



Birth Preparedness and Complication Readiness: Attitude and Level of Preparedness among Pregnant Women in Benin City, Edo State, Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Author OAI designed the study, wrote the protocol and wrote the first draft of the manuscript and analysis of the study. Authors OAI, OHO and KR managed the literature searches, subsequent manuscript drafts with proof reading. All authors read and approved the final manuscript.

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ABSTRACT

Lack of advance planning for use of skilled attendants at birth contributes significantly to delays in receiving obstetric care. This study assessed attitude and level of birth preparedness and complication readiness (BPACR) plan among pregnant women in Benin City, with a view to improving utilization of skilled attendants at birth and health facility deliveries.

Materials and Methods: A community based analytical cross sectional study was conducted, involving interviewer administration of pretested structured questionnaires to 252 consenting pregnant women in Benin City, Edo State.

Results: The mean age of pregnant women studied was 28.9±4.9 years. Two hundred and thirty eight (94.4%) respondents had positive attitude towards BPACR. Furthermore, 197 (78.2%) and

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218(94.4%) of respondents were well prepared with regard to intended and actual birth plans respectively. Awareness of BPACR (OR=0.337; 95%CI=0.128-0.891; p=0.028) and Antenatal Care (ANC) registration (OR=0.016; 95%CI=0.002-0.127; p<0.001) were significant predictors identified that influenced BPACR plans.

Conclusion: Majority of pregnant women studied had positive attitude towards BPACR and were well prepared with regards to intended and actual birth plans respectively. There is need to strengthen Antenatal Care (ANC) registration practices to sustain the improved utilization of skilled attendants at birth and health facility deliveries identified among pregnant women in Benin City, Edo State.

Keywords: Attitude; birth preparedness and complication readiness; Edo State; Nigeria; pregnant women.

1. INTRODUCTION

Nigeria accounts for nearly 14% of global maternal deaths reported [1-2]. Ninety-nine percent of these 358 000 global maternal deaths occur annually in the less developed countries¹. The situation is particularly very worrisome for women in Sub-Saharan Africa, where 1 in every 16 women dies of pregnancy related causes during her lifetime, compared to 1 in 2,800 women in developed regions [3].

Every pregnant woman faces the risk of sudden unpredictable complications that could end in death or injury both to the woman and or her infant, with an estimated 15% of most pregnancies ending up in death or injury to mother and or her baby [4]. It is therefore necessary to employ strategies to overcome such challenges as they arise. Birth Preparedness and Complication Readiness (BPACR) is a comprehensive strategy that addresses delays in obtaining appropriate obstetric care and is aimed at promoting timely utilization of skilled maternal and neonatal health care, based on the theory that preparing for childbirth and being ready for complications reduces delays in obtaining care and thereby impacting positively on birth outcomes [4]. The key elements in birth preparedness include: identification of skilled care provider; knowledge of danger signs; planning on where to give birth and making the necessary plans to receive skilled care for all births while complication readiness include; saving money as emergency funds; planning for transport; identifying potential blood donor and designated decision-maker. Although, antenatal care (ANC) represents a window of opportunity for information, education and communication to help empower pregnant women to make appropriate and informed choices especially during emergencies [5-6], the level of ANC registration remains poor in Nigeria,

as only 36% of pregnant women register for ANC [2].

Attitudinal concerns are well documented factors that can influence the level of utilization of health services and interventions, this is attributable to perceived benefit of such intervention possibly due to underlying belief systems and formed impressions on the attitude of health care providers to their clients and work, this has been reported to result in negative attitude towards BPACR resulting in preference for out of health facility care and services as have been reported in previous studies [7-8]. Poor levels of birth preparedness and complication readiness plan have been reported among women in developing countries with prevalence ranging between 4.8 to 17% [9-11].

Inadequate human resources for health; inadequate and poor political commitment; poor financial support especially in meeting transportation challenges; antenatal care, delivery care and post natal care cost; coordination and partnership problems; poor male and community involvement; increasing poverty status of the citizenry compounded by the low socio-economic status of women; the use of inappropriate strategies to stem the growing tide of maternal mortality etc are well documented factors contributing to the growing challenges to maternal care not only in Nigeria but in other developing countries [2,12-14].

In Nigeria most pregnancies are unplanned as the birth preparedness and complication strategy is not well embraced [15]. In spite of the great potential of birth preparedness and complication readiness (BPACR) strategy as a cost effective tool in reducing maternal and new born deaths, its status in this regard is not well known and practiced in most of sub-Saharan Africa [4]. This study will help provide relevant information on

BPACR that will help policy makers and significant others review existing health programs and interventions for improved utilization of skilled attendants at birth and health facility deliveries by pregnant women in Nigeria. This study was therefore carried out to assess attitude and level of birth preparedness and complication readiness (BPACR) plan among pregnant women in Benin City, Edo State, Nigeria.

2. MATERIALS AND METHODS

This study was carried out in Benin City, the capital of Edo State. Benin City comprises three Local Government Areas:-Egor, Oredo and Ikpoba-Okha Local Government Areas respectively [16]. Benin City is bounded to the west by Ovia North East Local Government Area and the North-East by Uhumwuode Local Government Area and South by Ethiope – West Local Government Area of Delta State. It has an estimated population of 1,086,882 people consisting of 542,545 and 544,337 males and females respectively [17], with 300,797 of the total population comprising women in the reproductive age group (15-49 years).

