ORIGINAL PAPER

Factors associated with home deliveries in a low income rural setting-observations from Nchelenge district, Zambia

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ABSTRACT

Objectives: To determine the proportion of and factors associated with home deliveries in Nchelenge district, Zambia.

Design: A population-based cross sectional study survey using simple random sampling was carried out among women (n=499) who attended immunization posts that were randomly selected. Binary multivariate logistic regression was used to determine factors associated with home deliveries.

Main outcome measure: Percentage of deliveries reported to have occurred at home.

Results: Overall (n=499), the prevalence of home deliveries was 43%, 95% CI (38.62, 47.48). Women who had four years of schooling or less, were 63% (AOR=1.63, 95% CI [1.06, 2.51]) more likely to deliver at home than a health facility compared to those who had at least five years of schooling. Women who lived within a radius of 5 kilometers to the nearest health facility providing maternal health and delivery services were 39% (AOR=0.61, 95% CI [0.41, 0.90]) less likely to deliver at home compared to those who lived more than 5 km away. Aspects of traditional beliefs, personal experiences of mothers and the perspectives of community members were among possible reasons cited for this outcome. Response rate was 96% (< 5% refused).

Conclusion: The association of home deliveries with access to health care suggests a need for structural response coupled with ethnographic studies to explore linked aspects of traditional beliefs, personal experiences of mothers and the perspectives of community members.

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INTRODUCTION

Maternal and neonatal morbidity and mortality arising from inadequate health services is an important global health concern. The burden of maternal deaths occurring worldwide has been estimated at 358 000, a decline from the previous high of 529 000 in the recent past[1, 2]. However, ninety-nine percent of these deaths still come from developing countries[2]. One of the factors associated with this maternal and fetal mortality is the occurrence of home deliveries in developing countries as they are largely unplanned, accidental and unhygienic[3,4].

Like many other countries in sub-Saharan Africa, the major causes of maternal mortality and morbidity are haemorrhage, hypertensive disorders, malaria, sepsis, abortions and complications of obstructed labour, among many other factors[5, 6]. Notably, these factors are preventable if necessary structural responses are put in place as has been observed in the developed world. Sad to note that in developing countries such structural responses need to address the complex dynamics of access for the impact to gain root[7]. Embedded in this structural

Key words: *Zambia, Home deliveries, Factors, Cross-sectional Survey*

response is the promotion of skilled birth attendants although the "skilled" aspect of the response has been a subject of discussion recently[8].

In 2008, Nchelenge district in Zambia, recorded 3,449 deliveries in health institutions but a total of 1,946 deliveries were also reported to have occurred at home assisted by traditional birth attendants[9]. The home environment as a place of delivery in developing countries has been shown to be unsafe and may have adverse neonatal and maternal outcomes[10, 11]. However, reasons for this are still unclear as many areas in literature remain scanty and unexplored and hence this study.

We investigated the burden of, and factors associated with deliveries that occurred at home in Nchelenge, Zambia.

METHODS

Population and sampling procedures

The study was conducted in Nchelenge district, which is located in the northern part of Zambia in Luapula province. It is a rural setting with a population of approximately 155,510 people[9]. A cross sectional study design was used. The study population comprised of women of child bearing age from 18-49 years. The target population was women who had had a recent delivery in the past one year prior to the commencement of the study. At the time of the study, women in the child bearing age group of 15-49 years in Nchelenge district were approximately 34, 212. Using Epi info Stat Calc. software and utilizing an expected frequency of 50% $\pm$ 5% and a 95% confidence level, the needed sample size after adjusting for 10% non-response was 437. Simple random selection was used to randomly select 43 health posts from a frame of 79 immunization posts. All the women attending the outreach posts on the specified day and meeting the set criteria were selected. In total 479 women who consented to take part in the study, were interviewed.

Data collection and analysis

A semi-structured questionnaire was developed and pre-tested on 10 non-participating women outside the study area. Personal interviews were carried out with all respondents who willingly consented to be part of the survey. In addition, four focus group discussions and six in-depth interviews were conducted. Qualitative data was analyzed with Nvivo software.

Statistical Package for Social Sciences (SPSS) version 17 was used for analysis. Multiple logistic regression analyses were used to assess and estimate the factors and magnitude of effect on home deliveries. The variables in the model were age or age group, marital status, income status, educational level, distance to health facility and birth history.

Ethics

The survey protocol was approved by the Biomedical Research Ethics Committee of the University of Zambia. All respondents gave consent before participating.

