THE ETHNOBOTANICAL KNOWLEDGE OF THE BARBAIG COMMUNITY OF BALANGIDALALU VILLAGE IN MANYARA REGION, TANZANIA

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ABSTRACT

An ethnobotanical survey was carried out in Balangidalalu village in Hanang district, Manyara Region to document the indigenous knowledge on the use of plants.Social survey methods mainly semi-structured questionnaire and participant observation were used to collect information. A total of 57 plant species were identified and documented, out of which; 28 are used for human medicine, 12 for livestock medicine, 15 for food, 10 for cosmetics and decoration, 15 for cultural aspects and 9 for handicrafts. The study revealed that some species have various myths and taboos attached to them, which do help to protect them from destruction. There is a need to conserve the documented resources to retain the valuable indigenous knowledge attached to them for future generations.

Keywords: Ethnobotany-Barbaig tribe-Manyara region- Tanzania

INTRODUCTION

Ethnobotany is the study of the interrelationship between plants and people. Its basic principals are botany and anthropology. Historically, ethnobotany has consisted of collecting a list of plants from a group of people and describing their use of those plants (Gomez-Beloz, 2002). Over the last century, ethnobotany has evolved into a scientific discipline that looks at the people-plants relationship in a multidisciplinary manner using not only botany and anthropology, but ecology, economics, public policy, pharmacology, public health, and other disciplines as needed (Balick, 1996; Gomez-Beloz, 2001).

The interest in ethnobotany has increased dramatically in recent years and ethnobotanical studies have become increasingly valuable in the development of health care and conservation programs in different parts of the world (Balick, 1996). For example, the recent use of ethnobotanical information in medicinal plant research has also gained considerable attention in segments of the scientific community (Heinrich, 2000).

There are considerable economic benefits in the development of indigenous medicines and in the use of medicinal plants for the treatment of various diseases. In a report published by the World Bank, Lambert *et al.* (1997) pointed out that preserving and enhancing the plant knowledge and use was equivalent to 'rescuing a global heritage'. Local ethnobotanical knowledge can be conserved as part of the living cultural-ecological systems, helping to maintain a sense of pride in local cultural knowledge and practices and reinforcing links between communities and the environment so, essential for conservation (Martin, 2004).

It is a well documented fact that people living far from urban centres know and use the local vegetation (Byg and Basley, 2000; Lykke, 2000; Campos and Ehringhaus, 2003; Lykke *et al*., 2004) and that internal factors such as gender, age, and occupation influence the knowledge and use of native resources (Monteiro *et al*., 2006).

The use of plants for various aspects is well established in many cultures and traditions

of Tanzanians, and is still a way of life of majority of the people. However, not much of the ethnobotanical information has been documented from the Barbaig communities to allow use of the information in developing different fields such as the health care system and biodiversity conservation. Plant knowledge among the Barbaig has been communicated orally from generation to generation. However, bulk of this oral knowledge has been limited to few individuals especially the older generations who seldom reveal their secrets. This paper focuses on ethnobotanical knowledge of the Barbaig communities living in Balangidalalu village in Manyara region. The knowledge is crucial for sustainable development and biodiversity conservation of plant resources in the area.

METHODOLOGY

An ethnobotanical survey using semi-structured questionnaire and participant observation was conducted among 50 households in Balangidalalu village in Hanang district, Manyara region, Tanzania. The village has an estimated population of about 4550 distributed in 639 households (Tanzania National Census, 2002). 40% of the population is dominated by the Barbaig, while the 60% is composed of Iraqw, Sandawe, Nyaturu, Nyiramba and other tribes.

The area is characterized by warm temperatures reaching maximum in September and October just before the onset of rain season. The monthly mean daily temperature varies from 24˚C in January to 27˚C in October. The area has bimodal rainfall patterns, with short rains in October to December and long rains in February to April. The vegetation of the area is typical woodlands of the Somali- Maasai regional centre of endemism (White, 1983), mainly dominated by species of the genera *Acacia*, *Grewia*, *Maerua*, *Boscia* and *Commiphora*. The villagers mainly depend on agriculture and livestock keeping for their living. Other economic activities include beekeeping, salt extraction from Lake Balangidalalu and charcoal production.

