

# Medicinal plants used in the treatment of maternal health-related problems by the Mapulana of Ehlanzeni District, Mpumalanga province, South Africa

Shalom Pabalelo Mashile\*, Milingoni Peter Tshisikhawe, Ndivhaleni Anox Masevhe  
Department of Botany, University of Venda, Thohoyandou 0950, South Africa.

---

## ARTICLE INFO

Received on: 12/04/2019  
Accepted on: 19/08/2019  
Available online: 03/12/2019

---

### Key words:

Maternal healthcare, bulging, sunken fontanelles.

---

## ABSTRACT

A decreased mortality rate among infants and children has been a health target for most health facilities. South Africa's free maternal healthcare services are not adequately utilized due to the tradition of new mothers following their parents' footsteps. The use of medicinal plant species in maternal healthcare has been perceived to be effective and reliable in preventing illness among communities. For this study, ethnobotanical data were collected by means of interviews using semi-structured questions responded to by the elderly, community adults, and youth who had been selected on the basis of referrals. Infants within the communities have been treated with traditional medicine for ailments, such as colic, nail biting, sunken, and bulging fontanelles. *Hypoxis hemerocallidea* Fisch., C. A. Mey. & Ave-Lall, *Lippia javanica* (Burm.f.) Spreng., *Vachellia karroo* (Hayne) Banfi & Glasso, and *Annona senegalensis* Pers. subsp. *senegalensis* were among plant species which were frequently reported as being used medicinally. The decoction was mostly prepared from the roots (79%) followed by bulbs (8%) and most of the decoction was taken orally. The study identified 13 plant species used successfully for the treatment of bulging and sunken fontanelles.

---

## INTRODUCTION

Maternal healthcare has always been a topic in societies for decades, as they aim to reach international standards of decreased mortality rates of infants and children (Coovadia *et al.*, 2009). South Africa is one of the countries that declared maternal healthcare free; including healthcare for lactating women and children under the age of six. The latter simply means that vaccinations and all requirements for pre-natal, infant birth, and post-natal stages are being funded by the government. These have been categorized as a priority in the healthcare system (Coovadia *et al.*, 2009; Kibiribiri *et al.*, 2016; Mhlanga, 2008). Dorrington *et al.* (2014) and statistical reports show a decrease in the number of infant mortality, from 40 to 30 per 1,000 infants and 56 to 40 per 1,000 children in 2011.

An increased number of communities in South Africa still rely on traditional medicine for maternal health problems (Abdillahi and Van Staden, 2013; Randrianarivony *et al.*, 2016). The reliance is due to tradition, whereby mothers follow in their parents' footsteps (Friend-du Preez *et al.*, 2013). Shortages of medicine in public health facilities, cases where patients were referred to the pharmacy to purchase expensive medications, and wrong description of illness by mothers to health practitioners are among the reasons for the reliance. It is perceived that Traditional health practitioners not only rely on the mothers' diagnose but also on experience and spiritual diagnose (Friend-du Preez *et al.*, 2013). The use of traditional medicines which are effective in preventing illnesses represents a significant area in the care-giving practices of mothers (Abdillahi and Van Staden, 2013; Bland *et al.*, 2004). Paulos *et al.* (2016) further stipulated that traditional medicine is effective in preventing certain types of illness. Certain illness like *inyoni*, *ibala* are called African illnesses and are supposed to be remedied by traditional practices (Bland *et al.*, 2004; Friend-du Preez *et al.*, 2013).

---

### \*Corresponding Author

Shalom Pabalelo Mashile, Department of Botany, University of Venda,  
Thohoyandou 0950, South Africa. E-mail: [shalompabalelo@yahoo.com](mailto:shalompabalelo@yahoo.com)

This study aimed at investigating medicinal plants used by the Mapulana in the treatment of certain maternal-health problems.

## MATERIALS AND METHODS

### Study area

The study was conducted in 15 villages in the Ehlanzeni District (Fig. 1) within three local municipalities, namely, Bushbuckridge, Mbombela, and Thaba Chweu. The Ehlanzeni district is among the three district municipalities located in the north-eastern part of Mpumalanga Province of South Africa.

### Data collection

Structured questions were asked during interviews of participants selected for the study. The snowball technique was used whereby participants referred others for inclusion in the study (Cohen *et al.*, 2007). The interviews were conducted face-to-face with selected elderly people, community adults, and youths. The interviews sought information on the names of various plants used to treat some common maternal-health problems, plant parts used, administration route, the traditional names for these ailments, and whether any ailments required combinations of plants. All participants signed prior consent forms as a show of willingness to participate in the study. Voucher specimens were collected for each plant species mentioned during the interviews

were identified, labeled, and deposited in the University of Venda, Department of Botany's Herbarium. The researcher obtained ethical approval from the University of Venda Research Ethics Committee registered as project number SMNS/17/BOT/01/0905.

### Data analysis

Thirty-eight participants were selected for the study and they were able to list various plants used for maternal-healthcare. A frequency index was calculated using a mathematical formula adapted from Madikizela *et al.* (2012). The formula  $FI = FC/N \times 100$  states that FI is the frequency index, which expresses the percentage of frequency of listing a plant species by participants. FC is the number of participants who listed the use of a certain plant species and  $N$  is the total number of participants.

## RESULTS AND DISCUSSION

### Demography of informants

Responses of participants are represented in Table 1, whereby community adults, were more knowledgeable about plants used for maternal care, followed by the elders. Fifteen percent of the overall participants were traditional health practitioner (THP). Overall, female participants responded well as compared to males, presumably because females are the recipient of maternal-healthcare. Most of the participants had at least attended secondary schools.

