

Artículo Original / Original Article

## Use of herbal, complementary and alternative medicines among pregnant women in Makoni District, Zimbabwe

[Uso de medicinas a base de hierbas, complementarias y alternativas entre mujeres embarazadas en el distrito de Makoni, Zimbabwe]

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**Abstract:** Use of herbal, complementary and alternative medicines during pregnancy, labour and delivery is common in Zimbabwe. This study aimed at documenting herbal, complementary and alternative medicines used during pregnancy in Makoni District in Zimbabwe. Snowballing was used to select 66 participants which included herbalists (45.5%), traditional birth attendants (18.2%), traditional healers (15.2%), and assistant traditional healers and herbal medicine vendors (10.6% each). Pregnant women in the study area used a total of 47 plant species from 27 families, and 14 non-plant products as herbal, complementary and alternative medicines. A total of 26 medical cases were treated with the majority of medicinal plants and non-plant products, used to dilate or widen the birth canal (55.3%) and to augment labour or speed up the delivery process (46.8%). This study showed that herbal, complementary and alternative medicines play an important role in the provision of basic health care in Zimbabwe.

**Keywords:** Pregnancy; Traditional birth attendant; Traditional medicine; Plants; Non-plant products; Zimbabwe

**Resumen:** El uso de medicinas a base de hierbas, complementarias y alternativas durante el embarazo, el trabajo de parto y el parto es común en Zimbabwe. Este estudio tuvo como objetivo documentar las medicinas a base de hierbas, complementarias y alternativas utilizadas durante el embarazo en el distrito de Makoni en Zimbabwe. Se utilizó bola de nieve para seleccionar a 66 participantes que incluían herbolarios (45,5%), parteras tradicionales (18,2%), curanderos tradicionales (15,2%) y asistentes de curanderos tradicionales y vendedores de hierbas medicinales (10,6% cada uno). Las mujeres embarazadas en el área de estudio utilizaron un total de 47 especies de plantas de 27 familias y 14 productos no vegetales como medicinas a base de hierbas, complementarias y alternativas. Un total de 26 casos médicos fueron tratados con la mayoría de plantas medicinales y productos no vegetales, utilizados para dilatar o ensanchar el canal del parto (55,3%) y para aumentar el parto o acelerar el proceso de parto (46,8%). Este estudio mostró que las medicinas a base de hierbas, complementarias y alternativas desempeñan un papel importante en la prestación de atención médica básica en Zimbabwe.

**Palabras clave:** El embarazo; Asistente de parto tradicional; Medicina tradicional; Plantas; Productos no vegetales; Zimbabwe

## INTRODUCTION

According to the World Health Organization (WHO, 2021), about 830 women die from pregnancy or childbirth-related complications around the world every day and 99% of these maternal deaths occur in developing countries. The maternal deaths are caused by severe bleeding after childbirth, infections, high blood pressure during pregnancy, complications from delivery, unsafe abortion, malaria and human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) opportunistic diseases (WHO, 2021). Research by the United Nations Population Fund showed that maternal death in Zimbabwe is 614 per 100000 live births (UNFPA, 2015). Research by Choguya (2014), Mawoza *et al.* (2019) and Dimene *et al.* (2020) showed that the traditional birth attendants (TBA) are still attending many pregnant women in Zimbabwe. The World Health Organization defines TBA as “a person who assists the mother during childbirth and initially acquired her skills by delivering babies herself or through apprenticeship to other TBAs” (WHO, 1992). Choguya (2014) argued that TBAs assist in 60-80% of all deliveries in rural and suburban areas of developing countries due to shortage of trained medical professionals and maternal health care facilities. Local communities in rural areas and marginalized ones have faith in TBAs, as they speak the local language, provide psychosocial support at birth, and are an integral part of traditional medicine. The WHO defines traditional medicine as the sum total of the knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures that are used to maintain health as well as to prevent, diagnose, improve or treat physical and mental illnesses (WHO, 2000). According to the National Center for Complementary and Alternative Medicine (NCCAM, 2012) complementary and alternative medicine (CAM) is defined as a group of diverse medical and health care systems, practices and products that are not generally considered part of conventional medicine. The term “traditional medicine” is sometimes used interchangeably with “herbal medicine”, “complementary medicine” or “alternative medicine” in some countries. The literature highlighted a significant use of herbal medicines and CAM among pregnant women, ranging from 5.8% to 79.9%. It has been stated that 5.8% to 12.1% of pregnant women in Canada and the USA use herbal medicines (Eisenberg *et al.*, 1998; Mousally *et al.*, 2009; Louik *et al.*, 2010), while 40 to 52% of pregnant women in

