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# Determinants of Home Deliveries by Pregnant Mothers in Lumbo Chabbobboma Zone of Gwembe District in Zambia

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## Abstract

**Background:** Home deliveries is still high globally at 42% WHO 2022, due to high home deliveries, maternal death is also high at 43% globally. In sub-Sahara region home deliveries still high. Giving birth at health facilities in most of sub-Saharan African countries Zambia inclusive is still a challenge whereby more than 51% of first-time mothers give birth at home and this gives a risk of high maternal and perinatal deaths. Therefore Reducing number of home deliveries is important to improve maternal and perinatal health issues. In this study, the aim was to investigate the determinants of home deliveries by pregnant mothers in the Luumbo zone of Gwembe district, Zambia. **Purpose:** Access to skilled care and facilities with capacity to provide emergency and newborn care is critical to reduce maternal death. In Zambia 42% of women still deliveries from home, suggesting a persistent challenge for women to seek, reach, and receive quality maternity care. This study aimed investigate the determinants of home deliveries by pregnant mothers in Luumbo zone of Gwembe district, Zambia. **Methods:** The study was conducted among postnatal mothers who came for postnatal care at 6 weeks in Luumbo Chabbobboma clinic in Gwembe district southern province of Zambia. This was a descriptive cross-sectional study where a Simple random sampling technique was used to select 105 women of childbearing age who attended postnatal and had a recent delivery. Data were collected using a researcher-administered structured questionnaire to identify determinants of home deliveries in Luumbo Chabbobboma zone. Data analysis was done using SPSS computer software version 27.0. Both descriptive and inferential (chi-square test) analyses were performed and statistical significance was taken at $\alpha \leq 0.05$. **Results:** The results show that 46 (43.8%) respondents were in the age bracket 20 - 29 years. Of the 105 respondents included in the study, 24 (22.9%) of them delivered from home. The results show that high maternal

age (p = 0.03), occupation (p = 0.024), distance to the facility (p = 0.014), means of transportation (p = 0.023), multiparity (p = 0.01), timing and number of ANC visits (p < 0.001), attitude of facility staff (p = 0.005), and gender of staff assisting in labour (p = 0.014) were the factors associated with home delivery and putting women at risk of delivery from home. **Conclusion:** From this population. The major reason why women still deliver at home was long distance to the nearest facility. To reduce maternal and perinatal mortality access to health facilities by pregnant women needs to be improved. There should also be active engagement of the traditional and religious institutions in the area.

## Keywords

Antenatal Care, Factors, Home Birth, Cultural Factors, Maternal Mortality Rate, Skilled Delivery, Home Delivery, Prevalence, Zambia

## 1. Introduction

Home delivery is one of the major contributors to high maternal mortality ratio in sub-Saharan Africa. Sub-Saharan Africa and South Asia together contribute over 85% of maternal deaths, of which, only half of deliveries are institutional ([1]. Institutional delivery at birth is an important indicator of improvements in maternal health, which remains one of the targets of sustainable development goals intended to reduce the maternal mortality ratio [2]. Despite putting many interventions by the government of Zambia and cooperating partners to reduce home deliveries, the district has been recording home deliveries [3]. However, data are scarce on the availability of information with regard to the determinant factors for this high prevalence of home delivery in Gwembe District in Luumbo zone. This study aims to explore the determinants of home deliveries among postnatal mothers in Luumbo zone of Gwembe district. It is hoped that the findings from this study would contribute to reduction of home deliveries and consequently help reduce maternal and neonatal mortalities.

### Background

Despite many interventions put in place, home deliveries still remain a challenge which has led to high maternal mortality. Maternal deaths remain high globally at 43% [2] in the low- and middle-income countries. Most of the maternal mortality in developing countries, including Zambia, occurs because of low levels of maternal healthcare-seeking behaviour. There are pieces of evidence to suggest that inadequate antenatal care (ANC) utilization and the extremely low number of deliveries assisted by a skilled attendant are related to maternal mortality [4]. The utilization of maternal healthcare services, such as antenatal and prenatal care, and family planning have been shown to significantly reduce maternal mortality [5]. Another study conducted in the Netherlands on factors influenc-

ing home deliveries revealed that above 30% of respondents delivered from home. [6]

Sub-Saharan region, accounts for 50% of deaths due to home deliveries which is around 533 deaths per 100,000 live births [7]. A cross-sectional study was carried out among women in a semi-urban settlement in Giwa.

In Zambia, a study on the use of maternal health services in Kalomo revealed more than half (53%) of the women, did not receive skilled birth attendance, the survey further showed that these numbers are even higher in rural areas where more than 70% of the women give birth at home, outside the health facility, [8]. Literature has shown that the maternal mortality rate is extremely high among women who are delivered by an unskilled attendant [9]. Zambia home deliveries accounted for 42% of all births in the five-year period preceding the health survey of 2018. At the provincial level, 68.4% of the deliveries in the southern Province occurred at home followed by Central Province and Luapula Province at 66.1% and 64.3% respectively [10].

All women are recommended to use facility-based delivery services provided by trained and skilled healthcare staff. The Zambian government policy encourages the expectant mother to deliver from health institutions rather than seeking services from TBAs. The place of delivery is linked to having a direct effect on the mother and baby's health and survival. [11]. This shows that home deliveries are still high globally, regionally and nationally.

**AIM** of the study aimed to examine the determinants of home deliveries among postnatal in Gwembe district.

All women should have access to skilled care during pregnancy and childbirth to ensure the prevention, detection and management of complications. Assistance by properly trained health personnel working within an enabling environment is needed to eliminate preventable maternal and newborn deaths. A key strategy to ensure skilled care during childbirth is to that all births take place in health facilities in which obstetric complications can be treated when they arise. The minimum target for this indicator should be set by national or local governments, and many countries have made having 100% of deliveries in institutions their main strategy for reducing maternal mortality [2].

Gwembe district recorded 44% coverage of institutional deliveries and 66% were home deliveries [12].

The district had many interventions put in place such as training of safe motherhood action groups (SMAGs), conducting community engagement meetings, and incentivising pregnant mothers, but still had a high number of home deliveries accounting for 48% [13]. Further, Gwembe District Health Office allows mothers who stay in far areas from the clinic to wait for deliveries in mothers' shelters dotted across health centres. Despite the above interventions women in Luumbo still deliver from home Therefore it remains unclear on the determinants of home deliveries, hence the need to study the determinants of home deliveries among postnatal mothers in Gwembe district Luumbo Chabbobboma zone.