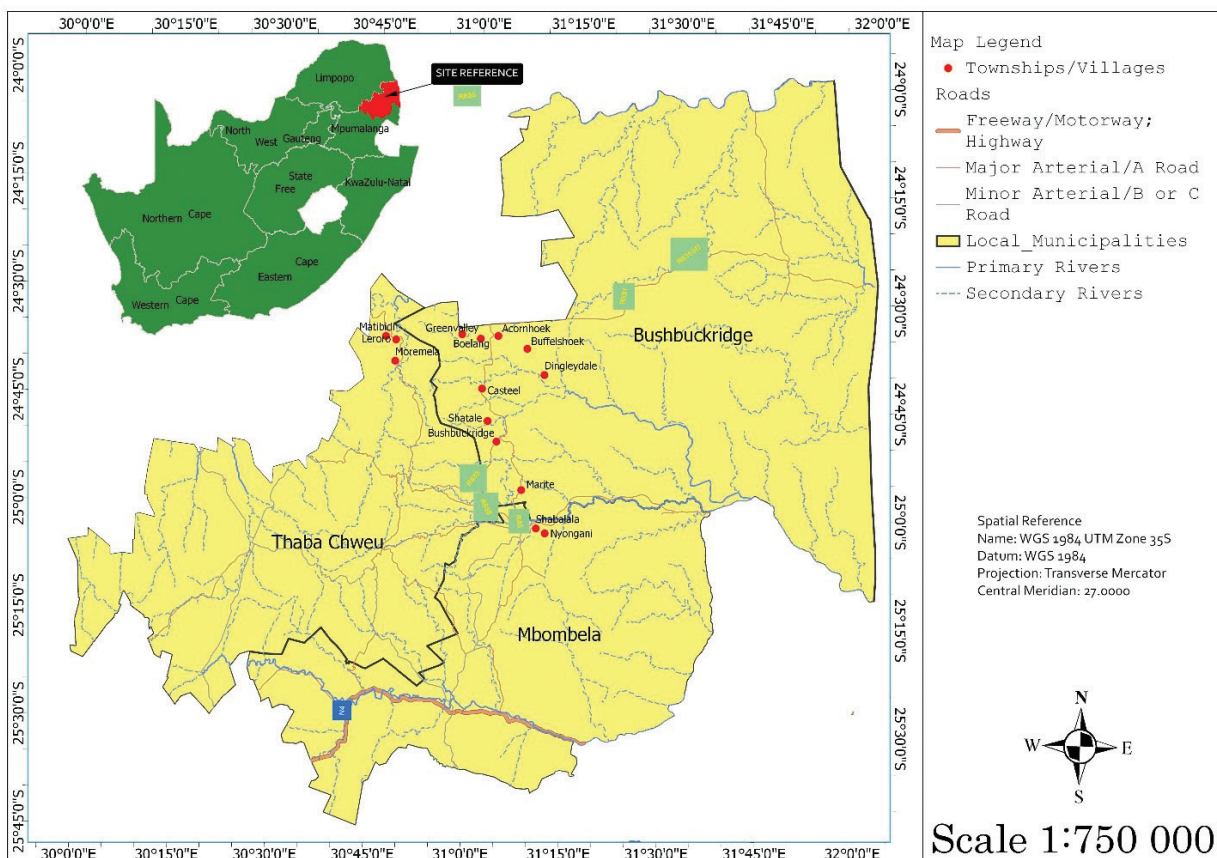


Figure 1. Showing map of Ehlanzeni local municipalities.

### Plant species used for the treatment of maternal healthcare problems

Thirty-two plant families with 49 genera used for maternal healthcare problems were recorded in the study (Table 2). Fabaceae was the most frequently cited family, followed by Apocynaceae, Asphodelaceae, and Rutaceae. Similar finding was observed by Steenkamp (2003); Mahwasane *et al.* (2013); Kankara *et al.* (2015); Yazbek *et al.* (2016). de Wet and Ngubane (2014) and Nduche *et al.* (2015) in their studies recorded Euphorbiaceae as the most cited families.

Plant parts frequently used in the current study were roots followed by bulbs, leaves, bark, and whole plant (Fig. 2). Similar finding was observed by Steenkamp (2003) and Mahwasane *et al.* (2013) where roots were the most used parts; however, Shosan *et al.* (2012); Nduche *et al.* (2015), and Kankara *et al.* (2015) reported leaves as the most frequently used parts, in their studies.

The frequently cited plant species were *Annona senegalensis* subsp. *senegalensis* and *Senna occidentalis* with

26% and 18% frequency index, respectively. Mahwasane *et al.* (2013) observed similar finding where *A. senegalensis* subsp. *senegalensis* had the highest frequency index in a study done among the Vhavenda of Lwamondo village in Limpopo Province of South Africa.

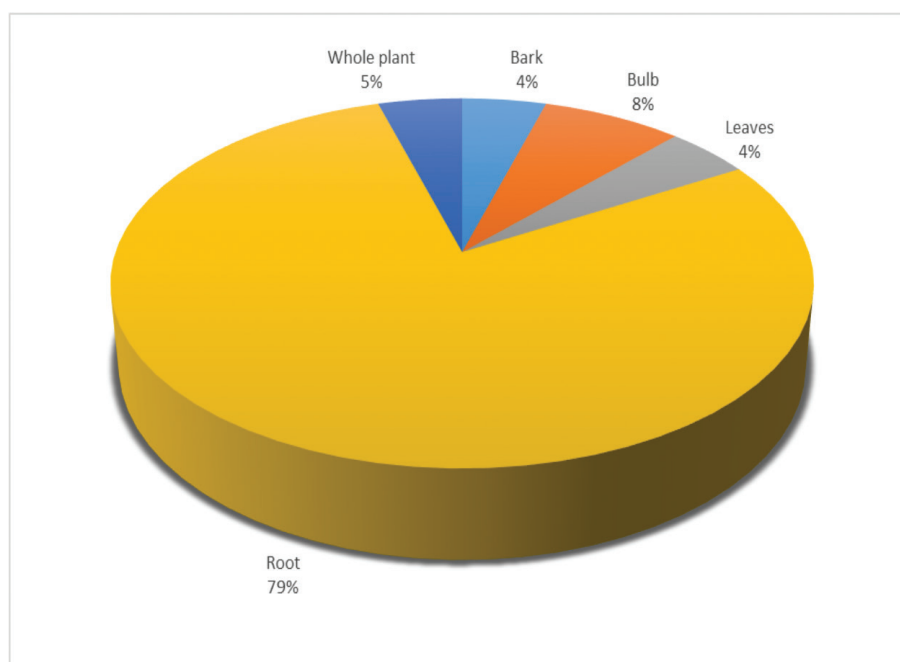
Decoctions were prepared and taken orally for almost all the plants mentioned in the study. Preparation of decoction was also highlighted by Abdillahi and Van Staden (2013) and Kankara *et al.* (2015). The mode of administration for all the plants as indicated in Table 3 depends on the instructions given by the THP or Herbalist and the nature or state of the problem (Mabogo, 1990; Steenkamp, 2003). For the treatment of conception problems, hematuria, and dysmenorrhea, mothers were usually required to drink half a cup, three times a day for 3 to 7 days of the decoction depending on the level of the problem. Babies were given oral medicine in small quantities, two to three times a day depending on their age. In the case of sunken or bulging fontanelles, the medication can be given in baby formula from day 1 of birth to 12 months of age or more if required or depending on the closure levels of the fontanelles. Typhoid treatment is rather unpleasant for children, since fresh leaves are crushed to make a paste which is inserted through the anus, however; oral mode is hence preferred.

