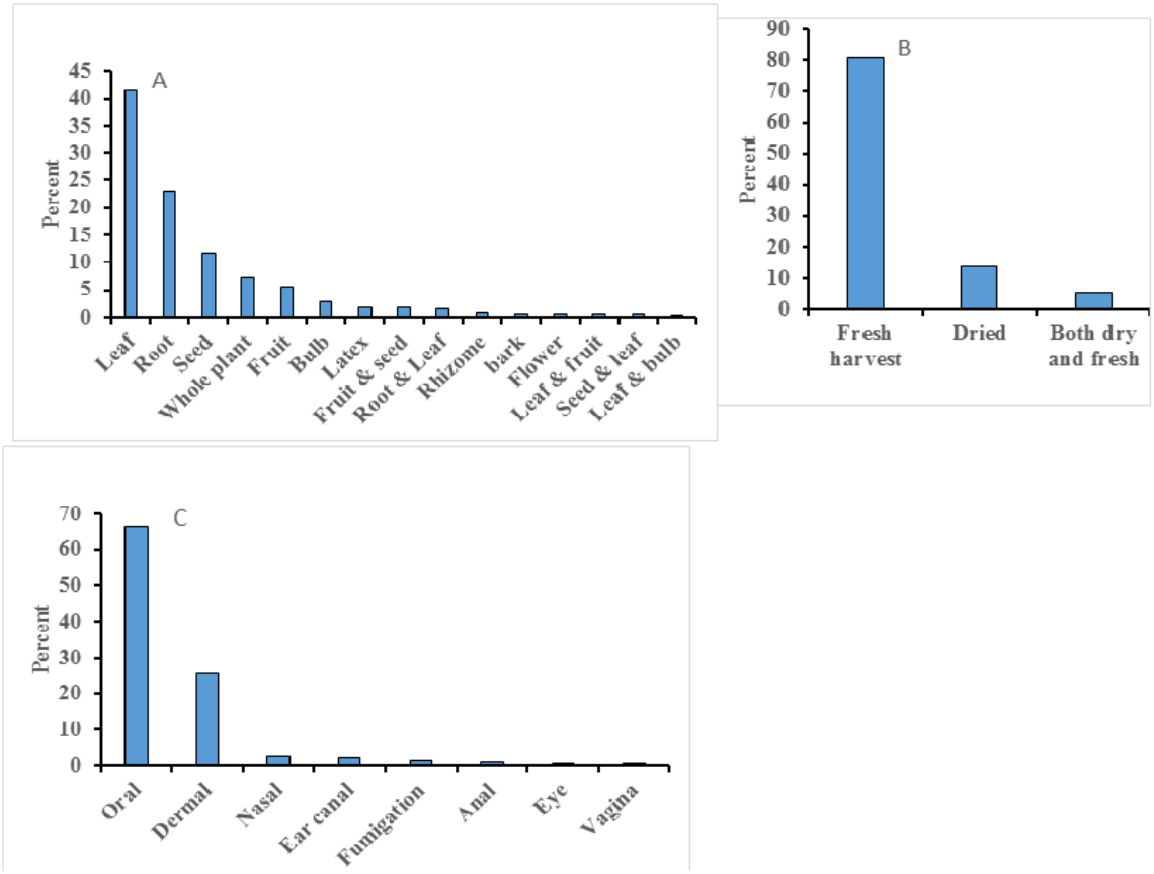

Figure 2. Plant parts used for remedy preparations (A), state of plant parts during remedy preparation (B) and route of remedy application (C)

Table 2. Informant consensus factor on major categories of ailment

Ailment category	Use citation (N_{Ur})	№ of species used (N_t)	Informant consensus factor
Gastro-intestinal related ailments	138	77	0.45
Dermatological related ailments	91	62	0.32
Genitourinary and venereal ailments	79	54	0.32
Respiratory and throat infection	63	44	0.31
Skeleto-muscular ailments	16	13	0.20
Circulatory system related ailments	48	42	0.13
Headache, Fever and Febrile illness	30	26	0.12
Bite and external parasite related infection	33	30	0.09
Sensory disorder	16	15	0.07

