

Original Research Article

MATERNAL HEALTH SEEKING BEHAVIOURAL FACTORS ANTITHETICAL TO THE USE OF HEALTH INSTITUTIONAL FACILITIES FOR CHILDBIRTH AND TO GOOD ANTENATAL OUTCOME.

ABSTRACT

Objective:

To determine the hospital delivery rate and the associated factors among booked parturients at the Niger Delta University Teaching Hospital

Methodology.

This was a descriptive, retrospective cross-sectional study carried out at The Niger Delta University Teaching Hospital (NDUTH), Okolobiri in the South -South geopolitical zone of Nigeria. Participants were women who registered for antenatal care in the Niger Delta University Teaching Hospital, Okolobiri from January to December 2016. A representative sample of 401 participants whose medical records were completely filled were enrolled for the study. The data collected was entered into SPSS version 20, using descriptive analysis and Forward Binary logistic regression.

Results

The mean age for the study group was 28.16 ± 5.86 with a range of 12-45 years. Two hundred and six subjects (51.4) were Pentecostals. 223 (55.6%) had secondary and 83 (20.7%) had tertiary education. The mean antenatal visits were 6.05 ± 3.4 with a range of 1-12 visits. Out of the antenatal population that registered for care, only 116 (28.9%) delivered at the centre in the index pregnancy. A binary logistic regression performed showed there was an association between subject's demographic characteristics and delivery in a hospital. $X^2 = 66.455$, DF 7, $P < .000$. Cross tabulation showed an association between antenatal care attendance and delivery in hospital, $X^2 = 56.44$, DF 11, $P < .000$. Cross tabulation between cervical dilatation and parity made on admission to hospital for childbirth at NDUTH (N=116) did not show any association. $(X^2) = 23.437$, DF 20, $P < .268$. The perinatal mortality was 8.62 deaths/1000 total births. There was no maternal death.

Conclusion

The utilization of health care facilities for childbirth is still poor in Nigeria, compared to some other African countries. The creation of awareness through advocacy on the utilization of health facilities and skilled attendants at childbirth is needed. More time has to be spent on health education during antenatal clinic sessions to improve the prospective mothers' perception of a safe delivery.

Key words: Antenatal care/attendance, skilled providers, Health facility delivery, Advocacy, TBAs, skilled attendants at child birth.

INTRODUCTION

The issue of maternal mortality has plagued Nigeria and some countries in the world, especially sub-Saharan African countries for decades with no apparent solution proffered. Every day, approximately 830 women die from preventable causes related to pregnancy and childbirth globally (1). Ninety-nine percent (99%) of all maternal deaths occur in developing countries, most of them in sub-Saharan Africa (1). When viewed critically, maternal death is one of the most preventable deaths in human existence (1- 4).

Since the introduction of prophylactic care in pregnancy later to be known as antenatal care in Europe in the 18th century and developed in the 19th century, there has been a dramatic improvement in maternal and fetal outcomes globally especially in developed countries (5, 6). However, outcomes of antenatal care vary from one country to the other and from region to region depending on the degree of efficiency of execution and not necessarily the degree of participation. For instance, The United Arab Emirates (UAE) has an antenatal coverage of 100% and a MMR of 10/100,000 live births (7), Ukraine 96% antenatal care coverage and a MMR of 24/100,000 live births (8), Ghana 97% coverage with a MMR of 319/100,000 live births (9) and Nigeria had 61% coverage and a MMR of 814/100,000 live births (10). A well executed antenatal care service is a functional four-pronged relationship between the Caregiver, the antenatal care participants, health facilities and healthcare providers for women's health. A break in this chain of relationship promotes an inefficient health care delivery system with high maternal mortality and morbidity. The hallmark of antenatal care is that at the end of pregnancy, both mother and child are alive and healthy. The benefits of antenatal care are only realizable if the would-be mother registers for antenatal care, delivers in a health facility and by skilled attendants at the point of childbirth. This part of the chain is often broken in the sub-Saharan Africa region as registered antenatal attendees do not always return to the health facility where they received antenatal care in the index pregnancy for delivery. In the Nigerian Demographic and Health survey 2013, 61% of Nigeria women had antenatal care from a skilled provider, but only 36% of them delivered in health facilities (10).