Benin is the predominant ethnic group; others include Esan, Etsako with other indigenous and non-indigenous tribes. The industrial undertakings in the State include farming, carving, saw milling, rubber processing, cement, textile production, brewing, flour milling etc [18]. There is a high literacy rate [19] (75.6%) in the State, supported by the large distribution of public and private primary, secondary and tertiary educational institutions. Benin City has a local airport with a good network of roads with variable level of motorability, especially in rainy season [18]. There is a large distribution of public and private health facilities in the study area offering a wide range of maternal health services, but the patronage of traditional birth attendants' services is common [20].

A community based analytical cross sectional study was conducted involving pregnant women in Benin City, Edo State between February 2012 and June 2012. Interviewer administered pretested structured questionnaires, adapted from the safe mother hood questionnaire [21] was utilized for data collection from consenting currently pregnant women in their third trimester this category of respondents were identified based on their last menstrual period (LMP) [22] with regards to socio-demographic characteristics, attitude towards birth

preparedness and complication readiness and BPACR plans. The minimum sample size of 239 pregnant women was calculated using the Cochran formulae for simple proportion in a descriptive cross sectional study [23] based on a 17% prevalence of being well prepared for birth from a previous study [24]. A multistage sampling technique was utilized to recruit consenting pregnant women from the three LGAs (i.e Egor, Oredo and Ikpoba-Okha respectively) in the Benin City. Using 5% of the derived population estimate based on the 2006 census figures [17] as those who were currently pregnant, a population estimate per LGA for currently pregnant women was obtained as (i.e 5061, 5248 and 4731) respectively for Ikpoba-Okha, Oredo and Egor LGAs. Thus, the total population of currently pregnant women in Benin City was estimated at 15,041; subsequently applying sampling fractions of 0.337, 0.349 and 0.315 for Ikpoba-Okha, Oredo and Egor LGAs respectively to the calculated minimum sample size estimate of pregnant women (i.e 239) aided obtaining the sample size estimate of currently pregnant women per LGA for study (i.e 87 from Oredo, 84 from Ikpoba-Okha and 81 from Egor LGAs respectively).

Data collected was sorted for completeness, coded, entered and analyzed using SPSS 20.0 statistical software with results presented as statements, frequency tables and figures. Bivariate analyses was conducted using Chi square and fishers' exact test to identify independent variables that influenced attitude and level of BPACR, subsequently logistic regression analysis was carried out to identify significant predictors and eliminate possible confounders. Statistical significance was set at $p < 0.050$ and 95% confidence interval.

Attitude towards BPACR was computed based on nine attitudinal questions, a maximum point score of one was given for every correct positive or negative attitudinal response to a positive or negative attitudinal question while a score of zero for every incorrect positive or negative attitudinal response to negative or positive question respectively, thus making a total point score of 9. This scoring system had a reliability (Cronbach's alpha) score of 0.781. A total percentage score of 0-6.2 points ($\leq 69.9\%$) was graded as negative attitude towards BPACR while 6.3-9 points ($\geq 70\%$) graded as positive attitude towards BPACR.

The level of BPACR plan was graded as well prepared, partially prepared and not prepared

based on a scoring system developed by researcher. This was computed based on five practice questions involving a maximum point score of one given to each of the five key elements of birth preparedness practiced which included; plan for transportation, saving money as emergency fund, identifying skilled birth provider, identifying a health facility for emergency and identifying potential blood donor in case of emergency. Taking at least three steps with at least three (3) point score was considered as being well prepared while taking one to two steps (i.e 1-2 point score) was considered partially prepared and taking no step at all (i.e 0 point score) was considered as not prepared. Socio-economic classification (Upper and Lower socio-economic class) of pregnant women was based on Oyedeji recommendation [25].

Ethical approval was sought and obtained from the Ethics and Research Committee of the University of Benin Teaching Hospital, Benin City, Edo State before the commencement of the study. Institutional approval was also obtained from the Department of Hospital Services Edo State Ministry of Health, the three Local Government Area Councils respectively. Informed consent was sought and willfully obtained from the respondents before the commencement of the study. There was no inducement (financial or otherwise) for respondents who agreed to participate in the study and all pregnant women including those that did not meet inclusion criteria and those who declined participation were given haematinics at point of exit and encouraged to register and attend antenatal clinic regularly.

2.1 Limitation of Study

The findings of this study were based on self-report, so it was not possible to validate the claims made by respondents in the course of questionnaire administration. Some of the pregnant women (21 pregnant women earlier interviewed) were lost to follow-up and could not be traced; as such useful information that could have enriched result findings may have been lost as a result of this.

