

Medicinal Plants Used in the Management of Sexually Transmitted Infections by the Samburu Community, Kenya

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ABSTRACT

The study aimed at documenting the use of traditional medicine in management of sexually transmitted infections by Samburu traditional healers. The study also documents the methods of diagnosis of Sexually Transmitted Infections/Diseases (STIs/STDs) by the traditional healers. Data on use of plants for management of STIs was obtained using focused group discussions and administration of semi-structured questionnaire to 29 traditional healers from seven divisions in Samburu County. The information on identity of medicinal plants, medicinal preparations, their effectiveness, safety, availability and STIs diagnosis was obtained. The symptoms of STIs as mentioned by the traditional healers were varied and diverse and Samburu community has accumulated reliable ethno-diagnostic skills for diagnosis of STIs on the basis of these symptoms. The commonly used plants species in management of STIs as cited were *Clerodendrum myricoides*, (93%) with the roots being the most preferred part, *Carissa edulis* (52%), *Myrsine africana*, (31%), *Rhamnus staddo*, (24%) *Rhamnus prinoides* (17%), *Sansevieria enhribergii*, (10%) and *Psiadia arabica* (10%). *Clerodendrum myricoides* was ranked first in STIs management and is used alone or in combination with the other plants. The purpose of using it in combination with other plants was to increase its efficacy and to decrease toxicity. The medicinal remedies for STIs were prepared mainly as decoctions and given orally, but in chronic cases of STIs, *Clerodendrum myricoides* is given per rectum. Although *Clerodendrum myricoides* was ranked as the best plant, toxicity was reported to be acute, severe and often fatal in case of its overdose. The survey showed that *Clerodendrum myricoides* alone or in combination with other plants is considered an important medicinal remedy for STIs in the Samburu community. However, there is a danger for its eradication since the roots are commonly used. There is need to develop propagation measures in order to ensure sustainability.

Keywords: Ethnomedicine, Sexually Transmitted Infections management, Traditional herbal Practitioners, Samburu Community

INTRODUCTION

According to the incidence rates of Sexually Transmitted Infections (STIs) remain high in most parts of the world, despite diagnostic and therapeutic advances that can manage most of these infections. This is compounded by the development and spread of drug-resistant bacteria like penicillin-resistant gonococci,

which makes some STIs harder to cure [1]. Furthermore, an estimated 340 million new cases of curable STIs (syphilis, gonorrhoea, chlamydia and trichomoniasis) occur throughout the world annually; Sub-Saharan Africa leading with 11 to 35% of all new cases [2, 3]. Lack of access to resources for health care and treatment has hampered control of these diseases and

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contribute to the growing STI epidemic in Sub-Saharan Africa [4, 6]. According to [2, 5, 6] an estimated 1 million people were being infected by STIs daily among the youth and among women of child bearing age. Many STIs are asymptomatic and are often inadequately treated or left untreated, leading to Pelvic Inflammatory Disease (PID) and infertility. Untreated Chlamydia and gonorrhoea infections often result in pelvic inflammatory disease (PID), and accounts for 50-80% infertility in Africa.

Thus providing prompt and adequate treatment for curable STIs is one of the most cost-effective methods to improve reproductive health, and can also significantly contribute to decreasing the HIV/AIDS epidemic [4, 6] Further, in developing countries, STIs and their complications are amongst the top five disease categories for which adults seek health care [6].

The Government of Kenya per capita expenditure on health care has declined from US \$ 10 in the 1980s to US \$ 3 currently. Due to inadequate public funding the road system has also deteriorated adversely, which coupled with insecurity in parts of the country including Samburu County has affected efficient delivery of health care services [7]. Samburu community thus largely use traditional medicine for treatment of STIs since this mode of treatment is easily accessible and affordable [2].

In the remote and rural Samburu County in the part Northern Kenya, where bitumen roads are scarce and motorized transport rare, reaching the mostly pastoralist and nomadic inhabitants with HIV/AIDS and STI services require an unusual approach where camels are often used as the mode of transport. This compounded by poverty, illiteracy, cultural practices like

polygamy and beading practice and early forced marriages has made the Samburu community to rely on traditional medicine for primary health care. This study was carried out to document the traditional herbal remedies used by the Samburu community in management of STIs.

