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A survey of South African plant species used for the treatment of “u wela” in Venda culture, Limpopo Province

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ABSTRACT

Medicinal plants are widely recognized as the key component for critical human health, social and economic support. The current study was conducted to identify medicinal plants used by local people and traditional healers to treat “u wela” in Vhembe District, Limpopo, South Africa. A questionnaire was designed to gather information on the local names of plants, plant parts used and methods of preparation administered by the traditional healers. Plant species were collected based on indigenous knowledge of local traditional healers through the use of a questionnaire and personal interviews, and some were identified using literature and herbarium at the University of Limpopo. The study revealed that thirty-seven medicinal plants are used for the treatment of “u wela” in the study area. The frequency index was calculated and the highest frequency was observed in *Elaeodendron transvaalensis* Jacq (47%) and the least was found in *Albizia versicolor* Welw. Ex Oliv (6%). Some medicinal uses of identified plants that have not been recorded in the consulted literature were documented. Noticeably, many of these plants were grown in the wild. Traditional healers use different plant part(s) for the treatment of various ailments. Roots (40%) were highly used followed by 20%, bark (13%) and leaves. The plant forms used were trees, (38%), shrubs, (3%), climbers, herbs and succulents (4.7%). The results stipulated that a high population of people in the community still relied on traditional medicine for their primary health care.

Keywords: Medicinal plants, Ethnobotanical survey, “U wela”, Indigenous knowledge

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Introduction

"Uwela" is a sexually transmitted that affects males in Venda after having unprotected sexual intercourse with a female who had an abortion or a miscarriage. A woman recovering from a miscarriage should undergo dilatation and curettage before engaging in social activities. In South Africa, traditional healers and local people use medicinal plants to combat various diseases in humans including "uwela". Traditional healers have the ability to identify and recognize the symptoms of "uwela" while other symptoms are much similar to those of HIV/AIDS. Previously, it was difficult to treat "uwela", since the infected women should be traced. According to Venda culture, traditional healers prepare urine of both partners and mixed with herbs and give to the infected male to drink. However, due to difficulties of tracing the infected women, a new method of treatment has been developed which does not involve a mixture of herbs with urine (Mulaudzi, 2001). Nowadays, the medication is prepared from different plant parts such as leaves, roots and bark in a form of decoction, maceration or infusion (Masevhe et al., 2015).

Traditional medicine is useful in diagnosing, preventing and eliminating physical, mental or social custom imbalances based on indigenous knowledge, practical experiences and belief (Richter, 2003). Information on the indigenous knowledge on medicinal usage is passed from generation to generation (Maema et al., 2016). Furthermore, traditional medicine is utilized by many ethnic groups to combat various ailments in humans and animals. Documentation of medicinal plants and the failure of the conservation of these plants has led to the disappearance of traditional knowledge systems. Most young generation prefers western medicine than consulting traditional healers.

Documentation of indigenous knowledge through ethnobotanical studies is important for the conservation and utilization of biological resources (Muthu et al., 2006). In South Africa, the conservation of medicinal plants such as wild yam used for relieving pain, poor circulation

and neuralgia, intestinal cramping is also challenging as unity amongst individuals with knowledge and scientists is lacking. Therefore, the establishment of the local names and indigenous uses of plants has significant importance to the communities (Bağcı, 2000). More importantly, some plants have become endangered and should be protected.

Information regarding plants containing therapeutic value should be documented in systematic studies. The documented studies can assist with the identification of plants that have market potential, hence making money for the local communities. On the other hand, this will set as an incentive for the local people to protect their indigenous plant species (Shackleton, 2001). In this study, ethnobotanical survey has been carried out for the identification of plants; and traditional healers in local communities of Vhembe district were interviewed regarding the medicinal plants they use to combat various diseases. All plant species used by the local people and traditional healers to treat various diseases were recorded in the study area. In this paper, ethnomedicinal uses of plant species utilised by the community for the treatment of "uwela" in Vhembe District, Limpopo Province were investigated. Local people and traditional healers were interviewed and information was gathered using a semi-structured questionnaire.