In Nigeria, it is commonplace to find women who defaulted from antenatal care at the point of delivery to be laboring in unorthodox centers run by quacks, traditional birth attendants and in Charismatic Churches. However, if delivery proved difficult in these centres or complications arose, these women would present as emergencies in the centre they registered for care in the index pregnancy (11- 15)

Secondly, we record high maternal mortalities in the sub-Saharan Africa region because policy formulators while planning strategies to reduce maternal mortality do not take into consideration antenatal subjects. Women are not dying because of untreatable diseases in Africa. They are dying because societies have yet to make the decision that their lives are worth saving. (16). If health facilities abound and antenatal subjects are not utilizing them when in labour, then it means antenatal

participants in the sub-Saharan region has not come to the full realization that a skilled birth attendant at childbirth saves lives. Basically, this health seeking behavior occurs because the physiology and the complications that could arise during pregnancy is poorly understood by the antenatal participants. (17). Health Planners should not only improve infrastructure, provide health personnel, drugs, but on how to take advocacy to the doorsteps of the antenatal participants. Health seeking behavior of antenatal subjects has contributed largely to the huge maternal mortality ratio in the sub-region. Our objectives in this study, at the Niger Delta University Teaching Hospital, is to examine those factors exhibited in the behavioural pattern of antenatal participants that are antithetical to the utilization of health facilities for childbirth and how does it affect antenatal outcome.

Methodology

Study site.

This was a descriptive, retrospective cross-sectional study carried out at The Niger Delta University Teaching Hospital, Okolobiri in the South-South geopolitical zone of Nigeria. The Hospital caters for the health needs of people from the adjoining Rivers, Delta, Abia and Imo states. Apart from rendering clinical services, it also trains medical personnel and conduct research.

Sampling method.

This was a non – experimental research design. The study participants were the women who registered for antenatal care at the Niger Delta University Teaching Hospital, Okolobiri from January to December 2016. A representative sample of 401 participants' medical records were retrieved from the hospital archives and enrolled for the study.

Data collection/Management

The information sought from participants' medical records included the place of delivery, the sociodemographic characteristics of participants, the number of times they attended antenatal clinics in the index pregnancy, the patronage of traditional birth attendants, and the delay at home (if any) before presentation to the hospital when in labour.

The results obtained were entered into SPSS statistical software version 20 for analysis using descriptive statistics. (numbers/frequencies), tables, cross tabulations) and binary forward logistic regression. LR

The objective of the study.

The objective of the study was to determine the hospital delivery rate and the associated factors among booked patients at the Niger Delta University Teaching Hospital.

101 .Antenatal protocol

102 The conventional form of antenatal care protocol is still practiced at ‘the Niger Delta University
 103 Teaching Hospital, Okolobiri. as in most tertiary hospitals in Nigeria (18). By this protocol, the
 104 antenatal participant is given four weekly appointments if her gestational age is under 28 weeks,
 105 fortnightly if she is 28-36 weeks pregnant and weekly appointments at 36 weeks till delivery. This
 106 protocol follows WHO recommendations that for a woman to have a positive pregnancy experience,
 107 she needs a minimum of 8 antenatal visits to be able to access her physician throughout the pregnancy
 108 (19). Antenatal participants receives health education talks at every visit, which covers various topics
 109 including: what to expect in pregnancy, labour and the puerperium. Lectures are also given on medical
 110 diseases including the ones that are peculiar to pregnancy. Labour preparedness, and personal
 111 hygiene among others are also taught during the antenatal period.

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112 Eligibility.

113 All the antenatal participants who had antenatal care within the study period and whose medical
 114 records were completely filled were enlisted for the study.

