



“Back to Eden”: An explorative qualitative study on traditional medicine use during pregnancy among selected women in Lusaka Province, Zambia

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ARTICLE INFO

Keywords:

Lusaka province
Maternal health
Pregnancy
Traditional medicine
Women's experiences
Zambia

ABSTRACT

Background and purpose: No qualitative study on traditional medicine use among Zambian pregnant women has ever been conducted. Accordingly, this study was performed to explore the perceptions, motivations and experiences of Zambian women with regard to traditional medicine use during pregnancy.

Materials and methods: In-depth, semi-structured interviews were conducted in June/July 2019 with 8 adult women residing in Lusaka, Zambia, who used traditional remedies during their pregnancies, and who were recruited through purposive and snowball sampling.

Results: Reported reasons behind traditional medicine use during pregnancy included labour induction, prevention of childbirth complications in case of sexual infidelity by either spouse, and prevention and/or treatment of anaemia. In addition, family members and faith leaders played an important role in influencing traditional medicine use.

Conclusion: Multiple, interconnecting factors influence traditional medicine use among pregnant women in Lusaka, Zambia. Traditional medicine use during pregnancy will likely continue to be widespread across Zambia.

1. Introduction

Zambia is a landlocked country in Southern Africa with a population of approximately 18 million. Zambia has both a high under-five mortality rate (62.5 deaths per 1000 live births) and a high maternal mortality rate (213 deaths per 100,000 births). Total fertility rate is 4.7 children born per woman [1]. Traditional medicine represents an important part of health practices in Zambia, with the number of traditional healers estimated at 40,000 in comparison to 1500 medical doctors [2].

Traditional medicine is defined, by the World Health Organisation, as the sum total of 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 [3]. For instance, in many parts of sub-Saharan Africa, traditional medicine largely defines illness as a social experience believed to result from the breakdown of social balance.

This can be due to omissions or commissions, such as breaking codes of conduct now or in the past, ancestral spirits, as well as evil spirits [4].

Maternity care is an area in which traditional medicine use has attracted interest in clinical, public health, policy and research communities, largely due to the potential adverse health effects associated with the use of traditional medicine, in particular herbal medicine, by pregnant women [5]. Indeed, herbal medicine use during pregnancy raises several concerns, which can mainly be attributed to the herbal ingredient itself, conventional drug-herbal medicine interactions, and contamination or adulteration of herbal remedies with potentially toxic compounds such as heavy metals (e.g., lead, mercury, arsenic) [6].

Despite such concerns, the use of traditional and herbal remedies among pregnant women is widespread in many parts of the world, including sub-Saharan Africa. In a recently published systematic review by Ahmed et al. (2018) [7] including a total of 22,404 African pregnant or lactating women, the average prevalence of herbal medicine use during pregnancy among the different African regions was between 32%

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<https://doi.org/10.1016/j.ctcp.2020.101225>

Received 12 April 2020; Received in revised form 15 July 2020; Accepted 26 July 2020

Available online 5 August 2020

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(in Central Africa) and 45% (in East Africa).

In Zambia, although there is a paucity of data on traditional medicine use during pregnancy, it is openly known that traditional medicine has played a significant role since the pre-colonial era during pregnancy, delivery, and the postpartum period. The very few studies that have been published on traditional medicine use during pregnancy in Zambia have found a prevalence of use of up to 32% [8,9]. However, the botanical data of both these studies as well as information about women's perceptions and knowledge about traditional medicine are limited. To the best of our knowledge, no qualitative study on Zambian women's use of traditional medicine during pregnancy has ever been conducted. Accordingly, the present qualitative study was performed to explore the perceptions, motivations and experiences of Zambian women with regard to their use of traditional medicine during pregnancy.