The informants were chosen in stratified manner based on ethnic groups where 38 were Barbaig, 7 the Iraqw, and 5 other tribes. Selection was keen to ensure that respondents are knowledgeable of the traditional indigenous plants of the area. The questionnaire with both open and close-ended questions addressed to each of the respondent included both social and cultural aspects of plant uses. The identity of the plant species was checked using a checklist of plants growing in the area. Difficult plants to identify were collected, pressed and sent to a botanist for further identification.

RESULTS

The study revealed that the Barbaig are knowledgeable of plants growing around their environments. A total of 57 plant species used by the Barbaig for various purposes were identified and documented. The documented plants seem to play roles in household income, food and health security, as well as cultural values.

Plants used for human medicine

A total of 28 plant species used for human medicine were recorded (Table 1). It was observed that the parts which are mostly used as medicine are roots and leaves, followed by barks, fruits, latex and gums. However, there are limitations on the use of some species, for example, *Euphorbia candelabrum* (Giyoneda) which is used for Tuberculosis, chest pains, coughs and HIV opportunistic diseases. The medicine is more or less poisonous and care should be taken while administering the remedy. The side effect of this medicine is severe purging, which is later controlled by giving the patient milk and soup.

Some species are rare and therefore used when available. For example, *Aeschynomene elephroxylori* (Makubeshta), which is used for eradication of intestinal worms in children, is used from April to August when it becomes available.

Table 1 Plants used for medicine

Botanical name	Vernacular name (Barbaig)	Family	Condition treated	Part used	Applications
Acacia nilotica	Barjomoda	Mimosaceae	Flu	Bark	The inner back is directly chewed raw or may also be boiled with beef to make soup to relieve flu.
Aeschynomene elephroxylori	Makubeshta	Papilionaceae	Intestinal worms	Leaves	The leaves are pounded then administered through the anus using a funnel made from the mouth part of the gourd.
Annona senegalensis	Makobriged	Annonaceae	Excessive bile reduction/ Abortion	Leaves	The leaves are pounded, soaked in water and boiled for some time. The mixture is then filtered. The extract is taken in a half glass, three times per day for 3 days. For abortion, the roots are boiled and half glass of the juice is used once.
Argemone mexicana	Qetesh	Papaveraceae	Ringworms	Leaves	The young leaves are squeezed to obtain white latex. Few drops of the latex are taken once per day for 3 to 4 days, consecutively for curative purpose
Asparagus racemosus	Sangwalechanda	Asparagaceae	Calcium deficiency in infants	Bark	The bark is burned to form charcoal, then crushed and smeared on the infants' gums.
Balanites aegyptiaca	Sawachanda	Balanitaceae	Worms/aphrodisiac	Roots	The roots are boiled in water. One glass of the juice is taken once per day orally or through the anus.
Bombax rhodognaphalon	Gendarjand	Bombacaceae	HIV opportunistic diseases	Sap	A mixture of sap from the stem and barks and latex of other species is boiled together and one glass is taken thrice per day till the patient is relieved from the complication.
Combretum molle	Dumbechand	Combretaceae	Stomachache/ Syphilis	Gums	The gums are directly collected from the tree then mixed with any drink and taken once per day till recovery.
Commiphora africana	Ishponeda	Burseraceae	Dysentery/ Snakebite	Leaves/Bark	The inner bark is placed in old water for 12 hours starting during the evening hours. In the morning, the water will turn red in colour and ready for use. One glass is taken thrice per day for 4 - 5 days. To reduce toxicity from a snake bite or from poisonous arrow, the leaves or barks are chewed raw until the patient get relief.
Cordia manoica	Maghaunyanda	Boraginaceae	Chicken pox	Roots	The roots are boiled giving a red juice. The patient is steamed while wrapped in a blanket or bed sheets. When the extract cools the patient is given one glass of the extract to drink three times per day till recovery. The same preparation may be used to detoxicate someone who has consumed toxic materials.
Cucumis figarei	Sharahandid	Cucurbitaceae	Ticks and mites repellents/ Ulcers	Fruits	To prevent ticks and mites, the fruit juice is smeared on the body. The juice may also be used for bathing. To treat peptic ulcers, the juice extract from the fruits is taken in one glass once per day till recovery.
Cyphostemma adenocaule	Getasyam	Vitaceae	Worms	Bark	The inner bark is grinded and boiled. Its juice in one litre is then taken once.
Cyphostemma kilimandscharicum	Sangwalid	Vitaceae	Elephantiasis/small pox	Roots	The roots are chopped into small pieces and soaked in cold water for few hours. For elephantiasis, a glass of the resulting extract is drunk twice per day till recovery. For small pox the body is washed with the extract once per day till recovery.
Dichrostachys cinerea	Mtunduruda	Mimosaceae	Joint pains	Roots	For Arthritis, the roots are boiled together and then its extract is taken as one glass three