Fidelity level (FL)

Fidelity level (%) is a quantitative measure that shows the relative importance of a given plant species to treat a claimed ailment in a particular community. If a particular plant species is constantly mentioned by a larger proportion of informants for the specified ailment, FL will be higher, suggesting that plant species is more likely to have therapeutic potential for the claimed ailment. In this study, FL was calculated for ten most reported plants to treat top ten frequently cited ailments. Values of FL ranged from 78 to 100% with *Alysicarpus rugosus* and *Phytolacca dodecandra* scored 100% for Cough and Gonorrhea, respectively (Table 3). Some of these species, for example, *Premna schimperi* was reported by Bogale *et al*. (2023) for body swelling. *Calpurnia aurea* was reported for the removal of ecto-parasites including louse and tick by Usman *et al*. (2022).

Table 3. Fidelity level for ten most cited medicinal plants to treat top ten reported ailments

№	Ailments cited	Botanical name OF MPs used to treat the cited ailment	NP	N	FL%
1	Cough	*Alysicarpus rugosus*	39	39	100
2	Gonorrhea	*Phytolacca dodecandra*	35	35	100
3	Body swilling	*Premna schimperi*	36	37	97.3
4	Common cold	*Allium sativum*	44	46	95.65
5	Diarrhea	*Melia azedarach*	44	46	95.65
6	External parasite (e.g., louse infestation)	*Calpurnia aurea*	36	39	92.31
7	Typhoid	*Carica papaya*	46	51	90.2
8	Febrile illness	*Otostegia i ntegrifolia*	58	69	84.06
9	Kidney problem	*Aloe bertemariae*	41	49	83.67
10	Urine retention	*Foeniculum vulgare*	32	41	78.05

Preference ranking (PR)

Preference ranking exercise was done to prioritize eight medicinal plants based on their relative curative potential to treat typhoid as perceived by ten key informants. *Carica papaya* was the most preferred species to treat typhoid (Table 4). This species was previously reported by Bogale *et al*. (2023) and Usman *et al*. (2022) for stomach complaint, suggesting the need for further investigation to validate its effectiveness pharmacologically.

Table 4. Preference ranking of medicinal plants used to treat Typhoid

№	**Plant species**	**Respondents**										**Total**
		R_1	R_2	R_3	R_4	R_5	R_6	R_7	R_8	R_9	R_{10}	
1	*Carica papaya*	9	10	10	10	9	10	10	8	10	9	95
2	*Ocimum basilicum*	7	8	9	8	10	9	9	7	8	10	85
3	*Aloe bertemariae*	8	9	6	7	7	6	7	6	6	8	70
4	*Allium sativum*	6	7	8	6	5	7	6	9	7	7	68
5	*Conium maculatum*	5	4	5	4	6	5	5	5	4	6	49
6	*Artemisia afra*	3	3	2	3	1	3	1	4	2	3	25
7	*Ruta chalepensis*	2	1	3	2	2	2	3	2	3	1	21
8	*Maesa lanceolate*	1	2	1	1	3	1	2	1	1	2	15