2. Materials and methods

2.1. Study design and setting

This study adopted a qualitative research approach, which focuses on understanding experiences, motivations, and the meanings people assign to things. Moreover, qualitative research enables the study of individuals in their natural settings [10]. Data collection was based on in-depth, semi-structured interviews with women residing in Lusaka Province, Zambia and who were using one or more traditional remedies during pregnancy. In-depth, semi-structured interviews are helpful for investigating complex behaviours, opinions, and emotions and for collecting information on a diverse range of experiences [11]. We chose individual, face-to-face, in-depth, semi-structured interviews for data collection, as they are particularly useful for investigating personal, sensitive, or confidential issues, and allow probing of interesting responses and observation of body language [11]. A topic guide of 9 open-ended questions with probes was used during the interviews to obtain information regarding the patterns and reasons for use of traditional medicines and explore the perspectives and attitudes towards the use of these medicines during pregnancy.

The present study was conducted in Lusaka Province, since this is the most populated of all the 10 provinces of Zambia, with a population of over 3 million [12]. It also contains both urban and rural districts, thus increasing the transferability of the study findings. This study was approved by the Regional Committee for Medical and Health Research Ethics in Norway (REC West; 2019/378), the University of Zambia Biomedical Research Ethics Committee (UNZABREC; 009-04-19), and the National Health Research Authority of Zambia.

2.2. Study participants and sampling procedure

Participants for the study were: (1) adult Zambian women, (2) residing in Lusaka Province, (3) who were pregnant at the time of the conduct of the study or had been pregnant in the last five years, (4) and who used traditional medicine during pregnancy. Participants could have been from any cultural or ethnic background and were not required to be fluent in English.

Purposive sampling and subsequent chain or snowball sampling methods were used to recruit participants. A purposive sampling technique was employed because it allows careful selection of cases which are information-rich [13]. Participants were initially recruited at antenatal care clinics. Recruitment was performed by the principal investigator (M.E.H.) and by two trained female research assistants (a graduate student in public health and a medical student) fluent in both Nyanja and Bemba, the two most commonly spoken local languages in Lusaka Province. Subsequently, a snowball sampling method was adopted for further recruitment where participants were requested to share the study information with other women who were pregnant or have been recently pregnant and who used traditional medicine.

There is no cap on how many participants should make up a purposive sample, as long as the needed information is obtained [13,14]. Seidler (1974) studied different sample sizes of participants selected purposively and found that at least 5 participants were needed for data to be reliable [15]. In the present study, a decision was made to recruit between 8 and 10 women and, through data analysis, determine whether a point of saturation was reached, when no new themes emerged. Overall, 11 potential participants were approached for the interview, but 3 of them declined, leaving 8 women meeting the eligibility criteria in the study sample.

2.3. Data collection

Prior to the conduct of interviews, an information sheet about the research and a detailed explanation of the study purpose were provided to the participants. Participants were also requested to sign a consent form prior to conducting the interviews. Participants were given ample opportunity to ask questions, were reminded that the study was completely voluntary, and that they could withdraw at any stage without prejudice.

All interviews were conducted in June and July 2019, at a time and place chosen by the study participants. They were carried out by M.E.H. and by two female research assistants who were fluent in both Nyanja and Bemba. The interviews were audio-recorded. After each interview, M.E.H. listened to the audio recording and made an interview summary before carrying out another interview. All audio-recorded interview data were transcribed verbatim.

2.4. Data analysis

Data analysis was conducted immediately after all the data were collected to prevent data loss. Participants were de-identified, and codes were used in the analysis (the first interviewee was P1 for Participant 1). For interpretation, the interviews were analysed using a thematic analysis. According to Patton (2015), a qualitative thematic analysis can be used when the purpose is not only to describe the content of the interviews, but also to interpret the findings at a higher level by formulating themes [16].

In the first part of the analysis, the interviews were read several times by M.E.H., with the study aim in mind. Subsequently, the emerged ideas or topics along with their supporting quotes were noted. These topics were then grouped and reclassified as subthemes. The process continued until all subthemes were regrouped to form major overall themes.