Materials and methods

Study Area

The study was conducted in Vhembe District Municipality, Limpopo Province South Africa (22° 56 S, 30° 28E) as shown in Figure 3. Data were collected from eleven villages: Mawoni, Luvhalalani, Tshikuwi, Paradise, Makungwi, Ha-Mavhunga, Tshiswenda, Tshituni, Divhani, Straighthart and Pfumbada in Nzhelele area. The estimated population is about 1.2 million and the community speaks Venda language. They are agriculturalists who keep livestock including cattle, sheep, goats and chickens (Mphaphathi et al., 2008).

Climate and vegetation

The vegetation is classified as a Bushveld (Low and Rebelo, 1998). The climate is a subtropical dry savanna, and rainfall ranges between 350 mm and 1 200 mm annually. In Vhembe district, wind speed is about 4 m/s and soil moisture ~21%. It usually rains between November and March, concentrated in ~ 7 rain days per month. Seasonal rainfall fluctuates from year to year (Tyson et al., 2002; Tadross et al., 2005). The average temperatures range from 28°C in January to 15°C in July. Humidity in the area is $\pm 40\%$.

Ethnobotanical survey and identification of plant species

Ethnobotany was conducted in the Vhembe district from January to September 2016, within 11 villages (Mawoni, Luvhalalani, Tshikuwi, Paradise, Makungwi, Ha-Mavhunga, Tshiswenda, Tshituni, Divhani, Straighthart and Pfumbada). Permission to conduct the study in the area was

granted by the traditional council. Forty (40) traditional healers were selected randomly from the selected villages. Each traditional healer was requested to sign a consent form approved by the University of Limpopo. Data was collected using a semi-structured questionnaire and guided field work with traditional healers. A questionnaire was used to gather information on the local name/s of plants used to treat different ailments, source of these plants, plant part/s used to treat "u wela", methods of preparation of remedy, diagnosis of different ailments and other relevant information.

Collected plants were identified using the literature and Larry Leach Herbarium at the University of Limpopo. The plant species names (Vernacular, Scientific names) were identified at the University of Limpopo Herbarium and the Voucher specimens placed in the herbarium.

