

Research Article

Birth Preparedness and Complication Readiness Plan among Antenatal Care Attendants in Kofale District, South East Ethiopia: A Cross Sectional Survey

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ABSTRACT

Background: Birth preparedness and complication readiness plan is a major strategic tool designed to reduce maternal deaths. Despite its importance on maternal mortality reduction, its practice is less studied in Ethiopia. Hence, this study assessed birth preparedness and complication readiness practices and associated factors among antenatal care attendees in Kofale district, south east Ethiopia.

Method: Cross-sectional study was conducted among 555 antenatal care clients. A systematic random sampling technique was used to select respondents. Data were entered and analyzed using SPSS version 20.0. Logistic regression analyses were used to assess the relationship between dependent and independent variables.

Results: In this study, 41.3% of the women were well-prepared for birth and its complications. Over two third (69.0%) women identified place of delivery ahead of their current pregnancy and while 20.5% of them identified skilled birth attendants. Maternal education (2.02 (95% CI: 1.33-3.06)), age group from 21-25 (2.68 (95% CI: 1.23-5.85)) and being aware of danger signs (2.01 (95% CI: 1.40-2.88)) were independent predictors of birth preparedness and complication readiness practices.

Conclusion: Less than half of the interviewed mothers were prepared for birth and related complications. Maternal education, age and awareness of danger signs were among the major predictors identified to have impact on birth preparedness and complication readiness. Further studies on why women prepared less, especially to address whether the gaps are from health care providers, women or any other factors is required.

Keywords: Birth preparedness; Complication readiness; Kofele

Introduction

Most maternal deaths occur in the less developed world, with sub-Saharan Africa constituting more than half of the deaths [1-8]. About 80% of maternal deaths are due to causes directly related to pregnancy and childbirth: unsafe abortion and obstetric complications such as severe hemorrhage, infection, hypertensive disorders, sepsis and obstructed labor. Birth preparedness and complication readiness plan remain the most important health care services to prevent the causes of maternal deaths [9-13]. The high maternal mortality and low progress in low and middle income countries including Ethiopia are well explained partially by low coverage of care and delayed maternal care seeking behavior during obstetric emergencies. This may be influenced by demographic, poor socio-economic status and poor services quality [14,15].

The government of Ethiopia has applied multi-pronged approaches to address the burden of maternal and newborn morbidity and mortality as clearly stated in strategic objective of health sector development program IV [11,16]. Evidences showed that maternal morbidity and mortality could be prevented significantly if women and their families recognize obstetric danger signs and promptly seek health care. The presence of skilled attendants at births and availability of emergency obstetric care have been shown to greatly reduce maternal deaths due to obstetric complications [17].

Birth preparedness and complication readiness (BP and CR) is a safe motherhood comprehensive strategy whose objective is to promote the timely use of skilled maternal and neonatal care during childbirth or obstetric emergencies by reducing delays to care seeking for obstetric emergencies [18-20]. It is a comprehensive matrix that includes shared responsibility among the woman and her family, the community, healthcare providers, facilities that serve them, and the policies that affect care for the woman and the newborn [20]. The matrix encompasses the responsibilities, actions, practices and skills needed to help ensure the safety and well-being of the woman and her newborn throughout pregnancy, labor, childbirth and the postpartum period. Life-threatening delays could happen at home, on the way to care, or at the place of care. Hence; BP and CR readiness must include plans and actions that can be implemented at each of these points [21-24]. Birth preparedness and complication readiness entails making plans prior to birth to ensure that a pregnant woman is prepared for normal birth and

complications. Birth preparedness and complication readiness plan includes identification of the following elements: the desired place of birth, the preferred birth attendant, the location of the closest appropriate care facility, funds for birth-related and emergency expenses, a birth companion, support in looking after the home and children while the woman is away, transport to a health facility for the birth, transport in the case of an obstetric emergency, and identification of compatible blood donors in case of emergency [20].

