

Research Article

Assessment of knowledge and practice towards birth preparedness and complication readiness among women in Northern Ghana: a cross-sectional study

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ABSTRACT

Background: The principle and practice of birth preparedness and complication readiness (BP&CR) in resource-poor settings have the potential of reducing maternal and neonatal morbidity and mortality rates. The purpose of this study was to assess BP and CR among pregnant women and women who gave birth in the 12 months preceding the study and the socio-demographic factors affecting BP and CR.

Methods: The study was a health facility-based cross-sectional survey using pre-tested and structured questionnaires to gather data among 422 currently pregnant women and women who gave birth in the 12 months preceding the study and attending antenatal or postnatal care in health facilities in the Kassena-Nankana Districts in Northern Ghana. Data were analysed using State version 10.

Results: For the 422 respondents, 50% were rural and 50% urban residents. Having at least a primary education and living in a rural area were significantly associated with birth preparedness plan (BPP) ($P = 0.044$) and ($P = 0.007$). There was no association between age group, occupation, marital status and religion to BPP ($P=0.907$), ($P=0.397$), ($P=0.573$) and ($P=0.564$) respectively. The study also revealed that identification of a potential blood donor and a skilled birth attendant were not considered crucial by the respondents.

Conclusions: The study identified poor knowledge and practices of identification of a potential blood donor and skilled birth attendant preparation for birth preparedness and its complication in the study area. Antenatal care education should place emphasis on birth preparedness and complication readiness to improve access to skilled and emergency obstetric care.

Keywords: Birth preparedness, Complication readiness, Antenatal, Postnatal, Women, Ghana

INTRODUCTION

Each year, more than half a million women die during pregnancy and childbirth making pregnancy-related complications among the greatest killers of women of reproductive age in developing countries.¹⁻³ the lifetime risk of a woman dying during pregnancy or childbirth is much higher in the poorest countries than in the richest.³ According to the WHO, maternal mortality demonstrates the greatest disparity between poor and rich countries.

Maternal mortality continues to be the major cause of death among women of reproductive age between 15-49 years in Ghana, as in many other Sub-Saharan African (SSA) countries, where 1 in 16 women is likely to die as a consequence of pregnancy and childbirth.⁴ Women die as a result of obstetric complications during and following pregnancy and childbirth.

The major obstetric complications that account for about 80 percent of all maternal deaths include severe bleeding,

infections, high blood pressure during pregnancy, obstructed labour and unsafe abortion. The rest are caused by diseases such as malaria, anemia and HIV/AIDS during pregnancy. Most of these deaths are preventable provided pregnant women attend antenatal clinics regularly for checkups and report obstetric complications as and when they occur for skilled attention.⁵ It is particularly important that all births are planned as well as attended to by skilled attendants as timely management and treatment can make the difference between life and death.

To achieve an improvement in the health of pregnant women and their babies and a reduction of maternal mortality, Ghana has implemented a number of policies and strategies which include policies on maternal health services, motherhood programme, and national reproductive health service policy and standards.⁶

One of the key roles of antenatal care is to provide health education on danger signs of pregnancy, delivery, preparation of a birth plan and to encourage delivery under a skilled attendant. The WHO now recommends that pregnant women should receive focused antenatal care in which birth preparedness and complication readiness is a key component.⁷

The safe motherhood plan of the WHO defines a range of complementary interventions to improve maternal and newborn health, one of which is the birth-preparedness package (BPP). The purpose of the package is to encourage pregnant women, their families, and communities to plan for normal pregnancies, deliveries, and postnatal periods and to prepare to deal effectively with emergencies if they occur.⁸

Birth preparedness and complication readiness is a safe motherhood strategy whose objective is to promote the timely use of skilled maternal and neonatal care during childbirth or obstetric emergencies by reducing delays at the first, second and third levels. It entails making plans prior to birth to ensure that a pregnant woman is prepared for normal birth and complications. Decisions are made and documented on such issues as desired place for birth, the preferred skilled birth attendant, items required for birth, birth companion, getting a compatible blood donor and arranging in advance for transport. Other elements of birth preparedness include knowledge of expected date of delivery, signs of labour, HIV testing, mobilizing resources to pay for services, and arranging for someone to take care of the family during delivery, importance of postnatal care, importance of exclusive breastfeeding and contraception. It is advised that birth plans are discussed at the booking visit, then reviewed in subsequent visits and finalized by 32 weeks.⁶ This study therefore sought to assess the birth preparedness and complications readiness among pregnant women and women who gave birth in the 12 months preceding the study.