MATERIALS AND METHOD

Study area

The study was carried out in Samburu County in the dry northern frontier of Kenya. The County covers approximately 21126.5 Km² (Figure 1) and is bordered to the West by Baringo, Laikipia to the South, Isiolo to the East, Turkana to the North West and Marsabit to the North. It is characterized by high level plateaus, hills and the Great Rift Valley with an altitude of up to 2000 m above sea level. The area has a bimodal rainfall distribution pattern which runs from April to May for long rains and July to September for short rains. The dry season then extends from January to March. The mean annual rainfall is 500 mm, and mean annual temperature is 29°C. The Samburu people are the dominant indigenous ethnic group (80%) but Turkana, Kikuyu, Meru, Somali and Maasai people (20%) have also settled in the area. Pastoralism is the major economic activity of the local people. The District is sparsely populated and has a population of approximately 156,125 inhabitants. These rural communities are almost totally dependent on forests and savannah as source of traditional medicine for their own health and livestock care [8]. The pastoral livelihood exposes this community to complete lack of formal infrastructure hence they rely on the natural environment. The area is harsh and difficult to survive during the dry spell.

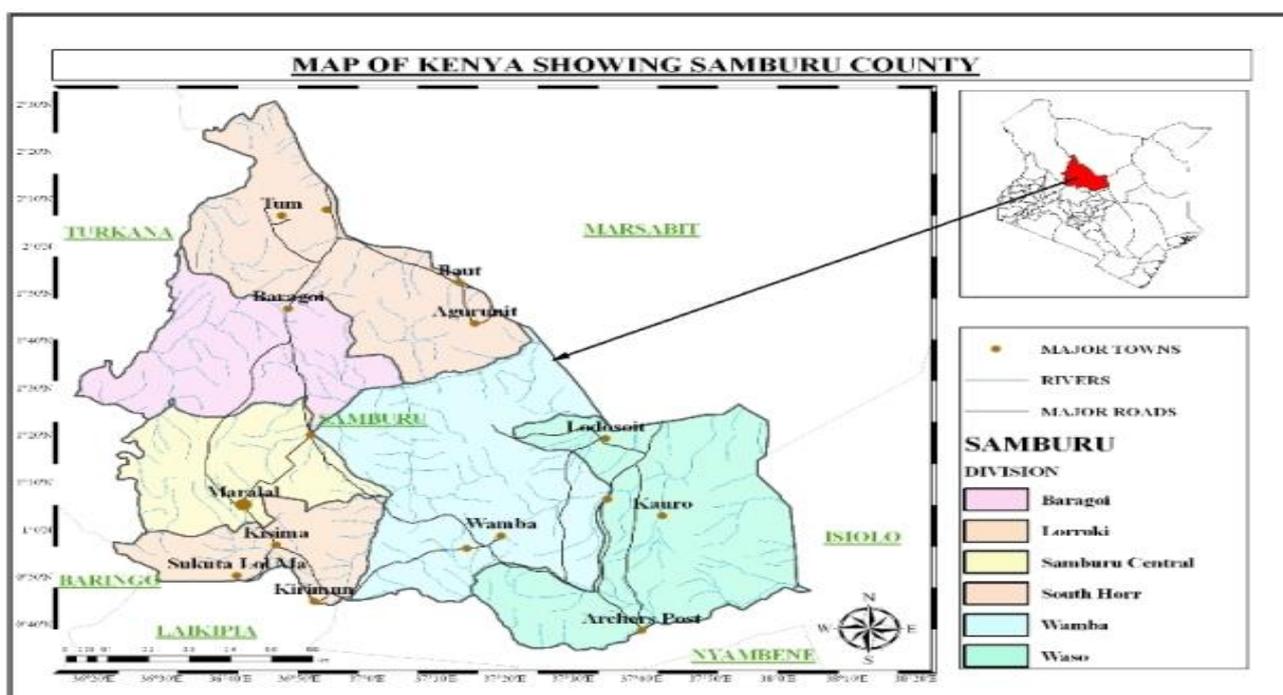


Figure 1: The map of Kenya showing the location of Samburu County and its administrative boundaries.