Australia use herbal medicines (Pinn & Pallett, 2002; Frawley *et al.*, 2013). Research in Iran, Malaysia, and Palestine showed that 30.8% to 72.3% of pregnant women in these countries used herbal medicines (Rahman *et al.*, 2008; Tabatabaee, 2011; Ali-Shtayeh *et al.*, 2015), while 34% to 56% pregnant women in China used herbal medicines (Ong *et al.*, 2005; Chuang *et al.*, 2009; Tang *et al.*, 2016). In Africa, use of herbal medicines by pregnant women in Egypt, Ghana, Mali, Nigeria, Tanzania and Zambia ranged from 21% to 79.9% (Mbura *et al.*, 1985; Addo, 2007; Banda *et al.*, 2007; Fakeye *et al.*, 2009; Yussuf & Omarusehe, 2011; Orief *et al.*, 2014; Nergard *et al.*, 2015), while use of herbal medicines by pregnant women in Italy, Norway, Turkey and the United Kingdom ranged from 39.7% to 57.8% (Lapi *et al.*, 2010; Holst *et al.*, 2011; Nordeng *et al.*, 2011; Kissal *et al.*, 2017). Pregnancy is a condition characterized by several physiological changes resulting in many pregnancy-related problems, including nausea, vomiting, constipation and heartburn (John & Shantakumari, 2015). These physiological changes force women to use herbal medicines and CAM rather than prescription medications, mainly because they believe that herbs are safer for the foetus than modern medicines (Holst *et al.*, 2011; John & Shantakumari, 2015). Pregnant women are also likely to use CAM because, they believe it provides additional strategies for managing pregnancy disorders which may be seen as minor physiological discomforts of pregnancy by the conventional maternity care providers, and therefore, may not be managed with conventional medicines (Tabatabaee, 2011). In order to achieve successful maternal health strategies, there is need to have a better understanding of women’s treatment seeking behaviour, herbal medicine and CAM beliefs and practices. There is limited research correlating maternal health problems with phytochemistry and pharmacological properties of some of the herbal medicines used during pregnancy. According to the World Health Organization (WHO, 2000), the integration of safe and effective traditional medicines and CAM into the formal health systems is one way of increasing the health-care in local communities. In spite of widespread national commitment to reducing maternal deaths and improving reproductive health in Zimbabwe (Mlambo *et al.*, 2013), little information is available on the use of herbal medicines or CAM by pregnant women in Zimbabwe. Previous studies by Mawoza *et al.* (2019) and Mudonhi & Nunu (2021) collected data on herbal medicines used during

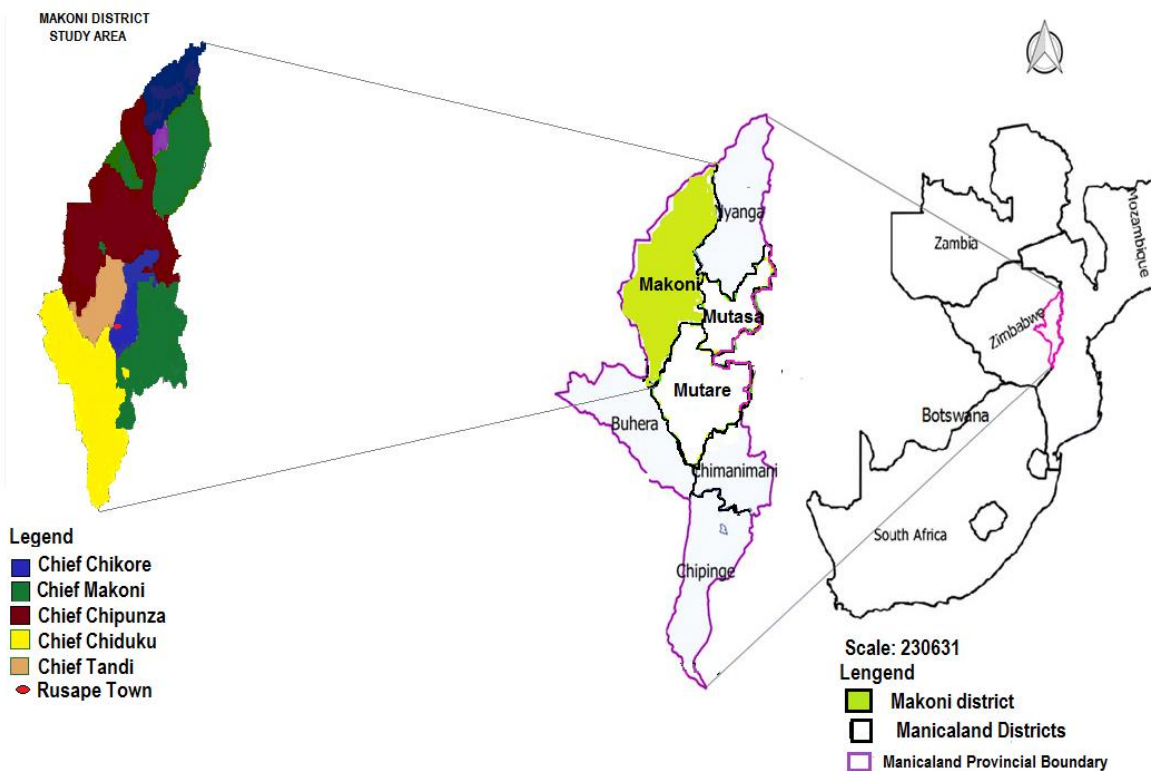
pregnancy in Zimbabwe by interviewing pregnant women while the current study interviewed herbalists, traditional birth attendants, traditional healers, assistant traditional healers and herbal medicine vendors. Therefore, this study aimed at documenting CAM and herbal medicines used by pregnant women in Makoni district, Zimbabwe.