Some plants are combined to increase the chances of healing; it is argued that all the plants species work synergistically.

Roots dominate in terms of being the plant parts utilized most for maternal healthcare purposes among the Mapulana. This is not a sound practice since it may affect the vigor of such plants thereby killing them. The death of individual plants ultimately affects the viability of the population in the long run and hence may lead to the demise of the species. Mapulana people avoid this by only harvesting the required roots from few trees or shrubs (Kurui *et al.*, 2016).

**Table 1.** Demographic structure of participants.

Parameter	Specification	Frequency	Percentage (%)
Gender	Male	4	10.53
	Female	34	89.47
Status	Youth (20–35)	5	13.16
	Community adult (36–59)	18	47.37
	Elder (60–99)	15	39.47
Education	None	7	18.42
	Primary	10	26.32
	Secondary	17	44.74
	Tertiary	4	10.53



**Figure 2.** Plant part used for maternal healthcare.

**Table 2.** Inventory of medicinal plants used in treatment of maternal health care in the Ehlanzeni District municipality.

Family	Scientific name	Local name	Voucher number	Parts used	Mode of preparation	FI
Cactaceae	<i>Opuntia ficus-indica</i> (L.) Mill.	Foyiyya	SP 084	Roots	Decoction	3
Passifloraceae	<i>Adenia gummifera</i> (Harv.) Harms var. <i>gummifera</i>	Komashattha	SP 153	Bulbs	Decoction	3
Alliaceae	<i>Allium sativum</i> L.	Konofolo	SP 092	Leaves	Decoction	3
Asphodelaceae	<i>Aloe zebrina</i> Baker	Legalane	SP 010	Roots	Decoction	3
Fabaceae	<i>Senna occidentalis</i> (L.) Link	Lenogane	SP 047	Roots	Decoction	18
Iridaceae	<i>Cyperus latifolius</i> Poir.	Lesegi	SP 046	Roots	Decoction	3
Agapanthaceae	<i>Agapanthus africanus</i> (L.) Hoffmanns. subsp. <i>africanus</i>	Letlladiane	SP 079	Roots	Decoction	11
Verbenaceae	<i>Lantana rugosa</i> Thunb.	Mabelemabutjwa	SP 082	Roots	Decoction	3
Polygaceae	<i>Fallopia convolvulus</i> (L.) Holub	Makgobata	SP 053	Roots	Decoction	3
Fabaceae	<i>Erythrina lysistemon</i> Hutch	Matlho ya baloi	SP 254	Roots	Decoction	5
Rubiaceae	<i>Vangueria infausta</i> Baker	Mmilo	SP 018	Roots	Decoction	3
Hypoxidaceae	<i>Hypoxis hemerocallidea</i> Fisch., C.A.Mey. & Ave-Lall	Modimotsana wo mogolo	SP 067	Roots	Decoction	11
Hypoxidaceae	<i>Hypoxis rigidula</i> Baker var. <i>rigidula</i>	Modimotsane wo monyana	SP 077	Roots	Decoction	3
Fabaceae	<i>Bauhinia galpinii</i> N.E.Br	Mofethala	SP 042	Roots	Decoction	3
Vitaceae	<i>Cyphostemma woodii</i> (Gilg & M.Brandt) Desc.	Mokgakgwa	SP 069	Bark	Decoction	3
Fabaceae	<i>Piliostigma thonningii</i> (Schumach.) Milne-Redh.	Mokgoropo	SP 176	Roots	Decoction	3
Fabaceae	<i>Senna petersiana</i> (Bolle) Lock	Mokorola kgogo	SP 174	Roots	Maceration	3
Lauraceae	<i>Persea americana</i> Mill.	Mokotapeni	SP 142	Roots	Decoction	3
Rutaceae	<i>Citrus sinensis</i> (L.) Osbeck	Monamona	SP 182	Roots	Decoction	3
Fabaceae	<i>Cassia abbreviata</i> Oliv. subsp. <i>beareana</i> (Holmes) Brenan	Monepenepo	SP 062	Roots	Decoction	3
Roseaceae	<i>Prunus persica</i> (L.) Batsch	Mopeta	SP 186	Leaves	Decoction	5
Caricaceae	<i>Carica papaya</i> L.	Mophopho	SP 007	Roots	Decoction	5
Araliaceae	<i>Cussonia transvaalensis</i> Reyneke	Morotho	SP 171	Roots	Bath	3
Anacardiaceae	<i>Sclerocarya birrea</i> (A.Rich.) Hochst. subsp. <i>caffra</i> (Sond.) Kokwaro	Morula	SP 103	Barks	Decoction	11
Fabaceae	<i>Vachellia karroo</i> (Hayne) Banfi & Glasso	Moseemane	SP 067	Roots	Decoction	3
Apocynaceae	<i>Gomphocarpus fruticosus</i> (L.) Aiton f. subsp. <i>fruticosus</i>	Moshekamolapo	SP 040	Roots	Decoction	3
Verbenaceae	<i>Lippia javanica</i> (Burm.f.) Spreng.	Moshukutjwane	SP 106	Roots, leaves	Decoction	3
Fabaceae	<i>Abrus precatorius</i> L. subsp. <i>africanus</i> Verdc.	Motatabaloyi	SP 041	Roots	Decoction	3
Fabaceae	<i>Castanospermum australe</i> A.Cunn. & C.Fraser	Mothobesetsane	SP 059	Roots	Decoction	3
Apocynaceae	<i>Carissa edulis</i> (Forssk.) Vahl	Mothokolo	SP 183	Roots	Decoction	5
Olacaceae	<i>Ximenia caffra</i> Sond var. <i>caffra</i>	Motjhidi	SP 024	Roots	Decoction	8
Phyllanthaceae	<i>Flueggea virosa</i> (Roxb. ex Willd.) Voigt subsp. <i>virosa</i>	Motlhakawume	SP 045	Roots	Decoction	3
Ebenaceae	<i>Euclea crispa</i> (Thunb.) Gurke subsp. <i>crispa</i>	Motlhakola swifi	SP 055	Roots	Decoction	8
Ranunculaceae	<i>Clematis brachiata</i> Thunb.	Motlhemaphogo	SP 073	Roots	smoke	5
Annonaceae	<i>Annona senegalensis</i> Pers. subsp. <i>senegalensis</i>	Motllepo	SP 076	Roots	Decoction	26
Ebenaceae	<i>Diospyros mespiliformis</i> Hochst. ex A.DC.	Motsoma	SP 023	Roots	Decoction	3
Malvaceae	<i>Grewia flavescens</i> Juss	Mopharatshena	SP 043	Roots	Decoction	3
Vitaceae	<i>Cyphostemma cirrhosum</i> (Thunb.) Desc. ex Wild & R.B.Drumm. subsp. <i>cirrhosum</i>	Sebabo	SP 113	Roots	Decoction	3
Orchidaceae	<i>Ansellia africana</i> Lindl.	Sefagama	SP 167	Whole plant	Decoction	5
Rutaceae	<i>Zanthoxylum capense</i> (Thunb.) Harv.	Semata	SP 050	Roots	Decoction	3
Celastraceae	<i>Gymnosporia senegalensis</i> (Lam.) Loes.	Sephashu	SP 052	Roots	Decoction	3
Zingiberaceae	<i>Siphonochilus aethiopicus</i> (Schweinf.) B.L.Burt	Serokolo	SP 089	Whole plant	Decoction	11
Hyacinthaceae	<i>Ledebouria revoulute</i> (L.f.) Jessop	Sethuse	SP 097	Roots	Decoction	3
Solanaceae	<i>Lycopersicon esculentum</i> L.	Tamatie	SP 267	Leaves	Decoction	5
Asphodelaceae	<i>Bulbine frutescens</i> (L.) Willd.	Tjhikwane	SP 268	Bulbs	Decoction	11
Lamiaceae	<i>Leonotis ocymifolia</i> (Burm.f.) Iwarsson	Unknown	SP 141	Roots	Decoction	3
Malvaceae	<i>Sida acuta</i> Burm.f. subsp. <i>acuta</i>	Unknown	SP 064	Roots	Decoction	3
Rubiaceae	<i>Conostomium natalense</i> (Hochst.) Bremek. var. <i>natalense</i>	Unknown	SP 063	Roots	Decoction	3