Respondents' Socio-demographic features as factor for ethnomedicinal knowledge

Socio-demographic features of a given population may affect the extent of traditional knowledge (TK) on ethnomedicine (Gazzaneo *et al*. 2005, Hanazaki *et al*. 2013). Thus, we analyzed if there are discrepancies in TK of respondents by considering the amount of cited medicinal plants by respondents of different socio-demographic groups (Table 5). From our results, age significantly ($p < 0.001$, df = 4, F = 6.465) affected ethnomedicinal knowledge of the respondents. The number of reported medicinal plants increased with age of the respondents, which indicates more years of experience by elderly people enabled them to explore the medicinal values of plants of their surroundings. Our result is supported by previous studies conducted in different parts of Ethiopia (Bogale *et al*. 2023, Usman *et al*. 2022, Desalegn *et al*. 2022, McCarter & Gavin 2915, Giday *et al*. 2009, Girmay *et al*. 2021). Lowest report of medicinal plant from younger respondents may be attributed to insufficient knowledge transfer from elderly to younger generations, which may endanger TK in the future. It is also possible that younger generations are less interested to traditional medicine due to better access to modern medication than elderly people at their age. Occupation wise, our respondents were farmers, retired persons, religious leaders and traditional healers. Assessment of their ethnomedicinal knowledge showed significant ($p < 0.001$, df = 3, F = 8.502) difference. Traditional healers who earn their income mostly from practicing traditional medicine reported highest number of plants followed by religious leaders, retired persons and farmers. Less report from farmers may be ascribed to their better economic potential than other groups to visit modern health facilities. Educational level also significantly ($p = 0.007$, df = 4, F = 3.686) affected ethnomedicinal knowledge of the respondents. However, gender, marital status and religion of respondents had no

significant (p>0.05) effect on ethnomedicinal knowledge of the respondents. With respect to gender, our finding is opposite to many other previously reported results that show males are more knowledgeable than females (Bogale *et al*. 2023, Usman *et al*. 2022), for example. Usually, in Ethiopia, transfer of ethnomedicinal knowledge is gender biased and patrilineal. In this study, absence of significant difference between male and female may be due to our sampling technique (simple random sampling) in which less number of female household head are captured. In addition, analysis of multiple linear regression showed that age (β = 2.218, p = 0.001), educational status (β = 1.124, p = 0.029) and occupation (β = 1.586, p = 0.043) of the study population were found to be determinants of respondents' knowledge on traditional medicine, and our finding is in line with that of Bogale *et al*. (2023).

Table 5. Ethnomedicinal knowledge of the different socio-demographic groups

Socio-demographic feature	Group	Percentage	No. of medicinal plants reported	F	p-value
Gender	Male	89.80	16.60±0.62	0.229	0.633
	Female	10.20	15.60±1.71		
Marital status	Married	91.80	16.74±0.61	2.355	0.114
	Single	8.20	13.40±1.42		
Religion	Islam	81.02	16.03±0.65	0.605	1.190
	Christian	18.98	18.35±1.19		
Age	20-30	8.03	10.50±1.00	6.465	0.000
	31-40	27.74	14.60±0.87		
	41-50	33.58	16.50±1.00		
	51-50	19.00	18.80±1.40		
	>60	11.70	21.10±1.70		
Occupation	Farmer	87.60	15.50±0.57	8.502	0.000
	Retiree	5.10	21.57±3.20		
	Religious leader	3.60	24.60±2.00		
	Traditional healer	1.50	30.50±1.50		
Education	Illiterate	40.90	15.50±0.90	3.686	0.007
	Elementary school (1-8 grades)	46.00	16.30±0.81		
	High school (9-12 grades)	2.90	15.30±4.10		
	Higher education (≥Diploma)	1.50	11.00±4.00		
	Religious education	8.80	23.00±1.70		
Study *kebele*	Bate	16.10	16.10±1.50	0.578	0.717
	Gebiba	17.50	15.30±1.40		
	Hake-Bas	17.50	15.80±1.40		
	Obbi	16.80	18.00±1.00		
	Sebale	15.30	17.70±1.60		
	Surri	16.80	16.20±1.50		

Conclusions

The documentation of numerous medicinal plants indicates that the indigenous people of the study district possess rich traditional medicinal knowledge. However, younger generations, and people of higher modern educational status appeared to have less knowledge of ethno medicinal knowledge. The fact that values of ICF are lower also suggest that information exchange between the indigenous people is weak. Therefore practice of traditional medicine should be given due attention to preserve indigenous knowledge and medicinal plants.

Declarations

List of abbreviations: Not applicable

Ethics approval and consent to participate: Oral consent was obtained from respondents to share their experience prior to data collection

Consent for publication: All authors agreed on the publication of the manuscript

Availability of data and materials: All required data are included in the manuscript

Competing interest: Authors have no competing interest

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