3. RESULTS

The mean age of pregnant women studied was 28.9±4.9 years, Christianity 247(98.0%) was the predominant religion while 106(42.1%)

respondents had completed secondary level of education. Furthermore, 211 (83.7%) of respondents were married, 24(9.5%) single and 1(0.4%) widowed. In relation to the socio-economic classification, 180(71.4%) were in the Lower (Socio-Economic Class) SEC while 72 (28.6%) in the Upper SEC. Benin constituted 100 (39.7%) of total ethnic group of respondents, followed by Esan 41(16.3%) and Igbo 30 (11.9%), the least being (i.e Hausa 4(1.6%), Igala 3(1.2%) and Epira 2(0.8%) respectively). In relation to obstetric characteristics of respondents 83(32.9%) of respondents were pregnant for the first time in index pregnancy, while 169(67.1%) had been pregnant previously. In relation to parity 150(59.5%) were primiparous, 91(36.1%) multiparous and 11(4.4%) grand multiparous. Furthermore, 228(90.5%) of the respondents had previous history of stillbirth while 24(9.5%) had no such history. Finally, in relation to the gestational age 118(46.8%) respondents were in the 27-30 week of gestation, 82(32.5%) in 31-35 week of gestation while 52(20.6%) in 36-40 week of gestation as at the time of study.

A total of 197(78.2%) of respondents studied had heard of the term "birth preparedness" while 55(21.8%) had never heard; health care providers 172(87.3%) were their predominant source of information followed by family 133(67.5%) with least being media 21(10.7%) (See Table 1). In relation to attitudinal score towards BPACR (see Table 2) 238(94.4%) pregnant women had positive attitude towards BPACR while 14 (5.6%) had negative attitude.

Table 1. Awareness and source of information on birth preparedness (BPACR) among pregnant women in Benin City, Edo State

Variable	Frequency (252)	Percent
Awareness of BP		
Ever heard	197	78.2
Never heard	55	21.8
Source of information*(197)		
Health provider	172	87.3
Family	133	67.5
Friends	101	51.3
School	24	12.2
Media	21	10.7

Table 2. Attitudinal scores for responses towards BPACR among pregnant women in Benin City, Edo State

Attitudinal score/response	Positive response i.e strongly agree and agree (point score=1)	Negative response i.e strongly disagree, disagree and indifferent (point score= 0)	Total
Plan place of delivery	240(95.2)	12(4.8)	252(100.0)
Transport plan for delivery	248(98.2)	4(1.6)	252(100.0)
Husband attend ANC	64(25.4)	188(74.6)	252(100.0)
Cost of care	37(84.7)	215(85.3)	252(100.0)
Bad roads	44(11.2)	208(82.8)	252(100.0)
Poor security	39(15.5)	213(84.5)	252(100.0)
Poor attitude of HCPs	19(7.5)	233(92.5)	252(100.0)
Spouse Present during Labour	19(7.5)	233(92.5)	252(100.0)
Men contribute little during labour	24(9.5)	228(90.5)	252(100.0)

In relation to factors associated with attitude towards BPACR, Table 3 shows a significant association between previous history of pregnancy ($p=0.040$) and awareness of BP (0.016) and attitude towards BPACR as positive attitude towards BPACR. In contrast parity, ANC registration, previous history of still birth, Number of ANC visits, Trimester of ANC registration, counseling on BPACR, age group of respondents, Educational status, marital status and Socio economic status of respondents were not significant factors associated with attitude of pregnant women towards BPACR.

In relation to the actual components of BPACR (See Table 4); Identifying health facility 246 (97.6%) was the most mentioned followed by identifying skilled care provider 245(97.2%) then saving money 244(96.8%), identifying a mode of transport 231(91.7%) with least mentioned being identifying a potential blood donor 172(68.3%). Furthermore, in relation to level of preparedness towards intended and actual birth plans, 197(78.2%) and 218(94.4%) pregnant women studied were well prepared, 46(18.3%) and 13(5.6%) of respondents were partially prepared, while 9(3.5%) were not prepared respectively (See Fig. 1).

In relation to factors associated with level of birth preparedness for intended birth plans (see Table 5) educational status of respondents ($p<0.001$), marital status ($p<0.001$), age group of respondents ($p=0.02$), ANC registration ($p<0.001$), receiving counseling on BPACR ($p<0.001$) and number of ANC visits ($p=0.010$) were significant factors associated with level of preparedness for intended birth plan. Furthermore, history of previous pregnancy, socio-economic status, parity, history of still birth and trimester of ANC registration were not

significant factors. Furthermore, multivariate analysis identified awareness of BP as a significant predictor for level of preparedness for intended birth plan (OR=0.337; 95% (CI) =0.128-0.891; $p=0.028$); pregnant women who were not aware of BP were 67 times less likely of being better well prepared than those who were aware of BP.

In relation to factors associated with level of preparedness for actual birth plan, Table 6 shows that history of previous pregnancy, educational status of respondents, marital status, parity, age group of respondents, history of still birth, awareness of birth preparedness and complication readiness, ANC registration, Number of ANC visits, trimester of ANC registration, receiving counseling on BPACR and Socio-economic classification were not significant factors associated with level of preparation for actual birth plan among respondents. Finally, multivariate analysis identified ANC registration as a significant predictor for level of preparedness for actual birth plan (OR=0.016; 95% CI =0.002 -0.127; $p<0.001$); pregnant women who did not register for ANC were 99 times less likely of being well prepared during delivery than those who registered for ANC.