Euphorbia candelabrum	Giyoneda	Euphorbiaceae	Tuberculosis/chest/coughs/ HIV opportunistic diseases	Latex	The white latex from the stems is mixed with water and boiled. During boiling the foam is removed and discarded. The remaining part is then taken in one glass twice per day for one to two weeks. A mixture of latex from the stem and barks and sap of other species is boiled together and one glass is taken thrice per day till the patient is relieved from the complication.
Euphorbia hirta	Getyanoga	Euphorbiaceae	Skin rashes	Leaves	The leaves and stem are cut and drops of the white latex are consumed directly once per day.
Euphorbia tirucalii	Mnyaranyanda	Euphorbiaceae	Prolonged menses	Roots	The species is boiled in water and its water is taken directly one glass three times per day for four days.
Leonotis nepetifolia	Samaghamungda	Labiatae	Wounds	Leaves	The leaves are pounded then squeezed. Its extract is poured onto the wound, to cure and prevent flies.
Ormocarpum trichorcarpum	Unyawarer	Papilionaceae	Anemia	leaves	The leaves are pounded and mixed with water. One glass of the mixture is taken three times per day for 5 days.
Plumbago zeylanica	Helga	Plumbaginaceae	Tonsillitis	Roots	The roots are boiled, filtered, and the sap is taken in one glass twice per day. The medicine is also used to wash the affected area of tonsils so as to release pus.
Senna didymobotrya	Utuijeda/utuided	Caesalpinaceae	Induce vomiting/joint pains/diarrhoea	Leaves/roots/ barks	To induce vomiting leaves are boiled in water and two litres are drunk only once, normally early in the morning. Similarly, roots are boiled in water then mixed with honey and allowed to cool for a day. One glass of the mixture is drunk three times per day to relive joint pains. The bark is grinded into powder; then mixed with water. A glass of the mixture is taken only once to relieve diarrhoea.
Solanum arundo	Gisaigweda	Solanaceae	Sexually transmitted disease	Fruits	The fruits are cut into small pieces and the seeds removed. The pulp is put in water for two hours. The resulting juice is then introduced in the anus using a local funnel made from a gourd. The medicine is used as a purgative. The dose is given once. Later on about two litters of the cold water are introduced through the anus again to clean the stomach. The patient is given a light meal of porridge followed by soup.
Solanum incanum	Shabochanda hhau	Solanaceae	stomach-ache/Intestinal worms	Roots/Fruits	The roots are washed, chewed raw and its juice swallowed. The juice from the fruits is also administered through the anus to eradicate intestinal worms.
Solanum mauense	Shabotca manang'i	Solanaceae	Stomach-ache/	Roots	The root is chewed and the juices are swallowed.
Tagetes minuta	Nyashan	Compositae	Intestinal worms	Leaves	The leaves are pounded, and then mixed with water ready for use. Half a glass of the juice is taken twice per day.
Thylachium africanum	Getaryara	Capparidaceae	Fever	Bark	The bark is boiled in water, and one glass of the extract is drunk twice per day till recovery.
Vitex doniana	Haraghadechanda	Verbenaceae	HIV opportunistic diseases	Bark	A mixture of the bark and latex from the stem of another species is boiled together and one glass is taken thrice per day till the patient is relieved from the complication.
Ximmenia caffra ssp Americana	Longyanda	Olacaceae	Flu/arthritis	Leaves/Roots	For Flu, the leaves are chewed raw and the resulting juice swallowed. For Arthritis, the roots are boiled together and then its extract is taken as one glass three times per day till recovery.

Plants used for livestock medicine

A total of 12 plant species used as livestock medicine were recorded (Table 2). The conditions used for include, stomach troubles such as bloat, tonsillitis, dysentery, eye diseases, skin lumps, wounds, coughing, foot and mouth disease, placenta retention and ticks and mites eradication.