METHODS

The study was a health facility based cross sectional survey using structured questionnaires to gather data among currently pregnant women and women who gave birth in the 12 months preceding the study who are attending antenatal or postnatal care in health facilities within the 5 zones of the study area. A structured survey questionnaire used for this study was adapted from the safe motherhood research tools by the maternal neonatal programme of JHPIEGO. The questionnaire was pretested in the similar environment in a neighboring Bulsa District. The area has 5 health centers, 5 clinics, a 140 bed hospital that serves as a referral center and 27 community-based health planning and services (CHPS). All these health facilities in one way or the other provide antenatal care, delivery and run child welfare clinics. Therefore, for the purpose of this study, participants were recruited from each zone. The questionnaires covered socio demographics, education about birth preparedness, knowledge about danger signs and complication readiness.

The study population was pregnant women and women who recently delivered less than one year preceding the commencement of this study. Women who recently delivered are included in this study to control for likely inability of current pregnant women to adequately share their experience regarding BP and CR, while pregnant women also controlled for recall problems of women who have recently delivered. For the pregnant respondents, the inclusion criteria are as follows; women in their second and third trimester of pregnancy and who are 30 or more weeks of gestation and have had at least 2 antenatal visits during current pregnancy. The second categories of respondents were women who gave birth in the last 12 months preceding the commencement of the study were included. Pregnant women with gestational ages below 30 weeks, and women who gave birth more than 12 months preceding the commencement of the study were excluded from this study.

The sample size of this study was arrived at with the assumption that the proportion of women who know BP and CR and danger signs of pregnancy and childbirth was 50% since there is no known prevalence rate of BP and CR locally. The margin of error and confidence interval was taken to be 5% and 95% respectively. Based on the above assumption, this gives a sample size of 384 plus a 10% non-response rate, the total sample size becomes 422.4 (422). The sample size was then be divided into two n= 211 (pregnant women) and n=211 (women who recently gave birth). A systematic random sampling technique was applied in selecting respondents for this study. For every daily antenatal and child welfare clinic, every third client in the attendance queue was selected for interview. In a situation where the selected respondent declines, the next in the queue was interviewed.

Statistical analysis

Statistical analysis was done using Stata version 10. The completed questionnaires were cross checked for consistency and completeness and sorted. The data was coded, doubly entered, and analyzed. Univariate analysis was done from which, absolute and relative frequencies was obtained. Bivariate analysis and logistic regression analyses was used to determine the associations between the outcome variables and a host of explanatory variables. P value <0.05 was used to indicate statistical significance.

RESULTS

Socio demographic characteristics

Table 1: Socio demographic characteristics of respondents.

Variable	Frequency	Percentage (%)
Age (410)		
<25 years	179	43.7
≥25 years	231	56.3
Place of residence (422)		
Urban	211	50.00
Rural	211	50.00
Occupation (422)		
Housewife	156	36.97
Trader	144	34.12
Farmer	77	18.26
Salaried worker	45	10.66
Marital status (421)		
Married/co-habiting	379	90.02
Never married	33	7.84
Divorced/separated	8	1.90
Widowed	1	0.24
Level of education (422)		
Primary	100	23.70
JHS	131	31.04
SHS	69	16.35
Tertiary	32	7.58
None	90	21.33
Religion (422)		
Traditional	35	8.27
Christian	340	80.57
Muslim	47	11.14
Maternal status (422)		
Yes (presently pregnant)	211	50.00
No (recently delivered)	211	50.00
Parity (417)		
0	73	17.50
1-2	233	55.88
≥3	111	26.62

