Birth Preparedness and Complication Readiness of Pregnant Women Attending the Three Levels of Health Facilities in Ife Central Local Government, Nigeria

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ABSTRACT

Background

Birth preparedness and complication readiness (BP/CR) is a safe motherhood strategy which addresses delays that could increase the risk of dying in pregnancy, child birth and the immediate postpartum period. The strategy has not been effectively implemented in Nigeria hence maternal mortality remains unacceptably high. This study assessed the level of BP/CR and the determinants among antenatal clinic attendees in Ife Central Local Government Area of Nigeria.

Subjects and Method

Antenatal women selected proportional to client caseloads from health facilities were studied using a semi-structured questionnaire. SPSS version 16 was used for data entry. Univariate, bivariate and multivariate analyses were performed.

Results

Four hundred and one antenatal women were recruited. One hundred and fifty eight (39.3%) respondents knew no danger sign in pregnancy, childbirth and postpartum period. Only 24 (6.0%) had adequate knowledge of obstetric danger signs without prompting. Three hundred and forty (84.8%) and 312 (78.3%) women respectively had identified a birth place and begun saving money for delivery. As many as 304 (79.4%) made no arrangement for a blood donor. Majority of pregnant women (60-82%) took five other steps towards emergency readiness. By the study criteria, 140 (34.9%) and 265 (66.1%) were birth and complication prepared respectively.

Conclusion

Majority of pregnant women had poor knowledge of obstetric danger signs. Women who booked late were more

INTRODUCTION

The birth of a baby is a major reason for celebration around the world; however pregnancy and childbirth is a perilous journey especially in the developing countries, where a woman's lifetime risk of dying from pregnancy and related complications is almost 40 times greater than that of her counterpart in developed countries.[1] Nigeria records a maternal mortality ratio of 545 maternal deaths per 100,000 live births; this is one of the highest in the world[2]. Every pregnant woman faces the risk of dying from sudden, unpredictable complications.[3]

Birth Preparedness and Complication Readiness (BP/CR) strategy promotes the timely utilization of skilled maternal and neonatal care , based on the theory that preparing for childbirth and being ready for complications promotes rapid action in the

event of an obstetric emergency thereby reducing delays in accessing care.[4] Failure to plan in advance for a normal birth, and inadequate preparation for urgent action in the event of obstetric complications, are well documented factors contributing to delays in receiving skilled obstetric care and consequently contribute to maternal and neonatal mortality.[5-7] Many pregnant women are unable to recognize the danger signs of obstetric complications. When complications occur, the unprepared woman, her spouse and/or family waste time in recognizing the problem, making the decision to seek emergency obstetric care, getting organized, getting money, finding transport and reaching the appropriate referral facility.[4,8] BP/CR is a global strategy in safe motherhood programs aimed at reducing these delays.[4]

Birth Preparedness (BP) includes selecting a birth location, identifying a skilled provider and making the necessary plans to receive skilled care for normal births, and preparing for rapid action in the event of an obstetric emergency. It is thus an essential component of the safe motherhood program. The most recent demographic and health survey (DHS) in Nigeria reported that only 39 % of births were attended by skilled birth attendants.[2] Complication Readiness (CR) facilitates urgent skilled attention when an obstetric emergency occurs. An emergency plan should include identifying the nearest functional 24 hour emergency obstetric care facility, means of transportation in emergency, suitable blood donors, source of emergency funds, designation of a person to make decisions on the woman's behalf and a person to care for her family while she is away.[9] While obstetric complications like severe haemorrhage may lead to maternal death within a few minutes, any delay when complications arise worsens the prognosis for the pregnant woman and her baby.[10,11] This highlights the importance of BP/CR.

Therefore, this study assessed the knowledge and practices of pregnant women attending antenatal clinics with respect to BP/CR and identified the associated factors among antenatal care attendees in Ife Central local government area of Osun State, Nigeria.

SUBJECTS AND METHODS

This was a descriptive cross-sectional study among pregnant women attending antenatal clinics in Ife Central Local Government Area, Ile-Ife, Osun State, Nigeria. The study population was stratified by type of facility (primary, secondary and tertiary health facilities) and respondents were selected proportional to client caseload per level of facility. At a confidence interval of 95%, a margin of error of 5%, a prevalence rate of 50% in a population above 10,000, a sample size of 384 was calculated. Four hundred and one subjects were recruited and allotted at 120(30%), 100(25%) and 181(45%) participants for primary, secondary and tertiary health facilities respectively.