Plants used for food

The study revealed that the natural vegetation around Balangidalalu village is a source of various edible plants. A total of 15 plant species were recorded to be edible (Table 3). Use categories include, fruits, vegetables and spices. Some plants are chewed as mouth refreshment

Table 2 Plants for livestock medicine

Scientific name	Vernacular name	Family	Condition/treated	Parts used	Applications
Acacia tortilis	Harabangheda	Mimosaceae	Stomach pains	Pods	The fruits are consumed directly
Asparagus racemosus	Sangwalechanda	Asparagaceae	Tonsilitis/ Dysentery	Stem	The stem is cut into small pieces and boiled in water. The resulting juice is given to the calf one litre twice a day.
Combretum molle	Dumbechand	Combretaceae	Ticks eradication	Gums	The gums is collected from the plant and smeared on the body of affected livestock.
Commiphora africana	Ishponeda	Burseraceae	Dysentery	Barks	The inner bark is immersed in cold water for 12 hours to form a red sap. One litre of the sap is given three times per day to affected livestock for four to five days.
Cordia monoica	Maghanyand	Boraginaceae	Skin lumps	Roots	The roots are boiled in water and half a litre of the juice is taken twice per day.
Cucumis figarei	Sharahandid	Curcubitaceae	Ticks/mites eradication	Fruits	The fruits are squeezed and the juice squeezed out. The animal is washed by the extract.
Leonotis nepetifolia	Samaghamungda	Labiatae	Wounds	Leaves	Fresh leaves are squeezed and the juices squeezed out. The juice is dropped onto the wound to prevent flies from eating it.
Solanum arundo	Giseigweda	Solanaceae	Coughing	Fruits	The fruits are chopped into small pieces, soaked in water and boiled. The seeds are then removed and the juice is given to the livestock one litre per day.
Synadenium grantii	Illelngwanda	Euphorbiaceae	Tonsilitis/vaccination against poisonous animals and insects	Latex	The latex is collected from the stem then smeared on the affected tonsil. The latex when mixed with sheep blood and drank, acts as a vaccination against snake, scorpion and ticks poisons.
Triumfetta flavescens	Ghalyalyanda	Tiliaceae	Foot and mouth disease	Branches	Branches of the plant are placed at the entrance of livestock kraal. The branches are stamped on by the livestock. The stamped branches are then immersed in water which the livestock are going to drink.
Vitex doniana	Haraghadechanda	Verbenaceae	Placenta expulsion	Roots	Roots are boiled and given to the animal twice per day for five days.
Ximmenia caffra spp americana	Longyanda	Olacaceae	Placenta expulsion/Eyes	Roots	The roots are boiled and given to the animal with no appropriate dose to induce the release of retained placenta. The roots are also pounded and the powder mixed with milk fat. The mixture is the milk then smeared on the affected eyes.

Table 3 Plants for food

Botanical name	**Vernacular name**	**Family**	**Edible part**	**Food use category**
Amaranthus hybridus	Suktay	Amarantaceae	Leaves	Vegetable
Balanites aegyptiaca	Sawacheg	Batanitaceae	Fruits	Fruits
Cordia crenata	Segida	Boraginaceae	Fruits	Fruits
Cucurbita maxima	Njorida	Cucubitaceae	Fruits/Leaves	Fruits/Vegetable
Grewia stolzii	Gangwaida	Tiliaceae	Leaves/Flowers/Fruits	Vegetable/Fruits
Gynandropsis gynandra	Mayo	Capparidaceae	Leaves	Vegetable
Maerua triphylla	Ghurfyachanda	Capparidaceae	Fruits	Fruits
Malva parviflora	Nyamborida	Malvaceae	Leaves	Vegetable
Senna didymorbotrya	Utuijeda	Caesalpinaceae	Stem	Spice
Solanum nigrum	Hamomyg	Solanaceae	Leaves	Vegetable
Triumfetta sp	Dandaid	Tiliaceae	Leaves	Vegetable
Vangueria apiculata	Ryabyakchanda	Rubiaceae	Fruit	Fruits
Vitex doniana	Haraghyadata	Verbenaceae	Fruits/Roots	Fruits/Local brew
Ximenia caffra ssp *americana*	Longyanda	Olacaceae	Fruits	Fruits
Zeleya pentandra	Damshaptaded	Aizoaceae	Leaves	Spice

Plants used for cultural aspects

The study revealed that the Barbaig use a number of plants for worship and cultural events. 8 plant species were recorded (Table 4). The highly respected and sacred plant species are *Cordia crenata* (Segida) and *Boscia mossambicensis* (Nyoshechand). Places where *Boscia mossambincensis, Senna didymobotrya, Vitex doniana* plants grow, are also considered important sites for worshiping. It is believed that destruction of these plants may lead to disasters to the communities, and therefore are protected and retained around homesteads.

