



## Original Paper

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### Prevalence of Traditional Herbal Medicine use and associated factors among pregnant women of Lusaka Province, Zambia

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#### ABSTRACT

**Background:** Traditional herbal medicine (THM) use during pregnancy places women at high risk of adverse maternal health outcomes.

**Aim:** This study determined the prevalence and factors associated with traditional herbal medicine use in pregnancy.

**Methods:** A cross-sectional study was conducted using a structured interviewer-administered questionnaire for data collection. Two hundred and seventy-three women aged 18–45 years of Chongwe and Chawama communities of Lusaka province were identified for the study. Statistical analysis was done using SPSS v.20 (*IBM SPSS Inc., Chicago, IL, USA*). Proportions and frequencies were used to describe results and Pearson's Chi-square test with continuity correction was used to determine association between categorical variables. Fisher's Exact test was used where more than 20% of the expected frequency was less than 5. Cramér's V test was used to determine strength of association.

**Results:** More than a quarter (32%) of the study participants had used traditional herbal medicine at some point during pregnancy. Among the users of traditional herbal medicine, almost all (99%) used it to accelerate labour. Knowledge, socio-cultural beliefs and practices, including myths and misconceptions about pregnancy and delivery were factors associated with THM use.

**Conclusion:** Women in Chongwe and Chawama communities in Lusaka province of Zambia prevalently used traditional herbal medicine in pregnancy. Concerted efforts, including health education interventions are needed to reduce this practice.

**Key words:** Cross-sectional survey, Traditional herbal medicines, pregnancy, prevalence, factors, Lusaka, Zambia

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#### 1. Introduction

The gradual increase on the use of Traditional Herbal Medicine (THM) among pregnant women for induction or acceleration of labour in developing countries, Zambia inclusive, has become a source of concern as they can become toxic and lethal if incorrectly used. Moreover, crude herbal remedies can be toxic to both the mother and

the unborn child. Unconventionally accelerating labour can also lead to maternal distress, postpartum haemorrhage, trauma, and foetal distress [1]. It is not uncommon that some pregnant women may present with a breach delivery while others may not be physiologically fit for a normal delivery and therefore unlicensed use of these traditional herbs for inducing or accelerating labour can often lead to serious complications such as uterine rupture which could

be fatal and contribute to maternal mortality. For this reason, use of THM as a substitute for conventional medicines may not only be risky but also ineffective. Due to delicate nature and dangers that pregnant mothers and their unborn children are prone to during pregnancy, it is important to ensure that only safe and efficacious medicinal preparations are administered [2].

Traditional herbal medicines are crude plant materials such as leaves, fruits, stems, tree barks, roots or other plant parts used to treat illness based on knowledge, skills, practices, beliefs and experiences that are indigenous to different cultures [3]. More than three quarters (80%) of the population in developing countries depend on traditional medicines for primary health care [4]. There is still great concern about the limited scientific evidence on the safety and efficacy of THM [5]. Despite these concerns, there is a growing body of evidence that THM use during pregnancy for induction or acceleration of labour is on the rise especially in developing countries of sub-Saharan Africa. A study conducted in western Uganda revealed that more than three quarters (80%) of childbirths were conducted at home using herbal remedies whose toxicity levels and unspecified dosages were unknown [6]. Another study done in South Africa, half (50%) of black South African women used THM to induce and hasten labour [7]. In Malawi, Nyirenda and colleagues identified a local herbal plant *Cyphostemma hildebrandtii* that was commonly used as a natural pitocin to accelerate labour among pregnant women [8]. It is estimated that more than half (70%) of women in Zambia depend on the use of THM for primary health care [4]. The use of THM among pregnant women is gradually increasing at the expense of limited scientific evidence of their safety and efficacy. For instance, Banda and colleagues earlier found that more than three quarters (30%) of women surveyed in Lusaka reported visiting a traditional healer and 21% reported having used THM during their current pregnancies [9]. However, their study did not elucidate their intended use, factors influencing their use and the type of plants used.

Bateman and colleagues further acknowledged that THM has been gaining popularity throughout the world due to dissatisfaction with conventional medicines and the wide held belief that herbal preparations are 'natural and intrinsically harmless'. Arguably, THM effects can be quite potent, potentially toxic and lethal if incorrectly used. Anecdotal reports suggest that THM use in pregnancy for purposes of inducing and accelerating labour was quite widely practised but remained largely unreported in most parts of Zambia. There is need to quantify the magnitude of the problem and elucidate factors influencing the practice among maternal populations. Though largely perceived as being safe by most users, THM constituents may have long-term toxicity that may be life-threatening to the unborn baby and the mother [6]. This study aimed to determine the prevalence and factors influencing the use of THM for purposes of inducing or accelerating labour among

pregnant women. Other specific objectives were to determine the points during pregnancy at which most pregnant women administered THM preparations; and to describe the types of preparations, local names and parts of plants used.