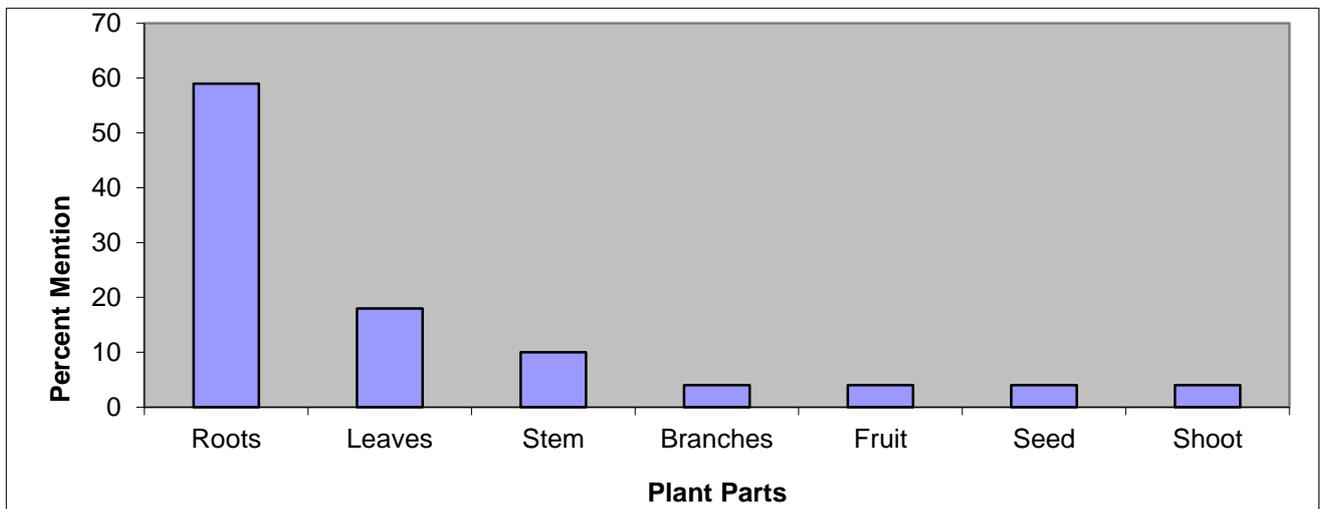


Figure 2: Percent mention of the plant parts used in the management of sexually transmitted diseases by Samburu traditional healers.

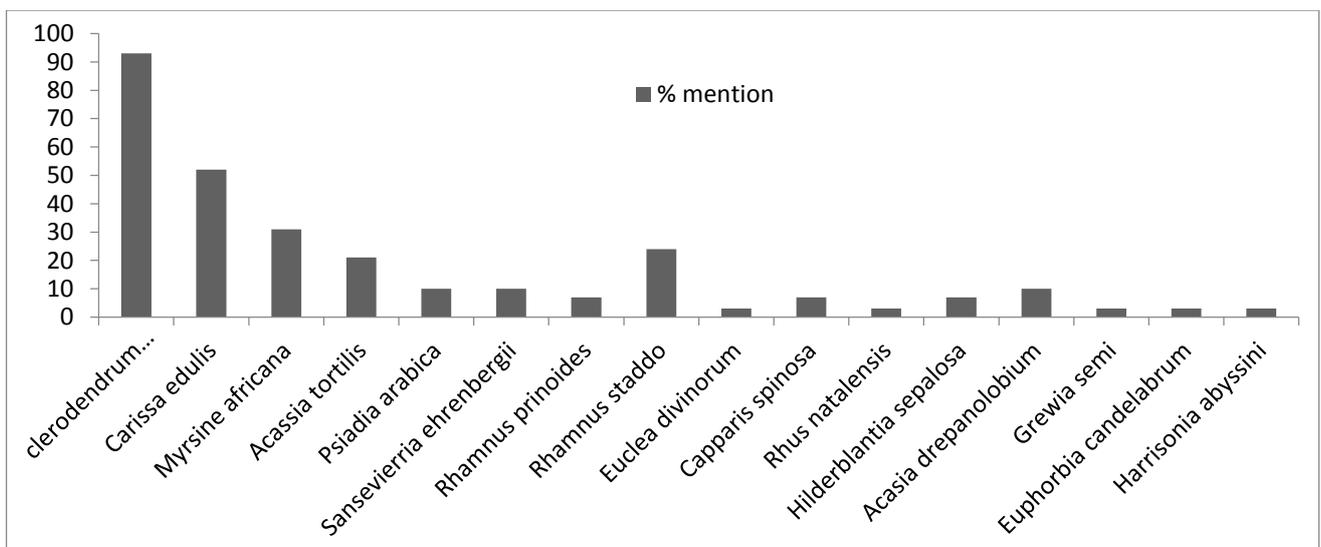


Figure 3: The Percent mention of the plants used to manage sexually transmitted diseases by the Samburu traditional healers.