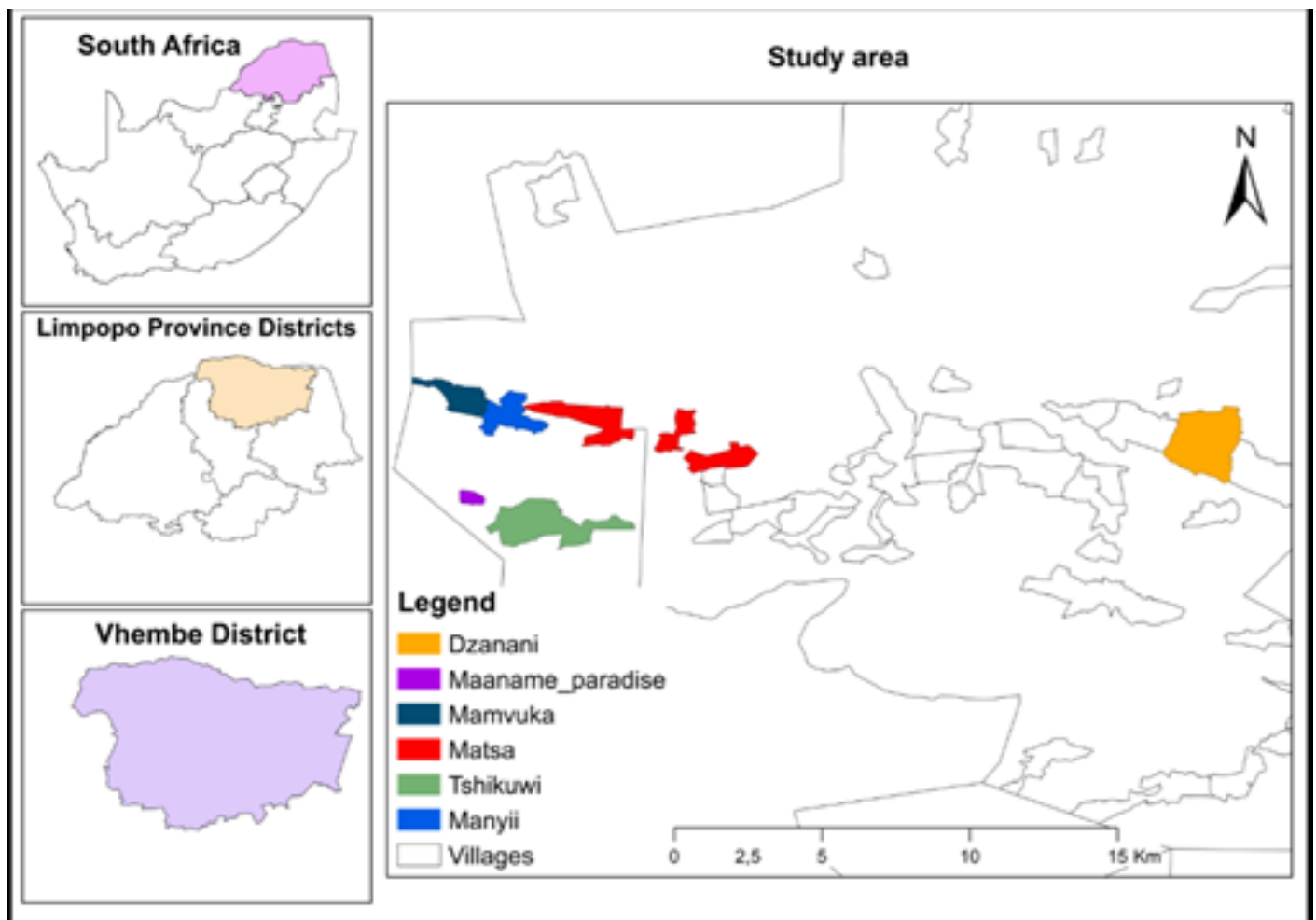


Figure 1: Map shows Vhembe District, Makhado Local Municipality.

Statistical Analysis

The collected data was captured in MS Excel 2010 and analysed using descriptive and inferential statistics. The frequency was calculated using this formula: $FI = FC \div N \times 100$ where FC is the number of informants and N is a total number of informants.

Ethical considerations

A permit was obtained from the Local authority and traditional councils of Makhado Local Municipality. The traditional healers were requested to sign a consent form approved by the University of Limpopo Research Committee prior to ethnobotanical survey. All traditional healers involved in the study participated freely. The information that participants shared with us was protected and respected to ensure confidentiality.

Results and discussion

Personal information and consultation

The survey consulted both male and female traditional healers. Among 20 participants, 33% were males and 67% were females. These results indicate that the majority of traditional healers are females. A survey revealed many traditional healers interviewed were not educated. Of the traditional healers interviewed, 47% of traditional healers had no formal education 33% while 27% acquired primary education and 13% have received college education and almost 7% attended ABET.

The survey revealed that 53% have more than 30 patients in a month, while 33% of traditional healers have less than 20 patients. The traditional healers keep in contact with their patients by giving them appointment dates for check-ups. Furthermore, traditional healers mentioned that some of the patients return back for further consultation if were not healed by the medication.

Methods of plant collection

Plant collection

Almost 86% of traditional healers interviewed collect plant materials themselves, while 13% of

female traditional healers request other people. Different plant parts were collected from the wild, at the mountains, but before the plants were to be collected specified rituals had to first be conducted such as sprinkling of snuff, bowing, invoking of their ancestors, etc. Traditional healers indicated that wild plants had superstitious healing powers as they are at peace and more potent (Lusaka and Van der Mere, 2006) than cultivated plants.

Diagnosis of “u wela”

Majority of the traditional healers mentioned that a person suffering from “u wela” cannot go to the toilet, the scrotums swell up, the person has a very severe headache, the behaviour of the person changes, the person avoids being around people, suffers from a bad cough, loses their appetite and also shivers. Besides the person just telling the traditional healer what they are suffering from, some traditional healers prefer using their bones to tell what might be wrong with that particular person, hence showing the sick person the confidence they have in what they are practicing. Previously, it was established that every culture laid down norms of sexual behaviour that are different for women and men and in turn those gendered patterns of sexual behaviours may contribute to the transmission of sexually transmitted diseases (Helman, 1996).

Traditional Practice

Plant part(s) used

Traditional healers used different plant part(s) for the treatment of various ailments (Figure 2). Roots (40%) were highly used followed by 20%, bark (13%), and leaves. The roots were also dominant in previous studies (Masevhe et al., 2015 and Maema et al., 2016). The plant forms used were trees, 38%, shrubs, 3%, climbers and the remaining 4.7% belonged to the herbs and succulents. Roots are believed to contain more healing powers as they are in contact with the ancestors. However, the utilization of roots and the whole plant are destructive and plant species will reach extinction.

