Birth Preparedness and Complication Readiness and Associated Factors among Pregnant Women in Basoliben District, Amhara Regional State, Northwest Ethiopia, 2013

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Abstract

Introduction: Birth preparedness and complication readiness is a strategy that has been globally endorsed as an essential component of safe motherhood programs to reduce delays for care, to reduce maternal mortality and neonatal mortality rates.

Objectives: To assess birth preparedness and complication readiness and associated factors among pregnant women in Basoliben district, East Gojjam Zone, Amhara Regional State, Ethiopia in 2013.

Methods: A community based cross sectional study was conducted in Basoliben District, on a sample of 546 pregnant women in 2013. Data was collected using pre-tested structured questionnaire which was adapted from other similar studies. Each data collector checked the questionnaires for completeness before leaving each study participant and reviewed on daily basis by supervisors. The collected data were analyzed using SPSS version 16 software. Bivariate analyses was done to identify factors associated with birth preparedness and complication readiness and those found significant (p-value ≤ 0.2) were entered in the multivariate logistic regression analysis. The results was presented in frequency table, odds ratio (OR) and 95% confidence interval (CI).

Ethical issues: Ethical clearance was obtained from Debre Markos University ethical review committee. Permission also requested from Basoliben District Health Office. Interview was carried out with full written consent of the person being interviewed.

Result: Data were obtained from 517 mothers, yielding a response rate 94.7%. Considering at least three elements of birth preparedness and complication readiness, 26.9% of the respondents were prepared for birth and its complications. Women living in urban areas were 2.55 times more likely to be prepared for birth and its complication than those living in rural areas [AOR (95% CI): 2.55(1.42, 4.56)]. Women who had Antenatal Care (ANC) follow up were 2.37 times more likely to be prepared for birth and its complication than those did not have ANC follow up [AOR (95% CI):2.37(1.11, 5.05)].Women who had history of still birth were 3.41 times more likely to be prepared for birth than those who did not have still birth [AOR (95% CI): 3.41(1.86, 6.27)]. Respondent who know at least one danger sign during labor/childbirth two times more likely birth prepared and ready for complication than those do not know any danger sign [AOR(95% CI) 1.96 (1.14,3.36)].

Conclusion: The proportion of mother who prepared for birth and its complications for was low. Women living in urban area, having antenatal care visit, with history of stillbirth and those aware of danger sign during labor/childbirth were positively associated with birth preparedness and complications readiness. Therefore, the district health office should come up with strategies to improve birth preparedness at individual and community level especially in rural. Health facilities should have Strengthen health services in promoting early ANC attendance and improving the information given during the follow up, with special emphasis given to birth preparedness.

Keywords: Birth preparedness; Complication readiness; Ethiopia

Introduction

Globally, an estimated 287 000 maternal deaths occurred in 2010, a decline of 47% from levels in 1990. Sub-Saharan Africa (56%) and Southern Asia (29%) accounted for 85% of the global burden (245 000 maternal deaths) in 2010 [1].

It is estimated that nearly two-third of the 8 million infant deaths that occur each year largely from poor maternal health and hygiene, inadequate care, inefficient management of delivery, and lack of essential care of new-born [2].
Based on the 2000 and 2005 Ethiopian demographic and health survey findings, the maternal mortality rate showed a decreasing trend from 871 to 673 maternal deaths/100,000 live births. Similarly, the data from various hospitals in the country generally indicated a decreasing maternal mortality rate trend [3].

But even if this trend expected to be low in order to achieve Millennium Development Goal 5 by improving health service access, there is still high maternal mortality ratio which is 676 based on 2011 Ethiopian Demographic Health Survey [4].

In many societies in the world cultural beliefs and lack of awareness inhibit preparation in advance for delivery and expected baby. It is believed that problems can be brought by preparing before the birth. Since no action is taken prior to the delivery, the family tries to act only when labor begins. When complications occur the unprepared family will waste a great deal of time in recognizing the problem, getting organized, getting money, finding transport and reaching the appropriate referral facility. These delays can lead to maternal death [5].

Maternal deaths mainly arise from pregnancy, childbirth or postpartum complications. A key strategy that can reduce the number of women dying from such complications is making a birth plan that constitutes birth-preparedness and complication-readiness measures for pregnant women, their spouses and their families. Birth-preparedness and complication readiness is a comprehensive package aimed at promoting timely access to skilled maternal and neonatal services. The birth-preparedness package promotes active preparation and decision-making for delivery by pregnant women and their families [6].

The concept of birth-preparedness and complication readiness includes knowing danger signs, planning for a birth attendant and birth-location, arranging transportation, identifying a blood donor, and saving money in case of an obstetric complication [7].