Birth preparedness and complication readiness matrix has been identified as the single most important intervention and global benchmark indicator to monitor progress towards the goal of maternal and neonatal morbidity and mortality rates reduction particularly in the developing world setting where there is prevailing illiteracy, inefficient infrastructure, poor transport system, and unpredictable access to skilled care provider [17,25]. Evidences from different studies have showed promoting BP and CR improves preventive behaviors, improves knowledge of mothers about danger-signs, and leads to improvement in care-seeking during obstetric emergency [26-28].

Despite a sound positive impact of birth preparedness and complication readiness to improve maternal health outcomes, there was limited study addressing BP and CR practices and its determinants factors in Ethiopia. Two previous cross sectional studies conducted at different time in Adigrat town, Northern Ethiopia and Aleta Wondo district, South Ethiopia revealed 22% and 17% birth preparedness and complication readiness respectively [12,13].

Also, little was known about the practices and factors affecting birth preparedness and complication readiness in the study district and the region as well. Therefore, this study aimed to fill this gap by assessing the current status and factors associated with BP and CR among women attending antenatal care (ANC) clinic in Kofale district, south east Ethiopia.

Materials and Method

Study setting, design and population

Health facility based cross-sectional study was carried out from December 1, 2013 to January 30, 2014 in four randomly selected health centers in Kofele district of Oromia national regional state, Ethiopia. The district has a population of 201,718 (49% males, 51% females) with majority living in rural areas. Kofale district is divided in to 41 administrative villages (38 rural and 3 urban). There are seven government health centers, thirty-eight health posts, and four private clinics executing health care activities for the district population during the study period [29].

Sample size and sampling procedure

Sample size was determined separately for both objectives (objective one: birth preparedness and complication readiness practice by using single population proportion formula and for objective two: factors associated with birth preparedness and complication readiness practice by using Epi-Info version 3.5.3 by considering two sample comparisons of proportions. Accordingly, the largest sample size was obtained from objective one. This was determined by using single population proportion formula with the assumptions of 95% confidence level, 17% prevalence of birth preparedness and complication readiness among mothers from previous study and 4% margin of error. Since multistage sampling method was used, a design effect of 1.5 was considered and the final sample size required after adjusting for 10% non- response rate became 561 mothers [12].

Four government health centers (Kofale, Roba, Guch and Kabate) out of a total of seven in the Kofale district were selected by lottery method. Based on the information obtained from health centers report and one year ANC registration log book data, the total sample size was proportionally distributed to each selected health centers [29]. Systematic random sampling method was considered to choose the study participants by using list of pregnant mothers collected from ANC registration log book obtained from December 2012 to January 2013 (the same time for the current data collection period). The first client was chosen randomly between one and the sampling interval.

Data collection process and measurements

Pre-tested interviewer administered structured questionnaire was adapted from the "monitoring birth preparedness and complication readiness tools and indicators for maternal and newborn health" developed by the Johns Hopkins Program for International Education in Gynecology and Obstetrics [11]. Birth preparedness and complication readiness practice refers to any women's usual activities or behaviors in relation to normal and complicated pregnancy, labor/childbirth and postpartum period. The score of birth preparedness and complications readiness practices of the respondents were computed from eight key elements. Women who took at least four steps out of eight key elements were considered as being "well prepared" and those who took three and below steps were considered "less prepared".

The questionnaire was first prepared in English then translated to local language (Afan Oromo) with back translation to English by experts to check consistency. Four clinical nurses, who were not working in the selected health centers were recruited, and trained to conduct exit interview. Trained supervisor and the researchers strictly followed and supervised the data collection process. The supervisor undertook the overall activities on daily basis to ensure the completeness of questionnaire and support for data collectors.