## 2. Research Methodology

**Research Design:** A descriptive cross-section design using quantitative data collection and analysis methods was used in this study.

**Research Setting:** The study was conducted in Luumbo Zone of Gwembe District, Southern province of Zambia. Where distance, cost and lack of transport were the many determinants of home deliveries

**Study Population:** The study population comprised postnatal mothers who had given birth within 6 weeks in Luumbo Zone. This was also where the study sample was selected from. **Target Population:** Women who delivered from homes despite attending antenatal care at any of the health facilities in Gwembe.

### 2.1. Inclusion and Exclusion Criteria

**Inclusion criteria was on** Postnatal mothers who delivered from homecoming for attending postnatal services and women living within the Luumbo catchment area. And Women consenting to take part in the study

**Exclusion criteria were** Postnatal mothers who had babies but outside the post-natal period, Postnatal women who gave birth from the health facility and Women who were critically ill or had children who were ill at the time of the study

### 2.2. Sample Selection and Sampling Technique

Simple random selection technique was used to select the participants. This was done at postnatal clinic for one month and data were collected from 105 respondents.

### 2.3. Sample Size Calculation

The sample size consisted of women who had given birth before and still in reproductive age. According to [14]. Luumbo Zone had 132 pregnant women in 2021. Out of the 132 pregnant women, 85 were institution deliveries while 47 were home deliveries. The home deliveries represented 36% of the total deliveries. In 2022 Luumbo recorded 135 pregnancies. Out of the 135 pregnancies, 84 pregnancies were institutional deliveries while 51 pregnancies were home deliveries. Therefore, the estimated study population for Mothers in Luumbo was 135. In order to determine the sample size, the study employed Taro's formula at a 95% confidence level. In the formula $n$ = sample size, $N$ = the target population and $e$ = error. Luumbo pregnant mothers' sample size

$$n = \frac{N}{1 + Ne^2}$$

$$n = \frac{135}{1 + (135)(0.05)^2}$$

$$n = \frac{135}{1.3125}$$

$$n = 95$$

The determined sample size for the study was 95 postnatal mothers (Mother who have given birth within 6 months). Taking into account the non-response rate at 10%, the sample size for the study came to 108 mothers.

### 2.4. Data Collection Tool

Data were captured using a researcher-administered structured questionnaire. sign a consent form. Participation was voluntary. The researcher conducted a maximum of 4 interviews per day in order to be effective and not to keep respondents waiting for long at the clinic after their postnatal reviews. However, there was no reimbursement of participants as they were selected from the health facility during their routine visits to the institutions.

### 2.5. Validity and Reliability

Two components of validity were used internal and external validity. Internal validity was upheld by avoiding selection bias of respondents by using random sampling methods [15]. The researcher also ensured that the research instrument was checked for validity by subject matter experts. The content validity was ensured by taking suggestions from experts, advisers, and lectures who looked at its relevancy, clarity and consistence to the study.

Reliability was upheld by using the same instrument to collect data from the respondents and clarifications done so that they did not misunderstand the questions. To achieve this, the Reliability of the instrument was measured by conducting a pilot study. The results from the pilot study were used as baseline data to test reliability. It was also complemented by the pilot study where questions were reviewed after the pilot and changes made for reliability.

### 2.6. Pilot Study

The questionnaire was pre-tested to check if it was clear enough to potential participants using 10% of the sample size. Ten (10) interviews were done at Munyumbwe Health Centre to test the study instrument. Munyumbwe was used because it has similar characteristics as the study site. From the pilot study, further changes were made to the questionnaire to ensure it applied well to the study.

### 2.7. Ethical Consideration

The approval to conduct the study was obtained from UNZABREC and National Health Research Authority (NHRA). Informed consent was sought from each study participant prior to enrolment. In the event that the respondent refused to take part in the research, they were replaced and all respondents were treated as anonymous to avoid identification. In situations where the respondent desired to withdraw and it was outside the control of the interviewer, they were freely allowed to do so and all their information shredded immediately. Information which was obtained during the study was treated with utmost confidentiality as

it was bordering on personal information which most people would rather keep to themselves. Written permission from the study site was also obtained.

## 3. Data Analysis and Presentation of Findings

### 3.1. Introduction

The independent variables for this study were demographic factors, socio-cultural factors and health facility-related factors. The dependent variable was place of delivery. In this study, out of 108 obstetric patients who met the inclusion criteria, 105 women were successfully interviewed, indicating a 97.2% response rate. This section presents respondents' descriptive characteristics. The characteristics of the participants are summarized in the following section. It starts with the socio-demographic characteristics of the respondents. The other sections are presented in line with the study objectives.

### 3.2. Data Analysis

This study adopted a quantitative research approach data and as such data collected were coded and entered into SPSS software version 27.0 for analysis. These included frequencies and percentages. To compare the relations among variables, cross-tabulations were used, while the chi-square test was used to determine associations among categorical variables. The significance level was set at $P < 0.05$ with a confidence interval of 95%.

### 3.3. Presentation of Descriptive Statistics

#### 3.3.1. Socio-Demographic Characteristics and Knowledge of Labour and Delivery

This section presents the socio-demographic profile and knowledge of labour and delivery among respondents.

Table 1 shows that 46 (43.8%) respondents were in the age bracket 20 - 29 years followed by 28 (26.7%) respondents aged 15 - 19 years. Most, 87 (82.9%) respondents were married, and 48 (57.2%) of them got married at the age bracket 15 - 19 years. 51 (48.6%) respondents were traditional protestant Christians. Most, 49 (46.7%) respondents had no formal education. Most, 79 (75.2%) of the respondents were housewives, hence age and being a housewife was one of the factors contributing to home deliveries.

Table 2 shows that 55 (52.4%) respondents lived over 5 kilometres away from the nearest health facility. Most, 72 (68.6%) respondents walked on foot to the health facility. Seventy-four (70.5%) respondents walked on foot when accessing ANC and labour services, respectively, while 81 (77.1%) respondents walked when accessing postnatal services. Distance, cost and lack of transport were a challenge.

Table 3 shows that 72 (68.6%) respondents had a high level of knowledge on labour and delivery while 30 (28.5%) respondents had medium level knowledge, and three (2.9%) respondents had low level knowledge. Poor knowledge also contributes to home deliveries.