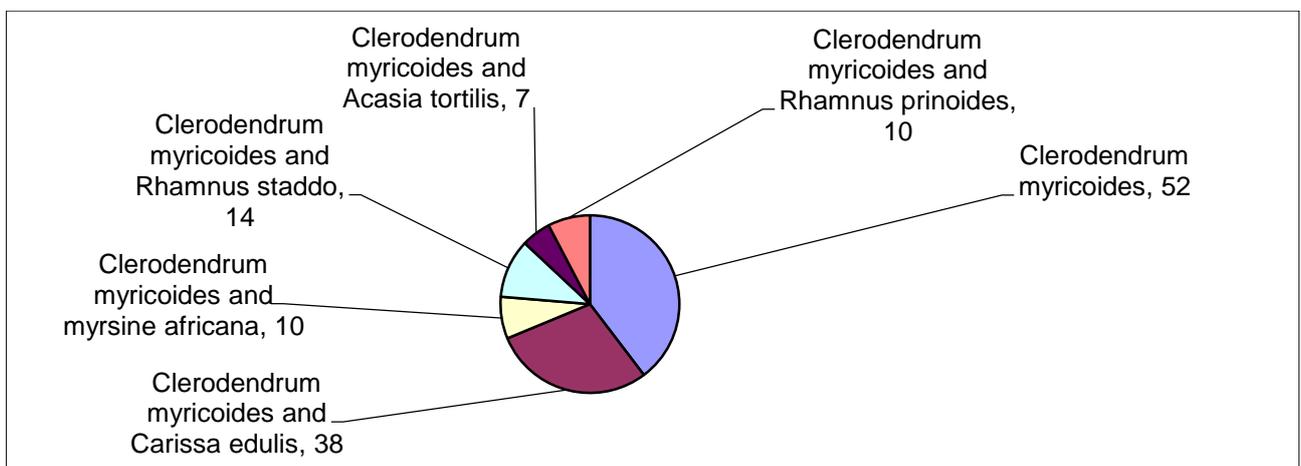


Figure 4: The percent mention of how Clerodendrum myricoides is mixed with other plants by the traditional healers to treat sexually transmitted infections.

Table 1: The plants used by the Samburu for the Management of STIs

Local name	Plant Family	Scientific name/ Voucher specimen no.	Frequency of mention	Habit/ Part used	Formulation /route of administration-	Vehicles	Condition Managed
Lmakuti-kuti	Verbenaceae	<i>Clerodendrum myricoides</i> (Hoechst) Vatke Sp- 6	93%(27)	Tree roots	1) A 3 finger thick root that is palm length is boiled in 1 litre of water for 15 minutes, its then sieved and cooled and 200mls is taken orally twice daily for 3 days. 2) The roots are dried and the bark removed and powdered 3) Spoonful are then boiled in 1 litre of water for 10-15 minutes. 200mls is taken orally twice a day for 3 days The anal route is used in chronic cases where 200mls is instilled while the patient is held upside down. The patient waits for 3 minutes and is then released.	water, fat blood, milk soup, soap	STIs, infertility, urethritis, arthritis, Malaria, flu, pneumonia, lack of libido
Lamuriai	Apocynaceae	<i>Carrisa edulis</i> Forsk (Vahl) Sp-1	52%(15)	shrub root, fruit	A 3-5 finger thick root which is palm length is boiled for 15 minutes in 2 liters of water. 400mls is taken daily for 5-7 days	water, soup milk, fat blood	STIs, infertility flu, pneumonia
Seketet	Myrsinaceae	<i>Myrsine africana</i> L. Sp-2	31%(9)	shrub seeds	A handful of seeds are ground into powder and boiled in 200mls of water. This is taken twice a day for 5-7 days.	water fat soup milk	Flu, helminthiasis, cysticercosis improve libido, arthritis, injuries
Ltepes	Cassia	<i>Acacia tortilis</i> (Forssk) Hayne Sp-8	21%(6)	Tree bark	A 3 finger size bark which is palm length is boiled in 1 liter of water for 20 minutes. 500mls is taken per day for 3 days. This is repeated after one week.	water, soup	STIs, infertility, arthritis, Migraine