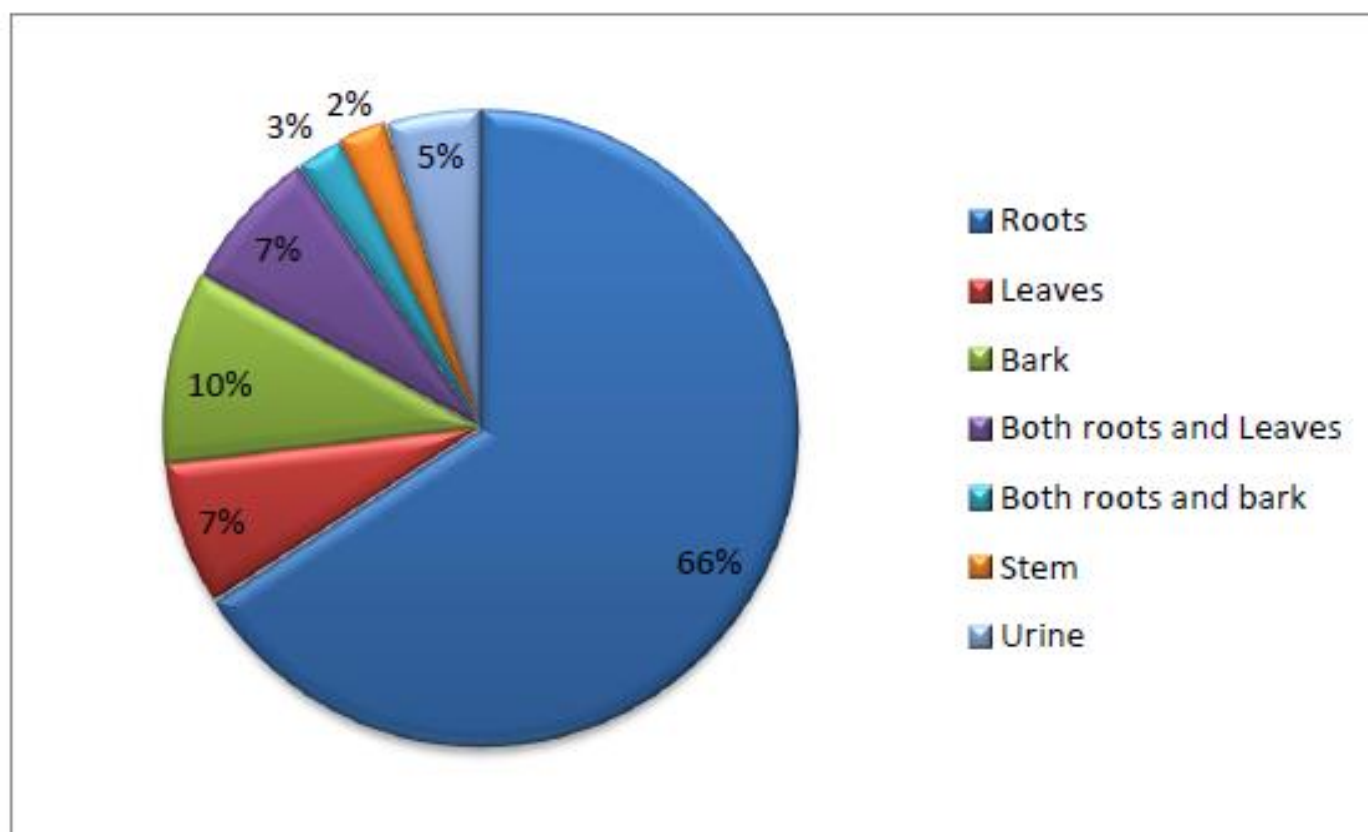


Figure 2: Plant parts used for the treatment of “u wela”.

Preparation and treatment

Clean utensils are used to wash plant parts before preparing the medicine for hygienic purposes. Most medicinal plant parts are dried and stored as a powder for further use. In some instances, various plant parts are mixed and prepared as decoction or infusion. Based on the belief, soaked plant extracts are super active. Traditional healers provide treatment by either stimulating the immune system or by directly inhibiting the microorganism causing the sickness or by looking at the therapeutic effect which may be guided by spiritual beliefs (Mulaudzi, 2007).