Data quality assurance

To assure data quality, questionnaires was translated to Afan Oromo then back to English for consistency. The issue of confidentiality and privacy were stressed in much depth during the training session and client exit interviews were conducted in separate rooms or in a place where no one else could have heard the interview. Data intensively checked for completeness. Five percent of the respondents were randomly revisited and interviewed by the principal investigator.

Data processing and analysis

The collected data were coded and entered in to Epi-Info

version 3.5.3 and then exported to SPSS version 20.0 for analyses. Simple frequencies, proportion and summary statistics were calculated to describe the study population in relation to relevant variables. Bivariate analysis was done to see the association between the dependent and independent variables. Variables found to have p<0.25 were entered to multiple logistic regression to control the possible confounding effects and to assess the separate effects of the variables. Final interpretation of association was conducted based on Odds Ratio at 95% confidence level and p-value less than 0.05.

Ethics and consent

Ethical clearance was obtained from Hawassa University College of Medicine and Health Sciences Institutional Review Board Committee, and formal permission to conduct the study was requested and granted from Kofale district health office. Informed verbal consent was requested and obtained from the study participants as majority were unable to read and write. The prepared consent form was read by the data collector to the participants to get their verbal consent. Each respondent was informed about the objective of the study, procedures of interview, possible risks and benefits and assurance of confidentiality. The participants were told that participation is purely voluntary, and the right of not responding to all or part of the questions was respected. All participants agreed to participate.

Results

Socio-demographic characteristics of the respondents

A total of 561 women attending antenatal care were interviewed, out of which 6 responses were excluded for gross incompleteness and inconsistency of the data. Therefore, analysis was made based on 555 questionnaires, yielding a response rate of 98.9%. Respondent's age ranged from 18 to 43 years with the mean ± Standard Deviation (SD) of 25.45 ± 4.59 years. More than one third (204, 36.8%) of the respondents age ranged between 26 and 30 years. Among the respondents, 546 (98.4%) were married and 502 (90.5%) were Oromo indigenes. A total of 272(49.0%) of the respondents were illiterate, 440 (79.3%) were housewives and 286 (51.5%) of the study participants were either not willing to tell or did not know their monthly income. Two hundred and seventeen (39.1%) of the study participants had 4-6 family size with the median of 5.1 and interquartile range (IQR) of 4.0 (i.e., 50% of the respondents family size were between three and seven) (Table 1).

All respondents 546 (98.4%) who were in marital union during the survey said that they knew their husband's occupation and educational level. More than half 325 (59.5%) of the respondents' husband were farmers and only 68 (12.4%) were government employees. Regarding educational level of respondents' husband, majority 246(45.1%) attended at least primary school and 92 (16.8%) were illiterate (Table 2).

Obstetrics characteristics of the respondents

Regarding pregnancy status of the respondents; the highest

Table 1: Socio-demographic characteristics of respondents, Kofale district, south east Ethiopia, 2013/2014 (n=555).

Variables	Frequency	Percentage
Age in years		
≤ 20	125	22.5
21-25	172	31.0
26-30	204	36.8
≥ 31	54	9.7
Total		100
Marital status		
Single	3	0.5
Married	546	98.4
Widowed	4	0.7
Divorced	2	0.4
Total		100
Ethnicity		
Oromo	502	90.5
Amhara	37	6.7
Wolaita	4	0.7
Others*	12	2.2
Total		100
Occupation		
Housewife	440	79.0
Government employee	38	6.8
Private employee	31	5.6
Business	31	5.6
Student	15	2.7
Total		100
Educational status		
Illiterate	272	49.0
Read & write	14	2.5
Primary	172	31.0
Secondary & above	97	17.5
Total		100
Family size		
1-3	185	33.3
4-6	217	39.1
7 and above	153	27.6
Total		100

Others*: Gurage, Sidama, Hadiya, Kambata

Table 2: Distribution of respondent's husband education and occupation in Kofale district, South East Ethiopia, 2013/2014 (n=546).