**MATERIALS AND METHODS**

**Study Area**

This study was conducted in Makoni District in Manicaland province in north eastern Zimbabwe (Figure No. 1), which is located on the western border of Mozambique. Locally, the Manicaland province shares common boundaries with Mashonaland East province to the north, Masvingo province to the south and Midlands province to the west. Manicaland province consists of seven administrative districts namely Buhera, Chimanimani, Chipinge, Makoni, Mutare, Mutasa and Nyanga (Figure No. 1). Makoni District is found predominantly in agro-ecological region iib (57%) and the remainder of the district is found in agro-

ecological region iii (FAO, 2005). The region is 1100 m to 1600 m above sea level, with mean rainfall of 500 mm to 1050 mm, concentrated in the rainy season from October to April and mean temperature range of 16°C to 22°C (FAO, 2005). The soils from coarse sands to sandy clay loams are classified as arenosols and lixisols with low levels of nitrogen, phosphorus, zinc and organic carbon contents (Manzeke et al., 2012). The natural vegetation is dominated by tropical savanna woodland commonly referred to as miombo woodland dominated by *Brachystegia spiciformis* Benth. and *Julbernardia globiflora* (Benth.) Troupin (Campbell, 1996; Manzeke et al., 2012). Makoni District is primarily rural with intensive farming based on maize (*Zea mays* L.), tobacco (*Nicotiana tabacum* L.), cotton (*Gossypium hirsutum* L.) and livestock. Other food crops include groundnuts (*Arachis hypogaea* L.), cowpea (*Vigna unguiculata* (L.) Walp.), bambara groundnut (*Vignasubterranea* (L.) Verdc.) and soyabean (*Glycine max* L.) (Mtambanengwe & Mapfumo, 2005; Maroyi, 2006; Manzeke et al., 2012).



**Figure No. 1**

Map of southern Africa showing the location of Makoni District and a detailed map showing the sampled sites

### Data collection

Non-probability snowballing sampling technique (Heckathorn, 2011) was used to select 66 participants from five study sites in Chief Chiduku, Chikore, Chipunza, Makoni and Tandi areas (Figure No. 1). One traditional healer was identified with the help of traditional leaders in Chief Makoni area and she identified others who were willing to participate in the study. Before conducting interviews, the aim of the study was explained and participants asked for a written informed consent. Structured and semi-structured interviews were carried between July 2015 to December 2017 in three languages, Maungwe, Manyika and Ndau, languages spoken by the majority of participants. Among the questions asked during the interviews were age, sex, marital status, years of experience, knowledge and utilisation of CAM and herbal medicines by pregnant women. In each study area, one focus group discussion (FGD) was held. Samples of the medicinal plants cited by the participants and FGD participants were collected with their assistance. The specimens were sent to the National Herbarium and Botanic Gardens in Harare (SRGH), Zimbabwe were positively identified and authenticated by a plant taxonomist, Mr Chris Chapano (Head of Institute). Voucher specimens were prepared and labelled including information on scientific names, locality, habit, local names, uses and plant parts used as herbal medicines and deposited in SRGH Herbarium and Giffen Herbarium (UFH), Botany Department, University of Fort Hare, South Africa.

### Ethical consideration

Data concerning CAM and herbal medicines documented in this study were collected on the understanding that such research impinges on the local peoples' lives, sources of livelihoods, their environment and cultures. Therefore, the participants were informed that the study was carried out for educational and not commercial purposes. The University of Fort Hare Research Ethics Committee (UREC) and the Medical Research Council of Zimbabwe Ethics Committee approved the study. The participants were protected by affording them the right to voluntarily participate in the study with no coercion and participants were allowed to withdraw at any time during the course of the study. All participants were asked to sign an informed consent

form before data was collected, as an indication that no coercion was used and participation was voluntary.

### Data analysis

Data entry and validation, descriptive statistical techniques of qualitative and quantitative ethnobotanical records, percentages, and frequencies were applied to summarize the data. Furthermore, preference ranking of the collected species and CAM were quantitatively analyzed using relative frequency citation (RFC) (Vijayakumar *et al.*, 2015):

$$RFC = FC/N$$

This index shows the local importance of each species or CAM and it is given by the frequency of citation (FC, the number of informants mentioning the species/CAM) divided by the total number of informants participating in the survey (N).

## RESULTS AND DISCUSSION

### Demographic characteristics of the participants

A total of 66 participants took part in the key informant interviews in this study (Table No. 1). These included herbalists (45.5%), traditional birth attendants (18.2%), traditional healers (15.2%), assistant traditional healers and herbal medicine vendors (10.6% each) (Table No. 1). All the traditional healers interviewed were members of the Zimbabwe National Traditional Healers Association (ZINATHA), and so their experience in their careers could not be questioned. The participants were mature individuals with several years of experience as shown in Table No. 1. Similarly, research by Weckmüller *et al.* (2019) carried out in Waorani in Ecuador revealed a positive correlation between an informant's medicinal plant knowledge and age. In general, elders tend to know more about medicinal plants than their younger counterparts (Yineger *et al.*, 2008). About two thirds (68.2%) of the participants were females and 31.8% were males (Table No. 1). The majority of participants (90.9%) were Maungwe speaking people (Table No. 1). The majority of participants (68.2%) reported that they were married while 22.7% were widowed as shown in Table No. 1. More than three quarters of the participants (81.9%) were aged 51 years and beyond (Table No. 1).