A total of four hundred and twenty two (422) women were interviewed. This comprised of 211 pregnant

women and 211 women who delivered during the period. The mean age was 26 years ranging 15-46 years. The respondents comprised 50% rural and 50% urban residents. Most of the women interviewed were housewives (36.97%) followed by traders (34.12%) farmers (18.26%) and those who were in full time employment that is salaried workers constituting (10.66%). More than half of the respondents (90.02%) were either married or co-habiting, 7.84% were never married, 1.90% of them were divorced or separated from their husbands and 0.24% of the respondents were widowed. 21.33% of the respondents have never been to school, 23.70% dropped out of primary school, 31.04% attained up to the JSS level, 17.35% up to SSS and 7.58% have had post-secondary/tertiary education. Majority (80.57%) of the respondents were Christians, followed by Moslems (11.14%) and African traditionalists constituted only (8.27%). For the parity of the respondents, 17.50% have not given birth before, 55.88% have given birth once or twice, and 26.62% have given birth trice or more (Table 1).

Knowledge level of BP and CR

Table 2: Birth preparedness practices among women.

Levels of birth preparedness and complication readiness	Frequency	%
# of respondents who have done the following		
Saved money for delivery (n=422)	243	57.58
Arranged for transport (n=422)	43	10.18
Planned ahead for a place of delivery (n=422)	76	18.01
Identified skilled provider (midwife/doctor) (n=422)	2	0.47
Identified a person to follow you to		
health facility for delivery (422)	97	22.10
Identified a blood donor (n=421)	4	0.95
Gathered essential items for delivery (n=421)	147	34.92
Food stuff /Ingredients (n=421)	168	39.91
# of steps taken		
0	65	15.44
1	164	38.96
2	87	20.67
3	37	8.79
4	28	6.65
5	24	5.70
6	15	3.56
7	1	0.24
8	0	0.00
At least 4 steps taken	68	16.15

The study revealed that about 98.20% of women attended ANC at least once during pregnancy. The knowledge of BP and CR of respondents was measured first by asking them whether they knew or have heard about BP and CR during ANC sessions. Majority (74.33%) had knowledge about BP and CR the remaining (25.67%) do not know and have never been spoken to concerning the subject. The findings indicates that 195 (46.21%) knew arrangement for food stuff and ingredients, 192 (45.50) made mention of gathering essential items for delivery, 178 (42.18%) mentioned saving money for emergency

obstetric complication, 30 (3.79%) respondents also mentioned arrangement for someone to cater for house and kids, 3.08% knew about making transport arrangements, 4.50% of respondents mentioned arrangement for delivery place ahead of time, 7.11% mentioned identification of someone to accompany to the facility to deliver, 1 (0.24%) mentioned the identification of blood donor, 3 (0.71%) mentioned identification of skilled attendants and 12.09% did not know about BP and CR and therefore could not mention any.

Table 3: Demographic factors associated with birth preparedness and complication readiness.

Variable	Frequency	Percentage	P value	95% (CI)
Age group (68)				
<25	31	45.59	0.907	-0.011-0.017
≥25	37	54.41		
Residence (68)				
Rural	46	67.65	0.007	0.834-0.533
Urban	22	32.35		
Occupation (68)				
Housewife	15	22.06		
Trader	24	35.29		
Farmer	23	33.82	0.397	-0.048-0.121
Salaried Worker	5	7.35		
Other	1	1.47		
Marital Status (68)				
Married/co- habiting	62	91.18		
Never married	4	5.88	0.573	-0.202-0.365
Divorced/Separated	2	2.94		
Educational Attainment (67)				
None	22	32.84		
Primary	17	25.37		
JHS	12	17.91	0.044	-0.155-0.002
SHS	11	16.42		
Tertiary	5	7.46		
Religion (68)				
Traditionalist	6	8.82		
Christian	58	85.29	0.564	-0.1737-0.3183
Muslim	4	5.88		

* 95% CI = Confidence interval, *Place of residence, age group, occupation, marital status, educational attainment, religion; P value<0.05 significant.

Levels of birth preparedness and complication readiness

Of the eight birth preparedness practices considered in this study; about two-thirds (57.58%) of the women saved money/ kept money aside for incurring cost of delivery and obstetric emergencies, if needed (Table 2). Also, 39.91% of the respondents arranged for food stuff and ingredients before their delivery. A considerable number 34.92% of women interviewed mentioned that they had gathered all the essential items needed during

delivery before their delivery day. The study has also revealed that 22.10% of the respondents reported to have identified family members to follow/accompany them to the facility to deliver. About a quarter 18.01% of respondents planned ahead for a place of delivery. It emerged from the responses of the women that prior arrangement for transport was only 10.18%. Identification of a potential blood donor 4 (0.95%) and a skilled provider 2 (0.47%) were not considered crucial (Table 2).