Variables	Frequency	Percent (%)
Occupation		
Government employee	68	12.5
Farmer	325	59.5
Business	140	25.6
Students	13	2.4
Total		100
Education		
Illiterate	92	16.8
Read & write	43	7.9
Primary	246	45.1
Secondary & above	165	30.2
Total		100

gravida (total pregnancy) was twelve with median and inter quartile range (IQR) of 3.0 (the IQR showed that 50% of the women were pregnant for 2-5 times). Majority 263 (47.4%) of the respondents were pregnant for two to four times while 101 (18.2%) women got pregnant only once. Concerning parity, the highest was eleven with 262 (47.2%) of the respondents who gave birth to one to three children, and only 101 (18.2%) respondents had not given birth. Less than half 269 (48.5%) of the women had one to three live births and 178 (32.0%) had four and above live births. Among the study participants 459 (82.7%) of the women had no history of still births while 96 (17.3%) reported that they had one and more still births. Considering identification of danger signs, half 282 (50.8%) of the respondents stated that they knew more than three danger sign which may occur during pregnancy and labor (Table 3).

Table 3: Distribution of obstetric characteristics of respondents, in Kofale district, south east Ethiopia, 2013/2014 (n=555).

Variables	Frequency	Percentage
Gravida		
1	101	18.2
2-4	263	47.4
5 and above	191	34.2
Total		100
Para		
0	101	18.2
1-3	262	47.2
4 and above	192	34.6
Total		100
Live birth		
0	108	19.5
1-3	269	48.5
4 and above	178	32.0
Total		100
Still birth		
0	459	82.7
1 and above	96	17. 3
Total		100
Gestational age in (months)		
≤ 6	214	38.6
≥ 7	341	61.4
Total		100
Stated ≥ 3 danger signs		
No	273	49.2
Yes	282	50.8
Total		100

Levels of birth preparedness practices and complication readiness

Over two-thirds (69.0%) of the respondents identified places of delivery and 114 (20.5%) identified skilled birth attendants for delivery. Only 69 (12.4%) of the respondents saved money for incurred costs of delivery and majority (450, 81.1%) had designated decision maker for emergency process. Only few 30 (5.4%) of the women prepared potential blood in case of emergency. In all, 289 (52.1%) of the respondents had planned for means of transportation for emergency referral and more than two third 397 (71.5%) had identified health care facilities operating 24-hour duty. The score of birth preparedness and its complications readiness practices of the respondents were computed from eight key elements. Women who took at least four steps out of eight key elements were considered as being well prepared and those who took three and below steps were considered "less prepared". Overall the study revealed that 41.3% of antenatal care attendant women were well prepared for birth and its complications (Table 4).

Table 4: Distribution of birth preparedness and complications readiness practices of respondents in Kofale district, South East Ethiopia, 2013/2014 (n=555).

Variables	Number	Percent
Identified place of deliver	383	69.0%
Saved money	69	12.4%
Identified skilled care provider	114	20.5%
Designated decision maker	450	81.1%
Prepared emergency fund	80	14.4%
Arranged means of transportation	289	52.1%
Prepared potential blood donors	30	5.4%
Identified health care facilities which are within 24 h on duty	397	71.5%

Factors associated with preparation of birth and its complications

After controlling for other factors, the multivariate model showed that three predictors were significantly associated with well preparedness. There was a statistically significant association between age of the respondents and preparation for birth and its complication. Women with age range of 21-25 were more likely to prepare for birth and its complication than those 31 years of age and above (AOR=2.69 (95% CI: 1.23-5.885)). The odds of preparation for birth and its complication among women who knew at least three danger signs were twice as high as those who did not (AOR=2.01 (95% CI: 1.40, 2.88)), which indicates poor awareness of women that may leads to high chance of poor pregnancy outcomes. In this study literate women were more likely to be prepared for birth and its complications compared illiterate ones (AOR=2.02 (95% CI: 1.33, 3.06)). In the bivariate analysis the independent variables maternal occupation, live birth and husband's education were associated with birth preparedness and complication readiness practices but after adjusting for possible confounders they did not show any association (Table 5).