Local name	Plant Family	Scientific name/ Voucher	Frequency of mention	Habit/ used	Part	Formulation /route of administration-	Vehicles	Condition Managed	(s)
Labai	Compositae	<i>Psiadia arabica</i> Jaub and Spach, Sp- 5	10%(3)	Roots, leaves	Part	A 2 finger thick root which is half hand long is cut into pieces mixed with 2 spoons of <i>Clerodendrum myricoides</i> powder and boiled in 1.5 liters of water for 6 minutes. 200mls is taken once daily for 5 days.			
Ldupai	Agavaceae	<i>Sansevieria enhribergii</i> Bach Sp -7	10%(3)	roots, shoots		A 2 finger thick root or shoot which is palm length is boiled in half liter of water for 15 minutes. 200mls is taken daily for 7 days	water fat	STIs, infertility chest pains	
Lkinyil	Rhamnaceae	<i>Rhamnus prionoides</i> L.Herit Sp -3	7%(5)	roots, bark		A 3 finger thick pieces of root palm length are boiled in 2 liters of water. 200mls is taken 3 times daily for 7 days.	water milk	soup STIs, infertility, malaria, arthritis	
Lkukulai	Rhamnaceae	<i>Rhamnus staddo</i> Rich Sp -4	A. 24%(7)	shrub, roots, leaves as ac-boiled in aricide		A 2 finger thick root which is half hand long is cut into pieces and leaves as ac-boiled in 1.5 liters of water for 6 minutes. 200mls is taken once daily for 5 days.	once water, milk	STIs, infertility, malaria diabetes asthma	
Lchingei	Ebenaceae	<i>Euclea divinorum</i> Hi-3 Sp - 9	3%(1)	roots		A 3 finger thick dried root is boiled in 400mls of water for 15 minutes. 200mls is taken once	15 water, milk	soup STIs infertility typhoid wounds	
Lakiringai	Capparidaceae	<i>Capparis spinosa</i> L Sp - 11	7%(2)	Shrub Roots, Leaves		A 3 finger size root which is palm length is boiled in 400mls of water for 15 minutes. 200mls is taken twice a day for 7 days	400mls of water, milk	soup, STIs, infertility, malaria fevers, colds and flu	

Local name	Plant Family	Scientific name/ Voucher	Frequency of mention	Habit used	Part	Formulation /route of administration-	Vehicles	Condition Managed	(s)
Lmisigiyoi	Anarcadiaceae	<i>Rhus natalensis</i> Bernh.ex Kraus SP - 10	3%(1)	Herb, leaves	Roots,	4 roots which are palm length or a handful of Leaves are boiled in 400 mls of water. After cooling 200mls is taken twice daily for 5 days.	forwater milk	STIs infertility	
Lnyirman	Vitaceae	<i>Hilderbrandtia sepalosa</i> Sp - 12	7%(2)	Shrub,	root	The bark of the root is ground and 4 spoonfuls of powder are taken and boiled in 1liter of water or soaked overnight. 400mls of water soup is taken once.		STIs infertility, malaria arthritis, body aches	
Rangau	Mimocaceae	<i>Acacia drepanolobium</i> , SP- 13	10%(3)	Tree,	Bark	3 pieces of bark 2feet long are soaked in 1 litre of water for an hour. 200mls is taken daily for 5 days.	water, milk	STIs infertility, Arthritis	
Lngalaiyoi	Tiliaceae	<i>Grewia simi</i> L, Sp-14	3%(1)	roots		A palm length root is boiled with 4 litres of water. This is mixed with ruminal contents soup and blood. 4 liters are taken.	water, soup	STIs infertility, stomach problems	
mpopongi	Euphorbiaceae	<i>Euphorbia candellabrum</i> , Sp - 16	3%(1)	Tree, branches		A 6cm branch is roasted until its liquid, it is then dried and put in soup. This is boiled for 5 minutes and taken.	water, soup	STIs infertility, asthma backache	
Lasaramai	Simarubaceae	<i>Harrisonia abyssinica</i> Sp - 15	3%(1)	roots		1 palm length root is taken and put in water and boil then cooled and honey is added a quarter of a glass is taken for 3 days	water honey	STIs, infertility arthritis, chest pains	