## 2. Methodology

### *Study design*

This was a cross-sectional study conducted in Lusaka province at the Main Health Center, Kanakantapa Rural Health Center, in Chongwe district and at Chawana First Referral Hospital, within Lusaka province. The study sites provided a representation of rural (low density) and urban (high density) communities of Lusaka province. Women aged above 18–45 years that have had children and were accessing healthcare services at the selected study sites during the study period were the study population from which a random representative sample was drawn.

### *Sample size determination*

To estimate sample size, the formula:  $n = Z^2P(1-P)/e^2$  was used where;  $Z = (1.96)^2$  for 95% confidence interval (i.e.  $\alpha = 0.05$ );  $P =$  prevalence estimate at 0.21 (based on 21% prevalence estimated by Banda *and colleagues* [9]);  $e =$  maximum tolerable error at 5% (i.e.  $\pm 0.05$ ) for the prevalence estimate; giving  $n = 255$ . From the targeted sample size, 273 women were attained. A semi-structured interviewer administered questionnaire containing closed and open-ended questions was used to collect data. Field data collection was conducted from March to April 2016.

### *Data analysis*

Statistical analysis was done using SPSS v.20 (*IBM SPSS Inc., Chicago, IL, USA*). Proportions and frequencies were used to describe results in tables. Pearson's Chi-square test with continuity correction was used to determine association between categorical variables. Fisher's Exact test was used where more than 20% of the expected frequency was less than 5. Cramér's V test was used to determine strength of association. Accordingly, Cramér's V-statistic at a level of 0.00 to 0.20 indicates a weak relationship, 0.21 to 0.30 indicates a moderate relationship, and  $>0.31$  a strong relationship. For statistical inference, a two-sided  $p$ -value  $<0.05$  was accepted. Open-ended responses were categorized and thematically analysed.

### *Ethical Considerations*

Ethical approval was obtained from the University of Zambia, School of Medicine Research Ethics Committee (*IRB00001131 of IORG0000774*). Permission was granted by the Ministry of Health, Lusaka Provincial Health Office and written informed consent was obtained from individual study participants.

### 3. Results

#### *Demographic Characteristics, Prevalence and Specific Uses of THM in Pregnancy*

Table 1 shows the 273 women that participated in the study. Of these, 160 were from Chongwe rural and 113 were from Chawama urban communities in Lusaka province. Participant demographic data were similar between the two communities in terms of age, marital status, education level, number of pregnancies and number of children. About 61% were aged between 25 – 34 years old and majority (94%)

were married. Nearly half the women (49%) have had 1 to 2 pregnancies, 43% have had 3 to 5 pregnancies and only less than 10% have had more than 6 pregnancies. Moreover, nearly half the women (48%) had 1 to 2 children, 43% had 3 to 5 children and less than 10% had more than 6 children. About 32% ( $n = 86$ ) had used THM in pregnancy. Demographic of THM use in pregnancy were similar between the two communities. Among women that used THM in pregnancy ( $n = 86$ ), majority (99%) used THM for accelerating labour.

Table 1: Demographic characteristics of participants

Variable	All Participants		Chongwe Rural		Chawama Urban		$\chi^2$	p-value
	N= 273	%	N=160	%	N=113	%		
<b>Age, years old</b>							0.368	0.832
▪ 15 – 24	75	27.5	46	28.8	29	25.7		
▪ 25 – 34	166	<b>60.8</b>	95	59.4	71	62.8		
▪ 35 – 44	32	11.7	19	11.9	13	11.5		
<b>Marital Status</b>							2.157	0.340
▪ Single	15	5.5	11	6.9	4	3.5		
▪ Married	257	<b>94.1</b>	148	92.5	109	96.5		
▪ Divorced	1	0.4	1	0.63	0	0		
<b>Education level</b>							5.166	0.160
▪ Primary	144	52.7	86	53.8	58	51.3		
▪ Secondary	105	38.5	57	35.6	48	42.5		
▪ Tertiary	6	2.2	6	3.8	0	0		
▪ None	18	6.6	11	6.9	7	6.2		
<b>Number of pregnancies</b>							1.426	0.699
▪ 1 to 2	133	<b>48.7</b>	75	46.9	58	51.3		
▪ 3 to 5	117	<b>42.9</b>	69	43.1	48	42.5		
▪ 6 to 8	20	<b>7.3</b>	14	8.8	6	5.3		
▪ >8	3	1.1	2	1.3	1	0.9		
<b>Number of Children</b>							1.325	0.723
▪ 1 to 2 children	132	<b>48.4</b>	75	46.9	57	50.4		
▪ 3 to 5 children	118	<b>43.2</b>	69	43.1	49	43.4		
▪ 6 to 8 children	20	<b>7.3</b>	14	8.8	6	5.3		
▪ >8 children	3	1.1	2	1.3	1	0.9		
<b>Women that used THM</b>							0.025	0.875
▪ Yes	<b>86</b>	<b>31.5</b>	51	31.9	35	31		
▪ No	187	68.5	109	68.1	78	69		
<b>Knowledge of THM used for inducing or accelerating labour</b>							0.723	0.395
▪ Yes	<b>85</b>	31.1	56	35	34	30.1		
▪ No	188	68.9	104	65	79	69.9		