**Table 1.** Distribution of respondents according to socio-demographics.

| Variable | Frequency | Percent |
|---|---|---|
| Age (in years) | | |
| *15 - 19* | 28 | 26.7 |
| *20 - 29* | 46 | 43.8 |
| *30 - 39* | 20 | 19 |
| *40 - 45* | 11 | 10.5 |
| **Total** | **105** | **100** |
| Marital status | | |
| *Married* | 87 | 82.9 |
| *Single* | 14 | 13.3 |
| *Widowed* | 4 | 3.8 |
| **Total** | **105** | **100** |
| Age at marriage (years) | | |
| *12 - 14* | 29 | 34.5 |
| *15 - 19* | 48 | 57.2 |
| *20 - 24* | 7 | 8.3 |
| **Total** | **84** | **100** |
| Religion | | |
| *Catholic* | 21 | 20 |
| *Traditional protestant* | 51 | 48.6 |
| *Pentecostal* | 33 | 31.4 |
| **Total** | **105** | **100** |
| Education level | | |
| *No formal education* | 49 | 46.7 |
| *Primary* | 47 | 44.7 |
| *Secondary* | 9 | 8.6 |
| **Total** | **105** | **100** |
| Occupation | | |
| *Housewife* | 79 | 75.2 |
| *Employed* | 3 | 2.9 |
| *Business* | 15 | 14.3 |
| *Farmer* | 6 | 5.7 |
| *Unemployed* | 2 | 1.9 |
| **Total** | **105** | **100** |

**Table 2.** Distribution of respondents according to mode of transportation.

| Variable | Frequency | Percent |
|---|---|---|
| Distance to health facility | | |
| *Within 2 km* | 21 | 20 |

Continued

| | | |
|---|---|---|
| *2 - 5 km* | 29 | 27.6 |
| *>5 km* | 55 | 52.4 |
| **Total** | **105** | **100** |
| Means of transport | | |
| *Foot* | 72 | 68.6 |
| *Bicycle* | 26 | 24.7 |
| *Motorcycle* | 7 | 6.7 |
| **Total** | **105** | **100** |
| Access to ANC services | | |
| *Foot* | 74 | 70.5 |
| *Bicycle* | 18 | 17.1 |
| *Motorcycle* | 13 | 12.4 |
| **Total** | **105** | **100** |
| Access to labour services | | |
| *Foot* | 74 | 70.5 |
| *Bicycle* | 11 | 10.5 |
| *Motorcycle* | 20 | 19 |
| **Total** | **105** | **100** |
| Access to postnatal services | | |
| *Foot* | 81 | 77.1 |
| *Bicycle* | 7 | 6.7 |
| *Motorcycle* | 17 | 16.2 |
| **Total** | **105** | **100** |

Table 3. Respondents' knowledge of labour and delivery.

| Variable | Frequency | Percent |
|---|---|---|
| Knowledge level | | |
| *High knowledge level* | 72 | 68.6 |
| *Medium level* | 30 | 28.5 |
| *Low level* | 3 | 2.9 |
| **Total** | **105** | **100** |

### 3.3.2. Maternal Obstetric History

Table 4 shows that 52 (49.6%) respondents had 3 - 5 living children, followed by 39 (37.1%) respondents who had 1 - 2 children. Most, 64 (61.5%) respondents received ANC services from the health facility while 40 (38.5%) others received ANC from the community outreach. Thirty-four (32.4%) respondents started ANC in their third month, and most of them (53.3%) had 6 - 8 ANC visits in their index pregnancy. Most, 71 (68.9%) respondents described the onset

Table 4. Distribution of respondents according to obstetric characteristics.

| Variable | Frequency | Percent |
|---|---|---|
| Number of living children | | |
| *1 - 2* | 39 | 37.1 |
| *3 - 5* | 52 | 49.6 |
| *6 - 9* | 14 | 13.3 |
| **Total** | **105** | **100** |
| Place received ANC | | |
| *Health facility* | 64 | 61.5 |
| *Community* | 40 | 38.5 |
| **Total** | **104** | **100** |
| Month started ANC | | |
| *First month* | 19 | 18.1 |
| *Second month* | 18 | 17.1 |
| *Third month* | 34 | 32.4 |
| *Fourth month* | 32 | 30.5 |
| *Fifth month* | 2 | 1.9 |
| **Total** | **105** | **100** |
| Number of ANC visits | | |
| *6 - 8* | 56 | 53.3 |
| *4 - 5* | 34 | 32.4 |
| *0 - 3* | 15 | 14.3 |
| **Total** | **105** | **100** |
| Description of onset of labour | | |
| *Was slow* | 25 | 24.3 |
| *Was fast* | 71 | 68.9 |
| *I don't know* | 7 | 6.8 |
| **Total** | **103** | **100** |
| Season went into labour | | |
| *Rainy season* | 29 | 27.6 |
| *Cold season* | 43 | 41 |
| *Hot season* | 33 | 31.4 |
| **Total** | **105** | **100** |

of their labour as fast in nature, and 43 (41%) of them went into labour during the cold season. High parity women has high chances of delivering from home.

### 3.3.3. Cultural-Community Characteristics

Table 5 shows about (66.7%) respondents sought permission to access maternal and child health (MCH) services, and most of them (78.3%) sought permission from their husbands. Seventy-six (77.6%) respondents indicated that

Table 5. Distribution of respondents according to their cultural/community profile.

| Variable | Frequency | Percent |
|---|---|---|
| Seek permission before seeking MCH services | | |
| *Yes* | 70 | 66.7 |
| *No* | 35 | 33.3 |
| **Total** | **105** | **100** |
| Person you seek permission from | | |
| *Husband* | 54 | 78.3 |
| *In-laws* | 15 | 21.7 |
| **Total** | **69** | **100** |
| Place of delivery decision-maker | | |
| *Myself* | 76 | 77.6 |
| *In-laws* | 15 | 15.3 |
| *Husband* | 7 | 7.1 |
| **Total** | **98** | **100** |
| Any prevailing traditional delivery norms | | |
| *Yes* | 49 | 50.5 |
| *No* | 48 | 49.5 |
| **Total** | **97** | **100** |
| Community action against home delivery | | |
| *You pay 150 ZMW* | 26 | 43.3 |
| *You pay 200 ZMW* | 26 | 43.3 |
| *You pay 250 ZMW* | 8 | 13.4 |
| **Total** | **60** | **100** |
| Availability of TBAs in your community to conduct deliveries | | |
| *Always* | 32 | 30.5 |
| *Sometimes* | 34 | 32.4 |
| *Rarely* | 39 | 37.1 |
| **Total** | **105** | **100** |

they made the decision on where they would deliver from while 15 (15.3%) and seven (7.1%) others were decided for by their in-laws and husbands, respectively. Half, 49 (50.5%) of the respondents indicated that they had some traditional delivery norms governing their practice, 52 (86.6%) respondents indicated that their communities demanded 150 - 200 ZMW for every home delivery a woman had, and 39 (37.1%) respondents indicated that TBAs were rarely available to conduct deliveries. Permission by husbands has a significant role it plays in helping mothers access for maternal health services.