FI denote the Frequency Index.

**Table 3.** Administration of medicinal plants used in treatment of maternal health related symptoms in Ehlanzeni District municipality.

Local treatment	Scientific name	Literature citations	Mode of administration	Recipient
Birth related issues	<i>Carissa edulis</i>	Stomach problems and venereal diseases (Johns <i>et al.</i> , 1990).	Oral, half cup three times a day	Mother
	<i>Opuntia ficus-indica</i>	Cleanse dirty blood (Semenya <i>et al.</i> , 2013); sore breast for nursing mothers (Deweck, 1997) and hair loss (Bussmann and Glenn, 2010).		
Body weight	<i>Cussonia transvaalensis</i>	Unknown, but <i>C. spicata</i> improves baby weight (Mabogo, 1990).	Use for bath only three days	Baby
Colic	<i>Allium sativum</i>	Induce labor (Kamatenesi-Mugisha and Oryem-Origa, 2007); restore fertility in men (Nduche <i>et al.</i> , 2015) and abdominal cramp (Shosan <i>et al.</i> , 2012).	Oral, give in small quantities	Baby
	<i>Fallopia convolvulus</i>	Unknown		
	<i>Adenia gummifera</i> var. <i>gummifera</i>	Unknown		
Colic, sunken or bulging fontanelles	<i>Senna occidentalis</i>	Conception (Awai and Igoli, 2015); Stop bleeding during pregnancy (Abdillahi and Van Staden, 2013).		
Conception	<i>Castanospermum australe</i>	Unknown	Oral, half cup three times a day	Mother
	<i>Aloe zebra</i>	Herpes zoster (Chinsebu and Hedimbi, 2010)		
	<i>Bauhinia galpinii</i>	Food supplement (Mabogo, 1990).		
Conception, stop bleeding of pregnant women	<i>Conostomium natalense</i> var. <i>natalense</i>	Unknown		
Dysmenorrhoea	<i>Cyperus latifolius</i>	Unknown	Oral, half cup three times a day	Mother
	<i>Ptilostigma thonningii</i>	Stomach problems and haematochezia (Mahwasane <i>et al.</i> , 2013).		
Untie womb	<i>Grewia flavescens</i> Juss	Infertility (Mabogo, 1990)	Oral, half cup three times a day	Mother
	<i>Cassia abbreviata</i> subsp. <i>beareana</i>	Abortifacient (Steenkamp, 2003); <i>C. fistula</i> treats typhoid (Shosan <i>et al.</i> , 2012).		
Hematuria	<i>Erythrina lysistemon</i>	Labor pains (Grace <i>et al.</i> , 2003).	Oral, half cup three times a day	Mother
	<i>Hypoxis rigidula</i> var. <i>rigidula</i>	Wounds and rash (Shale <i>et al.</i> , 1999)		
Lerere	<i>Vangueria infausta</i>	None, but <i>V. apiculata</i> induce labor (Kamatenesi-mugisha and Oryem-origa, 2007) infertility (Mabogo, 1990; Steenkamp, 2003).	Oral, give in small quantities	Baby
Nail-biting	<i>Acacia karroo</i>	General body health (Stafford <i>et al.</i> , 2008), colic (Moteeteete and Van Wyk, 2011).	Oral, give in small quantities	Baby
	<i>Abrus precatorius</i> subsp. <i>africanus</i>	Internal wound (Awai and Igoli, 2015).		
Painful womb	<i>Ledebouria revoulute</i>	Diarrhoea (Appidi <i>et al.</i> , 2008)	Oral, half cup three times a day	Mother
	<i>Cyphostemma woodii</i>	Unknown		
Prevent miscarriage or still born, stopping menstruation, Hiccups	<i>Sclerocarya birrea</i> subsp. <i>caffra</i>	Infertility (Steenkamp, 2003); induce abortion (de Wet and Ngubane, 2014); support pregnancy (Mabogo, 1990).	Oral, bath and in hail smoke depending on THP. Tie dry fruit around a child's neck or hands to stop hiccups	Mother and baby for hiccups
Prevent miscarriage or stillborn	<i>Ximenia caffra</i> var. <i>caffra</i>	Infertility (Steenkamp, 2003).		
	<i>Persea americana</i>	Used as contraceptive and sterilization for women (Bussmann and Glenn, 2010) and fontanelles (Shosan <i>et al.</i> , 2012).		
	<i>Citrus sinensis</i>	Induce abortion (Nikolajsen <i>et al.</i> , 2011)		
Prevent miscarriage or stillborn, typhoid	<i>Siphonochilus aethiopicus</i>	Dysmenorrhea (Steenkamp, 2003); protect homestead (Randrianarivony <i>et al.</i> , 2016).		
Resuscitation, Hematuria	<i>Carica papaya</i>	Jaundice (Shosan <i>et al.</i> , 2012; Tangiang <i>et al.</i> , 2011).	Oral, bath and in hail smoke depending on THP	Baby
Resuscitation, nail-biting	<i>Agapanthus africanus</i> subsp. <i>Africanus</i>	Easy childbirth (Kaïdo <i>et al.</i> , 1997).		
Sefetjwane	<i>Senna petersiana</i>	Infertility (Mabogo, 1990).	Oral, give in small quantities or incision on the chest	Baby
Stop bleeding of pregnant women	<i>Zanthoxylum capense</i>	Infertility (Steenkamp, 2003).	Oral, half cup three times a day	Mother