Data Collection

Information about socio-demographic characteristics, preparation for delivery, complication readiness, knowledge of danger signs in pregnancy, childbirth and immediate postpartum period was collected with a pre-tested semi-structured questionnaire designed for the purpose. Consenting pregnant women attending routine antenatal clinics at the three levels of health care namely Ife Hospital Unit(IHU) of Obafemi Awolowo University Teaching Hospital Ile-Ife (a tertiary health facility); Seventh Day Adventist Hospital, Ile Ife (a secondary health facility); Urban Comprehensive Health Center, Eleyele, Ile-Ife and Primary Health Center Enuwa, Ile-Ife.

Participants were recruited serially until the desired number was reached at routine antenatal clinics for each level of health care. Participants were enrolled in the study if they had attended the booking clinic at a previous visit and gave consent. Spontaneous responses were elicited about danger signs in pregnancy,

delivery and the immediate postpartum period. Respondents were then prompted about the dangers signs not mentioned spontaneously.

Measures

BP/CR as an important strategy towards safe motherhood is widely defined as following a series of steps prior to childbirth hinged on the woman' s knowledge of pregnancy and childbirth, and the attendant complications.[4,12-14] In line with the proposition of Onayade et al, we have considered birth preparedness and complication readiness as separate components of the safe motherhood strategy.[15]

In this study, respondents were classified as having adequate knowledge of the danger signs in pregnancy, delivery and the immediate postpartum period if they were able to mention without prompting at least four of the following conditions: convulsion or severe persistent headaches, swelling of the woman's feet and hands, vaginal bleeding prior to labour, heavy vaginal bleeding during or after delivery, labour lasting more than one night fall to one sunrise or vice versa, placenta not coming out on time after the delivery of the baby, sudden gush of fluid from vagina before labour, part of the baby coming or showing other than the head, smelly vaginal discharge and feverishness. They were classified as being adequately birth prepared if they had identified and agreed on a place of delivery, were saving money towards delivery, had begun purchasing materials/supplies for a clean delivery and newborn care, if they knew their estimated date of delivery and had undergone voluntary counseling and testing for HIV. Respondents were emergency or complication ready if they fulfilled at least four of the following criteria: had adequate knowledge of danger signs as defined above, designated a decision maker, identified the nearest functional comprehensive emergency obstetric care facility to use in case of emergency, identified the source of emergency funds, arranged an emergency means of transport, arranged a means of communication, and identified a suitable blood donor.

Data Analysis

The data analysis was done using the SPSS version 16.0 software. The Chi-square test was used to examine the association between categorical variables. Binary logistic regression was performed to identify the significant predictors of birth preparedness and complication/emergency readiness. P was significant at < 0.05.

RESULTS

A total of 401 respondents were recruited for this study which cuts across the three levels of health care namely primary, secondary and tertiary levels of care.

The mean age was 29.2 (SD = 3.44), 29.5 (SD = 3.73), and 30.0 (SD = 3.88) for respondents from primary, secondary and tertiary health care facilities respectively. Respondents' distribution by age, marital status, religion, occupation and family size did not vary with facility type ($p > 0.05$). Overall, the age of the respondents ranged from 19years to 39years (range 20years) with a mean of 29.2 years (SD = 3.71).

Majority (94.3%) of the respondents were married. About two thirds were Christians while the commonest occupation among them was trading (36.7%). About 93% had above basic primary education. One hundred and sixty three (40.6%) respondents were in their first pregnancy (nullipara). A significantly higher proportion of respondents from the tertiary facility was in first pregnancy and wished to deliver in the formal health sector compared to respondents from other facilities. About eight percent of multigravidas have had at least a miscarriage in a previous pregnancy. Only about 10% of respondents booked for antenatal care in the first trimester of pregnancy. More than half of the subjects have had at least four antenatal clinic visits, the registration of the index pregnancy or the

booking visit inclusive. At the time of the study, majority, 56.6%, of respondents were in their third trimester with few (18, 4.5%) of them in the first trimester.

Respondents' knowledge of obstetric complications

Table 1 shows that a relatively high proportion of respondents could not mention any danger sign during pregnancy (179, 44.6%), and during or after childbirth (264, 65.8%) while just 17 (4.2%) and two (0.5%) of the respondents could give three danger signs during pregnancy and during or after childbirth respectively. None of the respondents mentioned more than three correct danger signs either during pregnancy or during childbirth and immediately after.

Figure 1 shows that the most frequently mentioned danger sign during pregnancy was vaginal bleeding (47.6%) while prolonged labour (20.5%) was the most frequently mentioned danger sign followed by heavy vaginal bleeding (12.7%) during labour. However, when prompted majority (70 99%) of respondents who were unable to mention specified danger signs spontaneously admitted that these signs warrant immediate medical attention as shown in Table 2. Only 24 (6%) of the respondents mentioned at least four danger signs in pregnancy, labour and the immediate post-partum period altogether without prompting. About 10% of respondents in the upper socioeconomic class compared to three percent in the lower socioeconomic class and 10% of respondents who were multiparous compared to one percent of primiparas possessed adequate knowledge of the danger signs ($p < 0.05$). Sixteen percent of respondents were of the view that swelling of hands and feet during pregnancy does not warrant immediate medical attention.