**Methods**

**Study area and study design**

A community based cross-sectional study was conducted in Basoliben District, Amhara regional state, Ethiopia. Basoliben District is found 300 Kilometers away in the northwest direction from Addis Ababa. It has total population of 137470. Out of this 69876 are females [8]. The potential health service coverage is 84%. It has 3 urban and 22 rural kebeles (the smallest administrative level in Ethiopia) in which 5 health centers and 22 health posts [9].

**Sample size determination**

The sample size was determined using single population proportion formula with the assumption of 95% confidence level, 5% margin of error and proportion of women who had antenatal care among well birth prepared was 44.7% [10]. Then adding a 10% non-response and multiplied by a design effect 2, the total sample size became 836. Using correction formula, the final sample size becomes 546.

**Sampling procedure**

Multistage sampling procedure was used to select study participant. All the 25 kebeles in the district were stratified based on 3 urban and 22 rural. Then 1 urban and 7 rural kebeles were randomly selected.

Proportional allocation of the sample size was done according to the number of pregnant women in each selected kebeles. Finally, pregnant mothers were randomly selected by using the registration book of health extension works as a sampling frame.

**Operational Definitions**

Birth preparedness and complication readiness: A woman was classified as “well birth prepared and ready for complication” if she had accomplished at least three of the following practices: identified health facility for place of delivery, Saved money for the purpose of pregnancy and childbirth, decided to deliver by skilled provider, made advance arrangement for transport to skilled care site in case of emergency, arranged compatible blood donor in case of hemorrhage. A woman who made arrangements for birth in less than three of the five ways was classified as “not well birth prepared and ready for complication”.

**Data collection**

A pre tested semi-structured interview questionnaire was adapted from various hospitals in the country generally indicated a decreasing trend [11] and used for data collection after modification by considering the research objective. The questionnaire was first prepared in English language and it was translated to local Amharic language for the data collection. Training was given for data collectors and supervisors. The questionnaire was pretested on five per cent of sample size in similar study areas, modification was done accordingly. Each data collector checked the questionnaires for completeness before leaving each study participant. The questionnaire was reviewed on a daily basis by supervisors.

**Data management and analysis**

The coded data were entered to the computer using EPI data 3.1 version software, then after data cleaning it was exported to SPSS version 16. The results were summarized into frequency tables. Bivariate analysis was done to identify factors associated with birth preparedness and complication readiness and those found significant (p value ≤ 0.2) were entered in the multivariate logistic regression analysis. The results were presented as frequency table, crude and adjusted odds ratios (ORs) and 95% Confidence Interval (CI).

**Ethical issues**

Ethical clearance was obtained from Debre Markos University ethical review committee. Permission also requested from Basoliben District Health Office. Interview was carried out with full written consent of the person being interviewed. Before each interview, clear explanation was given about the aim of the study. Each respondent were assured that the information provided by them would be confidential and used only for the purpose of research. The right of the respondents to refuse participating in the study was respected.

**Result**

**Socio demographic characteristics**

Data was collected from 517 pregnant women. Most of the respondents (62.1%) were between 25 and 34 years of age. The mean age was 28.62 (± 5.4) ranging 18-43 years. The majority 458 (88.6%) of the respondents were living in the rural and the rest 59 (11.4%) were...
urban. Out of the study participants only 488(94.4%) were volunteered to tell their monthly income and the rest 29(5.6%) were unknown (Table 1).

| Variables          | Frequency | %     |
|--------------------|-----------|-------|
| Age                |           |       |
| 15 – 24            | 107       | 20.7  |
| 25 – 34            | 321       | 62.1  |
| 35 – 44            | 89        | 17.2  |
| Occupation         |           |       |
| Farmer             | 339       | 65.6  |
| Housewife          | 149       | 28.8  |
| Government employee| 14        | 2.7   |
| Private employee   | 3         | 0.6   |
| Private business   | 12        | 2.3   |
| Educational Status |           |       |
| Not read and write | 378       | 73.1  |
| Read and write     | 80        | 15.5  |
| Primary            | 45        | 8.7   |

Table 1: Socio-demographic characteristics of pregnant women, Basoliben District, Ethiopia, 2013 (n= 517)

Obstetric characteristics

Among 517 participants 34(6.6%), 256(49.5%) and 227(43.9%) of the respondents were first, second and third trimester respectively. The highest parity was nine. Majority 444(85.9%) of the respondents have attended ANC at least once. About fifty one (9.9%) had history of still birth (Table 2).