Cordia crenata is a very important plant as far as Barbaig culture is concerned, as it is used in various cultural ceremonies, such as honouring the dead, wedding and traditional gatherings. *Cordia crenata* trees/shrubs are worshipped by elderly women and youth usually instructed by traditional healers. *Bombax rhodognaphalon* (Gendarjanda) tree is used as the common meeting place for members of a community going for prayers under the main tree of worship.

Prayers may be for rain, hunger, or praying for livestock and peoples' health. Prayers are usually conducted by women only. However, in case of serious disasters such as war or hunger, their husbands do participate. When men are involved in the prayers, sacrifices of a black cow, sheep or goat on site are made prior to prayers. Pieces of the skin of the sacrificed animal are hanged on the branches of that tree of worship. In addition, all participating men have to wear a piece of the skin on their fingers and leave the prayer site. After the prayers they often consult the main traditional healer of each clan to receive blessings. All in all one has to be free of sins or wrong doings before getting the blessings.

Honouring the dead are special ceremonies conducted by Barbaig for important dead people or elders of their community. The ceremonies are known as *Bung'eda*. In the ceremony, forked sticks obtained from the branches of *Cordia crenata* are placed on top of an earthen funerary monument built on the grave of the dead to be honoured. Each first grandson of the dead person has to place one forked stick on the grave. The number of sticks to be placed on the grave therefore, depends on the number of the first grand sons the dead man has from several wives. The sticks are placed by order of seniority, starting with the eldest grandson in the group. Placement of the sticks is from west to east. Furthermore, to place a stick one has to climb the earthen funerary monument using a ladder made from *Commiphora africana* (Ishponeda) tree.

Sticks of *Cordia crenata* are also used in wedding ceremonies. During the ceremonies there is an exchange of sticks between the two marrying sides, usually done by women. In addition, the stick is also used by the wedding ceremony master to strike cows given to the marrying son as a gift. This action means that the father is no longer mandated to reclaim the cows back.

Cordia crenata sticks are also used to welcome and bidding farewell to guests in traditional gatherings. In welcoming guests, one takes a stick to the entrance of the house and waves it to welcome the guest. Similarly, on departure one will escort the guests to the entrance while carrying the stick.

Senna occidentalis (Maleshi) ropes are given as rewards in recognition to heroes of the community. Heroes are any youngster who has killed a buffalo, elephant, rhino or lion. The rope is prepared by stripping the inner bark of the roots of this plant and woven into ropes. The ropes are then smeared with butterfat, and awarded by tying it around the wrist of the brave man. This is done by selected beautiful girls in the community. Thereafter, butterfat is smeared on the head of the brave man by his mother.

Table 4 Plants used for worshiping and cultural events

Botanical name	**Vernacular name**	**Family**	**Applications**
Bombax rhodognaphalon	Gendarjanda	Bombacaceae	Cultural events
Boscia mossambicensis	Nyoshechand	Capparidaceae	Worshiping
Commiphora africana	Ishponeda	Burseraceae	Cultural events
Cordia crenata	Segida	Boraginaceae	Worshiping/cultural events
Senna didymobotrya	Utuided	Caesalpinaceae	Worshiping
Senna occidentalis	Maleshi	Caesalpinaceae	Cultural events
Senna siamea	Byakchanda	Caesalpinaceae	Cultural events
Vitex doniana	Haraghadechand	Verbenaceae	Worshiping

Seven (7) species were recorded as having myths and taboos attached to them by the Barbaig people. These included: *Aeschynomene elaphroxylon* (Makubeshta), *Bombax rhodognaphalon* (Gendarjand), *Boscia mossambicensis* (Nyoshechanda), *Commiphora africana* (Ishponeda), *Cordia crenata* (Segida), *Panicum maximum* (Nyega) and *Vitex doniana* (Haraghadechanda).