Discussion

This health facility-based cross-sectional study identified important information on birth preparedness and complication readiness practices. The mean number of children ever born to

Table 5: Association of selected socio-demographic and obstetric factors of respondents with respect to birth preparedness practice in Kofale district, South East Ethiopia, 2013/2014 (n=555).

Independent variable		Practice of birth preparedness		95% CI		
		Less prepared (n=326)	Well prepared (n=229)	Crude OR (95%CI)	Adjusted OR (95%CI)	P-value
Age of respondent	≤ 20	70 (21.5%)	55 (24.0%)	**2.75 (1.32, 5.72)****	2.14 (0.92, 4.99)	0.079
	21-25	**91 (27.9%)**	**81 (35.4%)**	**3.12 (1.54, 6.32)****	**2.68 (1.23, 5.85)**	**0.013**
	26-30	**123 (37.7%)**	**81 (35.4%)**	**2.31 (1.14, 4.64)*****	**2.23 (1.06, 4.70)**	**0.034**
	≥ 31	42 (12.9%)	12 (5.2%)	1.00	1.00	
Maternal Occupation	Unemployed	310 (95.0%)	207 (90.4%)	1.00	1.00	
	Employed	16 (5.0%)	22 (9.6%)	**2.06 (1.06,4.01)*****	1.26 (0.60, 2.64)	0.55
Maternal Education	Illiterate	189 (58.0%)	83 (36.2%)	1.00	1.00	
	Literate	**137 (42.0%)**	**146 (63.8%)**	**2.43 (1.71, 3.44)***	**2.02 (1.33, 3.06)**	**0.001**
Number of Live birth	0	58 (17.8%)	50 (21.8%)	**1.33 (0.82, 2.16)**	0.79 (0.42,1.49)	0.47
	1-3	160 (49.1%)	109 (47.6%)	1.10 (0.714,1.55)	0.71 (0.45, 1.11)	0.13
	4 and above	108 (33.1%)	70 (30.6%)	1.00	1.00	
Paternal Education **(n=546)**	Illiterate	60 (18.8%)	32 (14.1%)	1.00	1.00	
	Reed & write	27 (8.5%)	16 (7.0%)	1.11 (0.52, 2.36)	1.1 (0.48, 2.34)	0.88
	Primary	151 (47.3%)	95 (41.9%)	1.18 (0.72, 1.95)	0.88 (0.51, 1.51)	0.63
	Secondary & above	81 (25.4%)	84 (37.0%)	**1.94 (1.15, 3.29)*****	1.22 (0.65, 2.64)	0.54
Knew obstetric danger signs	<3	186 (57.1%)	87 (38.0%)	1.00	1.00	
	≥ 3	**140 (42.9%)**	**142 (62.0%)**	**2.17 (1.54, 3.06)***	**2.01 (1.40, 2.88)**	**<0.001**
Prediction success overall was 63.7% (78.4% for less prepared and 43.2% for well prepared)						

P-value: ≤ 0.001=*, ≤ 0.01=** and ≤ 0.05=***

the women in this study was 2.79 children; which is relatively consistent with the finding of 2011 Ethiopia Demographic and Health Survey (EDHS) (2.88) and the mean number of live birth was 2.59. Less than a quarter (17.3%) of the study women had one and more still births, and having still birth history was not associated with BP and CR practices in this study. Preparation of women on some key elements of birth preparedness and its complication readiness like a person to escort and made decision during delivery were better compared to earlier study in Ethiopia [11,12].

