



ORIGINAL ARTICLE

Knowledge and Attitude of Pregnant Women towards Obstetric Danger Signs amongst Those Attending Antenatal Clinic in Yenagoa Metropolis, South-South, Nigeria

Osegi Nkencho¹, Eguvbe Anthony Okeoghene^{2*} and Adam Vincent³

¹Consultant, Obstetrician and Gynaecologist, Federal Medical Centre, Yenagoa, Bayelsa State, Nigeria

²Consultant, Community Physician, Department of Community Medicine, Federal Medical Centre, Yenagoa, Nigeria

³Professor of Community Medicine, Department of Community Medicine, University of Benin and a Consultant Community Physician with the University of Benin Teaching Hospital, Edo State, Nigeria

*Corresponding author: Dr. Anthony Okeoghene Eguvbe, Department of Community Medicine, Federal Medical Centre, Yenagoa, Bayelsa State, Nigeria. Tel: +234-8036087938



Abstract

Background: The burden of maternal death is currently alarming; not less than 289,000 maternal deaths occurred globally in 2013. Sub-Saharan Africa (SSA) alone accounts for 62% (179,000 maternal deaths) of these globally estimated maternal deaths.

Objectives: To assess knowledge and attitude of pregnant women towards obstetric danger signs amongst those attending antenatal clinic in Yenagoa metropolis.

Methods: This was a cross-sectional descriptive study done amongst pregnant women of child bearing ages attending ANC clinics using an interviewer administered semi-structured questionnaire. Participants were selected using a systematic random sampling technique. There was a knowledge and attitude scoring system developed and applied. The data collected were analyzed using SPSS version 20.

Results: Over three-quarters, 201 (77.3%) of the mothers are aware of obstetric danger signs. Over two-thirds 178 (68.5%) got danger signs information from health workers. Almost half, 129 (49.6%) of the respondents mentioned vaginal bleeding as dangersigns followed by fever 51 (19.6%), severe and lasting abdominal pain/cramps 31 (11.9%), hypertension 28 (10.8%). Over three-quarters, 201 (77.3%) of the study participants considers convulsion as obstetric emergency during pregnancy. Almost all 93.5% of the participants considers vaginal bleeding as obstetric emergency during pregnancy. Most respondents 259 (99.6%), agree that in the presence of an obstetric danger sign, they will go to the nearest health centre. Knowledge of "danger signs" of pregnancy was not significantly associated

with the age of the expectant mother, mother's educational level and socioeconomic status. Knowledge of "danger signs" of pregnancy was significantly associated with number of antenatal care visit. It was found that respondents who attended antenatal clinic equal to or more than 4 times had two times good knowledge than those respondents who attended antenatal care less than 4 times, this was statistically significant.

Conclusion: Majority of the respondents have heard of obstetric danger signs during pregnancy. There was poor knowledge of obstetric danger signs in this study. There was fair attitude towards obstetric danger in this study. More 50% of the study participants had negative attitude towards obstetric danger signs during pregnancy. There is need for more education towards changing attitude towards obstetric danger signs.

Keywords

Knowledge, Attitude, Obstetric danger signs, Pregnant women, Antenatal

Introduction

Globally, maternal death has remained a public health concern especially in developing countries where 99% of these deaths occur [1]. The burden of maternal death is currently alarming; not less than 289,000 maternal deaths occurred globally in 2013 [2]. Sub-Saharan Africa (SSA) alone accounts for 62% (179,000 maternal deaths) of these globally estimated maternal deaths [2]. The

region also has the highest regional Maternal Mortality Ratio (MMR) of 510 maternal deaths/100,000 live births among the developing regions [2].

Pregnancy complications are the major health problems among women in developing countries. Approximately 529,000 women die from pregnancy related causes annually and almost all (99%) of these maternal deaths occur in developing countries. The global maternal mortality is unacceptably high [3]. Although there was significant progress in all developing regions, the average annual percentage decline in the global maternal mortality ratio (MMR) was 3.1%, short of the millennium Development Goals (MDGs) target of 5.5%. Every day, almost 800 women still die due to pregnancy or child birth, and for every woman who dies 20 or more experience serious complications. One of the United Nations' MDGs is to reduce MMR by 75% by 2015 [4].

A descriptive study was conducted in 2015 to compare perception of seven selected ODSs: vaginal bleeding, convulsion, high blood pressure, severe malaria, cessation of fetal movement, swollen legs, pale hands and feet among women in different childbearing age groups taking into consideration marital status, educational level and parity. Eight hundred and twenty-nine respondents included 249 (30.0%) women in ERA, 410 (49.5%) in MRA and 170 (20.5%) in LRA. Demographic characteristics of the respondents were skewed more towards 662 (79.9%) married women; 679 (81.9%) secondary education (679, 81.9%); 675 (81.4%) Yoruba ethnic group and 347 (41.85) parity of 1 to 2. Only 52 (6.3%) of the respondents had no formal education and 3 (0.4%) had other forms of education such as attending Koranic schools. There were 478 (57.7%) Christians, 346 (41.7%) Muslims and 5 (0.6%) Traditionalists. In all, 384 (51.4%) women in MRA, 335 (44.8%) of those with parity 1 to 2 and 614 (82.1%) of those who had secondary education ever used Antenatal care (ANC). A similar proportion among these groups was observed for those who considered that ANC as important in pregnancy. Women in MRA were over three times more likely to visit ANC ($\chi^2 = 23.43$; $P = 0.000002$, OR = 3.34; 95% CI = 2.01, 5.57) compared to those in ERA. Women in LRA were over four times more likely to visit ANC when matched with those in ERA. There was no statistically significant difference ($\chi^2 = 0.23$; $P = 0.63$, OR = 1.21; 95% CI = 0.56, 2.64) in the proportion of women in LRA who visited ANC compared to those in MRA. Perception of ODSs by women in different age groups clearly showing that a large proportion of the women have low perception of these ODSs. Higher proportions of women in MRA had better perception of ODS than those in ERA or LRA. However, that proportion was statistically significant only for vaginal bleeding ($\chi^2 = 4.31$; $P = 0.037$, OR = 1.40; 95% CI = 1.02, 1.92), severe malaria ($\chi^2 = 3.67$; $P = 0.05$, OR = 1.38; 95% CI = 0.99, 1.91), pale hands and feet ($\chi^2 = 4.43$; $P = 0.03$, OR = 1.71;