Ethno botanical survey

The study employed participatory epidemiological approaches (interviews, questionnaires, focused group discussion and transect walks) involving local community and Traditional Herbal Medicine Practitioners (THMP), all of which culminated in an ethnobotanical workshop. A validated semi-structured questionnaire was used to obtain information on indigenous knowledge on medicinal plants and their utilization in general with special emphasis on STIs. The interviews were recorded in specifically designed forms detailing interviewees' personal information, medicinal plant knowledge and utilization as well as the availability and status of the target plants. In order to obtain sound unbiased information, an introductory seminar by key stakeholders and Samburu Integrated Resource and Aids Network (SIRAN) officers preceded the administration of questionnaires. Leading questions and technical terms were avoided when asking the questions. The major questions addressed the medicinal plant usage in the management of STIs. The participants were assured that their responses shall remain confidential and will only be used for research purposes and that they were to be fully acknowledged in any information sharing arising from the study. Each informant was interviewed in camera. The information obtained included names of plant and part used; method of preparation, dosage and means of administration, antidotes used in case of overdose, storage as well as plant status and habitat. Both formal and informal consents were obtained from the herbalists prior to the interviewing session. Twenty nine herbalists from different parts of Samburu County, including Maralal, Kirisia, Malaso, Baragoi, Loroki, Wamba and Nyiro Divisions were involved in the study.

Collection and identification of plants used in management of STIs

A guided tour of the study area was taken during which plant samples were collected from highlands, escarpments and lowland areas of the vast dry land. The medicinal plants that were reported by the herbalists as useful in the treatment of STIs were collected by a team comprising of herbalists and the researchers. The medicinal plants were identified *insitu* by the herbalists during the tour and plant specimens were carefully collected for botanical identification. The specimens were identified by a botanist at the University of Nairobi, Department of Land Resource Management and Agriculture Technology (LARMAT) where voucher specimens were allocated a specific number and the voucher deposited. The information collected through both informal and formal discussions were normalized and summarized into meaningful units prior to calculating descriptive statistics.

RESULTS

Medicinal plants usage in management of STIs

Twenty nine consented Traditional Herbal Medicine Practitioners (THMPs) participated in the workshop (59% males and 41% females). The greater majority of the respondents were mature adults aged between 48 and 57 years (42%) and the older group > 57yrs formed a lesser majority (34%). The majority had been practicing in the area as herbalists for more than ten (10) years (62%). Some 50% of the respondents had no formal education while 50% had at least some formal education with the highest level of education being secondary school (20%) and primary school education (20%). All the herbalists interviewed had come across the conditions under study.

Most of the THMPs had gained skills either from their parents (45%) or they were trained by other herbalist (34%). Some of the members belonged to various organizations such as Samburu Integrated Resource Aid Network (SIRAN), Samburu Livestock Traders Association, Maendeleo Ya Wanawake, a women group, Samburu Traditional Healers Association and Maralal Tree Nursery Association which helped them in one way or another to market their traditional medicine.

Sixteen medicinal plants were reported as useful in samburu area for the treatment of STIs. These plants belong to 15 families distributed in 16 genera (Table 1).

The traditional healers reported that the parts of the plants that are commonly used are the roots (58%), followed by the stem bark (17%), the leaves (10%) branch bark, seeds, fruits and shoots (3%) (Figure 4). They reported that the plants are usually used after drying either as a powder or the whole part. Most of the plants mentioned were abundant apart from the dry season when the plants would only be available in the high land area while they became scarce in the lowland and the escarpment. During the dry season there is scarcity of pasture and insecurity at the lowland making plants from these areas scarce, however during the rainy season the THMPs are able to harvest enough to take them through the dry spell. The respondents reported that they have started a tree nursery which would help in reforestation of the important species that are being threatened by climate change and over use

Disease Management and Perception

Clerodendrum myricoides ranked first (93%) (Table 1) among the medicinal plants used in the management of STIs. The majority of the THMP (52%) reported that this plant is used alone to manage STIs while others reported that it is used in combination with several other plants (Figure 2). Those who preferred mixing several plants reported that this reduced the possibility of toxicity and the bitter taste of the product. The specific STIs managed were not confirmed using laboratory diagnosis but were arrived at using the associated clinical signs as perceived by the traditional Samburu medicinal healers who have accumulated knowledge

to identify various ailments using clinical symptoms. For example, they associated gonorrhoea and other STIs with symptoms such as backache (14%), pus in urine (52%), blood in urine (10%), urine blockage (14%), wounds in the mouth and eyes (7%), painful urination (28%), swollen genitals (17%), abdominal pain (10%), fever (7%), headache (3%), poor weight gain (3%) and yellow urine (3%). The THMPs reported that children get infected during child birth if the mother is suffering from the ailment