The birth preparedness score was computed from key elements of birth preparedness such as; saved money for delivery, arrangement for transportation, identified skilled attendant to assist at birth, identifying a health facility for emergency, Identified a person to follow you to health facility for delivery, gathered essential items for delivery, food stuff/ingredients and identified blood donor in case of emergency. Taking at least four steps was considered being well prepared. Accordingly, over all, 16.15% of women on this study were considered as well prepared for birth and complications as against 83.85% who were less-prepared. Findings from the regression model in Table 3 above shows that having at least a Junior high education and living in a rural area were significantly associated with birth preparedness plan (BPP) ($P = 0.044$) and ($P = 0.007$). There was no association between age group, occupation, marital status and religion to BPP ($P=0.907$), ($P=0.397$), ($P=0.573$) and ($P=0.564$) respectively.

Knowledge of danger signs

Of the 416 responses on danger signs, majority 90.38% who attended ANC had received education about danger signs. Regarding knowledge of key danger signs, severe vaginal bleeding was the most frequently mentioned complication by women during the following phases; pregnancy (59.24%), childbirth (46.21%) and in postpartum (41.71%). Others include: a severe abdominal pain 169 (40.5%) during pregnancy and postpartum 193 (45.73%) periods as one of the commonest danger signs. Prolonged labour, was reported by 129 (30.57%) of the respondents during childbirth. Majority of the respondents were able to mention at least one key danger sign in the following phases; during pregnancy (96.88%), childbirth (85.58%) and postpartum (85.01%) periods. When the scores were combined for the three periods 39.18% could mention at least 4 key danger signs during pregnancy and 3 key danger signs in childbirth and postpartum periods. The study also revealed that about (25.59%) did not know their expected delivery date (month) (Table 4).

Table 4: Women knowledge of key danger signs during pregnancy, childbirth and postpartum (N = 422).

Knowledge of key danger signs	Pregnancy		Child birth		Postpartum	
	n	%	n	%	n	%
Severe headache	180	42.65			142	33.65
Blurred vision	5	1.18				
Swollen hands/face/feet (oedema)	146	34.60				
High fever	16	3.79			6	1.42
Loss of consciousness	4	0.95				
Difficulty breathing	8	1.90				
Severe weakness	117	27.73				
Severe abdominal pain	169	40.05			193	45.73
Accelerated/ reduced fetal movement	22	5.21				
Water breaks without labour	87	20.62				
Convulsions	2	0.47	2	0.47		
Prolonged labour			129	30.57		
Retained placenta			53	12.56		
Foul smelling vaginal discharge					34	8.06
Severe vaginal bleeding	250	59.24	195	46.21	176	41.71
Don't know	103	24.41	59	13.98	70	16.63

Spousal support towards BP and CR

The study observed 29.45% involvement of spouses in maternity care which is rather at the lower side. Overall, only 20 (4.74%) of the women interviewed were accompanied by the spouses at least once to the hospital for antenatal, delivery or postnatal care.

For roles played by the spouses of respondents during pregnancy as part of their contribution to BP and CR, 288 (68.25%) reported that their spouses provided money for

medication, 27 (6.40%) arranged for transport, 114 (27.05%) provided food stuffs, 9 (2.13%) granting permission to attend routine antenatal and postnatal care and 64 (15.20%) reported that they do not enjoy any support from their spouses.