2.5. Ensuring trustworthiness

Trustworthiness or rigour of the study was ensured in different ways. Prior to commencing formal data collection, M.E.H. familiarised herself with Lusaka Province by residing there for more than one month before the conduct of interviews and by conducting several informal group discussions with Zambian pregnant women, local traditional medicine experts, and midwives based in Lusaka. This process was helpful in validating the final interview guide. During the in-depth interviews, M.E.H. used probes that were useful to elicit detailed data and iterative questioning, in which she returned to matters previously raised by a respondent and extracted additional data through rephrased questions. M.E.H. also kept a reflective diary in which she described the setting and aspects of each in-depth interview that were noted during the interview itself and during transcription, and the assumptions and potential biases she brought to the data collection and analysis. To enhance accurate and quality data for the study, full data verification was conducted where all the transcribed and coded data were checked through proofreading against the original audios and documents. Throughout the process of analysis, project supervisors (D.C.S, B.V., and L.H.) provided input and reviewed the themes to ensure reliability.

3. Results

Eight women (3 pregnant at the time of the study conduct and 5 who had been pregnant in the last five years) were interviewed. Five interviews were conducted in English, and 3 in Nyanja in which responses were translated on the spot. The interviews ranged in duration from 31 to 59 min, with a median duration of 55.5 min. The sociodemographic characteristics of the study participants are reported in Table 1. The major themes that emerged during data analysis were: (1) reasons for the use of traditional medicine, (2) negative attitudes towards traditional medicine use, and (3) positive attitudes towards traditional medicine use.

3.1. Reasons for the use of traditional medicine

Motivations for traditional medicine use during pregnancy were varied; however, four primary reasons were frequently cited by the study participants. Moreover, all study participants believed that traditional medicine is an integral part of Zambian culture. All interviewed women also had an in-depth knowledge of the most commonly used traditional medicines during the different stages of pregnancy in their communities.

3.1.1. Preparing for labour and delivery

Of the 8 women interviewed, all mentioned that they regularly took traditional medicines during the third trimester of their pregnancies and/or at the onset of labour to prevent prolonged labour, stimulate uterine contractions during childbirth, and avoid having a caesarean section delivery.

“I remember my family gave me traditional medicine in a big dish. I sat on a dish with herbal medicines in cold water every day for one week before delivery. This makes it easy to have a road for the baby when the baby comes out. So, I would not have the stitches.” (P2).

An intense fear of prolonged labour, unnatural childbirth, and labour pain was commonly expressed by all study participants.

“Labour is such a big issue, that I would take anything to make it better. If they tell me that drinking poo helps easing labour pain, I would drink it and I wouldn’t even feel nauseous.” (P5).

Table 1
Participant characteristics.

Variable	Total (N = 8)
Age, median (range) – years	32.0 (20.0–40.0)
Background	
Urban	5
Peri-urban	2
Rural	1
Residential area	
High-density (low-income)	5
Medium-density (middle-income)	1
Low-density (high-income)	2
Highest education level	
Primary education	2
Secondary education	6
Marital status	
Married	5
Single	1
Divorced	1
Separated	1
Employment status	
Formally employed	3
Informally employed	1
Unemployed	4
Number of children (excluding current pregnancy)	
1	1
2	4
3	1
4	1
5	1

“The only reason why I am taking all of these herbal medicines now is because in my last pregnancy, when my water broke, they had to [mechanically] induce labour. So, I really don’t want to experience that again. That’s why I’m taking all of these.” (P6).

Participants reported the existence of traditional medicines that are prescribed specifically for labour induction, such as castor oil and bush okra. Table 2 presents the most common traditional preparations used by the study participants to induce labour and facilitate childbirth.

3.1.2. Sexual infidelity by either spouse

According to several study participants, adultery is quite common in Zambia. Most interviewed women believed that adultery might harm both the baby and the postpartum mother, and it might lead to a prolonged and complicated labour that results in delivery by caesarean section or even death. Hence, almost all study participants relied on traditional medicine during their pregnancies for protection against their husband’s possible sexual infidelity.