(Continued)

Table 3. (Continued)

Local treatment	Scientific name	Literature citations	Mode of administration	Recipient
Sunken or bulging fontanelles	<i>Hypoxis hemerocallidea</i>	Infants constipation (Masafu <i>et al.</i> , 2016); infertility (Street and Prinsloo 2013) and prevent premature abortion and miscarriage (de Wet and Ngubane, 2014).	Oral, give in small quantities with other medication or formula	Baby
	<i>Lantana rugosa</i>	Improves children's height (Mabogo, 1990; Mahwasane <i>et al.</i> , 2013)		
	<i>Clematis brachiata</i>	Headache (Mabogo, 1990)		
	<i>Gomphocarpus fruticosus</i> subsp. <i>fruticosus</i>	Headache and cold (Moteetee and Van Wyk 2011)		
	<i>Diospyros mespiliformis</i>	Stomach problems (Mahwasane <i>et al.</i> , 2013); <i>D. lycyoides</i> infertility (Steenkamp, 2003); and <i>D. spiliformis</i> milk enhancement (Kankara <i>et al.</i> , 2015).		
	<i>Ansellia Africana</i>	Respiratory problems (Bandeira <i>et al.</i> , 2001)		
	<i>Sida acuta</i> subsp. <i>acuta</i>	Arrest threatened miscarriage (Nduche <i>et al.</i> , 2015) <i>S. cordifolia</i> induce labor (Randrianarivony <i>et al.</i> , 2016) and bleeding after delivery (Ogbe <i>et al.</i> , 2009).		
	<i>Leonotis ocymifolia</i>	Stomach pains (w).		
	<i>Annona senegalensis</i> subsp. <i>senegalensis</i>	Conception (Awai and Igoli, 2015); colic (Mabogo, 1990; Mahwasane <i>et al.</i> , 2013).		
	Sunken or bulging fontanelles, conception	<i>Euclea crispa</i> var. <i>crispa</i>		
<i>Gymnosporia senegalensis</i>		Infertility (de Wet and Ngubane, 2014).		
<i>Lippia javanica</i>		Diarrhoea (van Vuuren <i>et al.</i> , 2015)		
Sunken or bulging fontanelles, typhoid	<i>Bulbine frutescens</i>	Unknown		
Typhoid	<i>Prunus persica</i> var. <i>persica</i>	Antidiarrhoeal usage (Madikizela <i>et al.</i> , 2012)	Oral, give in small quantities or Insert as paste through the anus	Baby
	<i>Lycopersicon esculentum</i>	Induce labor (Kamatenesi-Mugisha and Oryem-Origa, 2007)		

### Local conditions treated by Mapulana

#### Phogwana

The term *Phogwana* represents sunken or bulging fontanelles which are usually called “soft spots” on the infants’ head; the treatment is over the first 12 months of the baby’s life. The process is called “cleansing period” (Bland *et al.*, 2004). Fontanelles or *ukhakhanyi*, *inyoni* (as called by Zulu-speaking people), are perceived as an open entrance for evil spirits, hence warranting immediate treatment (Cocks and Moller, 2002). Mapulana infants are treated with traditional medicine for sunken and bulging fontanelles. The study identified 13 plant species that treat the ailment—*Hypoxis hemerocallidea*, *S. occidentalis*, *Annona senegalensis* subsp. *senegalensis*, *Lantana rugosa*, *Clematis brachiata*, *Gomphocarpus fruticosus* subsp. *fruticosus*, *Diospyros mespiliformis*, *Ansellia Africana*, *Leonotis ocymifolia*, *Euclea crispa* var. *crispa*, *Flueggea virosa*, *Gymnosporia senegalensis*, *Sida acuta*, and *Lippia javanica*. Within these plants species, there are combinations used for the treatment as indicated in Table 4. Our findings supported that of Mabogo (1990) who identified the use of *A. senegalensis* subsp. *senegalensis* in the treatment of fontanelles among the Vhavenda people. *Persia americana* was one of the species recorded by Shosan *et al.* (2012) to treat fontanelles in Nigeria, while Abdillahi and Van Staden (2013) recorded *Ormocarpum trichocarpum* as a treatment for fontanelles in some parts of South Africa.