**Table No. 1**  
**Demographic profiles of participants**

Characteristics		Frequency	%
<b>Categories of participants</b>	Herbalists	30	45.5
	Traditional birth attendants	12	18.2
	Traditional healers	10	15.2
	Assistant traditional healers	7	10.6
	Herbal medicine vendors	7	10.6
<b>Years of experience</b>	≤10 years	9	13.6
	11 – 20 years	14	21.2
	21 – 30 years	3	4.5
	31 – 40 years	12	18.2
	41 - 50 years	14	21.2
	≥50 years	14	21.2
<b>Gender</b>	Female	55	83.3
	Male	11	16.7
<b>Language spoken</b>	Maungwe	60	90.9
	Manyika	4	6.1
	Ndau	2	3.0
<b>Marital status</b>	Married	55	83.3
	Single	4	6.1
	Widowed	7	10.6
<b>Age</b>	21-30 years	4	6.1
	31- 40 years	10	15.2
	41-50 years	12	18.2
	51-60 years	24	36.4
	60+ years	16	23.3

### **Diversity of medicinal plants**

A total of 47 plant species from 27 families were used by pregnant women in Makoni District in Zimbabwe (Table No. 2). Minor differences in terms of number of species used (Figures No. 2 and Figure No. 3) were observed within the studied areas. For example, Chikore and Tandhi study sites were characterized by lower numbers of species in comparison to Chiduku, Chipunza and Makoni study areas (Figure No. 3). Most popular species with RFC values >0.2 include (descending order of importance) *Fadogia ancylantha* Schweinf., *Pouzolzia mixta* Solms, *Asparagus asparagoides* (L.) Wight and *Ziziphus mucronata* Willd. (Table No. 2). Although herbal medicines used during pregnancy vary across regions due to differences in culture and traditions, two species recorded in this study (*Pouzolzia mixta* and *Abelmoschus esculentus* (L.) Moench) have also been recorded in previous studies conducted in Zimbabwe by Mureyi et al. (2012) and Mawoza et al. (2019). In this study, *Ricinus communis* L. was used

as an abortifacient, augment labour and oedema of feet while El Hajj & Holst (2020) argued that this species is popular amongst pregnant women as herbal medicine for abdominal pains, nausea and uterine rupture. More than half of the documented species (59.8%) belonged to Fabaceae (19.1%), Asteraceae (8.5%), Convolvulaceae (6.4%), Asparagaceae, Euphorbiaceae, Malvaceae, Rubiaceae, Vitaceae and Xanthorrhoeaceae (4.3% each) (Table No. 3). Plant growth habits were: shrubs (40.4%), trees (27.7%), climbers (17.0%), herbs (12.8%) and a grass (2.1%). The most plant parts used were roots (61.7%), leaves (25.5%), fruits (12.8%) and bark (10.6%) (Figure No. 2). A total of 29 medical conditions were treated by the documented plant species (Figure No. 3). The majority of medicinal plants were used to dilate or widen the birth canal (55.3%) and to augment labour or speed up the delivery process (46.8%) (Table No. 2, Figure No. 3). Interviews with participants revealed that 14.9% of the documented herbal medicines were used to guard against witchcraft and

to prevent the infants' illnesses (Figure No. 3). Other major uses of documented species during pregnancy included their use to lower blood pressure or hypertension during pregnancy (12.8%), to prevent caesarean section (10.6%) and to loosen or relax muscles during pregnancy (8.5%) (Figure No. 3). Results from this study corroborate research findings

by Ahmed *et al.* (2018) which revealed that pregnant women consume herbal medicines for foetal growth, stimulation of labour, prevention of premature labour, postpartum, aiding expulsion of placenta, and to alleviate pregnancy associated symptoms such as nausea and vomiting.

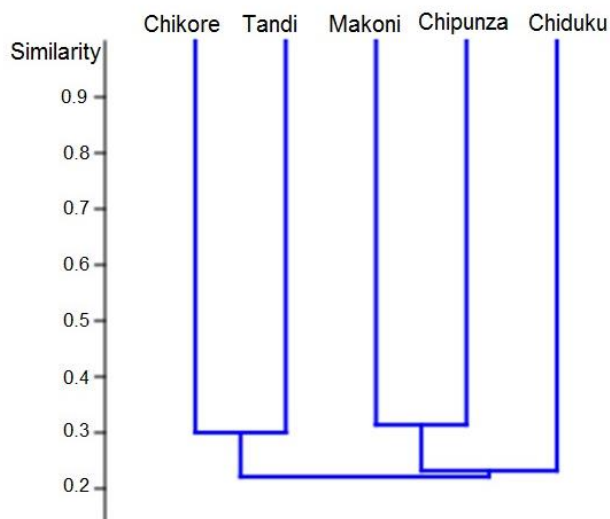
**Table No. 2**  
**Plant species used during pregnancy in Makoni district**