A smooth, forked stick obtained from *Cordia crenata* is believed protect people and livestock from bad omen. The stick smeared with butterfat is usually placed on top of the door, with its two forks pointing outside towards the kraal entrance. It is also believed by the Barbaig that by using the stick in cattle herding, their livestock will be highly productive. The stick is also believed to have healing powers and frequently used by traditional healers. It is also believed to have powers of attracting or preventing rainfall. The forked end of the stick is pointed towards the direction of the rain clouds with some words of attracting or preventing rain.

It is prohibited to fight some one with the stick of *Cordia crenata* as it may cause bad omen to you. It is also believed that *Cordia crenata* can cause serious disasters such as deaths to human and livestock, diseases and hunger if the plant is burnt or set on fire. It is a taboo to reclaim back the cows given to a marrying son as a gift if already stricken by *Cordia crenata* stick.

Other plants believed to bring bad omen or disasters when destroyed are *Bombax rhodognaphalon*, *Boscia mossambicensis*, *Vitex doniana* (Haraghadechanda) and *Commiphora africana*, hence commonly found retained near livestock kraals or homesteads. Probably the myth behind these plants is due to the reason that they are sacred plants used for worship by the Barbaig.

Panicum maximum grass is used for thanks giving, blessings or forgiveness. The grass is taken and placed on the head of the particular person to give him/her blessings. It is also believed that when placed on the tomb of a dead person, the dead will take it and award you blessings.

Plants used for cosmetics, decorations and miscellaneous purposes

A total of 10 plant species were recorded being used as cosmetics and for decorations (Table 5). Nine (9) plant species were recorded for use in miscellaneous purposes such as constructions and handicrafts (Table 6).

Gourds derived from fruits of *Lagenaria siceraria* are very important to Barbaig culture, and are used for various purposes. The gourds are used for carrying water, and as household utensils/vessels for various domestic activities. The gourds are classified according to size, shape and use as follows: i) *Bayokta*, a small gourd with wide opening. It is used for milking the cow. Men also use this type of gourd for drinking milk, ii) *Gulkuda*, a medium sized gourd, oval in shape. It used to store fresh milk for a while soon after being collected from the cow, iii) *Ramajeda*, a medium sized gourd used for fermentation of the milk. It is also used as a milk shaker for butterfat extraction, iv) *Gesuda*, a large gourd used for brewing a local honey brew known as *gesuda*, v) *Sindemga*, a medium gourd used to drink the brew from the large one, vi) *Qarjanda*, the smallest among the gourds. It is used by the elders to drink local brew in cultural ceremonies. *Albizia gummifera* leaves are crashed and used to seal cracks on milk gourds.

Table 5 Plants for cosmetics and decorations

Botanical name	Vernacular name	Family	Uses	Applications
Acacia seyal	Honyawenda	Mimosaceae	Decorations	The inner bark is stripped off, cut into small pieces then boiled to release a red dye. Clothes are then soaked into the dye and left for about 12 hours to pick the red colour.
Clerodendrum myricoides	Gununyanda	Verbenaceae	Cosmetics	The leaves are collected during the rain seasons put in a gourd. The gourd is hanged on fire so as to dry the leaves. The dry leaves are then removed from the gourd and grinded into a powder. The powder may be spread in clothes like a talcum powder or under the armpits to act as a deodorant.
Ocimum bacillicum	Burachanda	Labiatae	Cosmetics	The leaves and flowers are squeezed and smeared on clothes to impart smell. All age classes use this cosmetic.
Plumbago zeylanica	Helga	Plumbaginaceae	Decorations	Extract from the root of this plant is used for the famous Barbaig ring tattoos around the eyes. The roots are grinded then sun dried. The dried pieces will turn into gum-like paste. The paste is used to draw the ring tattoos around the eyes. The drawings are usually conducted in the afternoon by pasting the extract of the plant around the eyes, and left for hours. The paste is usually corrosive, scorching the skin as it comes into contact. At night, the paste is removed around the eyes, leaving scorched ring-like drawings around the eyes. The scorched skin will shade off in the morning, leaving red rings, which later turned into permanent black rings in 3 to 4 days.
Plunchea dioscorides	Udamurogujonju	Compositae	Decorations	The flowers of this plant are used as eyebrows dye. The flowers are picked and squeezed on the eyebrows to make them blacker
Solanum arundo	Gisaigweda	Solanaceae	Decorations	The fruits give an extract which soften hides and skins used to make special clothes/skirts worn by Barbaig women, known as *Hang'wenda.* S*olanum incanum* may also be used as an alternative. To prepare the extract, ripe fruits of the plant are chopped into small pieces and put into a container. Human urine (from women) is then mixed with these pieces. To prepare the clothing (*Hang'wenda*), skins (from goat, cow or sheep) are soaked in the mixture of human urine and fruits of *Solanum arundo* for one to two weeks. The skins are then removed from the mixture, dried and processed into *Hang'wenda* skirts.
Tinnea aethiopica	Rurukta	Labiatae	Decorations	The bark is dried and grinded into a powder. The powder is spread on the body as a deodorant. The bark can however, be used when fresh.
Zanthoxylum chalybeum	Wapkyanda	Rutaceae	Decorations	The leaves are picked, squeezed and smeared on clothes. This cosmetic is mostly used during cultural dances and ceremonies. The smell on the clothes attracts a partner.