Pearson's chi-square test revealed a statistically significant association between women's knowledge of THM used for inducing or accelerating labour and its use in pregnancy ( $p < 0.0001$ ). However, THM use in pregnancy was not associated with location, age or education level of women in this study (Table 2).

#### *Stages of pregnancy at which THM was used*

Majority of the women that used THM during pregnancy ( $n = 64$ ) stated they administered the herbal preparation at onset of labour whereas very few women ( $n = 17$ ) stated they used the herbal preparations throughout pregnancy (Figure 1). Others ( $n = 7$ ) used the preparations at other specific intervals (for instance at 8 to 9 months of gestation or 3 months before delivery).

#### *Source of information on THM used for inducing or accelerating labour*

Among participants that reported having used THM for inducing or accelerating labour during pregnancy, majority ( $n = 48$ ) reported obtaining information about the herbs from family members, others ( $n = 30$ ) reported having learnt about the herbs from friends whereas some ( $n = 11$ ) obtained information from elderly persons in the community.

#### *Indigenous local plants, parts used and methods or preparation*

With regards to indigenous local names of plants and parts used, most women that used THM for inducing or accelerating labour mentioned the following by local names of plants: 'moonoo' root ( $n = 17$ ) and stem ( $n = 6$ ), 'makole'

leaves ( $n = 7$ ) and roots ( $n = 6$ ); 'sope' leaves ( $n = 4$ ); 'mulolo' root ( $n = 3$ ) and 'mukona' stem ( $n = 2$ ), and 'shibili' root ( $n = 2$ ). Other local plants mentioned included: 'nkonde' root, 'bosha' root, 'chimufyopola' stem, 'chimunyasa' root, 'masau' root and 'muchechete' root, respectively. Liquid extracts and decoctions made by soaking or boiling plant parts in water for oral administration were the most common preparation methods used ( $n = 62$ ).

**Reasons & perceptions for use of THM during pregnancy**

Majority of women that had used THM during their pregnancy stated reasons for use as follows: to quicken labour and delivery process ( $n = 55$ ); to help deliver safely

( $n = 10$ ), to ease the process and pain of labour ( $n = 6$ ); whereas few women indicated they used THM for fear of myths associated with effects of prolonged labour ( $n = 3$ ). In terms of perceptions why women of child-bearing age use THM during pregnancy, majority ( $n = 88$ ) perceived that THM: helps accelerate labour; is linked to traditional practices and beliefs ( $n = 31$ ); facilitated safe delivery if a spouse/partner had infidelity during their pregnancy ( $n = 17$ ). About 14 women perceived THM induced labour whereas few ( $n = 4$ ) perceived it dilated the cervix to facilitate delivery. Moreover, some women attributed peers influence (friends, neighbours, relatives) to their use of THM during pregnancy.

Table 2: Association between THM use in pregnancy and demographic variables

Independent Variable		Dependent Variable: Use of THM in pregnancy		$\chi^2$	Cramér's V	p-value
		Used THM	Not used THM			
Knowledge of THM used for inducing/accelerating labour	Yes	85	5	246.5	0.950	<0.0001*
	No	1	182			
Location	Chongwe	51	109	0.025	0.010	0.896
	Chawama	35	78			
Age, years old	15 – 24	20	55	1.197	0.066	0.550
	25 – 34	56	110			
	35 – 44	10	22			
Education level	Primary	45	99	1.601	0.077	0.659
	Secondary	31	74			
	Tertiary	2	4			
	None	8	10			