4. DISCUSSION

This study identified that majority of respondents studied were aware of BP and had registered for antenatal care; as such could have benefitted from health education opportunities derived from ANC attendance on birth preparedness and danger signs in pregnancy, labour and delivery. The free antenatal care and delivery services offered by Edo State State Government [26] might have contributed to the high level of ANC

registration among respondents, as most of the respondents studied reported health care providers as their major source of information. The high awareness of BP identified in this study is similar to findings reported from a study [27] in South-Eastern Nigeria. Other study findings from Ile-Ife western Nigeria [10], North Ethiopia [9] and Kenyetta, Kenya [28] among nursing mothers and pregnant women also buttressed that antenatal care sessions provides a good avenue for information dissemination and communication that could possibly influence positive behavior changes to help improve maternal health indices in developing countries.

Table 3. Factors associated with attitudinal score towards BPACR among pregnant women in Benin City, Edo State

Variable	Negative attitude Freq. (%)	Positive attitude Freq. (%)	Total Freq. (%) (n=252)	Test statistic	p
Obstetric factors					
History of previous pregnancy					
Yes	13(7.7)	156(92.3)	169(100)	Fisher's exact = 4.465	0.040
No	1(1.2)	82(98.8)	83(100)		
Parity					
≤ 1	6(4.0)	144(96.0)	150(100.0)	$\chi^2=1.746$	0.418
2-4	7(7.7)	84(92.3)	91(100.0)		
>4	1(9.1)	10(90.9)	11(100.0)		
History of stillbirth					
Yes	1(4.2)	23(95.8)	24(100.0)	Fishers exact =0.098	0.755
No	13(5.7)	215(94.3)	228(100.0)		
Number of ANC visits (n=238)					
≤ 4	7(5.5)	120(94.5)	127(100.0)	$\chi^2=0.001$	0.971
> 4	6(5.4)	105(94.6)	111(100.0)		
Trimester of ANC registration					
1 ST Trimester	8(11.3)	63(88.7)	71(100.0)	$\chi^2=1.746$	0.418
2 ND Trimester	5(3.2)	149(96.8)	154(100.0)		
3 RD Trimester	0(0.0)	13(100.0)	13(100.0)		
Awareness of BP					
Yes	7(3.6)	190(96.4)	197(100.0)	Fishers exact =6.897	0.016
No	7(12.7)	48(87.3)	55(100.0)		
ANC registration					
Yes	13(5.5)	225(94.5)	238(100.0)	Fisher's exact=0.071	0.561
No	1(7.1)	13(92.9)	14(100.0)		
BPACR counseling (n =238)					
Yes	13(6.4)	191(93.6)	204(100.0)	Fisher's exact= 2.292	0.130
No	0(0.0)	34(100.0)	34(100.0)		
Socio-demographic factors					
age group (years)					
15-24	3(6.8)	41(93.2)	44(100.0)	Fishers exact =0.470	0.838
25-34	9(5.2)	164(94.8)	173(100.0)		
35-44	2(5.7)	33(94.3)	35(100.0)		
Educational status					
None	0(0.0)	5(100.0)	5(100.0)	Fisher's exact = 5.734	0.109
1 ^o Completed	3(5.2)	55(94.8)	58(100.0)		
2 ^o Completed	11(8.3)	121(91.7)	132(100.0)		
3 ^o Completed	0(0.0)	54(100.0)	57(100.0)		
Socio-economic class(SEC)					
Upper SEC	2(2.8)	70(97.2)		Fishers exact = 1.482	0.361
Lower SEC	12(6.7)	168(93.3)			
Marital status					
Single	0(0.0)	9(100.0)	9(100.0)	Fishers exact = 3.922	0.136
Married	10(4.7)	201(95.3)	215(100.0)		
Others	4(14.3)	24(85.7)	28(100.0)		

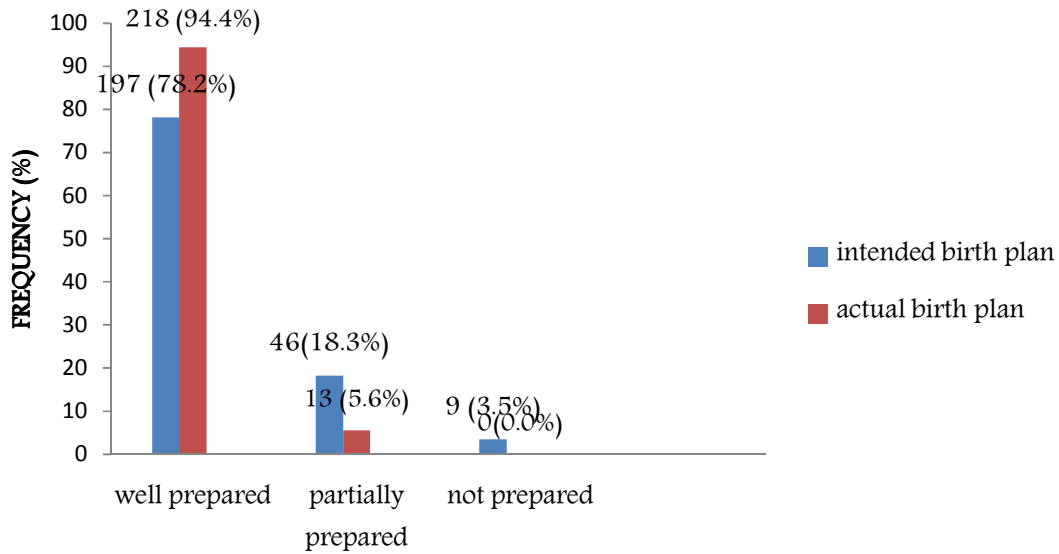


Fig. 1. Level of birth preparedness and complication readiness plan among pregnant women in Benin City, Edo State

This study also identified that majority of pregnant women that participated had positive attitude towards birth preparedness and complication readiness. It is possible that the high antenatal registration and attendance among respondents may have created the necessary platform for positive attitudinal changes among pregnant women studied towards BPACR, possibly resulting from positive reinforcement of health information and shared experiences from health providers and other pregnant women during their ANC visits. There is no doubt that antenatal care provides enormous opportunity for health education in relation to pregnancy, delivery and newborn care, this was equally reported in a recent study in Benin City [26], and this ANC opportunity could have positive influences on respondent's attitude towards pregnancy, child birth and emergency care.