“Men are always moving around. You never know if they are promiscuous or not. So instead of being in the dark and not knowing exactly what’s going on, I would rather take traditional medicine to prevent having a hard time during delivery and to prevent the baby from coming up instead of going down.” (P5).

“Before delivering, they called my husband and asked him: “Have you

Table 2
Most common traditional preparations used by the participants to induce labour or facilitate delivery.

Traditional preparation	No. of women reporting use	Preparation	Purpose
Soil from the crossroad	7	One fistful in a cup of room temperature water, shaken, usually drank on delivery day	To prevent childbirth complications in case of husband’s sexual infidelity
<i>Ricinus communis</i> L. – Castor oil or castor bean	5	Leaves or roots soaked in a cup of (hot or cold) water, usually drank at the onset of labour	To speed up labour
<i>Corchorus olitorius</i> L. – Bush okra (known locally in Zambia as “delete”)	5	Leaves or roots boiled, and fluid drank daily during third trimester	To widen the birth canal
<i>Thespesia garckeana</i> F.Hoffm.(Exell & Hillc.) – African chewing gum or snot apple (known locally in Zambia as “makole”)	4	Leaves or roots crushed, petroleum jelly or glycerin added, and the preparation applied on the belly daily during third trimester	To prevent childbirth complications in case of husband’s sexual infidelity
<i>Dicoma anomala</i> Sond. (known locally in Zambia as “palibe kantu” which translates from Nyanja as “no problem”)	2	Roots crushed, drank in a cup of cold water, daily during third trimester	To facilitate childbirth
<i>Ipomoea batatas</i> (L.) Lam. – Sweet potato leaves (known locally in Zambia as “kalemula”)	2	Leaves boiled, and fluid drank daily during third trimester	To widen the birth canal
Lifebuoy soap	2	Lather using hands and insert the hand into the vagina, daily during third trimester	To widen the birth canal

ever had sex with another girl [during the pregnancy]?”. He said: “No”. He was seeing another woman, but they never had sex. If they would have had sex, then they would have looked for me traditional medicine which should help me. The reason us women take traditional medicine is because if our husband is cheating and we look at the baby when it is born, immediately it will die.” (P2).

Almost all study participants admitted that they consumed crossroad soil at the end of their pregnancies to prevent childbirth complications in case of their husband’s sexual infidelity (Table 2).

“They say that you should take soil from the crossroad, in case the husband was cheating on you, because of the belief that somebody is double-crossing. Then you have to put it in a cup, then you drink it. It means that thing [extramarital affair] is being destroyed. That was the belief. So, I had to take it, because I was scared.” (P3).

“We believe that when you’re pregnant and your husband is having an affair, you’re going to have a hard time and complications during delivery. So, I drank soil from the crossroad every day for one week before my expected due date to avoid having complications.” (P1).

3.1.3. Community and family influence

More than half of the study participants described feeling pressured by relatives and particularly by elderly family members as a main reason for traditional medicine use during pregnancy.

“In Zambia, we use herbal medicines because that’s what the old people believe. When you are pregnant, older people like saying that: “when you are pregnant, you have to take this, you do this, get this.” So, you will be just following their instructions.” (P1).

Two participants also revealed that their local church had a significant influence on their traditional medicine use during pregnancy.

“At church, the SDA [Seventh-day Adventist Church], they say: “Back to Eden”. The SDA church says that even if you are not feeling well, not just during pregnancy, you should take herbal medicines. It’s called “Back to Eden Doctors”.” (P1).

3.1.4. Prevention and/or treatment of anaemia

Most study participants reported taking different medicinal plants to prevent and/or treat anaemia (Table 3), as they believed that anaemia is very dangerous and can even be fatal.