Identified medicinal plants

A total of 37 plant species belonging to 32 different families were identified (Table 1). The dominant families were Fabaceae and Meliaceae species both with 4 species each (18%). Amongst 37 species recorded, 50% were trees, followed by shrubs (38%), climbers (7%), and herbs (2.4%) and succulents (2.4%). The most widely used plant species were,

Elaeodendron transvaalense, *Trichilia emetic*, *Pouzolzia mixta*, *Elephantorrhiza burkei* and *Croton megalobotrys* (Figure 3).

Conservation

The study found that most traditional healers noticed a decline in certain plant species mostly in winter. This declinment has shown to have a bad impact since they must travel for a long distance in order to access particular plant parts. However, there are some difficulties such as seeking permission from the traditional council for plant collection in another area. If the permission is granted, a certain amount should be paid before plant collection. In addition, it also becomes a big distraction for them to travel long hours. Traditional healers tend to spend more time travelling than assisting their patients. A survey revealed that 73% of traditional healers use cultivated plants, 47% females and 26% males and more importantly, 27% of traditional healers buy their plants from both street vendors and markets.

Table 1. Medicinal plants used for the treatment of “u wela” in Makhado Local Municipality

Family	Scientific Name	Vernacular	Voucher Specimen	Parts used	Preparation	Dosage	Mode of administration	Frequency index in %	Availability status
Verbenaceae	<i>Clerodendrum glabrum</i> E.Mey.	Munukhatshi-longwe	Tryphina 01	Leaves	Boiled	½ Cup 3 times a day	Oral	7	Wild
Mimosaceae	<i>Dichrostachys cinerea</i> (DC.) Wight & Arn.	Murenzhe	Tryphina 02	Roots	Boiled	½ Cup 3 times a day	Oral	7	Wild
Fabaceae	<i>Senna petersiana</i> (Bolle) Lock	Munembenembe mutuku	Tryphina 03	Roots	Boiled	½ Cup 3 times a day	Oral	7	Wild
Boraginaceae	<i>Ehretia rigida</i> (Thunb.) Druce	Mutepe /Murovherovhe	Tryphina 04	Roots	Boiled	½ Cup 3 times a day	Oral	7	Wild
Asteraceae	<i>Vernonia eliptica</i> (DC.) H.Rob., S.C.Keeley, Skvarla & R.Chan	Mulomonyela (Type 1)	Tryphina 05	Roots	Boiled	½ Cup 3 times a day	Oral	7	Wild
Euphorbiaceae	<i>Jatropha Oregon</i>	Mulomonyela (Type 2)	Tryphina 06	Roots	Boiled	½ Cup 3 times a day	Oral	7	Wild
Caricaceae	<i>Carica papaya</i> L.	Mupapawe	Tryphina 07	Leaves	Boiled	½ Cup 3 times a day	Oral	7	Cultivated
Rosaceae	<i>Prunus persica</i> (L.) Batsch 1801 not Stokes 1812 nor (L.) Siebold & Zucc	Muberegisi	Tryphina 08	Leaves	Boiled	½ Cup 3 times a day	Oral	7	Cultivated
Caesalpinia-ceae	<i>Senna pendula</i> (Willd.)	Muboma/Munembenembe muhulwane	Tryphina 09	Bark	Boiled	½ Cup 3 times a day	Oral	7	Wild
Fabaceae	<i>Senna didymobotrya</i> (Fresen.) Irwin & Barneby	Tshiduwana	Tryphina 10	Roots	Boiled/Soaked	½ Cup 3 times a day	Oral	13	Wild
Asparagaceae	<i>Asparagus falctus</i> (L.) Druce	Lufhaladzamakole	Tryphina 11	Roots and Leaves	Grinded	½ Cup 3 times a day	Oral	13	Wild
Celastraceae	<i>Elaeodendron transvaalensis</i> Jacq.	Mukuvhazwivhi /Mulumanamana	Tryphina 12	Roots and Bark	Boiled/Grinded	½ Cup 3 times a day	Oral	40	Wild
Fabaceae	<i>Elephantorrhiza burkei</i> Benth.	Gumululo/Tshises avhafa/Musesevh ufa	Tryphina 13	Roots	Boiled/Grinded	½ Cup 3 times a day	Oral	20	Wild
Polygalaceae	<i>Securidaca longipendunculata</i> Fresen.	Mpesu	Tryphina 14	Roots	Boiled/Grinded	½ Cup 3 times a day	Oral	20	Wild
Apiaceae	<i>Heteromorpha trifoliata</i> Chum.	Muthathavhanna	Tryphina 15	Roots	Grinded	½ Cup 3 times a day	Oral	7	Wild
Annonaceae	<i>Annona senegalensis</i> Pers.	Muembe	Tryphina 16	Roots	Grinded	½ Cup 3 times a day	Oral	7	Wild
Rhamnaceae	<i>Ziziphus mucronata</i> Willd.	Mukhalu	Tryphina 17	Roots	Boiled	½ Cup 3 times a day	Oral	20	Wild
Meliaceae	<i>Trichilia emetic</i> Vahl.	Mutuhu/Mutshato/Mutshikili	Tryphina 18	Bark	Boiled	2 Litre	Enema	33	Wild
Meliaceae	<i>Entandophragma caudatum</i> Thomas Archibald Sprague (1910)	Munzhounzhou	Tryphina 19	Roots	Boiled	½ Cup 3 times a day	Oral	7	Wild
Ebenaceae	<i>Euclea divinorum</i> Hiern	Mutangule-thavha	Tryphina 20	Roots	Boiled/Soaked	½ Cup 3 times a day	Oral	13	Wild
Meliaceae	<i>Trichilia dregeana</i> Sond.	Mutshikili	Tryphina 21	Roots	Soak in cold water	½ Cup 3 times a day	Oral	7	Wild
Araceae	<i>Tabernaemontana elegans</i> Stapf	Muhatu	Tryphina 22	Roots	Soak in cold water	½ Cup 3 times a day	Oral	7	Wild