This study also identified that ANC registration was higher among pregnant women who were married women than others, who also might have received counseling on birth preparedness. Married persons are usually less likely to conceal their pregnancy status and may take all necessary steps to ensure that the pregnancy is properly cared for. This may explain the better attitude towards birth preparedness and complication readiness identified among married pregnant women than other women studied; although this association was not statistically significant. Marriage is known to instill some

measure of responsibility on pregnant women and as such they could be more objective in decision making than the unmarried women, who may try not only to conceal such pregnancies but also in extreme situations to terminate them. Thus making services provided by quacks and unskilled hands inevitable among the unmarried in their attempt to cover up from the potential social stigma and shame attached to such unplanned pregnancy. This can expose these pregnant women and unborn children to complications and in extreme situations death resulting from services provided by these unqualified care providers.

Furthermore, the positive attitude reported in this study is similar to that observed from a study in rural Tanzania⁷ where it was reported that improvements in health care provider attitudes towards their clients coupled with availability of drugs and medical equipment resulted in a two-fold increase in women's preference to use the available health units for delivery, this was equally reported in another study [29]. It is worthy of note, that the attitude of health care providers towards their client is an important factor which can influence the level of utilization of health facility services. Attitudinal concerns relating to health care providers have been widely reported in other studies [30-32], this can negatively influence the attitude of pregnant women, their spouse/male partners and family members towards health facility deliveries and care. They may then seek health care from

sources were they are better accepted and this may not necessarily be of better quality or cheaper but could also be from unqualified sources with the attendant negative health consequences, possibly resulting in complications and deaths.

In relation, to level of birth preparedness and complication readiness plan majority of the respondents were well prepared and this increased during labor among respondents although a very low proportion of respondents were not prepared for birth in this study. This is in keeping with findings from a study [7] in Northern Nigeria which equally showed high level of health facility deliveries and skilled attendant presence at birth and interestingly among the out of health facility delivery most of the deliveries were conducted by nurses/midwives. Other studies have also stressed on the need to identify and seek skilled birth providers during delivery especially when home deliveries are inevitable [7,33]. Similarly, other studies in Kenya [10] and Benin City [34] showed high level of birth preparedness among pregnant women as majority of them had made adequate transportation plan and set aside savings as emergency funds towards labour or any emergency situation.

This study identified increasing educational status, increasing age group of respondents in years, ANC registration and increasing ANC visits, awareness of BP and receiving counseling on BP as significant factors associated with high level of birth preparedness among pregnant women. This highlights the importance of early preparation towards childbirth and possible emergency that can occur as majority of respondents studied had registered for antenatal care, identified health facility for care, identified skilled care provider, made transportation plan as at the time of study; although only a low proportion of them reported to have made saving plans and identified potential blood donors.

The role of ANC registration cannot be overemphasized as it creates the right platform for information dissemination and clarification on any area of doubt in relation to antenatal care, thus affording health care providers the right opportunity to impart correct information to their clients in relation to maternal and child care. Clients must be reminded on the importance of presenting early for health care; such

opportunities enable health care providers intervene early and address any health problem or condition they may be passing through. This study showed that younger pregnant women than their older counterparts registered for ANC, this may be explained by the fact that the younger women may be less experienced and may be more cautious in relation to source, type of health information and care to be received and as such register earlier and attend ANC more frequently.

Table 4. Birth Preparedness and complication readiness (BPACR) practices by pregnant women in Benin City, Edo State

Variable	Frequency (n=252)	Percent
ANC registration		
Yes	238	94.4
No	14	5.6
Identify health facilities for ANC(n=238)		
Yes	234	98.3
No	4	1.7
Save money (Emergency funds)		
Yes	74	29.4
No	178	70.6
Transport plan		
Yes	165	65.5
No	87	34.5
Plan for skilled birth provider		
Yes	245	97.2
No	7	2.8
Identified blood donor		
Yes	21	8.3
No	231	91.7
Intended place of delivery		
Health facility	229	90.9
Home	13	5.2
TBA home	7	2.8
Undecided	3	1.2
Place of actual delivery (n=231)		
Health Facility	204	88.3
Church	10	4.3
TBA Home	16	7.0
Home	1	0.4
Skilled birth provider present for delivery (n=231)		
Yes	207	89.6
No	24	10.4

Table 5. Factors associated with level of preparedness for intended birth plan among pregnant women in Benin City, Edo State