“The doctors have never checked to see if I’m anaemic or not, but my brother had anaemia and he died of it. And the rest of my family are carriers of anaemia genes, but they are not anaemic. So, I take all these herbal medicines to boost my blood because I am afraid to die of anaemia like my brother. This is also why my grandma advises me to take these.” (P6).

Table 3

Most common herbal preparations used by the participants to prevent and/or treat anaemia during pregnancy.

Herbal preparation	No. of women reporting use	Preparation
<i>Persea americana</i> Mill. – Avocado leaves	4	Boil the leaves and drink the fluid
<i>Beta vulgaris</i> L. – Beetroot	3	Cut the beetroot into pieces, boil them, and drink the fluid
<i>Ficus sycamorus</i> L. – Sycamore fig (known locally in Zambia as “mukuyu”)	3	Boil the leaves, add milk, and drink the fluid
<i>Amaranthus spp.</i> L. – Amaranth leaves (known locally in Zambia as “bondwe”)	2	Boil the leaves and drink the fluid
<i>Telfairia occidentalis</i> Hook.f. – Fluted pumpkin leaves (known locally in Zambia as “chibwabwa”)	2	Boil the leaves and drink the fluid
<i>Adansonia digitata</i> L. – Baobab	1	Boil the fruit, add milk, and drink the fluid
<i>Eucalyptus globulus</i> Labill. – Blue gum or southern blue gum	1	Boil the bark and drink the fluid

The use of herbal preparations for anaemia was initiated on the women’s own initiative and/or after recommendations from family members or from health care providers.

“At any moment, when my family saw that my eyes were white, they would say: “You look pale”, or “There’s no blood in you”, then they would give me traditional medicine to boost my blood.” (P3).

“I take beetroot, every day from Month 5 of pregnancy, because I have a shortage of blood. Every time I’m pregnant, I have a shortage of blood. So, at the [antenatal] clinic, they recommended beetroot for me.” (P4).

3.2. Negative attitudes towards traditional medicine use

Although all study participants were regular users of traditional medicine, they all felt that there were several negative aspects associated with traditional medicine use during pregnancy.

3.2.1. Hiding information from health care providers

More than half of the interviewed women admitted that they would not disclose their use of traditional medicines to their health care providers, due to a fear of being judged, scolded, or neglected by the health care providers.

“I won’t tell the doctor about the castor roots use because he would be mad, and if he ever tells me to stop it, I won’t stop it because that is in our culture. Doctors always say that they are here for us whenever we need help or advice, but whenever we say that we use traditional medicine, they start to judge us.” (P2).

“I was scared [to tell the doctor], because sometimes when you go to the clinic and you tell them: “I am taking traditional medicine”, they will tell you: “Since you’ve got your own doctor, let me just attend to the other patients”. So, I just felt like they would reject me. So, I would pretend when I used to go to the clinic as if I’m taking nothing, just to please them. Because if I went home, and the traditional medicine failed on me, then where am I going to run to?” (P3).

“I didn’t tell them [the health care providers], because they discourage the use of herbal medicines unless they’re the ones who recommended it. At the clinic, they discourage the use of herbal medicines during pregnancy, because some of them might cause miscarriage or kill the baby in the stomach. That’s why I was scared of telling them.” (P4).

3.2.2. Adverse health outcomes

Half of the study participants reported experiencing adverse health effects associated with traditional medicine use during pregnancy. Most of these were gastrointestinal adverse reactions.

“When I was taking castor roots during the pregnancy, I developed diarrhoea for almost a week. My mom told me that my diarrhoea was because of the castor roots, but I never stopped them, because my mom told me that I was cleaning my body.” (P8).

However, generalised weakness and psychological side effects following traditional medicine administration were also reported.

“I was just feeling weak [from using herbal medicine], and it was too much, but I used to push myself to take herbal medicines. My parents used to tell me: “That’s how pregnant women feel, it would come to an end. So just continue with the herbal medicines”. My mom would say: “Even me, it happened to me, so just continue taking it”.” (P3).