Respondents' practices regarding preparation for delivery

All of the respondents reported that they had made some arrangements for the birth of their baby. Of these, 340(84.8%) reported they had identified a place for delivery as shown in Figure 2; majority of these respondents (312, 95.7%) had their husbands' approval of their chosen place of delivery; 312 (78.2%) respondents had begun saving money needed for delivery; 305 (76.8%) had begun purchasing essential items needed for delivery; 347 (86.8%) had identified someone to accompany them to their chosen place of delivery; and 383(95.5%) had voluntary counseling and testing on HIV. However, only 181 (45.5%) were aware of the day they are expected to deliver their baby. Overall, 140 (34.9%) respondents met the set criteria and were classified to have made adequate preparation for birth.

Of those that had identified a place to deliver, 245 (72.1%) will get to their chosen place of delivery within 30 minutes of travel Forty four (12.9%) respondents who had identified the place of delivery, planned to deliver at home, with traditional birth attendants or in a mission home.

Respondents' practices regarding readiness for emergency

Figure 2 shows that the majority (79.4%) of respondents had not identified a blood donor while many respondents (72.8%) had identified someone who can make decisions on their behalf in case they are unable to make them. About 65% of the respondents had identified the source of emergency funds and majority of the respondents (81.9%) had identified an emergency means of transportation. A total of 240(60.8%) respondents had identified a health facility around them for emergency services while most of the respondents (91.2%) had identified a way of communication in case of an emergency. Overall, 265(66.1%) satisfied the set criterion of taking at least four of the steps in preparing for an emergency and were classified to be complication ready.

Factors associated with respondents' birth preparedness and complication readiness

Bivariate analysis showed that both socio-

TABLE 1: Number of Spontaneous responses on Danger Signs in pregnancy, during and after child birth.

NUMBER OF SPONTANEOUS RESPONSES	Facility			TOTAL	Statistical Indices
	Tertiary	Secondary	Primary		
	N (%)	N (%)	N (%)	N (%)	
During Pregnancy					
0	82 (45.3)	40 (40.0)	57 (47.5)	179 (44.6)	X^2 2.8376
1	61 (33.7)	35 (35.0)	34 (28.3)	130 (32.4)	df 6
2	30 (16.6)	20 (20.0)	25 (20.8)	75 (18.7)	p 0.829
3	8 (4.4)	5 (5.0)	4 (3.4)	17 (4.2)	
During and after Child Birth					
0	128 (70.7)	62 (62.0)	74 (61.7)	264 (65.8)	X^2 17.8385
1	51 (28.2)	27 (27.0)	40 (33.3)	118 (29.4)	df 6
2	2 (1.1)	9 (9.0)	6 (5.0)	17 (4.2)	p 0.007
3	- (-)	2 (2.0)	- (-)	2 (0.5)	

TABLE 2.
Distribution of Respondents' knowledge of Danger signs in pregnancy, during and immediately after Child birth. (n 401)

	Spontaneous response n = 401	
DANGER SIGN	F	%
During pregnancy		
Vaginal bleeding before onset of labour	191	47.6
Sudden gush of fluid from the vagina before onset of labour (PROM)	51	12.7
Fever	42	10.5
Convulsion	24	6.0
Oedema (Swelling of feet, hands and face)	19	4.7
During or after child birth		
Labour lasting more than 1 night that is sunset to sunrise or vice versa- Prolonged labour	82	20.5
Heavy vaginal bleeding during or after delivery	51	12.7
Placenta not coming out on time after delivery of baby – Retained placenta	21	5.2
Part of baby showing other than the head – Malpresentation	4	1.0
Smelly vaginal discharge	-	-