### 3.3.4. Health Facility-Related Characteristics

Table 6 shows that 54 (51.4%) respondents indicated that the attitude of

Table 6. Distribution of respondents according to health facility-related profile.

| Variable | Frequency | Percent |
|---|---|---|
| Attitude of clinic staff | | |
| *Good* | 54 | 51.4 |
| *Poor* | 51 | 48.6 |
| **Total** | **105** | **100** |
| Status of health services in your community | | |
| *Expensive* | 30 | 29.7 |
| *No midwives* | 6 | 5.9 |
| *Unfriendly staff* | 22 | 21.8 |
| *Not expensive* | 43 | 42.6 |
| **Total** | **101** | **100** |
| Staff available to assist in labour | | |
| *Male staff* | 70 | 68.6 |
| *Female staff* | 10 | 9.8 |
| *Not predictable* | 22 | 21.6 |
| **Total** | **102** | **100** |
| Facility easily reachable | | |
| *Yes* | 74 | 70.5 |
| *No* | 31 | 29.5 |
| **Total** | **105** | **100** |
| Accessibility of ambulance | | |
| *Very easy* | 21 | 21.9 |
| *Just easy* | 24 | 25 |
| *Difficult* | 50 | 52.1 |
| *Impossible* | 1 | 1 |
| **Total** | **96** | **100** |
| Availability of mother's shelter | | |
| *Yes* | 72 | 68.6 |
| *No* | 33 | 31.4 |
| **Total** | **105** | **100** |
| Provision of food at the shelter | | |
| *Yes* | 46 | 44.7 |
| *No* | 57 | 55.3 |
| **Total** | **103** | **100** |
| Availability of beddings at the shelter | | |
| *Yes* | 16 | 15.2 |
| *No* | 89 | 84.8 |
| **Total** | **105** | **100** |
| Mother's shelter is habitable | | |
| *Yes* | 67 | 63.8 |
| *No* | 38 | 36.2 |
| **Total** | **105** | **100** |

health workers was good, 43 (42.6%) respondents indicated that health services in their community were not expensive, and 70 (68.6%) respondents indicated that male health workers were mostly available to assist with labour. Concerning health facility accessibility, 74 (70.5%) respondents indicated that the facility was easily reachable, and 50 (52.1%) respondents indicated that it was difficult to access the ambulance services. Concerning the mother's shelter, 72 (68.6%) respondents indicated that the nearest health facility had a mother's shelter, 46 (44.7%) respondents indicated that the facility provided food to waiting mothers in the shelter, 16 (15.2%) respondents indicated that there are beddings provided at the mother's shelter, and 67 (63.8%) respondents indicated that the mother's shelter was habitable.

#### 3.3.5. Magnitude of Home Deliveries among Respondent

Table 7 shows 105 respondents included in the study, 54 (51.4%) of them delivered from home while 51 (48.6%) respondents had facility delivery.

### 3.4. Factors Associated with Home Delivery among Respondents

This section presents results of bivariate analysis of factors associated with home delivery among study respondents. The section presents results from cross-tabulations between the examined independent variables and neonatal sepsis, with corresponding p-values from Chi-square test.

#### 3.4.1. Respondents' Socio-Demographic Factors

The results in Table 8 showed that respondents aged 20 - 29 years (67.4%) were more likely to deliver from home compared to younger respondents (p = 0.009). Also, housewives (57%) were more likely to have a home delivery compared to respondents in employment (p = 0.045). However, the rest of the sociodemographic variables were not statistically significant with home delivery.

The results in Table 9 showed that respondents who didn't have a means of transportation (61.1%) were more likely to have home delivery compared to respondents who had a means of transportation (p = 0.004). Further, respondents who walked to access ANC services (60.8%) were more likely to have home delivery compared to respondents who rode on a motorcycle (p = 0.002). Also, respondents who walked to access postnatal services (60.5%) were more likely to have home delivery compared to respondents who rode on a motorcycle or bicycle (p = 0.003).

Table 7. Distribution of respondents according to place of delivery.

| Variable | Frequency | Percent |
|---|---|---|
| Place of delivery | | |
| *Health facility* | 51 | 48.6 |
| *Home* | 54 | 51.4 |
| **Total** | **105** | **100** |

**Table 8.** Distribution of sociodemographic factors in relation to place of delivery.

| Variable | Place of delivery, n (%) | | p-Value |
|---|---|---|---|
| | Facility | Home | |
| Age (in years) | | | **0.009** |
| *15 - 19* | 19 (67.9) | 9 (32.1) | |
| *20 - 29* | 15 (32.6) | 31 (67.4) | |
| *30 - 39* | 9 (45) | 11 (55) | |
| *40 - 45* | 8 (72.7) | 3 (27.3) | |
| Marital status | | | 0.076 |
| *Married* | 42 (48.3) | 45 (51.7) | |
| *Single* | 9 (64.3) | 5 (35.7) | |
| *Widowed* | 0 | 4 (100) | |
| Age at marriage (years) | | | 0.222 |
| *12 - 14* | 11 (37.9) | 18 (62.1) | |
| *15 - 19* | 25 (52.1) | 23 (47.9) | |
| *20 - 24* | 5 (71.4) | 2 (28.6) | |
| Religion | | | 0.124 |
| *Catholic* | 8 (38.1) | 13 (61.9) | |
| *Traditional protestant* | 30 (58.8) | 21 (41.2) | |
| *Pentecostal* | 13 (39.4) | 20 (60.6) | |
| Education level | | | 0.121 |
| *No formal education* | 19 (38.8) | 30 (61.2) | |
| *Primary* | 28 (59.6) | 19 (40.4) | |
| *Secondary* | 4 (44.4) | 5 (55.6) | |
| Occupation | | | **0.045** |
| *Housewife* | 34 (43) | 45 (57) | |
| *Employed* | 3 (100) | 0 | |
| *Business* | 11 (73.3) | 4 (26.7) | |
| *Farmer* | 3 (50) | 3 (50) | |
| *Unemployed* | 0 | 2 (100) | |