3.2.3. Juggling concomitant traditional and conventional medicine use

The use of traditional medicine in combination with conventional medicine was deemed as tiring, stressful, and difficult to juggle by some study participants.

“I used to take conventional medicines, but sometimes I would throw them away, because I would feel that it’s too much for me. So, I would prefer to take more the traditional medicines, because my mom used to tell me: “If you don’t take these, you die”. And at the [antenatal] clinic, the information [about conventional medicine] wasn’t much. They would just tell us: “Go and take them when you reach home”. Then, we would throw them away.” (P3).

“I have a lot of medicines in my system. The medicines are just too much.

There's a lot that I am taking right now." (P6).

3.3. Positive attitudes towards traditional medicine use

Despite having some negative attitudes towards traditional medicine use, almost all interviewed women felt that the benefits of traditional medicine outweigh its potential harms.

3.3.1. Availability, accessibility, and cost-effectiveness

An important advantage that contributed to a preference for using traditional medicine over conventional medicine was its wide accessibility and cost-effectiveness. Almost half of the study participants pointed out that in most areas of Zambia, local herbs are very easy to find, as they can grow in most backyard gardens for instance.

"Herbs are everywhere. You just have to look for them. They grow around. I just have to go somewhere to look for it. Like yesterday I found castor roots there, growing on the roadside." (P1).

For some women, traditional medicine represents an inexpensive, affordable alternative to conventional medicine in the management of various ailments.

"When I don't have money to buy Haem up® [iron and folic acid supplement] because Haem up® is very expensive, I would prefer to buy beetroot to boost my blood." (P2).

3.3.2. Higher effectiveness compared to conventional medicine

Several women mentioned that they like taking traditional medicines because they are associated with a higher effectiveness, a faster onset of action, and an improved overall well-being compared to conventional medicines.

"I feel that beetroot works better for me [to treat anaemia compared to folic acid and ferrous], because when I drink it, I feel better fast. I stop feeling drowsy. And it's the same when I take mukuyu [sycamore fig]. But it takes a while for me to feel better when I take folic acid and ferrous." (P4).

"How I feel when I take mukuyu [sycamore fig] is different from how I feel when I take folic acid and ferrous, because when I take those, I feel bad at first, but then when I take mukuyu, I feel very good. I feel like there is a lot of blood in me, just after taking the mukuyu. I stop feeling dizzy, and everything." (P4).

3.3.3. Less side effects compared to conventional medicine

More than half of the interviewed women reported experiencing unpleasant side effects following administration of conventional medicines, which included drowsiness, vomiting, nausea, and sluggishness.

"I was failing to take folic acid and ferrous because I was always vomiting because of both of them." (P8).

"At the [antenatal] clinic, the staff told me that I should start using beetroot for my anaemia, since every time I used to take folic acid and ferrous, I used to throw up." (P4).

"I take folic acid and ferrous at night, because during the day, they always make me feel dizzy." (P6).

These previous unpleasant experiences related to conventional medicine use, along with the belief that herbal remedies are safer than conventional medicines because they are natural and do not involve chemicals, contributed to a more positive perception and an appreciation of traditional medicine among several study participants.

4. Discussion

To our knowledge, this is the first study from Zambia to explore in-depth the beliefs and motives for using traditional medicine among pregnant women. In our study, taking traditional remedies was commonly practiced to facilitate delivery by speeding up labour and widening the birth canal, and to prevent the occurrence of childbirth complications in case of adultery. This finding is line with other qualitative and quantitative studies from Zambia [9], Rwanda [17], Ghana [18], Uganda [19], and Zimbabwe [20,21]. Some of the traditional

remedies documented in our study, such as soil, castor oil, sweet potato leaves and *Dicoma anomala* Sond., were also found to be used in other sub-Saharan African countries to induce labour and facilitate childbirth [18–21].