Scientific and family names	Growth form	Local name	Posology and duration of treatment	Uses	Study area	RFC
<i>Abelmoschus esculentus</i> (L.) Moench, Malvaceae	Shrub	Okra	Fruits taken orally every day	Loosen muscles	Chipunza	0.05
<i>Albizia amara</i> (Roxb.) Boivin, Fabaceae	Tree	Mutapatapa	Bark and root macerate taken orally from seven months of pregnancy	Dilate birth canal and guard against witchcraft	Chipunza	0.07
<i>Aloe excelsa</i> A. Berger, Xanthorrhoeaceae	Shrub	Tewe	Leaf macerate taken orally from seven months of pregnancy	Dilate birth canal	Chiduku	0.09
<i>Aloe greatheadii</i> Schönland, Xanthorrhoeaceae	Shrub	Gavakava	Leaf sap applied on birth canal	Dilate birth canal	Makoni	0.05
<i>Annona senegalensis</i> Pers., Annonaceae	Shrub	Muroro	Root macerate taken orally	Dilate birth canal	Makoni	0.02
<i>Asparagus africanus</i> Lam., Asparagaceae	Shrub	Rukato	Root infusion taken orally once daily from eight months up to delivery to speed up labour	Augment labour, dilate birth canal, loosen muscles, congenital cataract, naval infection and guard against witchcraft	Chikore, Chipunza and Chiduku	0.02
<i>Asparagus asparagoides</i> (L.) Wight, Asparagaceae	Shrub	Muparadzam akore	Root macerate taken orally once daily from eight months up to delivery to speed up labour	Augment labour, dilate birth canal and loosen muscles	Chiduku, Chikore and Chipunza	0.39
<i>Aspilia pluriseta</i> Schweinf., Asteraceae	Herb	Chitswati	Leaf infusion taken orally from nine months until delivery	Dilate birth canal and augment labour	Tandi	0.05
<i>Astripomoea malvacea</i> (Klotzsch) A. Meeuse, Convolvulaceae	Climber	Demamhandwe	Root macerate taken orally at 9 months pregnancy three times a day for one week	Dilate birth canal and prevent caesarean section	Chiduku	0.05
<i>Azanza garckeana</i> (F. Hoffm.) Exell & Hillc., Malvaceae	Tree	Mutohwe	Fruit and root infusion taken as from 7 months, smeared on hand used to dilate birth canal	Dilate birth canal	Chikore and Chipunza	0.11
<i>Carissa spinarum</i> L., Apocynaceae	Tree	Munzambarara	Leaf and root infusion taken orally	Augment labour, prevent caesarean section and guard against witchcraft	Makoni	0.02
<i>Convolvulus sagittatus</i> Thunb., Convolvulaceae	Shrub	unknown	Leaf decoction taken daily as tea late in pregnancy	Dilate birth canal and prevent perineal tears	Tandi	0.02