Annonaceae	<i>Artabotrys brachypetalus</i> Benth.	Mudzidzi	Tryphina 23	Roots	Grinded	½ Cup 3 times a day	Oral	7	Wild
Capparaceae	<i>Maerua edulis</i> Gilg.	Mutshalimela	Tryphina 24	Roots	Grinded	½ Cup 3 times a day	Oral	7	Wild
Loganiaceae	<i>Strychnos decussate</i> L.	Muvhavhanyane	Tryphina 25	Roots	Grinded	½ Cup 3 times a day	Oral	7	Wild
Urticaceae	<i>Pouzolzia mixta</i> Solms	Mukundadi-vhu/Mulambadivhu	Tryphina 26	Roots	Boiled/Grinded	½ Cup 3 times a day	Oral	13	Wild
Euphorbiaceae	<i>Croton megalobotrys</i> Mill.Arg.	Muruthu	Tryphina 27	Roots	Grinded	½ Cup 3 times a day	Oral	13	Wild
Vitaceae	<i>Cissus quadrangularis</i> L.	Malongekanye	Tryphina 28	Roots and Leaves	Boiled/Soaked	½ Cup 3 times a day	Oral	13	Wild
Lilaceae	<i>Aloe microcantha</i> L.	Tshikhophatshituku	Tryphina 29	Roots	Soak in cold water	½ Cup 3 times a day	Oral	7	Wild
Fabaceae	<i>Pterocarpus angolensis</i> DC.	Mutondo	Tryphina 30	Bark	Soak in cold water	½ Cup 3 times a day	Oral	7	Wild
Canellaceae	<i>Warbugia salutaris</i> (Bertol.f.) Chiov.	Mulanga	Tryphina 31	Roots	Boiled	2 Litre	Enema	7	Wild
Capparaceae	<i>Cadaba aphylla</i> (Thunb.) Wild	Munnamutsu/Tshikuni	Tryphina 32	Roots	Boiled	½ Cup 3 times a day	Oral	7	Wild
Mimosaceae	<i>Albizia versicolor</i> Welw. Ex Oliv.	Muvhambangoma	Tryphina 33	Roots	Boiled	½ Cup 3 times a day	Oral	7	Wild
Vitaceae	<i>Rhoicissus tridenata</i> (L. f.) Wild & R.B. Drumm	Murumbulashedo	Tryphina 34	Roots	Boiled	½ Cup 3 times a day	Oral	7	Wild
Piperaceae	<i>Piper capense</i> L.f.	Mulilwe	Tryphina 35	Roots	Boiled	½ Cup 3 times a day	Oral	7	Wild
Rubiaceae	<i>Richardia brasiliensis</i> Gomes	Mulegere	Tryphina 36	Bark	Boiled	½ Cup 3 times a day	Oral	7	Wild
Myrtaceae	<i>Heteropyxis natalensis</i> Harv.	Mulomomunandi	Tryphina 37	Roots	Boiled	½ Cup 3 times a day	Oral	7	Wild