In this study, even though birth preparedness and complication readiness practices are primarily aimed at preventing postpartum hemorrhage (PPH) and preventing deaths due to PPH, identification of potential blood donor by the study participants was very low (5.4%). This is comparable to the finding from Southern Ethiopia 2.3% and Tanzania 8.7%, but better than study finding from Northern Ethiopia 0.7% [12,13,30]. Moreover, preparedness of the women to identify skilled birth attendants was still not satisfactory beside high attention from different sectors (20.5%) and is consistent with the study finding of Aleta wondo 20.5% [12] and Adigrat 10.5% [13]. A finding on identification of skilled birth attendants from this study is by far less than the study findings from Tanzania 86.2% and India 69.6% [30,31]. The difference is probably due to the local context. In our set up (study area context), regardless of government attention to enhance women's awareness on the practice of BP and CR elements, the finding is still low.

Identifying and knowing how to reach a skilled provider, as well as having adequate personal funds to pay for expenses incurred is an important key element that shows how individuals and families can be prepared for childbirth but in this study, only 12.4% of the women were saving money aside for incurred expenses. Compared to similar studies from Ethiopia, Kenya and India, the practice of saving money aside in this study was very low [12,13,31,32]. The difference (especially in our context) could be lack of proper counseling and advocacy on key elements of BP and CR, and experiences and accumulated knowledge from previous pregnancies and births. This highlights that provision of due attention on BP and CR practice in the study area is needed.

The finding of this study highlights the relationship between the elements of birth preparedness and complications readiness and maternal education, maternal age and identification of danger sign by respondents. In this study, women aged 21-25 years were about three times more likely to be prepared for birth and its complications compared to those aged 31 years and above. This could be better explained by the difference in experience between age groups. Younger women are more likely to accept modern health care system as they are likely to have greater experience to modern health and have greater amount of schooling than older women. Another possible explanation for this is that, pregnant women with their first child are more cautious about their pregnancies and therefore seek for trained professionals. Moreover, aged women may believe and less focused to the use of modern health care due to experiences and accumulated knowledge from previous pregnancies and births. Consequently, they are more likely to have more confidence about pregnancy, childbirth and the associated compilations and thus, may give less attention to practice birth preparedness

and complication readiness. Furthermore women who knew ≥ 3 obstetric danger signs were two times more likely to be prepared for birth and its complications than women who knew ≤ 3 danger signs. The findings correlate well with the other study done in Tanzania, where women who knew ≥ 3 obstetric danger signs were about three times more prepared for birth than those who knew less than 3 obstetric danger signs [30].

Another important finding from this study was the positive impact of education on BP and CR practice. Literate mothers were about two times more likely to be prepared for birth and its complication (2.01 (95% CI: 1.40-2.88)). This could best be explained by the fact that facilitates a person's communication, understanding and decision making power to make their own decision in matters related to their health and the expected incurred costs. This is consistent with the finding from India, Tanzania and Adigrat, Ethiopia [13,30,31].

Overall, below half of mothers interviewed in Kofale (41.3%) reported that they were prepared for birth and its complication. This appears higher compared to study reported from Southern Ethiopia 17%, Northern Ethiopia 22% and Uganda, 35% and lower compared to report from India (47.8%) [12,13,31,33]. The difference could be related to difference of means of measurements used to determine birth preparedness and complication readiness, social and environmental differences as well as difference in period of study which could have impact on maternal awareness. In Ethiopian context both studies were conducted about 7 years back; thus the difference could be true because there have been many changes regarding high impact areas of maternal, neonatal, and child health activities in the country; such as increase in the number of midwifes (accelerated midwifes), upgrading health extension workers and involvement of many nongovernmental organizations. Also both studies of Ethiopia were community based studies [12,13].