115 Sample size

116 The Calculation of Sample Size.

117 A prevalence rate of 31 % in a study about service utilisation at the University of Jos, amongst
 118 antenatal participants in a similar study was applied in calculating the sample size. (20):

$$119 n = pq / (e/1.96)^2$$

120 Where n = sample size

$$121 P = \text{prevalence rate} = 31\% = 0.31$$

$$122 q = 1 - p = 1 - 0.31 = 0.69$$

$$123 e = \text{margin of sampling error tolerated at 95\% confidence interval} = 5\% = 0.05$$

$$124 \text{ Hence, } n = 0.31 \times 0.69 / (0.05/1.96)^2$$

$$125 n = 0.2139 / (0.05/1.96)^2$$

$$126 n = 0.2139 / (0.0255102)^2 / 0.2139$$

$$127 n = 328.7 \text{ (329).}$$

128 At the end of retrieving the hospital files of women who registered and attended antenatal care within
 129 the study period, a total of 414 folders were retrieved and apart from the original sample size of 329
 130 files, 72 other files were properly filled. The addition of these 72 subjects' files to the 329 from
 131 calculated sample gave a total of 401 subjects' files that was used for the study.

132 Results

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A total of 401 subjects were enrolled for the study. The mean age for the study group was 28.16 ± 5.86 with a range of 12-45 years. Seventy-three (18.2%) were Catholics, 206 (51.4) were Pentecostals, 84 (20.9) were single, 315 (78.6%) were married, 22 (5.5%) had no formal education, 223 (55.6%) had secondary education and 83 (20.7%) had tertiary education. One hundred and thirty-four (33.4%) were Primigravidae, 101 (25.2%) had delivered once, 62 (12.5%) had delivered twice. The mean parity was 3.0.

Table 1. Demographic characteristics of subjects.

Age	Frequency	Percent
Twelve-Nineteen= 12-19	18	4.5
Twenty-Twenty five= 20-25	112	27.9
Twenty six-Thirty= 26-30	143	35.7
Thirty one-Thirty four= 31-34	66	16.5
Thirty Five-Thirty nine= 35-39	53	13.2
Forty years and above= ≥40	9	2.2
Total	401	100.0

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Religion	Frequency	Percent
Catholic	73	18.2
Protestants	69	17.2
Pentecostal	206	51.4
Jehovah's Witness	44	11.0
Muslim	8	2.0
Total	401	100.0

Marital status	Frequency	Percent
Single	84	20.9
Married	315	78.6
Divorced/Separated	2	5
Total	401	100.0

Education	Frequency	Percent
No formal education	22	5.5
Primary	69	17.2
Secondary	223	55.6
Tertiary	83	20.7
5.00	4	1.0
Total	401	100.0

145
146

Parity	Frequency	Percent
None	134	33.4
Once	101	25.2
Twice	62	15.5
Thrice	34	8.5
Four times	36	9.0
Five or more times	34	8.5
Total	401	100.0

147 The mean antenatal visits were 6.05 ± 3.36 with a range of 1-12 visits. Out of the antenatal population
148 that registered for care at the centre, only 116 (28.9%) turned up for delivery. Table 2 shows the
149 pattern of antenatal visits.

150 Table 2. Antenatal visits.

Number of times	Frequency	Percent
1.00	66	16.5
2.00	47	11.7
3.00	55	13.7
4.00	44	11.0
5.00	41	10.2
6.00	42	10.5
7.00	33	8.2
8.00	25	6.2
9.00	19	4.7
10.00	13	3.2
11.00	7	1.7
12.00	9	2.2
		100.0 refer
Total	401	earlier
		review

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151 A Forward stepwise binary logistic regression was performed to control for possible cofounders and
152 to see the association between the dependent variable –delivery in the Niger Delta University
153 Teaching Hospital and the independent predictor variables- age, religion, education, parity and
154 gestational age at booking on the likelihood of delivering in the hospital. The Hosmer and Lemeshow
155 test showed that the model fitted adequately – $X^2 = 8.596$, DF 8, $P < .378$. The model correctly
156 classified 73.8 % of cases. Age, $P < .54$ and Gestational age at booking, $P < .260$ did not contribute to
157 the model. However, Religion, $P < .012$, Education, $P < .000$, Parity, $P < .005$ were associated with
158 delivery in the hospital. Table 3 shows the binary logistic regression for the dependent variable versus
159 the predictor variables. ,

Table3. Forward binary logistic regression.