TABLE 3. Respondents' birth preparedness by socio-demographic characteristics

Parameter	Birth Preparedness						
	Adequate		Inadequate		Total		Statistical Indices
	n = 140		n = 261		n = 401		
	n	%	n	%	n	%	
Age(Years)							
15-24	12	26.7	33	73.3	45	100.0	x^2 = 2.443
25-34	116	35.3	213	64.7	329	100.0	df = 2
35-44	12	44.4	15	55.6	27	100.0	p = 0.295
Education							
Primary or less	2	6.9	27	93.1	29	100.0	x^2 = 22.143
Secondary	58	29.3	140	70.7	198	100.0	df = 1
Tertiary	80	46.0	94	54.0	174	100.0	p = 0.001
Occupation							
Housewife	20	27.0	54	73.0	74	100.0	
Schooling	17	37.0	29	63.0	46	100.0	x^2 = 7.438
Trading	45	30.6	102	69.4	147	100.0	df = 3
Others	58	43.3	76	56.7	134	100.0	p = 0.059
Marital Status							
Single	0	0.0	23	100	23	100.0	x^2 = 20.498$^+$
Married	140	37	238	67	378	100.0	df = 1
							p = 0.001
Family Size							
1-3	85	38.8	134	61.2	219	100.0	x^2 = 3.945$^+$
4-6	53	29.8	125	70.2	178	100.0	df = 2
> = 7	2	50.0	2	50.0	4	100.0	p = 0.133
Socio-economic Status							
Upper	67	45.6	80	54.4	147	100.0	x^2 = 17.162
Middle	53	34.4	101	65.6	154	100.0	df = 2
Lower	20	20.0	80	80.0	100	100.0	p = 0.001
Religion							
Christianity	94	35.7	169	64.3	263	100.0	x^2 = 0.231

$^+$ Likelihood Ratio used because of data characteristics

$^{++}$ For respondents who have identified a birth place

Table 4. Respondents' birth preparedness by selected clinical characteristics

Parameter	Birth Preparedness						
	Adequate		Inadequate		Total		Statistical Indices
	n = 140		n = 261		n = 401		
	n	%	n	%	n	%	
History of miscarriage							
Yes	10	50.0	10	50.0	20	100.0	x^2 = 2.109
No	130	34.1	251	65.9	381	100.0	df = 1
							p = 0.146
Parity							
Nullipara	60	36.8	103	63.2	163	100.0	x^2 = 0.439
Primipara	26	33.3	52	66.7	78	100.0	df = 2
Multipara	54	33.8	106	66.2	160	100.0	p = 0.803
No of ANC visits							
1	7	19.4	29	80.6	36	100.0	
2	6	9.7	56	90.3	62	100.0	x^2 = 48.128
3	17	21.2	63	78.8	80	100.0	df = 3
≥ 4	110	49.3	113	50.7	223	100.0	p = 0.001
Booking Trimester							
First	7	19.4	29	80.6	36	100.0	x^2 = 37.604
Second	54	24.7	165	75.3	219	100.0	df = 2
Third	79	54.1	67	45.9	67	100.0	p = 0.001
Trimester of Pregnancy at time of study							
First	1	5.6	17	94.4	18	100.0	x^2 = 67.524
Second	21	13.5	135	86.5	156	100.0	df = 2
Third	118	52.0	109	48.0	227	100.0	p = 0.001
Proximity to delivery place[++]							
Travel Time							x^2 = 3.974
< = 30 minutes	109	44.5	136	65.5	245	100.0	df = 1
> 30 minutes	31	32.6	64	67.4	95	100.0	p = 0.046
Knowledge of danger signs							
Adequate	12	50.0	12	50.0	24	100.0	x^2 = 2.557

TABLE 5. Respondents' emergency readiness by socio-demographic and selected clinical characteristics

Parameter	Emergency Readiness						
	Adequate		Inadequate		Total		Statistical Indices
	N = 265(66.1%)		n = 136(33.9%)		n = (401)		
	n	%	n	%	n	%	
Age(Years)							
15-24	22	48.9	23	51.1	45	100.0	x^2 = 7.128
25-34	223	67.8	106	32.2	329	100.0	df = 2
35-44	20	74.1	7	25.9	27	100.0	p = 0.028
Education							
Primary or less	17	58.6	12	41.4	29	100.0	x^2 = 4.679
Secondary	123	62.1	75	37.9	198	100.0	df = 2
Tertiary	125	71.8	49	28.2	174	100.0	p = 0.096
Occupation							
Housewife	44	59.5	30	40.5	74	100.0	
Schooling	25	54.3	21	45.7	46	100.0	x^2 = 6.756
Trading	99	67.3	48	32.7	147	100.0	df = 3
Others	97	72.4	37	27.6	134	100.0	p = 0.080
Marital Status							
Single	10	43.5	13	56.5	23	100.0	x^2 = 5.564
Married	255	67.5	123	32.5	378	100.0	df = 1
							p = 0.001
Family Size							
1-3	141	64.4	78	35.6	219	100.0	x^2 = 0.717
4-6	121	68.0	57	32.0	178	100.0	df = 2
> =7	3	75.0	1	25.0	4	100.0	p = 0.699
Socio-economic Status							
Upper	104	70.7	43	29.3	147	100.0	x^2 = 7.427
Middle	106	68.8	48	31.2	154	100.0	df = 2
Lower	55	55.0	45	45.0	100	100.0	p = 0.024
History of miscarriage							
Yes	15	75.0	5	25.0	20	100.0	x^2 = 0.746
No	250	65.6	131	34.4	381	100.0	df = 1
							p = 0.388
Parity							
Nullipara	95	58.3	68	41.7	163	100.0	x^2 = 7.601
Primipara	57	73.1	21	26.9	163	100.0	df = 2
Multipara	113	70.6	47	29.4	160	100.0	p = 0.022
No of ANC visits							
1	24	66.7	12	33.3	36	100.0	
2	34	54.8	28	45.2	62	100.0	x^2 = 4.711
3	52	65.0	28	35.0	80	100.0	df = 3
≥4	155	69.5	68	30.5	223	100.0	p = 0.194
Booking Trimester							
First	24	66.7	12	33.3	36	100.0	x^2 = 2.225
Second	138	63.0	81	37.0	219	100.0	df = 2
Third	103	70.5	43	29.5	146	100.0	p = 0.329
Trimester of Pregnancy at time of study							
First	12	66.7	6	33.3	18	100.0	x^2 = 1.769
Second	97	62.2	59	37.8	156	100.0	df = 2
Third	156	68.7	71	31.3	227	100.0	p = 0.413
Proximity to delivery place[++]							
Travel Time							x^2 = 0.046
< = 30 minutes	169	68.6	77	31.4	245	100.0	df = 1
> 30 minutes	64	67.4	31	32.6	95	100.0	p = 0.831
Knowledge of danger signs							
Adequate	21	87.5	3	12.6	24	100.0	x^2 = 5.224
Inadequate	244	64.7	133	35.3	377	100.0	df = 1
							p = 0.022