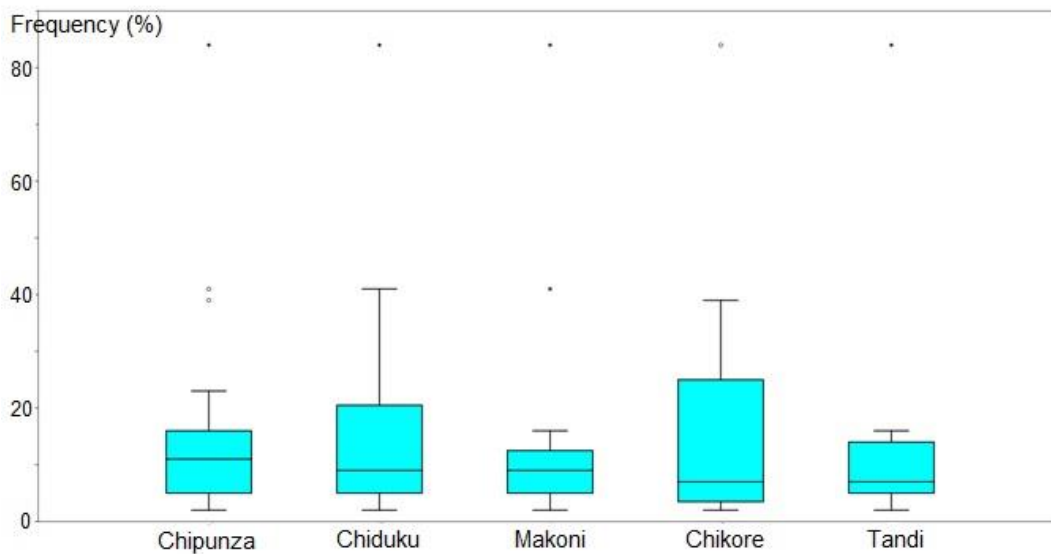
<i>Cussonia arborea</i> Hochst. ex A. Rich., Araliaceae	Tree	Mufenje	Bark macerate taken orally	Dilate birth canal	Makoni	0.05
<i>Cyphostemma cirrhosum</i> (Thunb.) Desc. ex Wild & R.B. Drumm., Vitaceae	Climber	Boho/muchik uvava	Whole plant moulded into a ball and inserted into vagina	Dilate birth canal	Chiduku	0.07
<i>Datura stramonium</i> L., Solanaceae	Shrub		Fruit and leaf mixture applied on genitalia	Sexually transmitted infections (STIs), cancer and fibroids	Tandi	0.07
<i>Dicerocaryum senecioides</i> (Klotzsch) Abels, Pedaliaceae	Climber	Ruredzo	Whole plant taken orally or applied to hand which will be inserted into the birth canal to dilate it	Dilate birth canal and augment labour	Chipunza, Makoni and Tandani	0.16
<i>Dichrostachys cinerea</i> (L.) Wight & Arn., Fabaceae	Tree	Mupangara	Fruit mixture applied on birth canal during delivery.	Loosen muscles	Chikore	0.07
<i>Dicoma anomala</i> Sond., Asteraceae	Herb	Chifumuro	Root infusion taken from eight months twice a day for abdominal pains	Dilate birth canal and guard against witchcraft	Chiduku, Chipunza and Makoni	0.11
<i>Elephantorrhiza goetzei</i> (Harms) Harms, Fabaceae	Shrub	Ndorwani	Root infusion taken orally daily	Blood pressure, STIs and HIV/AIDS opportunistic infections	Chiduku, Chipunza and Makoni	0.09
<i>Eriosema englerianum</i> Harms, Fabaceae	Herb	Mutsombori wamutiro	Root infusion taken orally	Blood pressure and infertility	Makoni	0.09
<i>Erythocephalum zambesianum</i> Oliv. & Hiern, Asteraceae	Shrub	Kamushinda –	Root infusion taken orally	STIs and HIV/AIDS opportunistic infections	Tandi	0.05
<i>Erythrina abyssinica</i> Lam. ex DC., Fabaceae	Tree	Mutiti	Bark infusion taken by pregnant woman or given to neonate	Blood pressure and cough in infants	Chipunza, Makoni and Tandani	0.14
<i>Euclea divinorum</i> Hiern, Ebenaceae	Shrub	Nyokarutombo	Roots chewed	Prevent fontanel	Chipunza	0.05
<i>Euphorbia hirta</i> L., Euphorbiaceae	Herb	Mufungati	Leaf sap taken orally	Hypertension	Makoni	0.05
<i>Fadogia ancylantha</i> Schweinf., Rubiaceae	Shrub	Makoni tea	Leaf decoction taken orally three times a day as from 28 weeks gestation up to 40 weeks	Dilate birth canal	Chiduku, Chikore, Chipunza, Makoni and Tandani	0.84
<i>Flueggea virosa</i> (Roxb. ex Willd.) Voigt, Phyllanthaceae	Shrub	Murugwishu	Root maceration taken during pregnancy	Prevents fontanel	Chikore and Makoni	0.07
<i>Gardenia ternifolia</i> Schumach. & Thonn., Rubiaceae	Tree	Mutarara	Root infusion taken orally twice a day for three days	Augment labour, abortion and toothache	Chikore	0.05
<i>Heteropogon contortus</i> (L.) P. Beauv. ex Roem. & Schult., Poaceae	Grass	Tsine	Fruit infusion taken orally	Augment labour	Chipunza	0.02
<i>Ipomoea batatas</i> (L.) Lam., Convolvulaceae	Climber	Muzvaresonga	Leaf infusion taken orally during labour	Augment labour, guard against witchcraft and correct breech presentation	Chiduku	0.05
<i>Jamesbrittenia albobadia</i> Hilliard, Scrophulariaceae	Shrub	Nhumbawayeni	Root infusion taken orally from six months	Augment labour and dilates birth canal	Chiduku	0.18
<i>Lannea edulis</i> (Sond.) Engl., Anacardiaceae	Shrub	Mutsamabatsi	Root infusion taken orally	Remedy for fontanel	Chiduku	0.05