		Variables in the Equation						95% C.I. for EXP(B)	
		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1 ^a	Education	.994	.179	30.862	1	.000	2.701	1.902	3.835
	Constant	-3.925	.575	46.613	1	.000	.020		
Step 2 ^b	Education	1.131	.187	36.674	1	.000	3.100	2.149	4.470
	Parity	.368	.089	16.919	1	.000	1.444	1.212	1.722
	Constant	-5.222	.688	57.640	1	.000	.005		
Step 3 ^c	Religion	.319	.127	6.324	1	.012	1.375	1.073	1.763
	Education	1.142	.189	36.626	1	.000	3.134	2.165	4.537
	Parity	.350	.090	15.155	1	.000	1.420	1.190	1.694
	Constant	-6.073	.789	59.284	1	.000	.002		

a. Variable(s) entered on step 1: Education.

b. Variable(s) entered on step 2: Parity.

c. Variable(s) entered on step 3: Religion.

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A Chi-square test of association between antenatal care attendance and delivery at NDUTH were statistically significant ($X^2 = 58.244$, df 11, $P < .000$). Table 4 shows the cross tabulation between antenatal attendance and hospital delivery.

Table 4: How many times attended ANC * Delnduth2 Cross tabulation

Count

		Delnduth2		Total
		No	Yes	
How many times attended ANC	1.00	56	10	66
	2.00	39	8	47
	3.00	48	7	55
	4.00	35	9	44
	5.00	29	12	41
	6.00	28	14	42
	7.00	12	21	33
	8.00	13	12	25
	9.00	10	9	19
	10.00	7	6	13
	11.00	6	1	7
	12.00	2	7	9
Total		285	116	401

The behavioral pattern of participants during the antenatal period as exhibited by the gestational age at booking and visits to traditional birth attendants.

The mean gestational age at booking was 23.08 ± 6.50 . One hundred and five participants (26.2%), visited the traditional birth attendants (TBA's), during the antenatal period. Table 5 shows the gestational age at booking for antenatal care and the patronage of the traditional birth attendants.

Table 5.

Gestation at booking (Weeks)	Frequency	Percent
4-8	26	6.5
9-13	44	11.0
14-18	61	15.2
19-23	83	20.7
24-28	97	24.2
29-33	53	13.2
34-38	31	7.7
39-44	15	.7
Total	401	100.0

Visits to traditional birth attendance

Visited TBA	Frequency	Percent
Yes	105	26.2
No	296	73.8
Total	401	100.0

Behavioural pattern of participants in labour.

Out of 116 participants who delivered at the NDUTH in the index pregnancy, 44(37.9%), ruptured their fetal membranes before presentation to the hospital. Thirty-three (75%), $N = 44$, ruptured their fetal membranes less than 12 hours before presentation to the hospital. Forty-nine participants (42.2%), were in latent phase of labour on admission to the labour ward. Table 6, shows membranes rupture at home, how long membranes ruptured and the degree of cervical dilatation at home, before presentation to the hospital.

Table 6.

Membranes ruptured at home (N=116)	Frequency	Percent
Yes	44	37.9

No	72	62.1
Total	116	100.0
How long membranes ruptured (N=44)	Frequency	Percent
<12 hours	33	75.0
12-24 hours	7	15.9
25-48 hours	1	2.3
>72 hour days	3	6.8
Total	401	100.0

Cervical dilatation on admission	Frequency	Percent
<3 cm	49	42.2
4-6 cm	39	33.6
7-9	19	16.4
10	9	7.6
Total	116	100.0

A Cross tabulation between cervical dilatation and parity on admission to hospital in labour, of those who delivered in NDUTH (N=116), there was no association between parity and the degree of cervical dilatation. (Pearson Chi Square test (X^2) =23.437, Df 20, P<.268.

The total number of babies delivered in the just concluded pregnancies were 119 babies -115 singletons and two set of twins. There was only one perinatal death. The perinatal mortality was 8.62 deaths/1000 total births. There was no maternal death.