There is conflicting and insufficient evidence regarding the efficacy and safety of traditional and herbal remedies for labour induction. In a recently published systematic review and meta-analysis [22] aimed at comparing pregnancy outcomes between users and non-users of herbal medicines (mainly castor oil) for labour induction, castor oil users were significantly more likely to give birth within 24 h than non-users, highlighting the oxytocic properties of this medicinal plant [22]. With respect to safety, no statistically significant difference in the rate of haemorrhage, caesarean section, assisted vaginal delivery, referral to neonatal intensive care unit, meconium-stained liquor, maternal death, stillborn and uterine rupture was found between users and non-users of herbal medicine. However, due to inadequate statistical power, residual confounding, and a lack of good quality data, the findings of this systematic review should be interpreted with considerable caution [22]. Moreover, a South African hospital-based study [23], which compared pregnancy outcomes between women reporting traditional medicine use (n = 126) and those not reporting such use (n = 103), seems to contradict the results of the Zamawe et al. (2018) systematic review. In the South African study [23], traditional medicine use was suggested to lead to foetal distress, as indicated by significantly higher rates of grade II/III meconium-stained liquor and of caesarean section in traditional medicine users compared to non-users, respectively [23]. Caution should therefore be practiced with traditional medicines used for labour induction, especially given that some of the traditional preparations reported in our study might be toxic if used in large doses. For instance, the seeds from the castor oil plant contain ricin, a potent toxalbumin that interferes with protein synthesis and is one of the most poisonous substances known [24]. The ingestion of castor oil seeds can affect multiple organs, resulting in various symptoms such as loss of consciousness, mydriasis, gastrointestinal haemorrhage, haematuria, fluid and electrolyte disturbances, abdominal pain, severe vomiting and diarrhoea [25]. Similarly, the consumption of soil, which was reported by almost all participants of the present study, was found to be significantly associated with an increased risk of anaemia and lower concentrations of haemoglobin, haematocrit, and plasma zinc [26]. Moreover, soil samples purchased from several markets across sub-Saharan Africa were found to be highly contaminated with aerobic bacteria, fungi, and heavy metals such as lead [27].

The present study revealed that there is a widespread belief in Zambian society that the mother and/or the baby might die in childbirth due to sexual infidelity by either spouse. This belief, which might push pregnant women to take traditional remedies to ensure protection from adultery, was reported in several previous studies conducted in different Zambian provinces and districts [9,28,29]. This superstition can be very dangerous, as it might discourage pregnant women from seeking medical care if complications arise because of a fear of being accused of adultery [29]. Indeed, past research from Nigeria and Tanzania has found a significantly increased risk of maternal mortality among couples who adhere to traditional beliefs [30,31]. Hence, there is a need for increased health education of both women and men across Zambia to demystify and change misconceptions surrounding maternal health care that potentially impact on maternal morbidity and mortality.

Recent studies have shown that anaemia continues to be a major cause of maternal death [32,33]. In a multilevel analysis of a dataset of 312,281 pregnancies in 29 countries [32], the odds of maternal death were twice as high in mothers with severe anaemia compared with those without severe anaemia [32]. Hence, the fear of maternal death due to anaemia that was expressed by several participants of the present study is justifiable. The use of traditional and herbal remedies to treat and prevent anaemia has been found to be common in many sub-Saharan African countries, such as Ivory Coast [34], Gabon [35], and Kenya [36]. In the present study, most medicinal plants used by the

participants to treat and prevent anaemia have demonstrated strong haematopoietic and anti-anaemic potentials [37–42]. This highlights the potential benefits of traditional medicine in the prevention and treatment of anaemia during pregnancy which remains a global public health and research priority [32]. However, further long-term and large-scale controlled studies are required to confirm these anti-anaemic properties.