<i>Nymphaea nouchali</i> Burm. f., Nymphaeaceae	Herb	Mahapa	Root infusion taken orally	Prevent black veins on infant's abdomen	Chipunza	0.02
<i>Opuntia ficus-indica</i> (L.) Mill., Cactaceae	Shrub	Dhorosia	Leaf infusion given to pregnant diabetic woman three times a day.	Diabetes mellitus	Tandi	0.05
<i>Ormocarpum kirkii</i> S. Moore, Fabaceae	Tree	Mupotanzou	Leaf maceration taken orally from seven months	Dilate birth canal	Chipunza	0.16
<i>Parinari curatellifolia</i> Planch. ex Benth., Chrysobalanaceae	Tree	Muchakata	Leaf decoction taken once a day for 10 days	Feeds neonate and mother	Chiduku	0.05
<i>Pouzolzia mixta</i> Solms, Urticaceae	Tree	Nhanzva	Bark and roots moulded into balls and inserted into birth canal or the hand is made slippery and widening of birth canal done manually	Dilate birth canal and reverse witchcraft	Chiduku, Chipunza and Makoni	0.41
<i>Pterocarpus angolensis</i> DC., Fabaceae	Tree	Mubvamaropa	Newly born baby made to lick fruit soot or ashes or mother rubs baby's palate with soot or ash	Treats fontanel	Tandi	0.05
<i>Pterolobium stellatum</i> (Forssk.) Brenan, Fabaceae	Climber	Rukato	Root infusion taken orally	Augment labour	Chikore	0.02
<i>Rhynchosia resinosa</i> (Hochst. ex A. Rich.) Baker, Fabaceae	Climber	Chiwaradzwa	Root infusion taken orally	Diabetes mellitus and hypertension	Makoni	0.09
<i>Ricinus communis</i> L., Euphorbiaceae	Shrub	Mupfuta	Root and seed infusion taken orally when in labour	Arbortifacient, augment labour and oedema of feet	Chiduku, Chipunza and Makoni	0.09
<i>Steganotaenia araliacea</i> Hochst., Apiaceae	Shrub	Mupomboshori	Root infusion taken orally once every day from first month and twice three times a day from seven months.	Dilate birth canal, augment labour, naval infection and prevents caesarean section	Chipunza and Tandis	0.09
<i>Tragopogon porrifolius</i> L., Asteraceae	Herb	Star of Jerusalem	Flower, leaf and root infusion taken orally	Vaginal bleeding and, toothache	Chiduku	0.05
<i>Trichodesma physaloides</i> (Fenzl) A. DC., Boraginaceae	Climber	Nyakamhete	Root infusion taken daily at nine months to initiate labour	Augment labour, prevent black veins on infant's abdomen and colic in infants	Chipunza and Makoni	0.11
<i>Triumfetta amuletum</i> Sprague, Tiliaceae	Shrub	Muroro	Root infusion taken orally from seven months	Dilate birth canal	Makoni	0.11
<i>Vitis vinifera</i> L., Vitaceae	Climber	Mugrapi	Root infusion taken orally from three months	Dilate birth canal	Chiduku and Tandis	0.11
<i>Ximenia caffra</i> Sond., Ximeniaceae	Tree	Munhengeni	Root decoction taken orally	Cough and diarrhoea	Chikore	0.07
<i>Ziziphus mucronata</i> Willd., Rhamnaceae	Tree	Muchecheni	Bark and root infusion taken orally for three days.	Augment labour and dilate birth canal	Chiduku, Chikore, Chipunza, Makoni and Tandis	0.23





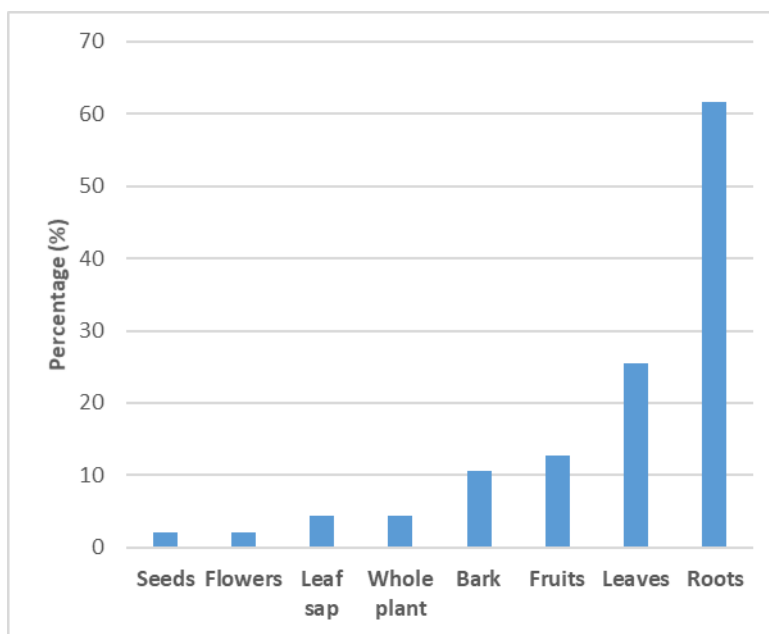
**Figure No. 2**  
Cluster diagram showing similarity of medicinal plants recorded in different study sites



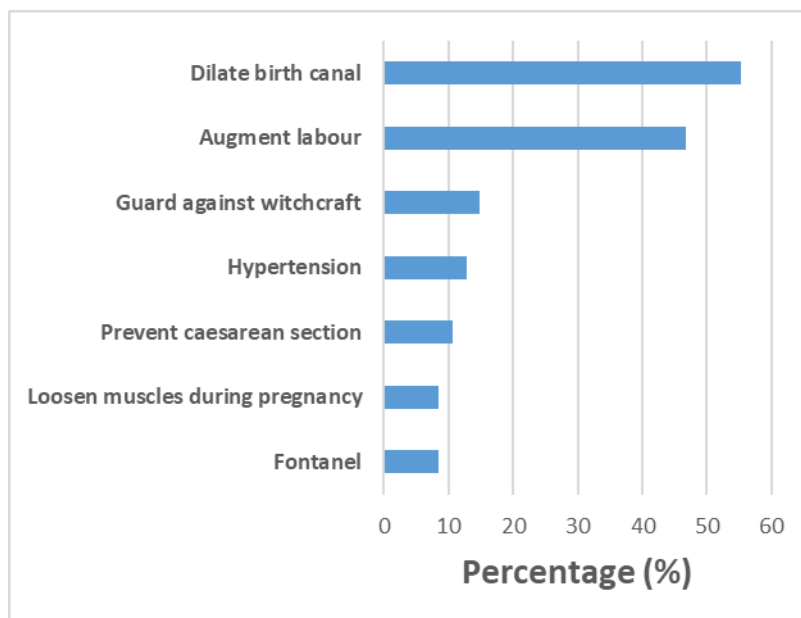
**Figure No. 3**  
Boxplots showing percentage of species recorded in different study sites