Reaching each of the Millennium Development Goal (MDG) targets is central to the government of Ethiopia as explained clearly in health sector development (HSDP-IV) strategy. Meeting the MDG 5 target however would mean reducing Maternal Mortality Ratio (MMR) by three-quarters to 220/100,000 live births by 2015 from the early 1990's estimate of 880 MMR but the EDHS (2011) showed that there were no significant changes in maternal mortality from the 1990 to 2011 in Ethiopia indicating that MMR is the most off-track health MDG indicator in Ethiopia [11]. At this stage considering the remaining time (2015) to meet MDG 5, over all preparation for birth and its complication is low in Ethiopia. This signifies that the district has to increase their effort so that the demand side (women, family and the community) should be aware and plan for birth and its complications. Generally, the study reflected that there is gap of the demand side in the study area and probably further study is needed to identify whether the gap is due to the demand or supply side. Lastly, as this study is cross-sectional in design, causal inferences cannot be established which demands further studies. Since most of the respondents had not completed their pregnancies, they may not yet have had the opportunity or need to make arrangements related to birth preparedness and complication readiness practices.

Conclusion

The study conducted among selected pregnant mothers from Kofele with the aim to estimate magnitude of BP and CR, identified that the number of mothers practicing BP and CR concept is increasing compared to previous reports from other parts of the country. Less than half of the interviewed mothers were found prepared for birth and related complications. Maternal education, age and awareness of danger signs were among the major predictors identified to have impact on BP and CR. A collaborated effort between mothers, community, care providers and policy makers is needed as shared responsibilities to ensure BP and CR practice. Also health care professional competence is an important area to reduce the third delay. Further studies on why women prepared less, especially to address whether the gaps are from health care providers, women or any other factors is required.

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Author's Contributions

Adugna Tafa: Designed the study, collected, analyzed and interpreted the data and also drafted the manuscript.

Dejene Hailu: Participated in conceptualization of the study, design, analyses and interpretation of results as well as drafting and review of the manuscript.

Jemal Ebrahim: Participated in conceptualization of the study, design, analyses and interpretation of results as well as drafting and review of the manuscript.

Melesse Gebrie: Participated in conceptualization of the study, design, analyses and interpretation of results as well as drafting and review of the manuscript.

Negash Wakgari: Participated in conceptualization of the study, design, analyses and interpretation of results as well as drafting and review of the manuscript. All authors read and approved the final manuscript.

Paper Context

Birth preparedness and complication readiness plan is proved to be a comprehensive strategy to reduce maternal and perinatal deaths. Birth preparedness and complication readiness plan practice is increasing in Ethiopia. Further studies needs to be conducted to identify whether the gaps are from health care providers, women or due to any other factor.

References

1. Bryce J, Daelmans B, Dwivedi A, Fauveau V, Lawn JE, et al. (2008) Countdown to 2015 for maternal, newborn and child survival: The 2008 report on tracking coverage of interventions. *Lancet.* 371:1247-1258.
2. World Health Organization (1994) Mother-baby package: Implementing safe motherhood in countries. Geneva: World Health Organization.

3. World Health Organization (1998) Pregnancy is special let's make it safe. World Health Day, Safe Motherhood. Geneva: World Health Organization.

4. World Health Organization (2005) World health day making every mother and child count. Geneva: World Health Organization.

5. http://www.unicef.org/pon96/woestima.html

6. John Snow Inc. (2000) Issues in programming for safe mother care. Arlington, VA: John Snow Inc.

7. Hogan MC, Foreman KJ, Naghavi M, Ahn SY, Wang M, et al. (2010) Maternal mortality for 181 countries, 1980-2008: A systematic analysis of progress towards millennium development goal 5. *Lancet.* 375:1609-1623.

8. http://www.who.int/reproductivehealth/publications/monitoring/9789241503631/en/

9. http://www.prb.org/pdf/makingpregancysafer_eng.pdf

10. http://pdf.usaid.gov/pdf_docs/PNACU209.pdf

11. Central Statistical Agency and ICF International (2011) Ethiopia Demographic and Health Survey 2011. Addis Ababa, Ethiopia and Calverton, Maryland, USA: Central Statistical Agency and ICF International.