\*Statistically significant

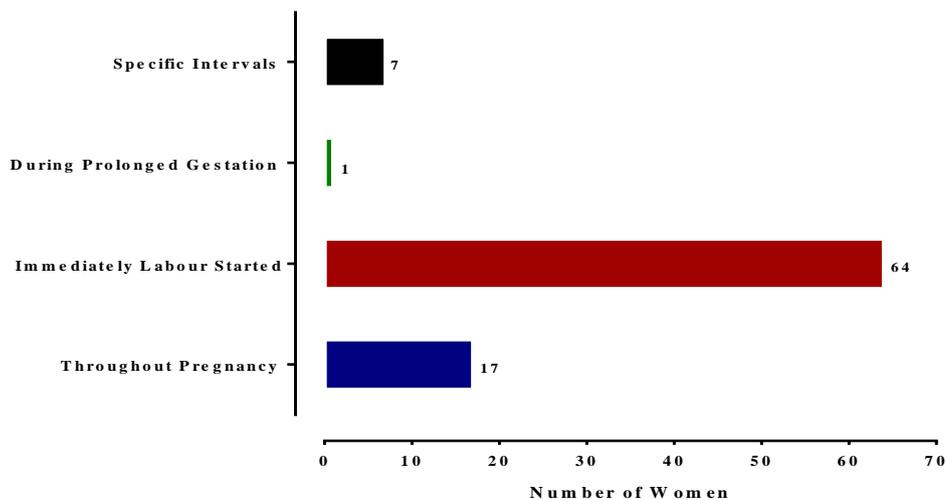


Figure 1: Points at which THM was used during pregnancy

#### 4. Discussion

This study embarked to determine the prevalence and factors influencing THM use for inducing and accelerating labour among women of childbearing age of Lusaka province, specifically in Chongwe and Chawama communities. Among the 273 women that participated in the study, 59% were from Chongwe and 41% were from Chawama in Lusaka district.

##### ***Prevalence of THM use in pregnancy among women in Chongwe and Chawama***

In this study, 32% of women in childbearing age reported using THM for purposes of inducing or accelerating labour during pregnancy. This was higher compared to findings by Banda *and colleagues* in Lusaka, Zambia but quite similar to findings by van der Kooi & Theobald in South Africa who reported 21% and 30% prevalence of THM use during pregnancy, respectively [9, 7]. Elsewhere, Mureyi *and colleagues* in Zimbabwe found a prevalence of 52% THM use in pregnancy which was quite higher than in this study [10] whereas Nyeko *and colleagues* found a prevalence of 20% THM use in pregnancy in Northern Uganda [11]. In this study, there was no difference in the prevalence of THM use by location (i.e. 32% in Chongwe vs. 31% in Chawama communities, respectively). Clearly the prevalence of THM use in pregnancy was similar in both a low-density rural and a high-density urban settings in Lusaka province which reflects a common practice by women from all social and economic backgrounds. Our study did not find a significant association between THM use in pregnancy with age, marital status, educational level, number of pregnancies, and place of delivery.

Interestingly, there was a statistically significant association between women's knowledge of THM and use for induction or accelerating labour during pregnancy (Table 2). It may be argued that uncontrolled and misinformed use of THM during pregnancy for accelerating labour may be contributing to maternal complications observed during obstetric care as most of the women administered THM at onset of labour. Evidently, the practice of using THM for accelerating labour was socio-culturally influenced within the social structures and peer networks as demonstrated by findings that the major source of information and knowledge of THM used in pregnancy was mostly from family members, friends, and elderly persons.

##### ***Factors associated with the use of THM among women of childbearing age***

In this study, sociocultural beliefs were the major factors that contributed to the use of THM during pregnancy. This depicts a social practice typical of the local Zambian culture where information about health and wellbeing is largely transmitted within the extended family and social structures.

Various cultural beliefs are disseminated within families and social support systems such that most women rely on these during pregnancy. This finding is collaborated by other similar studies that found that older family members like parents and older relatives were the most common persons who recommended the use of herbal medicines during pregnancy [12]. In a qualitative study conducted in South Africa, a considerable influence to use THM during pregnancy came from the older family members like grandmothers, parents and mother's in-law [7].

Myths and misconceptions were other factors that contributed to the use of THM during pregnancy. As demonstrated in this study, majority of the women who used THM during pregnancy believed in myths and misconceptions that taking some THM quickened the delivery process. Moreover, others believed in myths that if one's partner had been unfaithful while the woman was pregnant, the process of labour would be prolonged and the pregnancy might get complicated thus the need to use THM in order to avoid prolonged labour. These common misconceptions driven by socio-cultural belief systems existing in the communities may put a lot of women at great disadvantage in accepting or accessing conventional maternal health interventions that are scientifically evidence-based. As Maimbolwa *and colleagues* earlier argued, culturally-specific knowledge identified could be used to guide policy makers and health planners in the future development of safe motherhood initiatives in developing countries considering the increase on the use of THM in pregnancy [13]. In this study, majority of the women reported that they administered THM at or just after commencement of labour pains. This finding was quite similar to van der Kooi & Theobald [7] in South Africa where herbal medicine used right in the hospital labour wards was also observed, sometimes with disastrous outcomes such as ruptured uterus among other complications. Therefore any intervention to reduce the use of herbal medicine during pregnancy must involve addressing socio-cultural practices and belief systems that are constantly at conflict with conventional medical practices hence negatively impact maternal health.