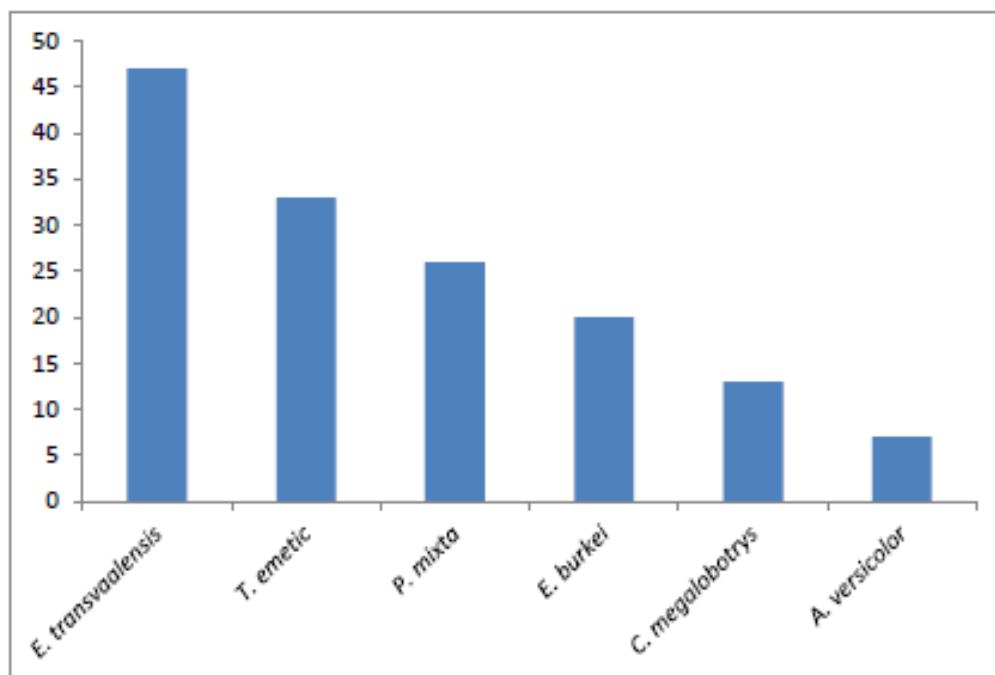


Figure 3: Frequency index of medicinal plant *Elaeodendron transvaalensis*, *Trichilia emetic*, *Pouzolzia mixta*, *Elephantorrhiza burkei*, *Croton megalobotrys* and *Albizia versicolor*.

The frequency index was calculated and the highest frequency was observed in *E. transvaalensis* (47%), followed by *T. emetic* (33%), *P. mixta* (27%), *E. burkei* (20%), *C. megalobotrys* (15%) and *A. versicolor* (6%) (Figure 3). The results indicate that *E. transvaalensis* is mostly used by the local people and traditional healers in the study area.

Conclusion

The current study revealed 37 medicinal plants used for "uwela" in Makhado Local Municipality, Limpopo province. The results stipulated that a high population of people in the community still relied on traditional medicine for their primary health care. A survey displayed that plants are still widely utilized even though there is a lack of conveying and spreading of systematic traditional practices. Elderly people and traditional healers are more knowledgeable about indigenous knowledge than young generation. The high rate of biopiracy and violation exposure has resulted in the existence of unidentified plant species and undocumented medicinal plant bases. Due to this impact, traditional healers continue to deprive western doctors from generating medicine in a scientific manner. Depth investigations still need to be made in order to further identify more plant species for the treatment of "uwela" and determine antifungal activity of the most promising plant species against fungal pathogens.

Authors' contributions

TT conducted ethnobotanical survey and recorded the results under the supervision of SM Mahlo. TT and SM processed the data and performed statistical analysis. SM and TT drafted the manuscript. All authors read the final manuscript and agreed to its submission.

Competing interests

The authors declare that they have no competing interests.

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