The sunken and bulging fontanelles cleansing purposes in infants include when they have diarrhea. *Diospyros mespiliformis* was reported as treating diarrhea in Lwamondo (Mahwasane *et al.*, 2013); similar finding includes using *G. senegalensis* for treating diarrhea by de Wet and Ngubane (2014) and Vuuren *et al.* (2015) which also quantifies the cleansing period, since some of the

Table 4. Combination of medicinal plants species used for maternal health care.

Plants species	Part used	Treatment
<i>Lippia javanica</i> + <i>Prunus persica</i>	Leaves	Typhoid
<i>Prunus persica</i> + <i>Lycopersicon esculentum</i>		
<i>Diospyros mespiliformis</i> + <i>Euclea crispa</i> var. <i>crispa</i>	Roots	Sunken and bulging fontanelles
<i>Senna occidentalis</i> + <i>Annona senegalensis</i>		
<i>Euclea crispa</i> + <i>Carica papaya</i>	Roots	Difeka

species used for sunken and bulging fontanelles are also used to minimize diarrhea.

#### Lenogane

The term *Lenogane* refers to the weak intestine as a result of an internal wound not healing after the baby’s umbilical cord was removed. Treatment of abdominal pains (colic) in infants including stomach sounds is referred to as *inkaba* in Zulu (Bland *et al.*, 2004). *Allium sativum*, *S. occidentalis*, and *Fallopia convolvulus* are the only species recorded for treating colic. Healing of wound is also supported by food supplement prepared with *Bauhinia galpinii* (Mabogo, 1990). The food supplement can in turn also facilitate relief from constipation. In Botswana, *E. crispa* var. *crispa* was reported to relieve constipation (Chinsamy and Koitsiwe, 2016). Masafu *et al.* (2016) in their comparative studies of medicinal plants used in Thulamela and JS Moroka Municipalities of South Africa reported that *H. hemerocallidea* was used in the treatment of constipation and intestinal parasites. They also reported the use of *Mewilla plumbea* in the treatment of colic. *Tephrosia purpurea* subsp. *purpurea* is a treatment for

internal wounds for women in Benue State, Nigeria (Awai and Igoli, 2015). Moteetee and Van Wyk (2011) recorded *Equisetum ramosissimum* and *Acacia karroo* as the treatment for colic in Lesotho. Masafu *et al.* (2016) recorded *M. plumbea* being used as the treatment for colic from a study of the natural habitats and the uses of medicinal plants in Thulamela and JS Moroka Municipalities. *Allium sativum* was recorded in Abeokuta South Local Government Area of Ogun State, Nigeria, as one of the species treating abdominal cramps (Shosan *et al.*, 2012).

#### Motlhapo

*Motlhapo* is a term used when women have blood in their urine (hematuria). The plant species identified from the study were *Erythrina lysistemon* and *Hypoxis rigidula* var. *rigidula*.

#### Metjha

When babies frequently want to feed or are constantly licking their nails, the ailment is called *Metjha* (nail-biting). *Acacia karroo* and *Abrus precatorius* subsp. *africanus* are the two species identified as being used for the treatment of the condition by the Mapulana.

#### Ditshemane or Manogane or Nkusu

*Ditshemane* or *Manogane* or *Nkusu* is the local name referring to typhoid among the Mapulana. The treatment is applicable to children of all ages. Leaves of *Prunus persica* var. *persica* and *Lycopersicon esculentum* are used as in combination to treat typhoid. Other combinations are shown in Table 4. Shosan *et al.* (2012) recorded four species for treating typhoid, including *Mangifera indica* and *Sorghum bicolor*.

#### Selomi

*Selomi* is when women experience severe period pains (dysmenorrhea) and some of the women are unable to conceive as a result. It is perceived that most women with *Selomi* have “tied-up wombs.” The participants also argued that the tying of the womb can also be spiritually connected. Dysmenorrhea is treated with *Cyperus latifolius* and *Piliostigma thonningii*. In a study conducted in Lwamondo by Mahwasane *et al.* (2013), *P. thonningii* and *D. mespiliformis* were reported as being used in the treatment of stomach problems. The treatment of dysmenorrhea traditionally was recorded from numerous studies. Steenkamp (2003), Mahwasane *et al.* (2013), and de Wet and Ngubane (2014) have recorded many plant species used for the treatment of dysmenorrhea. *Senna occidentalis* and *E. crista* var. *crispata* were also identified in the treatment of dysmenorrhea by Mabogo (1990), Steenkamp (2003) and Moteetee and Van Wyk (2011).

*Aloe zebrina*, *Castanospermum australe*, *B. galpinii*, and *Conostomium natalense* var. *natalense* are recorded species for the treatment of conception difficulties. Awai and Igoli (2015) recorded 10 plant species for the treatment of conception in Benue State, Nigeria, including *A. senegalensis* subsp. *senegalensis*, *Carica papaya*, and *S. occidentalis*. Masafu *et al.* (2016) reported that *H. hemerocallidea* was used in the treatment of infertility. From the current study, *Grewia flavescens* and *Cassia abbreviata* plant species were reported to “untie women’s wombs”. *Rhamnus mucronata*, *Casearia gladiiformis*, and *Scolopia stolzii* were

also reported for treatment of conception difficulties in Dabaga Ulongambi Forest Reserve, Tanzania (Kitula, 2007).

#### Makgoma

*Makgoma* is a term used to describe the results of people’s negligence of their tradition. The consequences include swollen stomach or body parts (legs and hands), coughing, and a shiny appearance. In this study, the researcher’s concentration with the issue was in relation to infants and pregnant women. In the case of pregnant women, they can be affected by *Makgomo* if they do not follow all the rules in their tradition. Certain rules, such as pregnant women being restricted from having sexual relations when there is a funeral in their families; they are expected to wait for 7 days of cleansing before any intimacy. In addition, if a woman has an illicit relationship and then cooks for people at her family funeral, whoever eats the food will become “contaminated” “o kgomisiwe”. *Sclerocarya birrea* subsp. *caffra*, *Ximenia caffra* var. *caffra*, *Persea americana*, *Siphonochilus aethiopicus*, and *Citrus sinensis* were the recorded species used to treat *Makgoma* in women. Nduche *et al.* (2015) recorded *S. acuta* subsp. *acuta* as arresting a threatened miscarriage. *Bauhinia petersiana* was recorded as preventing miscarriage in Mulanje District, Malawi (Maliwichi-Nyirenda and Maliwichi, 2010). Abdillahi and Van Staden (2013) have recorded *Sasevieria hycacinthoides* and *Pyrenacantha scandens* in the prevention of miscarriage in South Africa. Anyi-Ndenye women of Eastern Cote d’Ivoire have several plant species used to prevent miscarriages within the three trimesters of pregnancy. Some of the species recorded for this use were *Desmodium adscendens*, *Ficus exasperate*, and *Cyanthyla prostrate* (Malan and Neuba, 2011).