Among non-users, fear of complications to the baby and religious beliefs were the most common reasons for not using THM during pregnancy. It was also assumed that most of these women were adequately counselled regarding safe medication use during pregnancy. This was a very important finding because it showed that targeting peer education can be one strategy to consider when planning interventions to reduce unsafe use of THM during pregnancy.

### ***Types of traditional herbal medicines used for accelerating labour***

In this study, various traditional local names of indigenous plants were mentioned to be used for inducing or accelerating labour. These included: 'moonoo' leaves and roots, 'makole' roots and leaves, 'mulolo' roots and 'sope' leaves. It would be important to have these plants botanically identified, collected and scientifically evaluated to substantiate the claimed uterotonic effects. If found effective and efficacious, pharmacological elucidation can possibly validate their development into viable formulated medicines. In terms of traditional methods used for preparing the herbs for use, majority of the participants stated they prepared liquid extracts (decoctions) for oral administration.

Evidently, most of the women that used THM during pregnancy were not aware of health risks associated with administering crude herbal extracts during different trimesters of pregnancy. These may cause different adverse effects to either the mother or foetus in utero. For instance, exposure of the foetus to potentially toxic phytochemicals present in crude herbal medicines administered during the first trimester may lead to congenital malformation, whereas taking herbal medicines during the second or third trimester may also lead to foetotoxicity or complications such as intrauterine growth retardation, foetal distress, foetal hypoxia and intrauterine death [7]. Therefore, with such prevalence of THM use among women of childbearing age in Lusaka, sensitization on risks associated with its use during pregnancy must be emphasized if gains are to be scored in reducing maternal mortality rate in Zambia which currently stands at 0.74 maternal deaths per 1000 woman years of exposure [14].

### ***Limitations of the study***

This study was only conducted in Chongwe and Chawama communities in Lusaka province. Thus, the findings may not be generalizable to the entire province or whole country. However, since the population dynamics may not differ significantly across Lusaka province, there was a level of confidence that the study findings can be further collaborated or consolidated by a larger nationwide study.

The quantitative and cross-sectional nature of the study could have limited detailed elucidation of contextually and ethnographically rich information. Moreover, some women felt apprehensive to self-report using THM during pregnancy particularly that the data collection was conducted within the vicinities of formal healthcare institutions. This was perhaps due to the fact that THM is often negatively perceived by the conventional health system in Zambia. It would be interesting to find out how the results would vary if qualitative data was collected ethnographically.

### ***Recommendations***

Based on the findings of this study, the authors recommend that, the Zambia Ministry of Health through its community-based health institutions should be conducting targeted health information, education (IEC) and communication to pregnant women on the dangers associated with the use of THM during pregnancy and labour. This IEC will strengthen maternal health promotion. In addition, a country-wide survey on THM use in pregnancy should be conducted to gather more evidence to guide interventions and national policy formulation after policy briefing and dialogue with stake holders. Additionally, the authors recommend that botanical and pharmacological studies be conducted to identify and investigate the efficacy and safety of commonly used indigenous THM herbs with potential natural pitocins in Zambia. The results could prime-move our pharmaceutical Companies in Zambia to manufacture drugs from these herbs.

## **5. Conclusion**

The prevalence of THM use in pregnancy for purposes of accelerating labour was high (32%) among the women surveyed in Chongwe and Chawama communities in Lusaka province. Majority of the women administered crude herbal preparations at onset of labour or throughout pregnancy. Socio-cultural beliefs and practices, including myths and misconceptions about pregnancy and delivery were leading factors influencing THM use in pregnancy. Uncontrolled and misinformed use of THM in pregnancy continues to pose a major risk to maternal health in Zambia. There is clearly a case to be made for educational interventions to sensitize women on the risks associated with use of THM during pregnancy.

### **Declaration of interest:**

The authors declare no conflict of interest associated with this work.

### **Authors' contributions:**

SM conceptualized the study, AH supervised the protocol development and data collection, JM validated the tools, ACK and DM conducted data analysis and generation of the manuscript. All participated in the internal review and finalization of the article.

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