[+] Likelihood Ratio used because of data characteristics [++] For respondents who have identified a birth place

Table 6. Regression models for adequate birth preparedness and complication readiness practices of respondents

Factor	B coefficient	Odds Ratio	P value	95% CI
Birth preparedness				
Booking trimester	-1.05	0.25	0.001	0.13-0.46
Proximity	0.37	1.45	0.20	0.82-2.59
Family size	0.14	1.15	0.59	0.70-1.89
Constant	42.55	3.01	0.99	----
Complication/emergency readiness				
Parity	-0.19	0.82	0.17	0.63-1.08
Socio-economic status	0.08	1.08	0.62	0.77-1.52
Adequate knowledge of signs	0.97	2.64	0.13	0.76-9.21
Constant	-0.71	0.49	0.71	----

Figure 1. Danger signs in pregnancy, during and after child birth mentioned by respondents without prompting.

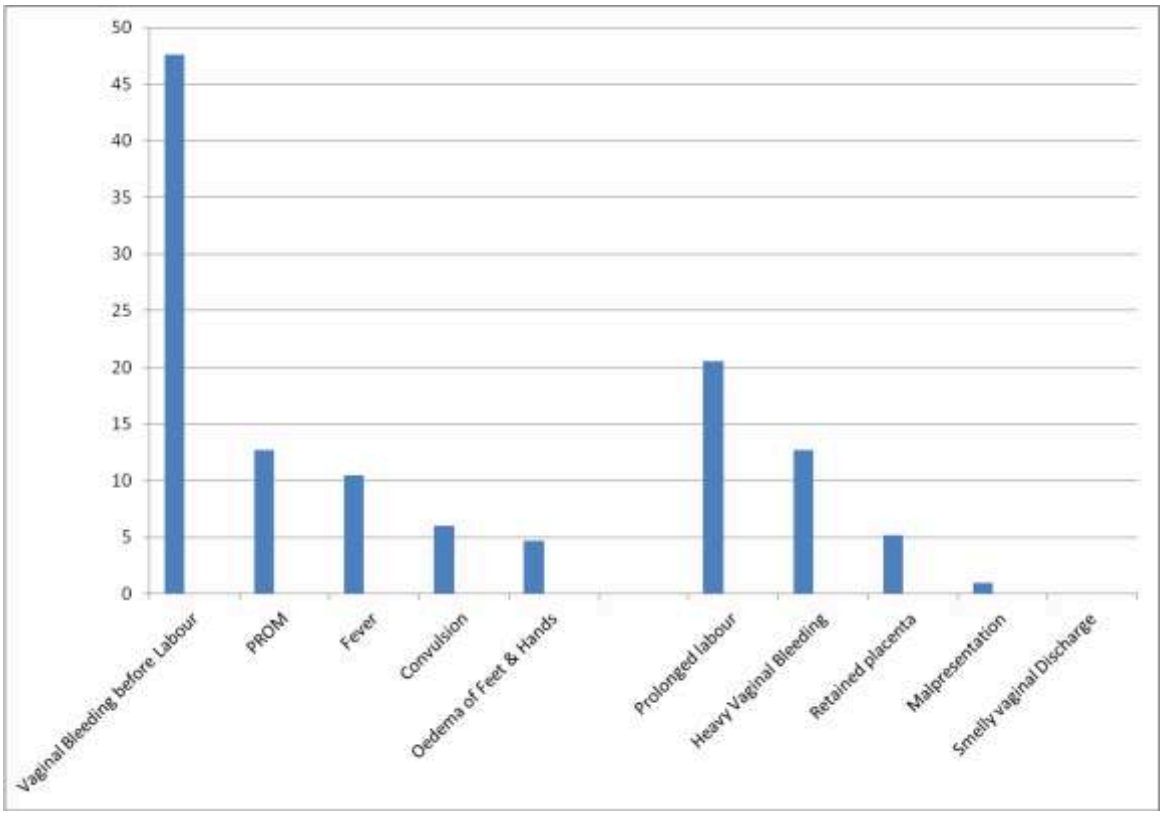
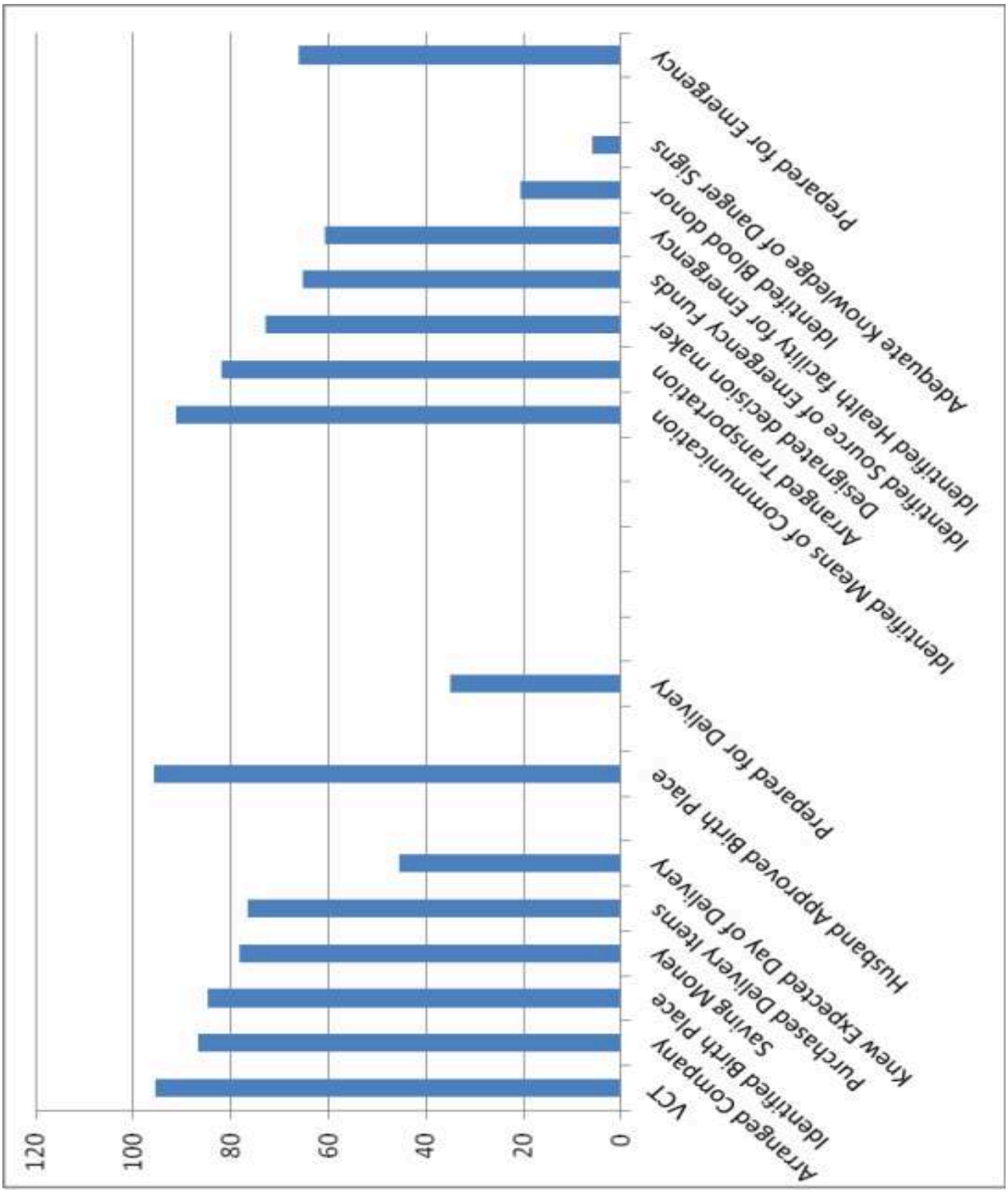