**Table 9.** Distribution of transportation factors in relation to place of delivery.

| Variable | Place of delivery, n (%) | | p-Value |
|---|---|---|---|
| | Facility | Home | |
| Distance to health facility | | | 0.656 |
| *Within 2 km* | 11 (52.4) | 10 (47.6) | |
| *2 - 5 km* | 12 (41.4) | 17 (58.6) | |
| *>5 km* | 28 (50.9) | 27 (49.1) | |

**Continued**

| | | | |
|---|---|---|---|
| Means of transport | | | **0.004** |
| *Foot* | 28 (38.9) | 44 (61.1) | |
| *Bicycle* | 20 (76.9) | 6 (23.1) | |
| *Motorcycle* | 3 (42.8) | 4 (57.1) | |
| Access to ANC services | | | **0.002** |
| *Foot* | 29 (39.2) | 45 (60.8) | |
| *Bicycle* | 10 (55.6) | 8 (44.4) | |
| *Motorcycle* | 12 (92.3) | 1 (7.7) | |
| Access to labour services | | | 0.076 |
| *Foot* | 31 (41.9) | 43 (58.1) | |
| *Bicycle* | 6 (54.5) | 5 (45.5) | |
| *Motorcycle* | 14 (70) | 6 (30) | |
| Access to postnatal services | | | **0.003** |
| *Foot* | 32 (39.5) | 49 (60.5) | |
| *Bicycle* | 5 (71.4) | 2 (28.6) | |
| *Motorcycle* | 14 (82.4) | 3 (17.6) | |

#### 3.4.2. Knowledge of Labour and Delivery

The results in Table 10 showed no significant association between respondents' knowledge level and home delivery.

#### 3.4.3. Maternal Obstetric Factors

Table 11 shows that respondents who had more than three children (65.4%) were more likely to have home delivery compared to respondents who had less than two children ($p = 0.016$). Also, respondents who started ANC in their second month (72.2%) were more likely to have home delivery compared to respondents who started ANC in their third month ($p = 0.044$). Further, respondents who had ANC visits of less than three (80%) were more likely to have home delivery compared to respondents who had more than six visits (39.3%) ($p = 0.02$). Also, respondents who went into labour during the cold season (67.4%) were more likely to have home delivery compared to respondents who went into labour in the hot season (36.4%) ($p = 0.019$).

#### 3.4.4. Cultural and Community Factors

The results in Table 12 showed no significant association between respondents' cultural and community factors and home delivery.

#### 3.4.5. Health Facility-Related Factors

Table 13 shows that respondents who felt the attitude of health workers to be good (66.7%) were more likely to have home delivery compared to respondents who thought the attitude of health workers was poor ($p = 0.001$). Also, Further, respondents who indicated that the gender mostly present to assist in labour was

**Table 10.** Knowledge on labour and delivery in relation to place of delivery.

| Variable | Place of delivery, n (%) | | p-Value |
|---|---|---|---|
| | Facility | Home | |
| Knowledge level | | | 0.139 |
| *High knowledge level* | 32 (44.4) | 40 (55.6) | |
| *Medium level* | 16 (53.3) | 14 (46.7) | |
| *Low level* | 3 (100) | 0 | |

**Table 11.** Distribution of obstetric factors in relation to place of delivery.

| Variable | Place of delivery, n (%) | | p-Value |
|---|---|---|---|
| | Facility | Home | |
| Number of living children | | | **0.016** |
| *1 - 2* | 25 (64.1) | 14 (35.9) | |
| *3 - 5* | 18 (34.6) | 34 (65.4) | |
| *6 - 9* | 8 (57.1) | 6 (42.9) | |
| Place received ANC | | | 0.063 |
| *Health facility* | 36 (56.3) | 28 (43.8) | |
| *Community* | 15 (37.5) | 25 (62.5) | |
| Month started ANC | | | **0.044** |
| *First month* | 12 (63.2) | 7 (36.8) | |
| *Second month* | 5 (27.8) | 13 (72.2) | |
| *Third month* | 21 (61.8) | 13 (38.2) | |
| *Fourth month* | 13 (40.6) | 19 (59.4) | |
| *Fifth month* | 0 | 2 (100) | |
| Number of ANC visits | | | **0.02** |
| *6 - 8* | 34 (60.7) | 22 (39.3) | |
| *4 - 5* | 14 (41.2) | 20 (58.8) | |
| *0 - 3* | 3 (20) | 12 (80) | |
| Description of onset of labour | | | 0.279 |
| *Was slow* | 15 (60) | 10 (40) | |
| *Was fast* | 33 (46.5) | 38 (53.5) | |
| *I don't know* | 2 (28.6) | 5 (71.4) | |
| Season went into labour | | | **0.019** |
| *Rainy season* | 16 (55.2) | 13 (44.8) | |
| *Cold season* | 14 (32.6) | 29 (67.4) | |
| *Hot season* | 21 (63.6) | 12 (36.4) | |

Table 12. Distribution of cultural/community factors in relation to place of delivery.

| Variable | Place of delivery, n (%) | | p-Value |
|---|---|---|---|
| | Facility | Home | |
| Seek permission before seeking MCH services | | | 0.407 |
| *Yes* | 32 (45.7) | 38 (54.3) | |
| *No* | 19 (54.3) | 16 (45.7) | |
| Person you seek permission from | | | 0.308 |
| *Husband* | 26 (48.1) | 28 (51.9) | |
| *In-laws* | 5 (33.3) | 10 (66.7) | |
| Place of delivery decision-maker | | | 0.877 |
| *Myself* | 39 (51.3) | 37 (48.7) | |
| *In-laws* | 7 (46.7) | 8 (53.3) | |
| *Husband* | 3 (42.9) | 4 (57.1) | |
| Any prevailing traditional delivery norms | | | 0.361 |
| *Yes* | 27 (55.1) | 22 (44.9) | |
| *No* | 22 (45.8) | 26 (54.2) | |
| Community action against home delivery | | | 0.857 |
| *You pay 150 ZMW* | 14 (53.8) | 12 (46.2) | |
| *You pay 200 ZMW* | 12 (46.2) | 14 (53.8) | |
| *You pay 250 ZMW* | 4 (50) | 4 (50) | |
| Availability of TBAs in your community to conduct deliveries | | | 0.824 |
| *Always* | 17 (53.1) | 15 (46.9) | |
| *Sometimes* | 16 (47.1) | 18 (52.9) | |
| *Rarely* | 18 (46.2) | 21 (53.8) | |