| Variables                          | Frequency | %     |
|------------------------------------|-----------|-------|
| First pregnancy                    |           |       |
| (n= 517)                           |           |       |
| Yes                                | 98        | 19    |
| No                                 | 419       | 81    |
| Gravidity                          |           |       |
| (n=517)                            |           |       |
| Primagravida(1)                    | 98        | 18.96 |
| Multigravida(2-4)                  | 278       | 53.77 |
| Grandmultigravida(5+)              | 414       | 27.27 |
| Parity                             |           |       |
| (n=517)                            |           |       |
| Nulliparus(0)                      | 99        | 19.1  |
| Primaparous(1)                     | 93        | 18    |
| Mmultiparous(2-4)                  | 246       | 47.6  |
| Grandmultiparous(5+)               | 79        | 15.3  |
| Attend ANC during current pregnancy|           |       |
| (n= 517)                           |           |       |
| Yes                                | 444       | 85.9  |
| No                                 | 73        | 14.1  |
| Number of Antenatal care visits    |           |       |
| (n=444)                            |           |       |
| Only one                           | 107       | 24.1  |
| Two times                          | 193       | 43.5  |
| Three times                        | 107       | 24.1  |
| Four and above                     | 37        | 8.3   |
| Personal checked for the first time|           |       |
| (n=444)                            |           |       |
| Health professional                | 104       | 23.4  |
| Health Extension Worker            | 305       | 75.5  |
| Do not know                        | 5         | 1.1   |
| History of still birth             |           |       |
| Yes                                | 51        | 9.9   |
| No                                 | 466       | 90.1  |

Table 2: Obstetrics characteristics of pregnant women, Basoliben District, Ethiopia, 2013
Knowledge of respondents about birth preparedness and complication readiness

About 393(76%) of respondents explained that they heard the term birth preparedness and complication readiness. Majority of the respondents 287(73%) got information about birth preparedness and complication readiness from Health extension workers.

Practices of birth preparedness and complication readiness

Majority (87.8%) of the respondents reported that they made at least one arrangement for birth and ready for complication. Considering at least three practices of identified health facility for place of delivery, Saved money for the purpose of pregnancy and childbirth, decided to deliver by skilled provider, identified mode of transport and arranged blood donor, 139(26.9%) of the total respondents were well birth prepared and ready for complication (Table 3).

| Variables                                      | Frequency | %   |
|-----------------------------------------------|-----------|-----|
| Ever heard the term BP and CR (n= 517)        |           |     |
| Yes                                           | 393       | 76  |
| No                                            | 124       | 24  |
| Source of Information (n=393)                 |           |     |
| Health professional                           | 79        | 20.1|
| Trained Traditional birth attendant           | 9         | 2.3 |
| Traditional birth attendant                   | 1         | 0.3 |
| Health Extension Worker                       | 287       | 73  |
| Mothers                                       | 11        | 2.8 |
| Media                                         | 6         | 1.5 |
| Spontaneously Mentioned BP and CR activities * (n=517) |           |     |
| Identify health facility for place of delivery| 262       | 50.7|
| Save money for emergency                      | 359       | 69.4|
| Identify skilled provider                     | 166       | 32.1|
| Arranging blood donors                        | 36        | 7   |
| Identify a mode of transportation             | 171       | 33.1|
| Preparation of food like porridge             | 149       | 28.8|
| Other **                                      | 27        | 5.2 |

* Multiple responses were allowed, BP and CR = Birth preparedness and complication readiness

Table 3: Knowledge of respondents about birth preparedness and complication readiness, Basoliben District, Ethiopia, 2013

Factors associated with birth preparedness and complication readiness

In the bivariate analysis 8 independent variables were significantly associated with birth preparedness and complication readiness at p-values<0.2. When all these independent variables were included in multivariate logistic regression analysis, residence, ANC follow up, history of still birth and know at least one danger sign during labor/childbirth were significantly associated with birth preparedness and complication readiness at p-values<0.05. Women living in urban were 2.55 times more likely birth prepared and ready for complication than those living in rural [AOR(95% CI): 2.55(1.42,4.56)]. Pregnant women who had antenatal care follow up were 2.37 times more likely to be birth prepared than those did not have ANC follow up [AOR(95% CI): 2.37(1.11,5.05)].