Variable	Not Well Prepared Freq. (%)	Well prepared Freq. (%)	Total Freq.(%) (n=252)	Test Statistic	P
Obstetric factors					
History of previous Pregnancy					
Yes	33(19.5)	136 (80.5)	169(100)	$\chi^2=1.59$	0.210
No	22(26.5)	61(73.5)	83 (100)		
Parity					
≤ 1	35(24.7)	113(75.3)	150(100.0)	$\chi^2=2.28$	0.320
2-4	17(18.2)	74(81.5)	91(100.0)		
>4	1(9.1)	10(90.9)	11(100.0)		
History of stillbirth					
Yes	4(16.7)	20(83.3)	24(100.0)	$\chi^2=0.41$	0.520
No	51(22.4)	117(77.6)	228(100.0)		
Number of ANC Visits (N=238)					
≤ 4	30(23.6)	97(76.4)	127(100.0)	$\chi^2= 6.69$	0.010
>4	12(10.8)	99(89.2)	111(100.0)		
Trimester of ANC Registration (n=238)					
1 st Trimester	14(19.7)	57(80.3)	71(100.0)	$\chi^2=0.39$	0.330
2 nd Trimester	24(15.6)	130(84.4)	154(100.0)		
3 rd Trimester	4(30.8)	9(69.2)	13(100.0)		
Awareness of BP					
Yes	23(11.7)	174(88.3)	197(100.0)	$\chi^2= 1.80$	0.180
No	3(5.5)	52(94.5)	55(100.0)		
Awareness of BP(No) ANC registration					
Yes	42(17.6)	196(82.4)	238(100.0)	$\chi^2=43.84$	<0.001
No	13(92.9)	1(7.1)	14(100.0)		
Received bpacr counselling (n=238)					
Yes	29(14.2)	175(85.8)	204(100.0)	$\chi^2=11.57$	<0.001
No	13(38.2)	21(61.8)	34(100.0)		
Socio-demographic factors					
Age group(Years)					
15-24	14(31.8)	30(68.2)	44(100.0)	$\chi^2= 7.95$	0.020
25-34	39(22.5)	134(77.5)	173(100.0)		
35-44	2(5.7)	33(94.3)	35(100.0)		
Educational status					
None	1(20.0)	4(80.0)	4(100.0)	Fishers exact =11.01	<0.001
1 ^o Completed	16(27.6)	42(72.4)	58(100.0)		
2 ^o Completed	34(25.8)	98(74.2)	106(100.0)		
3 ^o Completed	4(7.0)	53(93.0)	57(100.0)		
Socio-economic class					
Upper SEC	10(13.9)	62(86.1)	72(100.0)	$\chi^2=3.721$	0.054
Lower SEC	45(25.0)	135(75.0)	180(100.0)		
Marital status					
Single	14(58.3)	10(41.7)	24(100.0)	$\chi^2=22.13$	<0.001
Married	36(17.1)	175(82.9)	211(100.0)		
Others	5(29.4)	12(70.6)	17(100.0)		

Table 6. Factors associated with level of preparedness for actual birth plan among pregnant women in Benin City, Edo State

Variable	Partially prepared Freq. (%)	Well prepared Freq. (%)	Total Freq.(%) (n=252)	Test statistic	P
Obstetric factors					
History of previous pregnancy					
Yes	10(6.4)	147(93.6)	157(100)	$\chi^2= 0.51$	0.480
No	3(4.1)	71(95.9)	74 (100)		
Parity					
≤ 1	7(5.1)	129(94.9)	139(100.0)	Fisher's exact =1.06	0.660
2-4	5(5.9)	80(94.1)	85(100.0)		
4	1(10.1)	9(90.0)	11(100.0)		
History of stillbirth					
Yes	0(0.0)	23(100.0)	23(100.0)	$\chi^2= 1.52$	0.220
No	13(6.2)	195(98.1)	208(100.0)		
History of stillbirth					
Yes	0(0.0)	23(100.0)	23(100.0)	$\chi^2= 1.52$	0.220
No	13(6.2)	195(98.1)	208(100.0)		
Number of ANC visits					
≤ 4	8(6.7)	112(93.3)	120(100.0)	$\chi^2= 0.66$	0.420
> 4	4(4.1)	93(95.9)	97(100.0)		
Trimester of registration					
1 st Trimester	3(4.3)	67(95.7)	135(100.0)	Fisher's exact =2.99	0.230
2 nd Trimester	7(5.2)	128(94.8)	135(100.0)		
3 rd Trimester	2(16.7)	10(83.3)	12(100.0)		
Awareness of BP					
Yes	12(6.7)	166(93.3)	178(100.0)	$\chi^2= 1.81$	0.180
No	1(7.1)	52(98.1)	53(100.0)		
ANC registration					
Yes	12(5.5)	205(94.5)	217(100.0)	$\chi^2= 0.06$	0.800
No	1(7.1)	13(92.9)	14(100.0)		
ANC registration (No)	OR=0.016	95%CI=0.002 -0.127		P < 0.001	