**Table No. 3**  
**Families with the largest number of medicinal plants (more than 2 species) used during pregnancy in Makoni district**

Family	Number of species	%
Fabaceae	9	19.1
Asteraceae	4	8.5
Convolvulaceae	3	6.4
Asparagaceae	2	4.3
Euphorbiaceae	2	4.3
Malvaceae	2	4.3
Rubiaceae	2	4.3
Vitaceae	2	4.3
Xanthorrhoeaceae	2	4.3



**Figure No. 4**  
**Percentage use of different plant parts**



**Figure No. 5**  
Major ailments and diseases treated by medicinal plants

#### Utilization of non-plant products during pregnancy

Fourteen non-plant products were used during pregnancy in Makoni district (Table No. 4). The most popular non-plant products used with  $RFC \geq 0.25$  included (in their order of importance) soap, wasp nest, elephant dung and soil of burrowing mole (Table No. 4). These non-plant products were mainly used to prevent caesarean section, guard against witchcraft, dilates birth canal and augment labour

(Table No. 5). Research by Zamudio *et al.* (2010) and Sōukand *et al.* (2017) showed that non-plant remedies such as alcohol, animal fat, oil, soap and urine are equally important as wild and cultivated plants that are widely documented as sources of herbal medicines. Similarly, research by Panganai & Shumba (2016), revealed that women in the Midlands province in Zimbabwe use elephant dung to stimulate labour or facilitate labour and delivery.

**Table No. 4**  
Non-plant products used during pregnancy in Makoni district

Non-plant medicines	Preparation	Application	Purpose of use	RFC
Cow dung	Dry or wet cow dung is put in a plastic bottle, mixed with 2 litres cold water	Woman takes two litres every day at eight months gestation	It is believed that a cow eats many plants which will help the pregnant woman to have an easy delivery and corrects breech presentation	0.09
Donkey dung	Mixed with 2 litres of cold water	Woman is to wash birth canal twice a day during the 9th month of pregnancy	Dilates birth canal and reduce birth canal after delivery.	0.05
Elephant dung	Dung mixed with cold water	Infusion taken orally from seven months of pregnancy or at term, smoke from burnt dung directed into birth canal	Augments labour, promotes growth of baby after delivery, prevent abortion, guard against witchcraft	0.59
Goat droppings	Taken as tablets	Droppings are taken as from eight months	Plants eaten by goats are believed to widen birth canal and augment labour	0.02

Holy water	Water mixed with ashes or soil of burrowing mole	Mixture taken once daily from seven months of pregnancy	Reverses witchcraft, widens birth canal and augments labour	0.09
Key	Key put in water	Taken orally once at term	Guard against witchcraft, augment labour	0.05
Python saliva	Saliva kept for use later	Saliva smeared on abdomen	Used to augment labour and prevent caesarean section	0.05
Soil of a burrowing mole	Handful of soil mixed with water	Taken orally at term	Dilates birth canal, augment labour, prevents perinial tears, assist in the delivery of retained placenta	0.61
Soil from cross roads	Soil collected from cross roads mixed with water	Mixture drunk twice a day or whenever thirsty at nine months of pregnancy	Prevents caesarean section	0.05
Soil from where a dog has delivered	Soil mixed with water	Taken during labour	Augment labour	0.05
Soil from where hare speeds off from slumber	Soil mixed with water	Taken orally	Mixture taken to augment labour	0.05
Soap	Applied to hand to make it slippery and inserted into birth canal	Applied as from seven months of pregnancy starting with one finger until the whole hand can be inserted	Dilate birth canal	0.25
Termite soil	Soil mixed with water	White soil from inside the termite hill is taken as from eight months	Augment labour	0.07
Wasp nest	Soil from wasp nest mixed with water	Infusion taken orally from eight months of pregnancy until delivery or at term or during or in the second stage of labour	Augment labour, assist in the delivery of retained placenta	0.32

**Table No. 5**  
**Diseases and ailments treated by non-plant products**

<b>Medical condition</b>	<b>Number of reports</b>
Corrects breech presentation	1
Delivery of retained placenta	1
Easy delivery	1
Prevents perinial tears	1
Promotes growth of baby after delivery	1
Reduce birth canal	1
Prevent caesarean section	2
Guard against witchcraft	3
Dilates birth canal	5
Augments labour	10

## CONCLUSION

Results of this study showed that medicinal plants and non-plant products a vital role in obstetric issues in Makoni District in Zimbabwe. Such plant and non-plant products are used to widen birth canal, augment

labour, speed delivery and protect the baby from childhood illnesses. Future research should focus on evaluating the phytochemistry, uterotonic and toxicological properties particularly of plant species widely used to treat and manage obstetric ailments.

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