Safety and efficacy

About 52% of the respondents usually administer *Clerodendrum myricoides* alone while the rest usually administer it as a concoction with other plants (figure 2). The remedy is usually formulated as a decoction for oral administration. However, in chronic and recurrent cases of STIs, *Clerodendrum myricoides* decoction is administered per rectum (3%). However, fresh plant of *Clerodendrum myricoides* was reported to be toxic when used alone. Thus, for oral dosing, the decoctions and concoctions are usually mixed with expipients like soup, milk, fat, oil, soap and even blood to reduce toxicity and mask the bitter taste of the product. The decoctions are given once, twice or thrice a day for one up to seven days or until recovery. Moreover, according to the respondents (69%); the plant is used cautiously since toxicity may occur if the dosage is exceeded.

The adverse symptoms of overdose reported include stomachache (17%), fainting (12%), vomiting (10%), diarrhea (2%), headache (2%), rectal prolapse (2%), inappetence (2%) and weakness (5%) However milk, fat and even blood were reported to be used to ameliorate the adverse effects.

DISCUSSION

Traditional medicine remains the most affordable and easily accessible source of treatment in the primary healthcare systems of poor communities [9]. This is not different of the Samburu community in Kenya as the respondents cited in this study reported several medicinal plants that they use traditionally in management of STIs. The major health problems experienced by Samburu, as with most rural African populations, are infectious diseases including venereal diseases, malaria, pneumonia, gastroenteritis, diarrhea, measles, and whooping cough [10]. Some of the clinical signs reported for STI included pus in urine, urine blockage, blood in urine and even painful urination. Patients presenting these clinical signs to traditional healers were administered herbal remedies preferentially *Clerodendrum myricoides* alone or in combination with other plants. *Clerodendrum myricoides* (Hoechst Vatke) has also been reported to possess antibacterial and antifungal activity in a study done in Ethiopia [11]. The roots of this plant squeezed fresh and the juice mixed with milk and then administered orally in very

small amounts are reported to cure Rissaa [12]. However, among the Samburu the plant roots are taken when in powder form and not while wet to avoid toxicity.

The Samburu have reported that use of *Clerodendrum myricoides* alone is toxic. This is in contrast to Yinegar report., [12] where no toxicity was reported. This may be as a result of the different parts of plants used by the different communities. The samburu use the roots while the study from Ethiopia reported the use of plant leaves [12].

Carrisa edulis (Forsk) Vahl was also used for treatment of STI by the Samburu community although less frequently than *Clerodendrum myricoides*. It was also the main plant of choice for mixing with *C. myricoides*. This plant has also been used for treatment of STI [13-14]. The other plants mentioned in the treatment of STI are *Rhamnus staddo* A. Rich, *Rhamnus prinoides* L'Herit, and *Sansevieria ehrenbergii* Bach. *R. staddo* and *R. prinoides* have also previously been cited in literature as medicinal remedies for STIs among the Samburu of Mt Nyiro, [14] and the Masaai of Kajiado, Kenya [15]. *Sansevieria ehrenbergii* Bach, has been referred in other studies as a treatment for gonorrhoea [16] and also has strong antifungal activity [17]. *Psiadia Arabica* Jabb and Spach was mentioned as a remedy for STIs in our study. It contains flavonoids and kaulene as the bioactive compounds [18, 19]. *Myrsine africana* L. was also cited among the remedies for STIs and has been reported as having antifertility, analgesic, anti-inflammatory, antibacterial, antitumor activities. Additionally it has free radical scavenging compounds [20]. Five plants including *Capparis spinosa*, *Acacia drepanolobium*, *Hilderbranta sepalosa*, *Myrsine africana* L., and *Psiadia Arabica* Jabb and Spach were mentioned for the first time as useful in treatment of STIs.

CONCLUSION

In conclusion, the results of this survey show that several plants are used in STIs in Samburu.. Although the plants are generally safe, some may cause serious toxic effects for example *Clerodendrum myricoides*. *Clerodendrum myricoides* (Hoechst Vatke) is considered toxic based on the results of the current study and therefore safety standards need to be instituted through laboratory techniques so that the traditional healers may safely and efficaciously administer the herbal remedies. Notably the main parts of the plants used are the roots, which pose a danger to the sustainability of the medicinal remedies.

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