RESULTS

Sample description

Out of the 499 eligible participants, 479 consented to take part in the study while 20 refused giving a response rate of 96%. The majority (31.1%) of the respondents, were aged 18-24 years, whereas 28.4% were aged 25-29 years, 21.1% aged 30-34 years and 19.4% were aged 35 years and above. The median age was 28.00(IQR 10) whereas the mean age was 28.46(SD 6.83). Most of the respondents (86.6%) were married, 9.2% were either divorced or widowed and only 4.2% were single. The study revealed that, only 4.0% of the women attained secondary school education and reached at least the tenth grade.

The prevalence of home deliveries was found to be 43%, 95% CI (38.62, 47.48), of which 88.3% were married, 90.3% attained less than eight years of education and the mean age for this group was 27.91(SD6.59). On multivariate binary logistic regression analysis, women who had four years of schooling or less, were 63% (AOR=1.63, 95%CI [1.06, 2.51]) more likely to deliver at home than a health facility compared to those who had at least five years of schooling. Women coming from households that had a combined monthly income of less than 150,000ZMK were 73% (AOR=1.73, 95%CI [1.06, 2.81]) more likely to deliver at home than at a health facility when compared to those whose household income was greater or equal to

150,000ZMK. Women who lived within a radius of 5 kilometers to the nearest health facility providing maternal health and delivery services were 39% (AOR=0.61, 95%CI [0.41, 0.90]) less likely to deliver at home compared to those who lived more than 5 km away (table 1).

Table 1: Determinants of home delivery in Nchelenge, Zambia; results of multivariate binary logistic regression.

Factor	Prevalence (%)	Adjusted odds ratio (AOR) 95% CI	P-value
Distance >=6 km	55.7	1	
<=5 km	44.3	0.61 (0.41, 0.90)	0.012
Educational level of mothers			
-secondary and higher	15.4	1	
-none/prim ary	84.6	1.70 (0.92, 3.14)	0.090
School years of mothers			
>= 5 years	64.9	1	
<= 4 years	35.1	1.63 (1.06, 2.51)	0.027
Marital status			
married/other*	95.8	1	
single	4.2	1.5 3 (0.54, 4.38)	0.430
Educational level of child's father			
-secondary and higher	43	1	
-none/primary	57	0.83 (0.54, 1.27)	0.381
School years of child's father			
>= 5 years	88.1	1	
<= 4 years	11.9	1.29 (0.69, 2.42)	0.430
Occupation of child's father			
other**	98.3	1	
no trade/skill	1.7	0.61 (0.12, 3.07)	0.547
Age of mothers			
>= 25 years	68.9	1	
<= 24 years	31.1	1.20 (0.73, 1 .99)	0.468
Parity of mothers			
>= 2 children	80	1	
1 child	20	0.68 (0.30, 1.52)	0.348
Household size			
>= 4 members	84.1	1	
<= 3 members	15.9	0.98 (0.44, 2.19)	0.955
Household income			
>=150,000ZMK	23.2	1	
<150,000ZMK	76.8	1.73 (1.06, 2.81)	0.028
Antenatal care attendance			
>=One visit	97.9	1	
None	2.1	4.52 (0.91, 22.48)	0.065

Note: Reference was dummy variables in all cases
*Refers to married, widowed and separated
**Refers to peasant farmer/fishermen

The findings on perceptions about home delivery from the qualitative dataset were grouped into the following themes:

Long distances to health facilities

The study revealed that the distance from the mother's homes to the health facilities was very far. This finding coupled with lack of transport, made it very difficult for women in labor to get to the health facility. 'My labor started at about 03:00 hours in the early morning and we called the traditional birth attendant to escort us to the clinic but then ended up delivering before reaching the hospital. There was no transport available and walking proved to be a big challenge' (In-depth interview, female 34 years, Mantapala village).

Abrupt and unexpected labor

For most mothers the delivery was just unexpected. 'If things happen like that, one has no option but to deliver wherever they are as you cannot prevent the baby from coming if it's on the way'(Focus group discussion, female 33 years Kambwali village).

Circumstances beyond control

Some women reported circumstantial reasons for delivering at home. 'I delivered at home because I had a three year old child whom I could not leave at home as no one was around to look after him and at the time, people were being chased away from the clinic because of the cholera outbreak' (In-depth interview female 29 years, Kafwala village).