Women who had history of still birth were 3.41 times more likely to be prepared for birth than those who did not have still birth [AOR(95% CI ) : 3.41( 1.86, 6.27)]. Respondent who know at least one danger sign during labor/childbirth two times more likely birth prepared and ready for complication than those do not know any danger sign [AOR(95% CI) 1.96(1.14,3.36)] (Table 4).

| Variables                                      | Well BP and CR (n=139) N (%) | Less BP andCR(n=378) N (%) | CrudeOR (95%CI) | AdjustedOR(95%CI) |
|-----------------------------------------------|-----------------------------|---------------------------|-----------------|-------------------|

Citation: Bishaw W, Awoke W, Teshome M (2014) Birth Preparedness and Complication Readiness and Associated Factors among Pregnant Women in Basoliben District, Amhara Regional State, Northwest Ethiopia, 2013. Primary Health Care 4: 171. doi: 10.4172/2167-1079.1000171
Table 4: Factors associated with Birth preparedness and complication readiness, Basoliben District, Ethiopia, 2013

| Residence | 114(82.01) | 344(99.01) | 1 | 1 |
|-----------|------------|------------|---|---|
| Rural     | 25(17.99)  | 34(8.99)   | 2.29(1.31,4.02) | 2.55(1.42,4.56) |
| Urban     | 17(12.2)   | 81(21.4)   | 0.51(0.291,0.898) | 0.68(0.375,1.221) |
| First pregnancy | 1 | 1 |
| Yes       | 122(87.8)  | 297(78.6)  | 1.0 | 1.0 |
| No        | 344(99.01) | 344(99.01) | 1 | 1 |
| Attend ANC | Yes        | 130(93.5)  | 314(83.1) | 2.94(1.423,6.091) | 2.37(1.111,5.050) |
| No        | 9(6.5)     | 64(16.9)   | 1.0 | 1.0 |
| History of still birth | Yes | 26(18.7) | 25(6.8) | 3.25(1.804,5.852) | 3.41(1.856,6.269) |
| No        | 113(81.3)  | 353(93.4)  | 1.0 | 1.0 |
| Danger sign during pregnancy | Yes | 111(79.9) | 267(70.6) | 1.65(1.030,2.637) | 0.82(0.432,1.563) |
| No        | 28(20.1)   | 111(29.4)  | 1.0 | 1.0 |
| Danger sign during labor | Yes | 118(84.9) | 268(70.9) | 2.31(1.379,3.858) | 1.96(1.144,3.357) |
| No        | 21(15.1)   | 110(29.1)  | 1.0 | 1.0 |
| Danger sign during 42 days after birth | Yes | 94(67.6) | 193(51.1) | 2.00(1.331,3.013) | 1.46(0.894,2.377) |
| No        | 45(32.4)   | 185(48.9)  | 1.0 | 1.0 |
| Ever heard the term BP and CR | Yes | 120(86.3) | 273(72.2) | 2.43(1.425,4.142) | 1.40(0.735,2.649) |
| No        | 19(13.7)   | 105(27.8)  | 1.0 | 1.0 |

Discussion

In this study 26.9% of participants were well birth prepared and ready for complication. This finding was higher than results seen in previous studies done in Aletawondo district (17%) and Adigrat town (22%) and less than finding in Uganda (35%) and India (47.8%) which was analyzed by taking at least three steps of birth preparedness and complication readiness components for measuring except in Aletawondo which used two steps[5,6,10,12].

The reason for this progress of birth preparedness results in Ethiopia might be there was a safe mother hood strategy implemented in the district directed by federal ministry of health to increase the awareness of pregnant women through 1 to 5 small group discussions and during monthly pregnant women conference.

Findings from previous studies conducted in Ethiopia, Uganda, Tanzania and India showed that the main predictors to be well birth prepared and read for complication were attending antenatal care, being pregnant for the first time, literate, married women, parity with 2-4, women with history of still birth, women advised about birth preparedness during antenatal follow up, women with primary education and above and women who knew ≥ 3 obstetric danger sign [5,13,14].

Similar findings also observed in this study. The possible reason for this similarity might be most of the time the information about components of birth preparedness and complication readiness and danger sign provided during antenatal care visit that reinforce birth
preparedness. But living in urban be as new predictor in this study which was not seen in previous findings.

Conclusion and Recommendations

In conclusion, women living in urban, having antenatal care visit, with history of stillbirth and those aware of danger sign during labor/childbirth were positively associated with birth preparedness and complications readiness. Many respondents did not know about birth preparedness and had no plans for emergencies.

Health facilities should have strengthened health services in promoting early ANC attendance and improving the information given during the follow up, with special emphasis given to birth preparedness.

District health office as well as other partner organizations that are working in areas of maternal health should come up with strategies to improve birth preparedness at individual and community level especially in rural kebeles.

Acknowledgment

We expressed our gratitude to Debre Markos University, GAMBY College of Medical Sciences, staffs of Basoliben District Health office, all data collectors, supervisors, the study participants and Mr. Amsalu Kale.

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