Table 13. Distribution of health facility-related factors in relation to place of delivery.

| Variable | Place of delivery, n (%) | | p-Value |
|---|---|---|---|
| | Facility | Home | |
| Attitude of clinic staff | | | **0.001** |
| *Good* | 18 (33.3) | 36 (66.7) | |
| *Poor* | 33 (64.7) | 18 (35.3) | |
| Staff available to assist in labour | | | **0.002** |
| *Male staff* | 32 (45.7) | 38 (54.3) | |
| *Female staff* | 10 (100) | 0 | |
| *Not predictable* | 8 (36.4) | 14 (63.6) | |
| Facility easily reachable | | | 0.687 |
| *Yes* | 35 (47.3) | 39 (52.7) | |
| *No* | 16 (51.6) | 15 (48.4) | |

Continued

| | | | |
|---|---|---|---|
| Accessibility of ambulance | | | 0.176 |
| *Very easy* | 11 (52.4) | 10 (47.6) | |
| *Just easy* | 7 (29.2) | 17 (70.8) | |
| *Difficult* | 26 (52) | 24 (48) | |
| *Impossible* | 1 (100) | 0 | |
| Availability of mother's shelter | | | 0.211 |
| *Yes* | 32 (44.4) | 40 (55.6) | |
| *No* | 19 (57.6) | 14 (42.4) | |
| Provision of food at the shelter | | | 0.598 |
| *Yes* | 21 (45.7) | 25 (54.3) | |
| *No* | 29 (50.9) | 28 (49.1) | |
| Availability of beddings at the shelter | | | 0.079 |
| *Yes* | 11 (68.8) | 5 (31.2) | |
| *No* | 40 (44.9) | 49 (55.1) | |
| Mother's shelter is habitable | | | 0.065 |
| *Yes* | 28 (41.8) | 39 (58.2) | |
| *No* | 23 (60.5) | 15 (39.5) | |

not predictable (63.6%) were more likely to have home delivery compared to their counterparts who indicated that females were mostly available to assist in labour ward (p = 0.002).

## 4. Discussion of Findings and Implications of the Study

### 4.1. Introduction

This chapter is a presentation of the discussed results and their relationship with relevant literature and existing maternal health theories. The chapter is organized into the background of study participants, the magnitude of home delivery among respondents, and factors associated with home delivery.

### 4.2. Discussion of Findings

#### 4.2.1. Background of Study Participants

The study findings revealed that postnatal women were within the age category 20 - 29 years. Suggestively, the pregnant women were in the period of their lives where the performance of the tripartite roles of production, reproduction and familial care is highest. As a consequence, majority (82.9%) of them were married and most (49.6%) of the respondents had 3 - 5 children. Also, a third of postnatal women lacked any formal education and collectively 53.3% had less than tertiary education. Thus, the women were mostly mildly educated or not at all with 75.2% being housewives (See Table 1 and Table 4).

#### 4.2.2. Magnitude of Home Delivery among Respondents

In sub-Saharan Africa, home delivery practices are one of the risk factors for

maternal morbidity and mortality. This study investigated the prevalence and factors associated with home delivery among women of reproductive age in Luumbo Chabbobboma zone of Gwembe District, Zambia. The magnitude of home delivery among the 105 postnatal mothers included in the study was 51.4%. Studies carried out in the Southern African Development community and East African community, such as in Mozambique (98%) [16], Malawi (96%) [17], Rwanda (92%) [18], Burundi (92%) [19], Comoros (75%) [20], Zimbabwe (69%) [21], Uganda (66%) [22], and in Zambia (85%) [23] have reported a decreased probability of women choosing home delivery. In Rwanda, the prevalence of home delivery was estimated to be about 7% and has been tagged to have the lowest proportion of home deliveries in the East Africa region [18] [24]. This success story of lower prevalence in Rwanda, to an extent, might be associated with government investment in healthcare, access to maternal healthcare services, and recruiting CHWs to reach out to women, especially in grassroots communities [25] [26]. The weighted prevalence of home delivery was 23.8% among women in East African countries; while it was highest among Ethiopian women (72.5%) [1], Kenyan women (53%) and Tanzanian women (33.5%) [27], it was lowest among Mozambican women (2.8%) [16]. The finding from the above-weighted prevalence was in line with the national survey conducted on home delivery in India [28] but lower than in studies conducted in Nigeria [29]. However, a greater prevalence of home deliveries was reported in the West African region—Ghana (7.9%) [30], Nigeria (59%) [29], and Cameroon (33.8%) [31]. Also, another study conducted in Kenya indicated a likelihood of 2.24 times higher than for women with home deliveries in Ethiopia [32]. This finding can be interpreted that countries with a lower prevalence of home delivery were found to have greater utilization of health facilities during and after delivery [29] [33].

#### 4.2.3. Factors Associated with Home Delivery among Respondents

Women aged 20 - 29 years recording higher incidence of home delivery. This is similar to a Tanzanian study by [34] who reported that the prevalence of home delivery among 409 women aged 15 - 24 years living in thirteen districts of Tanzania were 24.1% with an overall one third of participants giving birth at home. This is similar to the results of a study conducted in Kenya which shows that older women had higher chances of delivery at home compared to newly young mothers [35]. However, another study done in rural Tanzania had shown younger women were more likely to give birth at home compared to adult women [34]. The age of women and place of residence have a role to play in home delivery. This association shows that women with higher-order births are much more likely to be delivered at home. Removal of financial barriers, increasing the number of health facilities and skilled human resources within the healthcare system are among the strategies that can promote a higher usage of maternal health services.