Figure 2. Respondents' Practices regarding Birth Preparedness and Complication Readiness



demographic and clinical factors are significantly associated with the respondents' preparation for delivery. Respondents from the tertiary health facility, those with tertiary education, those who were married and of the upper socioeconomic class, those who had four or more antenatal visits, those booked in the third trimester or who were in the third trimester at the time of study and those who lived within 30 minutes of travel from their chosen birth places were more likely to have made adequate preparation for the birth of their baby ($p < 0.002$) as shown in Table 4. For complication readiness, Table 5 shows that respondents who were older, married, in the upper socio-economic class, those who have had previous deliveries and those with adequate knowledge of the danger signs were more likely to be emergency ready ($p < 0.028$).

Logistic regression analysis was used to identify the significant predictors of birth preparedness and complication readiness. For birth preparedness only the booking trimester was a significant predictor of preparedness for birth ($p = 0.001$; OR = 0.243, 95% CI 0.13 = 0.464) with clients who book late in pregnancy being 4 times more likely to be prepared than those who book early in pregnancy as shown in Table 6.

For complication readiness, none of the factors entered into the model significantly predicted complication readiness as shown in Table 6.

DISCUSSION

The great potential of BP/CR to improve maternal and neonatal health remains unutilized in most developing countries especially in Nigeria, the rest of sub-Saharan Africa and the Indian sub-continent where maternal mortality remains unacceptably high.[2,16] The population of pregnant women in the study is unique in being antenatal clinic attendees in not-for-profit formal health facilities, in a purely urban community and a University town which might have accounted for the high literacy rate with 93% possessing above basic primary education. Contrary to expectation, the knowledge and practices in relation to BP/CR is relatively low. As many pregnant women intensify and finalize preparations for delivery including arranging ready transport as the time of delivery approaches, the knowledge of the expected day of delivery, EDD, is critical to their preparation. In this study, only 181 (45.5%) respondents knew their EDD. Similarly, the knowledge of signs of severe maternal illness was relatively poor with 158 (39.3%) unable to mention any at all whether in pregnancy, childbirth or the post-partum period. Although obstetric haemorrhage, an important cause of obstetric emergency is a common cause of maternal death,[17-20] nearly half of the respondents could not mention vaginal bleeding before labour or severe vagina bleeding during or after labour without prompting. Spontaneous knowledge of danger signs being the first step in taking appropriate and timely decisions and actions is an important parameter to prepare pregnant women for complications in advance[4,8] and in assessing their complication readiness. Pre-eclampsia and eclampsia being important causes of maternal and neonatal morbidity and mortality, it is of concern that 16% of respondents were of the view that swelling of hands and feet during pregnancy does not warrant immediate medical attention. By the study criterion of knowledge of at least four danger signs, only 24 (6.0%) respondents had adequate knowledge of severe maternal illness. This is low compared to the finding of 28.3% by Onayade et al[15] in the same community but

similar to the finding of 5.8% in a rural Ethiopian population[21] indicating a high risk of poor pregnancy outcomes.[8,22-24]

Currently, four ANC visits are recommended by the WHO for women whose pregnancies are progressing normally, with the first in the first trimester (ideally before 12 weeks but no later than 16 weeks), and at 24-28 weeks, 32 weeks and 36 weeks.[25,26] In this study, about 10% of subjects registered their pregnancy in the first trimester compared with 16.2% national average and 22.2% for the urban dwelling antenatal attendees.[2] While as many as 146 (36.4%) registered after the 26th week of pregnancy, 223 (55.5%) respondents had made four or more ANC visits at the time of study. This is similar to the finding of 60.7% by Onayade et al[15] but lower than the Nigeria DHS report of 68.8% for urban areas[2] and findings of 73% and 75% respectively from Ethiopia[21] and Nepal.[27] Women who receive four ANC visits with effective interventions are as likely to have good BP practice as women who receive more visits.[25] Early commencement of antenatal care and an optimum number of ANC visits offer the opportunity to educate and influence pregnant women about preparing for normal birth; recognizing complications early; and taking prompt and appropriate actions when complications arise. Respondents who had made at least two ANC visits (91%) ought to have benefited from the later in a focused antenatal setting and should thus have a good BP/CR practices.