DISCUSSION

Several important and interesting findings emerged from this study. The dominant group amongst the community respondents (nursing mothers and pregnant women) were

housewives, accounting for 36.97 percent of total number of respondents (N=422). The rest of the respondents were either self-employed or employees of the formal sector. This shows that a greater proportion of women who are in the child-bearing age are unemployed. Interestingly, this study found no statistical association of one's occupational status being a predictor for being well-prepared for BP and CR (occupation (P = 0.397 95% CI; -0.048-0.121). This finding is inconsistent with the findings by Debelew and colleagues.⁹ A greater proportion (90.02%) of the respondents were married. About 21.33% of the respondents were illiterates (have never been to school) thus portraying a high level of illiteracy among the study population. One's educational attainment at least junior high education level was found to be a significant predictor for being well-prepared for BP and CR (P = 0.044). This finding is consistent with that of a study by Kuganab-Lem et al in a rural Ghana and that of Debelew and colleagues in Ethiopia.⁹ However, there was no association between age group, occupation, marital status and religion to BP and CR (P=0.907), (P=0.397), (P=0.573) and (P=0.564) respectively agreeing with Ethiopian studies.^{11,12}

In assessing the knowledge of respondents regarding BP and CR, it was discovered that while the majority (74.33%) knew what it was about could not spontaneously mention at least three BP and CR steps, 51 (12.09%) of the women did not know or could not mention any BP and CR steps. These findings are quite striking and could be attributed to the strategy used in teaching prenatal sessions or classes where relevant information about pregnancy and childbirth to build maternal confidence.¹³

According to Bansah et al most prenatal (ANC services) are still conducted in a lecture format despite the introduction of focus antenatal care concept.¹⁴ This study revealed that midwives do not talk in-depth during ANC services and therefore most women feel that after all prenatal education was not a solution centered (prenatal needs). The study also found that identification of a blood donor and a skilled provider as an obstetric emergency plan was not considered as a crucial issue by some of the respondents. Only 0.24% respondents mentioned blood donor while 0.71% mentioned identification of skilled provider. Identifying a skilled birth provider and a blood donor in case of emergency seem to be the lowest in this study as compared to a study by Haliu et al in southern Ethiopia.¹²

It is also worrying to note from the findings that out of the 211 pregnant women, 54 (25.59%) women did not know their expected date of delivery. The knowledge of pregnancy and its complications is very important step in BP and CR which this study has shown has not been given serious attention by most women interviewed. Presentation of ANC information aimed at increasing awareness of risk factors and danger signs in pregnancy are a challenge to antenatal programs and the difficulties

involved should not be underestimated. The findings in this study are similar to a Cochrane review that failed to find high quality evidence for the benefit of antenatal education for child birth.¹⁴ Furthermore, a literature review of qualitative studies concluded that interaction between patient and nurse has a complex and multifaceted nature.¹⁵ Studies from Zimbabwe, Nepal and Tanzania, report that less than three minutes are spent on individual counseling per consultation in antenatal clinics.^{13,16,17} With the simulation of focus antenatal care (FANC) in Ghana by the Ghana health Service it looks like not much has changed yet from the findings in this study.

The prevalence of birth preparedness of 16.15% estimated in this study appears to be lower than what was reported in Uganda 35% 18 or 20%-22% reported in studies from Nigeria and India and 29.9% in Ethiopia, but higher than the 7% reported in Kenya by Mutiso and colleagues.¹⁹⁻²² However, it is difficult to compare the findings of these studies with those from other countries as the measures used to determine BP and CR had some variations and the general environments differed somewhat. Nevertheless, the underlying principles regarding birth preparedness are the same and the methods used to study BP and CR are similar except that in this study eight different BP and CR steps were considered as pertain to the Ghanaian context. The most common birth preparedness practice observed in this study was saving money, which may be explained by the fact that both women and their partners know that money is required to facilitate referral in case of complications. It is interesting to note that other studies on birth preparedness have reported similar findings.^{20,21}

Identification of an appropriate compatible blood donor and their availability in case of an emergency may be lifesaving especially in facilities where blood is scarce. However, at most times relatives and friends are requested to donate blood for a patient. Prior donor identification may be crucial in such situations. In this study only 0.95% of the respondents had identified a blood donor. This is alarming and could be attributed to lack of education on the subject during ANC. A similar study in Kenya reported 28.7% higher than the findings of this study.²²

In this study, only 10.18% of the respondents made advance transport preparations to the preferred place of birth. This could also be attributable to the proximity or siting of CHPS compounds in most communities with resident midwives and the very good emergency referral system within the Kassena-Nankana East and West districts. Hence most respondents did not really see advance transport arrangement as a priority. Like the findings in India, arrangement for transport did not emerge as an important issue disagreeing with a similar study conducted in India.^{20,23} Advance transport arrangements reduce delay in reaching the health facility. It saves time that would otherwise be used to arrange for

transport and especially in emergency situations. Advance transport plan should enable a couple know what transport is available at different times of the day, how much it will cost, contact persons or address, alternative mode of transport and more importantly save money to meet the costs.