Discussion

In our study, only 28.9% of booked antenatal subjects returned to the Niger Delta University Teaching Hospital facility where they had antenatal care for child birth in the index pregnancy. These results are comparable with the Nigerian Demographic and Health Survey where only 61% of women aged 15-49 years who had a live birth during the 5 years preceding the survey received antenatal care and only 36 % had health institutional delivery (10). Our results are also similar to work done in Jos in which only 33% had health facility delivery (20) and also to the reviews of the 'barriers to safe motherhood in Nigeria where the utilization of health services for delivery increased from 30% to 37% over a 13year period (21). Our results in this study and that of the Nigeria national study obtained from 'The Nigerian Demographic and Health Survey, 2013 (10) are at variance with those in recent Demographic and Health Surveys of Ghana in West Africa where 97% pregnant women received antenatal care and 73% delivered in a health facility (9), Kenya in East Africa where 96% received antenatal care and 61% delivered in a health facility (22) and in Zimbabwe in Southern Africa where antenatal attendance was 93% and 77% delivered in a health facility (23) respectively. These variations in antenatal care attendance and utilization of hospital facilities for child birth may be due

206 to the diverse socio-cultural interpretations of pregnancy that exist in the sub-Saharan Africa region
 207 (3). Culture and social status change peoples' perceptions and decision making process concerning
 208 health issues.

209 One thing also evident from our study and the results of the Nigerian Demographic and Health Survey
 210 (10) is that there is low antenatal care coverage and use of health facilities for delivery. The utilisation
 211 of skilled birth attendants and health institutional delivery is one of the major indicators for MDG-5
 212 and has been suggested to reduce maternal mortality by 50% (24). The unanswered question in
 213 Nigeria is: what will make a woman who registered and attended antenatal care to walk away from the
 214 facility when in labour? The obvious answer is that most of our antenatal population, have poor
 215 understanding of the dynamics of pregnancy and what behavioural attitude on their part that could
 216 jeopardise safe delivery (17). Most of the successive programmes by WHO, its affiliate agencies and
 217 national bodies failed to reduce maternal mortality in some African countries because adequate
 218 attention has not been paid to advocacy (health education) while formulating these policies (25). If
 219 health infrastructures are developed, skilled professionals are trained, but the antenatal subjects are
 220 unaware that health institutional delivery saves lives, then most of these programmes are bound to fail
 221 (24, 26). These among other factors constitute huge gaps in the execution of antenatal health care
 222 programmes in sub-Saharan Africa. Advocacy on what is pregnancy and the benefits derived from the
 223 well executed antenatal health programs should be taught in antenatal clinics, communities, churches
 224 and mosques (24, 26). Improving the socioeconomic status of women and families would also
 225 enhance the utilization of health facilities for delivery in areas where fees are paid for services.

226 The demographic characteristics of subjects in this study: age, religion, parity, education and the
 227 gestational age at booking for antenatal care as independent variables were tested against the
 228 dependent variable – Delivery in hospital in a binary forward logistic regression. It was found that
 229 there was significant association between these predictor factors and delivery in a hospital except age
 230 and gestational age at booking.

231 In our study, as the subject ages by a year, so the odds of delivering in a hospital decreases by 1.2
 232 times to delivering outside ($p < 0.56$). This result was at variance with a six country study done in
 233 Africa, where maternal age influences the decision to deliver in a health facility (27). These variations
 234 may have arisen from the impact of regional and cultural differences (between Nigeria and these
 235 countries) exerted on the health seeking behavioral pattern of the would-be mother to deliver in a
 236 health facility.

237 Most of our study subjects booked late for antenatal care. The mean gestational age at booking for
 238 antenatal care was 23.08 ± 6 amongst study participants. The earliest time recommended by the World
 239 Health Organisation to register for antenatal care is within the first 12 weeks of pregnancy. Early
 240 contacts of antenatal mothers with health care providers would enable them to complete the new
 241 World Health Organisation's 8 scheduled visits which is known to reduce maternal mortality by

242 8/100,000 live births (19). Gestational age at booking was not associated with delivery in hospital in
 243 our study model ($P < .253$).

244 Religion is one of the barriers that impacts negatively on the utilisation of health institutions for
 245 delivery. Half of our study subjects were of Pentecostal religion that harbours radical views against
 246 hospital delivery as exemplified in two studies in South-South, Nigeria, where 43% and 50%
 247 respectively of registered antenatal subjects studied delivered in Churches (28 - 30). It is generally
 248 believed by some antenatal subjects that they need 'spiritual support' against perceived enemies. In
 249 our study, religion was associated with delivery in hospital ($P < .012$). These results may have been
 250 due to the level of understanding of pregnancy by our study participants due to their high
 251 educational status.