12. Hailu M, Gebremariam A, Alemseged F, Deribe K (2011) Birth preparedness and complication readiness among pregnant women in Southern Ethiopia. *PLoS One.* 6:e21432.

13. Hiluf M, Fantahun M (2007) Birth preparedness and complication readiness among women in Adigrat town, north Ethiopia. *Ethiop J Health Dev.* 22:14-20.

14. Central Statistical Agency (CSA), ORC Macro (2001) Ethiopia Demographic and Health Survey 2000-2001. Addis Ababa, Ethiopia, and Calverton, Maryland, USA: CSA and ORC Macro.

15. Central Statistical Agency (CSA), ORC Macro (2012) Ethiopian Demographic and Health Survey 2011-2012. Addis Ababa, Ethiopia and Calverton, Maryland, USA: CSA and ORC Macro.

16. Federal Democratic Republic of Ethiopia Ministry of Health (2010) Health Sector Development Program (IV 2010/2011-2014/2015, final draft).

17. Koblinsky MA, Campbell O, Heichelheim J (1999) Organizing delivery care. What works for safe motherhood? *Bull World Health Organ.* 77:399-406.

18. Mutiso SM, Qureshi Z, Kinuthia J (2008) Birth preparedness among antenatal clients. *East Afr Med J.*

19. http://www.unicef.org/ethiopia/ET_2011_EDHS.pdf

20. Maternal and neonatal health program. Birth preparedness and complication readiness: A matrix of shared responsibility, JHPIEGO: Baltimore.

21. Kaye D, Mirembe F, Aziga F, Namulema B (2003) Maternal mortality and associated near-misses among emergency intrapartum obstetric referrals in Mulago Hospital, Kampala, Uganda. *East Afr Med J.* 80:144-149.

22. JHPIEGO Maternal, Neonatal health (MNH) (2001) Program. Birth preparedness and complication readiness: A matrix of shared responsibilities. JHPIEGO-MNH.

23. JHPIEGO (2004) Monitoring Birth Preparedness and complication readiness tools and indicators for maternal and newborn health. JHPIEGO.

24. Sherrat D (2002) Birth and emergency preparedness in antenatal care, standard for maternal and new born care, Geneva, World Health Organization, (unpublished document).

25. Improving Safe Motherhood through Shared Responsibility and Collective Action. MNH Program Accomplishments and Results, Jhpiego, Baltimore, Md, USA.

26. Moran AC, Sangli G, Dineed R, Rawlins B, Yameogo M, et al. (2006) Birth preparedness for maternal health: findings from Koupela district, Burkina Faso. *J Health Popul Nutr.* 24:489-497.

27. McPherson RA, Khadka N, Moore JM, Sharma M (2006) Are birth-preparedness programmes effective? Results from a field trial in Siraha district, Nepal. *J Health Popul Nutr.* 24:479-488.

28. Fullerton JT, Killian R, Gass PM (2005) Outcomes of a Community and Home Based Intervention for Safe Motherhood and Newborn Care. *Health Care Women Int.* 26:561-576.

29. (2005) Kofele woreda health office annual report. EC, unpublished.

30. Urassa DP, Pembe AB, Mganga F (2012) Birth preparedness and complication readiness among women in Mpwapwa district, Tanzania. *Tanzania J Health Res.*14:42-47.

31. Agarwal S, Sethi V, Shrivastsav K, Baqui AH (2010) Birth preparedness and complication readiness among slum women in Indore city, India. *J Health Popul Nutr.* 28:383-391.

32. Mutiso SM, Qureshi Z, Kinuthia J (2008) Birth preparedness among antenatal care clients at Kenyatta National Hospital antenatal care clinic, Kenya. *East Afr Med J.* 85:275-283.

33. Kabakyenga J, Ostergren P, Turyakira E, Pettersson K (2011) Knowledge of obstetric danger signs and birth preparedness practices among women in rural Uganda. *Reprod Health.* 8:33.

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