*Sclerocarya birrea* subsp. *caffra* is used to support pregnancy (Mabogo, 1990) and prenatal care (Kankara *et al.*, 2015; Randrianarivony *et al.*, 2016). *Siphonochilus aethiopicus* is used to protect homesteads (Masafu *et al.*, 2016). People living around the Analavelona forest in South West Madagascar use a combination of three to ten plant species for protecting women and babies from evil spirits. Plant species used are *Sida cordifolia*, *Flacourtia ramontchi*, and *Grewia flavescens* to mention a few (Randrianarivony *et al.*, 2016). Similar results were observed by Cocks and Moller (2002) where women bought plant medicines for the protection of their infants.

#### Difeka

*Difeka* is connected with *Makgoma*, whereby women’s negligence might cause the baby to be instantly disabled or disabled after 20 months of birth and turn into an infant. This can be caused by the negligence of tradition by ignoring the generic protocol. For instance, if a third-born woman has intercourse on a firstborn pregnant woman’s bed, when the pregnant woman later uses the bed “o fikegele” might occur, that is the pregnant woman may deliver a disabled child. In the case of a woman who had lost a baby and commits “di fikeka” this might result in that woman not conceiving or death. *Agapanthus africanus* and *C. papaya* were reported as remedying *difeka*. *Agapanthus africanus* subsp. *africanus* is taken for prolonged labor (Abdillahi and Van Staden, 2013; Kaido *et al.*, 1997; Steenkamp, 2003), and *C. papaya* induce lactation (Randrianarivony *et al.*, 2016).

## CONCLUSION

Traditional medicine is still relied upon in the treatment of some of the ailment in the study, especially for sunken and bulging fontanelles. A large number of medicinal plants reported to be used in the treatment of maternal healthcare warrant further research to validating such reliance and claims. Overuse of roots as medicinal materials is also a cause for concern in terms of the sustainability of natural resource utilization.

## ACKNOWLEDGMENT

The University of Venda and National Research Foundation are acknowledged for providing funding. Participants are thanked for sharing their valuable information. Dr. PK Kaburise is appreciated for editing the document.

## CONFLICT OF INTEREST

Mashile SP, Tshisikhawe MP, and Masevhe NA have no interest of conflict.

## FUNDING SOURCES

The University of Venda (Project number SMNS/17/BOT/01) and National Research Foundation (Grant number 102082) have funded the study.