The most recent DHS shows that about 15%, 36% and 56% of women have problems accessing formal health care on account of lack of permission, distance to health facility and lack of money respectively.[2] In this study, about five percent of subjects did not have their husband's approval of the chosen place of delivery while 28% will travel for more than 30 minutes, sometimes more than an hour to the identified place of delivery. One fifth of subjects were not saving money for the delivery of their baby. These findings may signify increased risk for poor obstetric outcomes. By the study criteria, only 140(34.9%) subjects were birth prepared. This is very low compared with the finding of 61% by Onayade et al[15] in the same community but higher than the 22.1% found in a rural Ethiopian population.[21] The difference between the proportion of subjects who were birth prepared in this study and that of Onayade et al may be accounted for by the fact that the knowledge of the EDD was low among study participants.

As obstetric emergencies are largely unpredictable with some progressing rapidly within a short time to endanger the life of the mother and/or her baby, all pregnant women must be complication ready to ensure the shortest time to skilled care. Anything that may cause delay in any way in decision making and/or taking action to receive prompt and appropriate care must be anticipated and taken care of. Thus to be classified as emergency or complication ready, respondents in this study must fulfill at least four of the earlier stated seven criteria. Only about 20% of respondents identified a blood donor ahead of the need for one compared with eleven percent reported in an earlier study in the same community.[15] Obstetric haemorrhage and the lack and/or inadequacy of transfusion services have a significant contribution to pregnancy-related deaths in developing countries, sub-Saharan Africa and in particular Nigeria.[11,19,20,32] In this study, majority of planned deliveries were in primary and secondary health facilities where blood banking services are either unavailable or inadequate, 12.9% of planned birth places is the informal sector where SBA are unlikely to take the delivery, travel time to identified place of delivery is from 30 minutes to one hour and longer for a third of subjects and only 12.7% of respondents knew that severe vaginal bleeding during or after delivery is a danger sign. Thus

the risk of obstetric haemorrhage deaths is very high in the study population. Apart from the small proportion of subjects who identified a blood donor and the very small proportion, (6%), of respondents who knew at least four danger signs, majority of subjects (60 82%) satisfied the remaining five criteria for complication readiness. Overall, 2.3 % satisfied all the seven; about 66%, 40% and 15% respectively satisfied at least four, five and six of the criteria. While these figures are high compared with findings from the same community (4.8%) by Onayade et al[15], and by Mihret and Mesganaw[21] from Ethiopia (22.1%), it should be emphasized that every pregnant woman should get ready for complications.

In this study, women who received antenatal care from the tertiary health facility, those with higher education, were married, who had more ANC visits, booked or were at the time of study in the third trimester and those who lived close to the health facility were more likely to prepare for birth. On the other hand, the older, parous, married women, those with good knowledge of danger signs and those in the upper socio-economic class were more likely to be complication prepared. These findings may be related to the obstetric experience, social support, economic power and the social status of pregnant women. The maternal services available at the health facilities may also be an influencing factor. However, logistic regression showed that only the trimester of booking significantly predicted pregnant women's preparation for birth. The closer the pregnant woman was to term at the time of booking, the more likely she was birth-prepared. It is customary to provide and discuss the list of requirements for childbirth at this visit in most health facilities. It is therefore beneficial that health care providers review and reinforce the preparation for child birth and complications with pregnant women at every ANC visit. Onayade et al found that the closer the woman was to term at the time of study, the more likely she was prepared.[15] Both findings corroborate the observation that pregnant women in the study community tend to prepare for birth as the pregnancy approaches term. None of the factors predicted complication readiness. This is in keeping with Onayade et al[15] that birth preparedness and complication readiness are two distinct components of safe motherhood

CONCLUSION

The study revealed that the majority of pregnant women had poor knowledge of obstetric danger signs; only a third were birth prepared while one third were not complication ready. Although the study location was urban, a quarter of subjects had poor physical access to emergency obstetric care (EmOC). Poor access adversely influenced both the knowledge of danger signs and birth preparedness. Thus there is need for policy to address the availability of EmOC to all pregnant women in the study location. The booking trimester was the singular significant predictor of birth preparedness in this study. It is recommended that antenatal care providers intensify efforts in educating women on obstetric danger signs, planning for births and complications in pregnancy. To this end, pregnant women must be educated and motivated to register future pregnancies early while antenatal care providers implement the focused antenatal care principles. Only early commencement of antenatal care and an optimum number of ANC visits offer the greatest opportunity to educate, support, and influence pregnant women about preparing for normal birth; recognizing complications early; and taking prompt and appropriate actions when complications arise; the latter will provide the opportunity for providers to appraise their BP/CR plans and individualize interventions promptly.

In this study, multiple predisposing factors such as choice of birth place, lack of knowledge of haemorrhage as an obstetric danger sign, failure to identify a blood donor, and poor access to EmOC, magnified respondents' risk of poor

outcome. These and other factors particularly prior identification of a suitable blood donor and improved blood banking services especially in secondary health facilities require urgent attention.

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