'Women shun delivering at the clinic because it is shameful when after five or six months not a single piece of clothing or napkin has been prepared for the baby and so they feel ashamed and would rather deliver at home' (Focus group discussion female 43 years, Kabuta village).

Myths and Traditional Beliefs

Most women decided to deliver at home in order to be attended by their grandmothers and be treated for incila, which according to the participants, was a situation where the partner or husband of the pregnant woman or indeed the pregnant woman herself engaged in sexual affairs with other people during the woman's pregnancy, as a result of which the woman could have difficulties at delivery.

'The process of preventing death by "incila" requires the woman to divulge confidential information to the women assisting her delivery so that she delivers well in addition to taking the medication and so some women even go further away from their own villages to other villages for confidential reasons because some traditional birth attendants do not keep secrets. If there were too many men that the woman may have had extramarital affairs with while pregnant and they could not all be counted, then she is required to put maize meal into a bowl as a gift, for everything to end there and this cannot be done at the clinics'(Focus group discussion female 56 years, Kabuta village).

'The other reason why women prefer to deliver at home is to have their babies protected from "icifutato", which is a situation where the baby may die if the father of the child recommences sex with a different woman other than his spouse who has not even recovered and healed after delivery of the child. So the women will prefer to deliver at home so that the baby after being born is bathed in water that is medicated to prevent death by "icifutato"' (Focus group discussion male 59 years Kambwali village).

It was also further reported that women delivered at home because of the availability of medicines for situations such as kamulengule. 'This "Kamulengule" happens when both partners (husband and wife) were faithful to each other throughout the gestation of the pregnancy but when the time for delivery approaches the woman may fail to deliver because some people out of envy and malice would just want to wish doom on the couple by using sorcery at the spot where the woman may have urinated and thus she would fail to deliver. Therefore to avoid this misfortune from taking place, the woman would rather be delivered at home where the medicine can be found and not the health facility' (Focus group discussion male 65 years Kafutuma village).

DISCUSSION

A prevalence of home deliveries in Nchelenge (43 percent), though lower than what was reported in the recent Zambia demographic and health survey[12], is unacceptably high. We think that the magnitude of home deliveries might actually be an under-estimate. Firstly we have noted that out of the reported deliveries that occurred in Nchelenge in 2010, 20.2% took place at home[9], a prevalence which also is unacceptably high but lower than what

we found illustrating that the district health information systems may actually be under-estimating the magnitude by up to 50%. We are also aware that conducting the survey among women who were attending immunization posts could have understated our estimate for prevalence of home deliveries as most of our respondents may have had a preference for seeking health services. In this regard and although our estimates could have been affected by report bias, the burden of home deliveries is a real challenge and the reported magnitude might be as significant under-estimation.

Some have argued that the relationship between female education and health-seeking behaviour may not be due to education alone per se, but a combination of factors, one of which is women's childhood background for which education may serve as a proxy[13]. It is further argued that if one does not control for childhood background during analysis, there is potential likelihood of overstating the impact of education on health outcome. In this study, one way this could have been done was to control for residence. However, controlling for residence did not offer any different findings than outlined, largely because this was a homogenously rural study sample. Nonetheless we still agree and recommend that there must always be an attempt to control for childhood residence and other factors using a conceptual framework so as to remove the possible confounding effect of this on education[14]. Overall, it may not have been surprising that the number of years of schooling for mothers, the household income and distance were significant determinants for home deliveries given that this is plausible.

In addition to the educational factor we noted that the perceptions on home deliveries varied on the basis of individual and community perspectives and revealed that following instruction or advice and personal experiences may have a bearing on women delivering at home irrespective of the proximity of their villages to a health facility.

The present study found a number of traditional beliefs and cultural practices that explained why women delivered at home. These aspects of reasons for making women deliver at home were in the context of our study setting and may not necessarily have been the same for other studies, making external validity inferences challenging.

We conclude that aspects of traditional beliefs, personal experiences of mothers and the perspectives of community members are invaluable in understanding determinants of home deliveries. However contextualized assessments are critical in order to understand core determinants which should be critical for informing and adjusting preventive policies. The findings in Nchelenge might be a close reflection of what is obtaining elsewhere in rural Zambia and might be a pointer to limitations in access-to-health care policies.

ACKNOWLEDGEMENTS

We thank the Ministry of Health and Nchelenge Health Office for their support. We also appreciate the effort of all the health workers in Nchelenge who assisted in the administration of the questionnaire and our profound gratitude to all the mothers who participated in the study.

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