## REFERENCES

- Abdillahi HS, Van Staden J, Application of medicinal plants in maternal healthcare and infertility: A South African perspective. *Planta Med*, 2013; 79:591–9.
- Appidi JR, Grierson, DS, Afolayan AJ. Ethnobotanical study of plants used for the treatment of diarrhoea in the Eastern Cape. *Pak J Bot Sci*, 2008; 15:1961–3.
- Awai EP, Igoli JO, Medicinal plants used in antenatal and perinatal care among the tiv people of Benue State, Nigeria. *Indo Glob J Pharm Sci*, 2015; 5:90–3.
- Bandeira S, Gaspar F, Pagula FP. Ethnobotany and healthcare in Mozambique. *Pharm Biol* 2001; 39(1):70–3.
- Bland R, Rollins N, Van Den Broeck J, Coovadia H, The use of non-prescribed medication in the first 3 months of life in rural South Africa. *Trop Med Int Heal*, 2004; 9:118–24.
- Bussmann RW, Glenn A. Medicinal plants used in Northern Peru for reproductive problems and female health. *J Ethnobiol Ethnomed*, 2010; 6:30.
- Chinsamy M, Koitsiwe M. Traditional knowledge of medicinal and food plant uses for sustainable community livelihoods: a case of Batswana communities in South Africa. *J Soc Sci*, 2016; 46:146–53.
- Chinsembu K, Hedimbi M. An ethnobotanical survey of plants used to manage HIV/AIDS opportunistic infections in Katima Mulilo, Caprivi region, Namibia. *J Ethnobiol Ethnomed*, 2010; 6:25.
- Cocks M, Moller V. Use of indigenous and indigenised medicines to enhance personal well-being: a South African case study. *Soc Sci Med*, 2002; 54:387–97.
- Cohen L, Manion L, Morrison K. Research methods in education. 6th edition, Taylor and Francis or Routledge, London and New York, 2007.
- Coovadia H, Jewkes R, Barron P, Sanders D, McIntyre D. The health and health system of South Africa: historical roots of current public health challenges. *Lancet*, 2009; 374:817–34.
- de Wet, H, Ngubane SC. Traditional herbal remedies used by women in a rural community in northern Maputaland (South Africa) for the treatment of gynaecology and obstetric complaints. *South African J Bot*, 2014; 94:129–39.
- Deweck AC. Ethnobotanical use of plants, part 4: The American continent. *Cosmet Toiletries*, 1997; 112:4.
- Dorrington R, Bradshaw D, Laubscher R. Rapid mortality surveillance report, pp 1–17, 2014. ISBN: 978-1-920618-00-1
- Friend-du Preez N, Cameron N, Griffiths P. “So they believe that if the baby is sick you must give drugs.” The importance of medicines in health-seeking behaviour for childhood illnesses in urban South Africa. *Soc Sci Med*, 2013; 92:43–52.
- Grace OM, Prendergast HDV, Jäger AK, Van Staden J. Bark medicines used in traditional healthcare in KwaZulu-Natal, South Africa: an inventory. *South Afr J Bot*, 2003; 69:301–3.
- Johns T, Kokwaro JO, Ebi KK, Herbal remedies of the Luo of Siaya District, Kenya: establishing quantitative criteria for consensus. *Econ Bot*, 1990; 44:369–81.
- Kaido TL, Veale DJ, Havlik I, Rama DBK. Preliminary screening of plants used in South Africa as traditional herbal remedies during pregnancy and labour. *J Ethnopharmacol*, 1997; 55:185–91.
- Kamatenesi-Mugisha M, Oryem-Origa H. Medicinal plants used in some gynaecological morbidity ailments in western Uganda. *Afr J Ecol*, 2007; 45:34–40.
- Kamatenesi-Mugisha M, Oryem-Origa H. Medicinal plants used to induce labour during childbirth in western Uganda. *J Ethnopharmacol*, 2007b; 109:1–9.
- Kankara S, Ibrahim M, Mustafa M, Go R. Ethnobotanical survey of medicinal plants used for traditional maternal healthcare in Katsina State, Nigeria. *South African J Bot*, 2015; 97:165–75.
- Kibiribiri E, Moodley D, Groves AK, Sebitloane, MH. Exploring disparities in prenatal care between refugees and local South African women. *Int J Gynecol Obstet*, 2016; 132:151–5.
- Kitula RA. Use of medicinal plants for human health in Udzungwa Mountains Forests: a case study of New Dabaga Ulongambi Forest Reserve, Tanzania. *J Ethnobiol Ethnomed*, 2007; 3:2–5.
- Kurui CM, Kiptui M, Chelang’a JK, Omondi P. Traditional controls of harvesting and conserving medicinal plants in Keiyo South Sub-Country, Kenya. *Int J Humanit Soc Sci*, 2016; 6:54–63.
- Mabogo EDN. The ethnobotany of the Vhavenda. MSc Dissertation University Pretoria, Pretoria, 1990.
- Madikizela B, Ndhala A, Finnie JF, Van Staden J. Ethnopharmacological study of plants from Pondoland used against diarrhoea. *J Ethnopharmacol*, 2012; 141:61–71.
- Mahwasane ST, Middleton L, Boaduo N, An ethnobotanical survey of indigenous knowledge on medicinal plants used by the traditional healers of the Lwamondo area, Limpopo province, South Africa. *South African J Bot*, 2013; 88:69–75.
- Malan DF, Neuba DFR. Traditional practices and medicinal plants use during pregnancy by Anyi-Ndenye women (Eastern Cote d’Ivoire). *Afr J Reprod Health*, 2011; 15:85–93.
- Maliwichi-Nyirenda CP, Maliwichi LL. Medicinal plants used for contraception and pregnancy-related cases in Malawi: a case study of Mulanje District. *J Med Plants Res*, 2010; 4:2121–7.
- Masafu MM, Mbajjorgu CA, Nematodzi LE, Kabine ES. A study of natural habitats and uses of medicinal plants in Thulamela and JS Moroka Municipalities, South Africa. *Indian J Tradit Knowl*, 2016; 15:363–9.
- Mhlanga RE. Maternal, newborn and child health: 30 years on. *South Afr Heal Rev*, 2008; 2008:115–28.
- Moteete A, Van Wyk, BE. The medical ethnobotany of Lesotho: a review. *Bothalia*, 2011; 41:209–28.
- Nduche MU, Omosun G, Okwulehie IC, Ethnobotanical survey of plants used as remedy for fertility conditions in Ebonyi State of Nigeria. *Sch Acad J Biosciences*, 2015; 3:214–21.
- Nikolajsen T, Nielsena F, Rasch V, Sørensen PH, Ismaild F, Kristiansene U, Jäger A. Uterine contraction induced by Tanzanian plants used to induce abortion. *J Ethnopharmacol*, 2011; 137:921–5.
- Ogbe FMD, Eruogun OL, Uwagboe M. Plants used for female reproductive health care in Oredo local government area, Nigeria. *Sci Res Essays*, 2009; 4:120–30.
- Paulos B, Fenta TG, Bisrat D, Asres K, Health seeking behavior and use of medicinal plants among the Hamar ethnic group, South Omo



zone, southwestern Ethiopia. *J Ethnobiol Ethnomed*, 2016; 12:44; doi:10.1186/s13002-016-0107-x

Randrianarivony T, Randrianasolo A, Andriamiharivo T, Ramarosandratana AV, Jeannoda VH, Rakotoarivony F, Bussmann RW, Useful plants and tradition for pregnancy, child delivery and for post-partum care used by people living around Analavelona Forest in South West Madagascar. *Indian J Tradit Knowl*, 2016; 15:68–78.

Semenya SS, Potgieter MJ, Erasmus LJC, Exotic and indigenous problem plants species used, by the Bapedi, to treat sexually transmitted infections in Limpopo Province, South Africa. *Afr Health Sci*, 2013; 13:320–6.

Shosan LO, Fawibe OO, Ajiboye AA, Abeegunrin T, Agboola DA. Ethnobotanical survey of medicinal plants used in curing some diseases in infants in Abeokuta South Local Government Area of Ogun State, Nigeria. *Am J Plant Sci*, 2012; 5:3258–68.

Stafford GI, Pedersen ME, Van Staden J, Jäger AK. Review on plants with CNS-effects used in traditional South African medicine against mental diseases. *J Ethnopharmacol*, 2008; 119:513–37.

Steenkamp V. Traditional herbal remedies used by South African women for gynaecological complaints. *J Ethnopharmacol*, 2003; 86:97–108.

Street RA, Prinsloo G. Commercially important medicinal plants of South Africa: a review. *J Chem*, 2013:1–16.

Tangiang S, Namsa N, Aran C, Litin A, An ethnobotanical survey of medicinal plants in the Eastern Himalayan zone of Arunachal Pradesh, India *J Ethnopharmacol*, 2011; 34:18–25.

van Vuuren SF, Nkwanyana MN, de Wet H. Antimicrobial evaluation of plants used for the treatment of diarrhoea in a rural community in South Africa. *Complement Altern Med*, 2015; 15:1–8.

Yazbek PB, Tezoto J, Cassas F, Rodrigues E, Plants used during maternity, menstrual cycle and other women's health conditions among Brazilian cultures. *J. Ethnopharmacol*, 2016; 179:310–31.

**How to cite this article:**

Mashile SP, Tshisikhawe MP, Masevhe NA. Medicinal plants used in the treatment of maternal health-related problems by the Mapulana of Ehlanzeni District, Mpumalanga province, South Africa. *J Appl Pharm Sci*, 2019; 9(12):021–029.