This research found the utilization of antenatal care services very encouraging (98.20%). This is slightly higher than the national rate (95%) as reported in the Ghana demographic and health survey.²⁴ However most women do not still know about the danger signals in pregnancy, child birth and postpartum period. From the data gathered, 103 (24.41%) could not mention danger signs during pregnancy, 59 (13.98%) did not know dangers during delivery and 70 (16.63%) could not mention a single danger sign during postpartum period. Approximately 25% of maternal deaths occur during pregnancy²⁵ as such knowledge of the danger signs of obstetric complications is therefore an essential step in recognizing complications and enables one take appropriate action to access emergency care.²² Although averagely 80% of respondents knew at least one danger sign, only 39.18% knew of three or more danger signs.

Most of the women completely lacked information on some of the danger signs. Severe vaginal bleeding as a danger sign of both ante partum and postpartum was not known by (50.95%) of the respondents. This is higher than a figure from a similar study in the Kenya, by Mutiso and colleagues who recorded 35.8%.²² This is alarming given that hemorrhage is the main leading and fastest cause of maternal mortality worldwide responsible for 33% of all maternal deaths.²⁶ Equally worrying was the inability of the respondents to identify danger signs which indicate severe pre-eclampsia and eclampsia such as oedema, blurred vision, and loss of consciousness.

The low (29.45%) involvement of spouses in maternity care observed in this study is similar to findings from studies in Northern Nigeria (32.1%) and South Africa (33.3%) but lower than that of studies of Osun 93.9% and Oyo 72.5% from Nigeria and (87.5%) from India.²⁷⁻³¹ It is also in agreement with the participation rate of (28.5%) of men in Odisha in India.³² Similarities between these findings and those of Northern Nigeria and South Africa may be due to the shared African culture and level of gender sensitivity. Evidence has shown that when men accompany their wives to hospitals, they have more access to reproductive health information and could result in greater communication between men and women on subjects related to reproductive health and child care.³³ This improved inter-spousal communication could enhance pregnancy planning, birth preparedness and complication readiness, as observed in men involvement in maternity services in India.³¹ This study also found that men were more likely to provide money for medication. In both routine care and treatment of problems, husbands participated more often by paying for care than accompanying their wives. When the question was asked

why men do not accompany their spouses to maternity units, most women (88.56%) indicated that even though they involved their spouses in taking decision regarding their preparation, but were quick to add that their husbands declined to attend/participate in any of the maternity sessions when asked to do so. The findings are however in contrast with those from a study in Northern Uganda which found that several men were actively involved in birth preparedness and complication readiness when their spouses were pregnant or in labor. In that study men who were more involved in ANC services, obtained health information from a health worker and whose spouses utilized skilled delivery at last pregnancy were more likely to accompany their spouses at ANC.³⁴

According to Iliasu et al, on male involvement in maternity, they observed that male involvement in prenatal clinic has been associated with positive outcomes for the mother and baby, which include more antenatal care visits and more birth preparedness in case of pregnancy complications.²⁷ Unfortunately, in this study, male partner involvement in maternal and child health is still low in many sub-Saharan African countries like Ghana.

CONCLUSION

The study identified poor knowledge and practices of identification of a potential blood donor and skilled birth attendant as a preparation for birth preparedness and its complication in the study areas. Antenatal care education should place emphasis on birth preparedness and complication readiness to improve access to skilled and emergency obstetric care.

Our study had some limitations. First, the study recruited pregnant women and women who gave birth within 12 months preceding the commencement of the study whose ability to recall were likely to be subject to bias. Second, antenatal records for some women who recently gave birth were not available for the survey.

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Conflict of interest: None declared

Ethical approval: Ethical clearance for this study was sought from the committee on human research, publication and ethics (CHRPE), school of medical science, Kwame Nkrumah University of science and technology, Kumasi and the institutional review board (IRB) of the Navrongo health research centre. All participants were asked to sign an informed consent before participating in the interview

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