The study findings also showed that women's occupational status was strongly

associated with home delivery. It was observed that housewives were more likely to have a home delivery compared to respondents in employment. Most often, women who are purely housewives have limited or no access to resources and at the same time lack ability to make decision in their marital homes; they are therefore entirely compelled to rely on their mothers' in-law perception of their pregnancy including delivery care needs. Women who are wealthier are more likely to make an appropriate choice of place of delivery than their poor counterparts [27] [29]. This finding proves the continual inability of poor women to have access to optimum maternal healthcare as they cannot afford it, and this invariably determines the number of times that they might be able to attend ANC for any pregnancy. However, several studies have proven that in recent times wealthier women are now opting for home birth owing to factors related to birthing environment preferences, intrinsic motivations, and/or avoidance of conventional medicine as well as comfortability and safety in a familiar environment, with trusted professionals and close "significant others" (family, friends, etc.) [36] [37]. On the other hand, the financial status of the poor could be the cause of the disparity in the choice of place of delivery, as poor women might have financial challenges in meeting the demands of health facilities. In addition, few studies have associated women with poor wealth index as a predictor for home delivery, and several studies have consistently shown that high cost is an important constraint to service utilization, particularly for poor women [38] [39]. Employed women were more likely to influence their preference for place of delivery than unemployed women. Other studies have additionally implicated employed women as having higher odds of influencing their choice of place of delivery [25] [26].

The study findings showed that there was no significant association between location of the health facility and home deliveries. However, findings showed that respondents living over two kilometres away from the health facility are more likely to deliver from home. This also showed that most respondents had no means of transportation to access MCH services, which showed a significant interaction with home deliveries. These findings are comparable to those reported in choice of place of delivery study by [40], the study did not report any statistically significant association between distance travel and choice of place of delivery in this study. Also, a study by [11] indicated that distance to a health facility was not an influential factor to the home delivery among mothers living in rural communities of Eritrea. However, the findings of the current study were not consistent with findings by [41] where the study noted that distance to a health facility was a significant factor in the choice of place of delivery among pregnant women. The finding of this study was also not in agreement to other studies that also indicated distance as a significant factor in the choice of place of delivery, which noted long distance to be a significant factor in impeding visits to health care facilities [42] [43]. [10] in Luangwa District, observed that 54% of the respondents reported that taking 1 - 2 hours to reach the health facility was mostly associated with home deliveries. According to these findings, the distance

or time taken to reach the health facility contributes to one delivering from home or on the way due to transport difficulties. The variation in results may be due to poor road network and closeness of health facility to most of the participants in the study area. Rural areas have the most inefficient maternal referral systems because of the limited access to emergency obstetric care as a result of scarce resources and long distances to health facilities and road networks [41].

The study found that grand multiparty was significantly associated with home deliveries among study respondents. This is consistent with the report of [10] who also found that majority of women implicated in home deliveries were mostly multiparous women followed by grand multiparous women and the least were primiparous women. This can be attributed to the fact that multiparous and grand multiparous women have had many experiences in terms of delivery and must have had one or more successful deliveries at home therefore making them feel more competent enough to deliver from home and shun delivering at the health facility but for a prime this is the first time that she is having a delivery and is very much uncertain of a lot of things involving delivery therefore most of them choose to deliver from the health facility.

Also, the current study findings revealed that the timing and the number of ANC visits were significantly associated with home deliveries. It was observed that respondents who initiated their ANC contacts in their second month and those who had visited the ANC clinic for less than three times were more likely to have home delivery. The reason for this finding is not clear because the respondents seemed to have had no problems with the staff or health providers they found when they went for antenatal, because according to this study, over half of the respondents indicated that the attitude was good. These findings are like a study by [44] among pregnant women in Ghana who identified a statistically significant association of ANC attendance to the choice of place of delivery among pregnant. [45] found that for many women, only labour complications would get them to go to a health facility to deliver, and therefore concluded that information they received during antenatal visits was not enough on the importance of institutional delivery or regarding birth preparedness. Furthermore, a study conducted in northern Ethiopia showed a strong association between place of delivery and number of ANC visits, plan for a place of delivery, and knowledge of pregnancy and danger signs [46]. High level of education may result in participants knowing the health importance of ANC attendance to both the unborn child and the mother. Medical examination during pregnancy can help women with information about the merits of delivery in the presence of a skilled birth attendant, to be guided recognizing symptoms of complications early enough and act accordingly to ward off any potential danger in a prompt manner [47].

Most studies around the globe have reported an inverse relationship between non-facility delivery and antenatal care factors such as early initiation, number of visits, seeing a physician during ANC, perceived quality of care and being advised to deliver in a facility during ANC [48] [49]. This study agrees with some

of these findings but disagrees with others in establishing no association. The place of ANC and service provider was significantly associated with home delivery. [50] [51] reported that women who received care in the hands of Doctors, Nurses and Midwives, which in this case are available in the General Hospital and PHCs were least likely to deliver in a non-facility. Whereas, those who had care in the health posts which are manned by only Community Health Assistance Workers were the most likely to deliver in a non-facility. This could reflect the quality of services offered in these two different places and providers [50]. Atinge *et al.* reported that on the other hand, the finding of no association between number of visits and timing of first visit with non-facility delivery contrasts with those who found that women who book in the first trimester of pregnancy and attend more than 4 ANC visits were least likely to deliver in a non-facility. The possible explanation is that either these women have some pregnancy-related complications forcing them to seek attention or they are very familiar with the health facility and clinic procedures and just want to go to the hospital toward the end of their pregnancy.

The study found that a good perception of health workers' attitudes was associated with home delivery; [52] study participants underscored this as problems in health facility-based deliveries [53]. However, [45] reiterated that poor reception and improper handling of expectant mothers are issues of concern in maternal care delivery, and those who had experienced such behavior previously would not advise others to go to health institutions when they are in labor. [45] detected a relationship between place of delivery and previous pregnancy experience to the extent that women with second-time pregnancies were more likely to deliver at home than those pregnant for the first time. Perceived quality of care is the benefits mother and the newborn derive from delivering in a health facility with trained personnel.

Further, [50] the study findings revealed that postnatal mothers who indicated that the gender mostly present to assist in labour was not predictable and mostly male staff, were more likely to deliver from home. According to the views of the respondents, the study has shown that respondents were more comfortable and open to being assisted by a Nurse or Midwife of the same sex as most of them would feel shy being assisted by a Nurse or Midwife of the opposite sex while for others it was just unacceptable according to their beliefs. This is supported by the findings of [10] who also reported that women preferred female Nurses/Midwives arguing that females are very kind and understanding because they all go through the same labour process as opposed to the males. According to these findings, one would not so much as predict the gender of staff that they are going to find at the health facility. Therefore, for one to say that they delivered from home because of a certain gender of staff who was on duty on that day would just probably be a cover-up and not necessarily the main reason why they chose to deliver from home.