Variable	Partially prepared Freq. (%)	Well prepared Freq. (%)	Total Freq.(%) (n=252)	Test statistic	P
Received BPACR counseling					
Yes	9(4.9)	175(95.1)	204(100.0)	$\chi^2 = 0.95$	0.330
No	3(9.1)	30(90.9)	33(100.0)		
Socio-demographic factors					
Age group (Years)					
15-24	2(4.9)	39(95.1)	41(100.0)	Fisher's exact = 0.41	0.900
25-34	9(5.6)	153(94.4)	162(100.0)		
35-44	2(7.1)	26(92.9)	28(100.0)		
Educational status					
None	0(0.0)	5(100.0)	5(100.0)	Fisher's exact =2.99	0.350
1 ^o Completed	5(9.8)	46(90.2)	51(100.0)		
2 ^o Completed	7(5.7)	115(94.3)	122(100.0)		
3 ^o Completed	1(1.9)	52(98.1)	53(100.0)		
Socio-Economic class (SEC)					
Upper SEC	2(2.9)	66(97.1)	68(100.0)	$\chi^2 = 1.31$	0.355
Lower SEC	11(6.7)	152(93.3)	163(100.0)		
Marital status					
Single	0(0.0)	23(100.0)	23(100.0)	Fisher's exact =1.07	0.620
Married	12(6.3)	179(93.7)	191(100.0)		
Others	1(5.9)	16(94.1)	17(100.0)		

This study also revealed high level of health facility deliveries among respondents. The high health facility deliveries and skilled attendant present at birth in this study is in contrast to the Nigeria National averages from previous surveys [2,35] which had health facilities deliveries (35%) and skilled attendant present at birth (39%) respectively. In addition other studies, in Enugu, South Eastern Nigeria [27], Southern Ethiopia [24] and rural Uganda [36] equally showed low level of birth preparedness among nursing mothers and pregnant women resulting in low health facility deliveries. These studies showed that inadequate preparation was a key factor influencing the level of birth preparedness as most of the respondents had poor plans towards birth preparedness; majority of them had not identified skilled care providers or health facility for delivery or emergencies, made no transportation plan, or made savings nor identified potential blood donor during emergency situations.

Majority of pregnant women in this study did not make plans for potential blood donor, inadequate plans in relation to identifying potential blood donors can result in serious morbidity and mortality during emergency situation such as from severe vaginal bleeding during pregnancy, delivery and even post-delivery. Bleeding events have been reported to contribute significantly to maternal mortality globally [4-5]. These unpredictable emergency events can occur in locations where laboratory facilities may not be readily available to assess blood group and having this information can minimize time delays in accessing safe and appropriate blood for transfusion needed under such circumstances to save life.

The high level of birth preparedness identified in this study is encouraging and should be sustained by stepping up health education interventions. This further reinforces the importance of adequate planning and making basic preparations towards delivery and emergency situation which are usually unpredictable; this study showed that respondents who made saving plans, registered for ANC and identified skilled attendant towards delivery had higher rates of health facility deliveries than those who did not. This is the essence of the birth preparedness and complication readiness strategy to empower women with basic information to plan better, recognize early warning signs and take necessary steps that will minimize delays in

accessing appropriate care from skilled hands and thus enhancing health facilities deliveries and improve maternal and child health outcomes.

5. CONCLUSIONS

This study identified that majority of respondents studied had positive attitude towards BPACR and were well prepared with regards to intended and actual birth plans respectively. Awareness of birth preparedness and antenatal care registration were identified as significant predictors for BPACR plan; furthermore, high health facility deliveries were reported among pregnant women studied in Benin City. There is need to strengthen Antenatal Care (ANC) registration practices to sustain the improved utilization of skilled attendants at birth and health facility deliveries identified among pregnant women in Benin City, Edo State.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. WHO, UNICEF, UNFPA and World Bank. Trends in Maternal Mortality: 1990 To 2008: Estimates Developed by WHO, UNICEF, UNFPA and the World Bank. Geneva, WHO; 2010.
2. National Population Commission (NPC). Nigeria and ICF International. Nigeria Demographic and Health Survey 2013, Abuja, Nigeria and Rockville, Maryland, USA: NPC AND ICF international; 2014.
3. World Health Organization (WHO), United Nations Children's Fund (UNICEF), and United Nations Population Fund (UNFPA). Maternal Mortality in 2000: Estimates developed by WHO, UNICEF and UNFPA. Geneva, WHO; 2004.
4. JHPIEGO. Maternal and Neonatal Health (MNH) Program. Birth Preparedness and Complication Readiness: A Matrix of Shared Responsibilities. Baltimore, MD: JHPIEGO. 2001;2.
5. Sundari TK. The untold story: How the health care systems in developing countries contribute to maternal mortality. International Journal Health Service. 1992; 22(3):513–528. DOI: 10.2190/91YH-A52T-AFBB-1LE
6. World Health Organization (WHO)/AFRO. Road map to accelerate the reduction of