252 Education impacts positively on health care utilization ($P < .000$). Educated women were 3 times
 253 more likely to deliver in a health facility than uneducated ones in our study. Education improves the
 254 antenatal mother's understanding of reproductive health issues, and to take right decisions.

255 The Parity of subjects in our study was associated with the decision to deliver in the Niger Delta
 256 University Teaching Hospital ($P < .005$). A woman who had a positive pregnancy experience in the
 257 last concluded pregnancy is likely to return to that health facility where she delivered previously if
 258 pregnant again (19).

259 Cross tabulation between antenatal care attendance and delivery at the Niger Delta University
 260 Teaching Hospital was analysed in our study. Antenatal care clinic attendance was associated with
 261 health facility delivery ($X^2 = 56.44$, $df\ 11$, $P < .000$). The positive impact of well executed antenatal
 262 care since its inception on reducing maternal/perinatal morbidity/mortality is well established.

263 We also examined the health seeking behavioural practices of the participants who delivered at
 264 NDUTH in the index pregnancy. The delivery of a pregnant woman in a health facility and by skilled
 265 attendants saves lives. However, there are still other determinants that could jeopardize antenatal out-
 266 comes. The time delay at home while in labour before going to the hospital for delivery judged by
 267 degree of cervical dilatation on admission, pre labour rupture of membranes and the time that elapsed
 268 before presentation to the hospital and patronage of traditional birth attendants.

269 Almost a third of the subjects in the study visited Traditional Birth Attendants (TBAs) in the course of
 270 the antenatal care period. The Traditional birth attendants (TBAs), an unskilled group of women,
 271 without medical education, had contributed enormously to the high maternal, perinatal mortality and
 272 morbidity in sub-Saharan African countries (31). In the 1990s, there were strong arguments in favour
 273 of training traditional birth attendants to alleviate the dearth of skilled attendants in the sub-region.
 274 The results were counter-productive, especially managing severe cases, they were suppose to refer.
 275 (32) Currently, TBAs are banned from health care delivery in most of sub-Saharan African countries,
 276 yet antenatal subjects clandestinely patronize them as in our study (33).

It is not unusual for fetal membranes to rupture before the onset of labour in term pregnancies. Prelabour rupture of fetal membranes (PROM) is defined as one that occurs spontaneously before the onset of labour.(33, 34) The incidence of premature rupture of fetal membranes (PROM) in our study was 11%. This is almost in agreement with the incidence of PROM of 5-10 % of all pregnancies reported by Duff and colleagues(34). Seventy-five (75%) of subjects (n= 44) in our study who had PROM presented early (within 12 hours) to the health facility for assessment and delivery. Prolonged rupture of fetal membranes is associated with high risk of infection., to both mother and child. The risk of infection is likely to commence after 12 hours of membranes rupture (35).The remaining 25% of study subjects with PROM presented late for assessment, with high risk for infection. The current opinion worldwide is to induce labour immediately after PROM if cervix is favourable or to commence cervical ripening followed by induction of labour if the cervix is not favourable (34, 35).

The degree of cervical dilatation on admission is a prediction of how long a parturient has been laboring either at home, in Churches or with TBAs with exclusion of other confounding variables like precipitate labour. Multiparous women with previous positive experience with home deliveries are most likely to present to hospital in advanced active phase labour or at full cervical dilatation when the hope of home delivery seems difficult (33). Majority of subjects in our study who delivered at NDUTH presented in the first phase of active labour allowing skilled attendants the opportunity and time to manage their labour. Health education, previous positive experience of hospital delivery coupled with their educational status must have impacted on this antenatal outcome. A Crosstabulation between parity and the degree of cervical dilatation on admission in labour was not statistically significant ($X^2=23.437$, Df 20, $P<.268$).

Maternal and perinatal outcomes in the study were favourable as there was no maternal death and perinatal mortality was 8.62/1000 total births which is lower than that obtained from the national average published in the Nigeria Demographic and health survey (10).

Conclusion.

Ignorance of subjects on the role played by antenatal care and skilled attendants at the point of childbirth in reducing maternal/perinatal mortality has made them to walk into substandard care. The power of knowledge in understanding reproductive health issues cannot be over emphasized. Advocacy on antenatal health education should be carried beyond health institutions to communities, churches, mosques and the media for understanding the dynamics of safe pregnancy and childbirth.

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