Table 6 Plants used for handcrafts

Botanical name	**Vernacular name**	**Family**	**Applications**
Acacia senegal	Yudek	Mimosaceae	Cattle kraal gates
Albizia gummifera	Masakta	Mimosaceae	Seal gourd cracks
Commiphora africana	Ishponeda	Burseraceae	Territory demarcation/beehives
Cordia crenata	Segida	Boraginaceae	Walking sticks, bows, spears handles, beds
Croton scheffleri	Warechanda	Euphorbiaceae	Walking sticks, bows, spears handles, beds
Euphorbia candelabrum	Geyoneda	Euphorbiaceae	Bee hives
Senna siamea	Byakchanda	Caesalpinaceae	Bee hives
Vitex doniana	Haraghadechanda	Verbenaceae	Building poles
Ziziphus abysinnica	Gosamngyanda	Rhamnaceae	Walking sticks, bows, spears handles, beds

DISCUSSION

It is evident from the study that the Barbaig people are knowledgeable of plants particularly herbal medicines as evidenced by quite a large number of plants species for human medicine (28 out of 57 recorded species). Plants have always occupied centre-stage in the lives of people in Africa (Cunningham and Davis, 1997) being used for food, firewood, medicines, spirituality, handcrafts, and construction. The livelihood of communities depends on using plants that exist in the area (Wickens, 1990). This could be the similar case to apply for the Barbaig communities.

Roots and leaves seem to be the preferred parts for use by Barbaig communities. The over-extraction of roots for medicine makes the sustainability of medicinal plants difficult, compared to leaves. According to Schippmann *et al*. (2002), use of leaves provides an incentive to protect and maintain wild populations and their habitats and the genetic diversity of medicinal plants. The Barbaig communities thus, need to be sensitized on sustainable ways of harvesting of medicinal plant resources to ensure their sustainability in future.

The indigenous knowledge on use of plants for livestock is not new for the Barbaig as its common all over the world. However, worldwide, variations in number of documented plants for veterinary medicine seem to exist and vary from one geographical area to another. For example, Yineger *et al*. (2007) documented a total of seventy four veterinary medicinal plant species in areas around Bale Mountains National Park in Ethiopia. In India, Rao *et al*. (2008) reported a total of 62 plant species used for animal health care practices by local communities.

Different plant species have through generations been used for different purposes including decorations and cosmetics as observed from The Barbaig communities. In India, besides the use of plants for food, drink and clothing, Mehra *et al*. (1975) reported that plants and or their parts are also used for other purposes like personal adornment and beautification of the home.

Barbaig communities seem to be knowledgeable also on plants with cultural values and most of them are protected to ensure future availability. The findings are in agreement with what Gadgil (1993) urged, that forests often provide venues for cultural needs in social events, and individual plants normally afford total protection. In Peddie, Eastern Cape South Africa, Cocks and Wiersum (2003) noted that almost half of the total amounts of wild harvested plant resources, and a third of the total number of species were used for spiritual and ritual purposes in both rural and urban communities to sustain cultural practices and maintain cultural identity. According to Cocks and Dold (2006), biodiversity conservation programs need to take cognisance of the multitude of cultural values that affect biodiversity, as these factors are an integral part of the newly emerging socio-economic group in newly emerging socio-economic conditions.

CONCLUSION

The Barbaig are knowledgeable of plants growing around their environments, this is evidenced by the significant number of recorded species for various purposes at household level ranging from income, food and health security to cultural values. There is a need therefore, to conserve the documented plant resources to retain the valuable indigenous knowledge attached to the Barbaig community for the benefit of the future generations.

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