- maternal and newborn mortality in Africa. Regional Reproductive Health Newsletter, NO2; 2004.
7. Magoma M, Requejo J, Campbell OM, Cousens S, Filippi V. High ANC coverage and low skilled attendance in a rural Tanzanian district: A case for implementing a birth plan intervention. *BMC Pregnancy Childbirth*. 2010;10:13.
DOI: 10.1186/1471-2393-10-13
[PMC Free Article] [Pubmed] [Cross Ref]
 8. Mcpherson RA, Khadkan, Moore JM, Sharma M. Are birth-preparedness programmes effective? Results from a field trial in Siraha District, Nepal *J Health Popul Nutr*. 2006;24(4):479–488.
 9. Hiluf M Fantahunm. Birth Preparedness and complication readiness among women in adigrat Town, North Ethiopia. *Ethiop. J. Health Dev*. 2007;22(1):14-20.
 10. Onayade AA, Akanbi OO, Okunola HA, Oyeniyi CF, Togun OO, Sule SS. Birth preparedness and emergency readiness plans of antenatal clinic attendees in ILE-IFE, Nigeria. *Niger Postgrad Med J*. 2010; 17(1):30-9.
 11. Agarwals S, Sethi V, Srivastava K, Jha KP and Baqui AH. Birth preparedness and complication readiness among Slum Women in Indore City, India. *J Health Popul Nutr*. 2010;28(4):383-391.
 12. World Health Organization [WHO]. Partnership for maternal, newborn and child health resources. Study of maternal and neonatal morbidity in Africa in rural integrated relief service – Ghana; 2007.
 13. Federal Ministry of Health. Integrated maternal neonatal and child health Strategy. Abuja; 2008.
 14. Federal Ministry of Health. Achieving millennium development goals in Nigeria: A Report of the presidential committee on achieving the MDGS in Nigeria. 2005;2-4.
 15. Wilmothj, Mathers C, Say L, Mills S. Maternal deaths drop by one third from 1990–2008. A United Nations Analysis. *Bull World Health Organization*. 2010;88: 718.
 16. Obi Al, Abe E, Okojie OH. Male and community involvement in birth preparedness and complication readiness in Benin City, Southern Nigeria *Iosr Journal of Dental And Medical Sciences* 2013;10(6):27-32.
 17. Federal Republic of Nigeria. Priority Table IV on Population Distribution by Age and Sex In states and Local Government areas. National Population Commission, April 2010. Abuja, Nigeria
 18. Eni-Meg Nigeria Limited. Edo State Investors' Guide (1st edition international). Eni-Meg. Publishers, Lagos. 1999:2-256.
 19. Federal Republic of Nigeria. Priority Table XII on population distribution by age and sex and literacy rate in states and local government areas. National population commission, April 2010. Abuja, Nigeria.
 20. Edo State ministry of health. Department of hospital services, list of Health Facilities.
 21. JHPIEGO. Maternal and Neonatal Health. Monitoring birth preparedness and complication readiness, tools and indicators for maternal and newborn health. Johns Hopkins, Bloomberg School of Public Health, Center For Communication Programs, Family Care International; 2004.
 22. Nägele FC. *Lehrbuch Der Beburtsilfe Fur Hebammen*. 3rd ED; 1836.
 23. Cochran WG. *Sampling techniques* (3rd ed.). New York: John Wiley & Sons; 1977.
 24. Hailu M, Gebremarian A, Alemseged F, Deribe K. birth preparedness and complication readiness among pregnant women in southern Ethiopia. *Plos One*. 2011;6(6):E21432.
 25. Oyedeji GA. Socioeconomic and cultural background of hospitalized children in Ilesa. *Niger J Paediatr*. 1985;12:111-117
 26. Obi Al, Okojie HO. Birth preparedness and complication readiness: Knowledge and practices among pregnant women in Benin city, Edo state. *Annals of Biomedical Sciences*. 2016;15(1):79-92.
 27. Ekabua JE, Ekabua KJ, Odusolu P, Agantu, Iklakiuc, Etokidemaj. Awareness of birth preparedness and complication readiness in south eastern Nigeria.
 28. Mutiso SM, Qureshi Z, Kinuthia J. Birth preparedness and complication readiness among antenatal clinic clients. *East Afr Med J*. 2008;85(6):275–83.
 29. Kruk Me, Paczkowski M, Mbaruku G, DE Pinho H, Galea S. Women's preferences for place of delivery in rural Tanzania: A Population-Based Discrete Choice Experiment. *AM J Public Health* 2009; 99:1666-1672. Pubmed Abstract |
 30. Onah HE, Ikeako LC, Iloabachie GC: Factors associated with the use of maternity services in Enugu, Southeastern Nigeria. *Socsci Med* 2006;63:1870-1878. Pubmed Abstract | Publisher Full Text

31. Kyomuhendo GB. Low use of maternity services in Uganda: Impact on women's status, traditional beliefs and limited resources. *Reprod Health Matters*. 2003; 11(21):16-26. Pubmed Abstract | Publisher Full Text.
32. Asuquo EEJ, Etuk SJ, Duke F. Staff attitude as barrier to the utilization of University of Calabar Teaching Hospital for obstetric care *African Journal of Reproductive Health*. 2000;4(2):69-73. Publisher Full Text.
33. Ekele BA, Tunau KA. Place of delivery among women who had antenatal care in teaching hospital. *Actaobstetgynaecol Scand*. 2007;86(5):627–630.
34. Tobin EA, Ofili AN, Enebeli N, Ogochukwu N. Assessment of birth preparedness and complication readiness among pregnant women attending primary health care centres in Edo State, Nigeria. *Ann Nigeria Med*. 2014;8:76-81. DOI: 10.4103/0331-3131.153358
35. Enhanse project. Reproductive health situation in Nigeria; 2005.
36. Kabakyenga JK, Ostergren PO, Turyakira E, Petterson KO. Knowledge of obstetric danger signs and birth preparedness practices among women in rural Uganda. *Reproductive Health*. 2011;8:33. DOI: 10.1186|1742-4755-8-33.

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