With the high prevalence of home delivery and access to health facilities and

the waiver of delivery fees, it is expected that women would not deliberate on the choice of having a home delivery, yet they did. What is, therefore, unclear is why women still deliver at home in the midst of the provision and easy access to the usage of a health facility for free in Zambia. It is, therefore, important to understand the factors associated with the choice of place of delivery among women in Zambia, and provide interventions aimed at reducing the risk for opting for home delivery.

## 4.3. Implications of Findings

### 4.3.1. Implications to the Health Care System

Home deliveries are dangerous such that they may lead to complications such as neonatal sepsis and other infections like neonatal tetanus due to luck of sterilized instruments during delivery. Moreover, it may also lead to high maternal and infant mortality rate due to complications that may arise during delivery as well as due to lack of skill and being incompetent with the delivery procedure. Home deliveries may also increase the risk of mother-to-child transmission during delivery due to lack of a skill.

### 4.3.2. Implications for Nursing Practice

During the research, it was discovered that home deliveries were not being indicated in the delivery registers and this negatively affects the nursing practice in such a way that it leads to low delivery coverage data. As a result, if there were any complications during the delivery, the baby might end up having neonatal sepsis thereby increasing the morbidity and mortality rates. The study will be beneficial to nursing practice because may help nursing professional to improve and intensify health education to encourage pregnant women to attend ANC services.

## 4.4. Conclusion and Improvement Suggested on According to the Study

The current study identified high maternal age, occupation, means of transportation, multiparty, timing and number of ANC visits, attitude of facility staff, and gender of staff assisting in labour as factors associated with home delivery. It is important to consider these factors in programming of interventions to reduce maternal deaths and barriers to accessing quality maternal health care at the health system and societal level It was observed in this study that women who attended ANC for less than three visits were more likely to have home delivery. Hence, education by the Ministry of Health heads and Community should be intensified to encourage pregnant women to attend ANC services.

The community to take an active role in encouraging women to deliver from health institutions and reporting those who deliver from home to the nearest headman, in Luumbo zone and other remote areas in Zambia. It was observed that women who stayed more than 2 km away from the facility deliver from home so there is a need to lobby for construction of another health post in

communities which are more than 5 km away by Gwembe council and ministry of health. Education is important for women to understand the information given, and there is a need to encourage women to go back to school regardless of age to improve on understanding of things by policymakers. On cultural beliefs more men need to be educated to allow and encourage wives to be independent and make their own decisions on their health, hence more male involvement and support is needed to Luumbo zone and other rural areas in the country. Community needs to be engaged and sensitised on gender and be explained how the same training is done by the female and for those males to reduce stigma to be attended by males. A good attitude needs to be encouraged by all health professionals as it encourages women to deliver from the health facility. More contacts help women to understand the danger signs and complications of home deliveries, this also helps health workers to have enough time to counsel the women and offer individualised care. Women need to be encouraged to be hard working to find resources for emergencies together with their partners and families as well as birth preparedness Train more SMAGS to reduce the tendency of women seeking help from TBAs. Promote community transport systems to reduce long hours to reach to health facility as most women took long hours to reach to the health facility and most of them were footing. Further studies can be conducted to compare if there is any disparity between choice of place delivery between the rural and urban populations within the district, with respect to the choice of place of delivery among expectant mothers.

### 4.5. Dissemination of Findings

Dissemination is essential for uptake, and uptake and use of research findings is crucial for the success and sustainability of the bodies of knowledge. Findings will be disseminated at the School of Nursing Sciences graduate fora, further, the results of this research will be deposited at the University of Zambia main Library and at the Medical Library. The findings of this study will serve as a good source for policy implementation. Hence, a summary of the findings will be disseminated to the Obstetric Department of Gwembe District Health Office and Luumbo Chabbobboma Zonal Health Centre. This will inform proper planning towards maternal policies both at the urban and rural areas. Therefore, the overall team members of the health personnel involved in the care for pregnant women will be more receptive towards the needs of the client when the need be. The findings will also be published in a peer-reviewed journal.

### 4.6. Limitations of the Study

This study was affected by situations which were outside the control of the researcher despite the careful selection and application of all aspects of this study. These conditions put a limit on the extent of what this work can cover. However, this did not affect the quality of data collected and the results in this study.

The study was only limited to women who had recently delivered or previously delivered from home. TBAs were not interviewed who might helped the researcher with much more needed information. The majority of women were unable to read and this consumed a lot of time for the researcher to explain the questionnaire. However, the data needed was corrected and used for analysis.

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## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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# Annexes

## Annex 1. Participant Information Sheet

**Introduction**

My name is Miyoba H. Habanji. I am a Midwifery Masters Student in the School of Nursing at the University of Zambia. As partial fulfilment of the program, I am required to undertake a research in any area of benefit to the provision of quality health care and to contribute to the knowledge.

**Purpose of the study**

This research is set to investigate **determinants of home deliveries by pregnant mothers in Luumbo zone of Gwembe district of Zambia**. This study builds on researches previously carried out by other researchers and is designed to allow comparisons with other findings.

**Description of the study**

You will be asked to complete a structured questionnaire which I will personally administer over an estimated period of 30 - 45 minutes. You may also wish to agree to a follow-up interview to find out more about your thoughts. The questionnaire will ask you about your opinions and experiences regarding pregnancy, delivery and baby care. The focus is to close gaps leading to home deliveries. Your views and experience are just what the study is interested in exploring. The results of the research will not be shared with the public. It will be kept in the Library at the University of Zambia. If you wish to be given a copy of any reports resulting from the research, please ask us to put you on the circulation list.

**Confidentiality**

All the information that we collect about you during the course of the research will be kept strictly confidential. You will not be able to be identified or identifiable in any reports or publications. Any data collected about you in the questionnaire will be stored on computer in a form protected by passwords and other relevant security processes and technologies. Data collected may be shared in an anonymized form to allow reuse by District Health Office or University. These anonymized data will not allow any individuals or their institutions to be identified or identifiable.

**Voluntary participation and withdrawal**

It is up to you to decide whether or not to take part. If you do decide to take part, you will be able to keep a copy of this information sheet and you should indicate your agreement to the online consent form. You can still withdraw at any time. You do not have to give a reason.

**Risks and Benefits**

Whilst there are no immediate benefits for those people participating in the project, it is hoped that this work will have a beneficial impact on the prevention of maternal home deliveries. Results will be shared with health workers and patients in general in order to improve their professional work and conduct respectively.