Our study suggests that community and faith leaders play an important role in influencing the use of traditional medicine during pregnancy. This can be mainly attributed to traditional teachings which have been passed down from generation to generation. Hence, faith and community leaders can be used in health promotion strategies to positively influence the health behaviour of their congregants and communities. Nevertheless, these passed down practices, coupled with the abundance and availability of traditional remedies in most areas, and the belief that most traditional medicines are safer than conventional medicines will all likely contribute to their continued widespread use in Zambia.

Disclosure of traditional medicine use to health care providers was uncommon among the study participants. Non-disclosure of traditional medicine use was mainly attributed to a fear of the health professional's response. This was consistent with findings from prior studies conducted in Ghana [43], Uganda [44], and Kenya [45]. This finding implies that health care providers' communication with pregnant women regarding traditional medicine use may need to improve. Women's lack of knowledge of herb-drug interactions and of the potential harms of traditional remedies is of great concern. Hence, discussing traditional medicine use in an open and non-judgmental way will go a long way towards establishing trust with patients and integrating safe and reliable traditional therapies into patients' care.

The present study has some limitations that include the use of a small and purposive sample which limits the transferability of the results, language barriers and possible translational errors, and utilisation of a single geographic location (Lusaka Province). Since only 8 women were interviewed, they are unlikely to be representative of pregnant women residing in Lusaka Province and using traditional medicine. However, it is important to keep in mind that given the absence of qualitative data on Zambian women's use of traditional medicine during pregnancy, our research was intended to be a preliminary evaluation to provide insight into this understudied local health practice. Moreover, as with all qualitative studies, social desirability bias and recall bias cannot be eliminated. Despite these limitations, this study provides detailed and in-depth understanding of the experiences and reasons for traditional medicine use in pregnant women from Zambia. Future qualitative research can benefit from increasing the sample size and including study participants from different parts of Zambia.

5. Conclusion

There are several reasons behind the use of traditional medicine during pregnancy among Zambian women, which include preparation for labour and delivery, prevention of childbirth complications in case of sexual infidelity by either spouse, and prevention and/or treatment of anaemia. In addition, family members and community leaders play an important role in influencing the use of traditional medicine during pregnancy. Studies conducted across Zambia, evaluating maternal, foetal and neonatal outcomes in pregnant women using traditional medicine, would be highly valuable to determine the nature, severity, and frequency of adverse effects associated with this common health practice.

Funding

During the conduct of this study, M.E.H. was a Master student at the Centre for International Health, University of Bergen, Norway. She was the recipient of a scholarship from the Norwegian Partnership

Programme for Global Academic Cooperation (NORPART) in collaboration between the Centre for International Health and the University of Zambia (NORPART-2016/10380). The aforementioned institutes had no role in study design; in the collection, analysis and interpretation of data; in the writing of the manuscript; and in the decision to submit the article for publication.

Ethics approval and consent to participate

The study was approved by the Regional Committee for Medical and Health Research Ethics in Norway (REC West; 2019/378), the University of Zambia Biomedical Research Ethics Committee (UNZABREC; 009-04-19), and the National Health Research Authority of Zambia. Written informed consent was obtained from all study participants.

CRediT authorship contribution statement

Magalie El Hajj: Conceptualization, Funding acquisition, Investigation, Methodology, Formal analysis, Writing - original draft. **Doreen Chilolo Sitali:** Conceptualization, Validation, Project administration, Supervision, Writing - review & editing. **Bellington Vwalika:** Conceptualization, Validation, Project administration, Supervision, Writing - review & editing. **Lone Holst:** Conceptualization, Validation, Supervision, Project administration, Writing - review & editing.

Declaration of competing interest

The authors declare that they have no competing interests.

Acknowledgments

The authors would like to thank the women who participated in this study. A special thanks goes to Karen Mwendwe and Laurential Mwendwe for their wonderful research assistance, without which this study would not have been possible. Magalie El Hajj would like to dedicate this manuscript to her beloved city Beirut. Beirut, you will rise again!

Abbreviations

SDA Seventh-day Adventist Church

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ctcp.2020.101225>.

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