95% CI = 1.03, 2.85) when MRA group was compared with ERA group; and only for convulsion ($\chi^2 = 4.75$, $p = 0.03$, OR = 1.81, 95% CI = 1.06, 3.10) when MRA group was compared with LRA group. Also, single women were more than twice likely to disregard vaginal bleeding ($\chi^2 = 17.0$; $P = 0.000043$, OR = 2.09; 95% CI = 1.46, 2.98) and about twice as likely to also disregard convulsion ($\chi^2 = 5.05$; $P = 0.02$, OR = 1.80; 95% CI = 1.10, 3.00) as ODSs. In general, there was no significant difference in the risks of an ODS among the respondents. Nevertheless, among those who disagreed that bleeding is an ODS, risk of vaginal bleeding during pregnancy was slightly higher among women in ERA compared with MRA (RR = 1.17, 95% CI = 1.0, 1.9) and among those who were singles compared to those who were married (RR = 1.37, 96% CI = 1.2, 1.7). There were significant associations (positive and negative, respectively) between knowing a woman who died in pregnancy and perception of bleeding as an ODS ($t = 3.72$, $P = 0.000$, 95% CI = 0.07, 0.22) on one hand and perception of pale hands and feet as an ODS ($t = -2.30$, $P = 0.02$, 95% CI = -0.11, -0.01) on the other hand. This singular factor of knowing another woman who died in pregnancy was responsible for 33% of the variation in perception of bleeding ($r = 0.14$, $r^2 = 0.33$, $P = 0.0001$) and 22% of the variation perception of pale hands and feet ($r = -0.06$, $r^2 = 0.22$, $P = 0.005$) as ODSs. There was also a negative but significant association between age group and pale hands and feet ($t = -3.41$, P -value = 0.001, 95% CI = -0.10, -0.03), accounting for a significant 22% of the variation in perception of pallor as an ODS ($r = -0.07$, $r^2 = 0.022$, $P = 0.005$). Substantial but negative association was also observed between educational level and severe malaria ($t = -2.46$, $P = 0.14$, 95% CI = -0.06, -0.01) which explains an insignificant 14% of the variation in the said perception ($r = -0.04$, $r^2 = 0.014$, $P = 0.09$). Marital status was significantly but negatively associated with cessation of fetal movement ($t = -2.86$, $P = 0.004$, 95% CI = -0.09, -0.02) which explained a significant 15% of the variation in perception of cessation of fetal movement as an ODS ($r = -0.06$, $r^2 = 0.015$, $P = 0.05$) [5].

A cross-sectional survey was conducted between October 2003 and April 2004 to compare the knowledge, attitude and practices among antenatal care facilities utilizing and non-utilizing women, aged 15-49 years. The sample comprised of 200 married women in the age range 15-49 years. Knowledge, attitude and practices of women utilizing and non-utilizing antenatal care facilities during their previous pregnancy were compared by calculating odds ratios and 95% confidence intervals. P values were obtained by doing chi-square test. The results showed that knowledge about danger signals in pregnancy and realization of the importance of eating a healthy diet during pregnancy was significantly higher among women utilizing antenatal care [6].

Another cross-sectional study done in 2006 aimed to explore knowledge of obstetric complications amongst

primigravidae attending an urban health centre in Blantyre, Malawi. Participants were selected by means of purposive sampling from a population of pregnant women who fitted defined criteria and who were attending antenatal clinic at a health centre. Forty-five primigravidae from the urban setting with a gestation period between 28 and 42 weeks were interviewed. Results showed that participants were more aware of obstetric complications that could occur in pregnancy than of complications that may occur during and after delivery. Sixty percent of the participants were knowledgeable about obstetric complications in pregnancy. The majority of the participants, 73% and 82.2% did not know of any problems that could occur during and after the birth of the baby respectively. Participants had limited knowledge of complications that may need immediate treatment during all three periods. Fifty-eight percent (95% CI: 43; 73) of the primigravidae had some knowledge and could make an informed decision to go to a health facility with pregnancy complications. However, only 24% (95% CI: 11; 38) of the primigravidae had some knowledge and could make an informed decision to go to a health facility with complications after delivery [7].

An exploratory descriptive study was conducted in 2010 at two Maternal and Child Health Centres (MCH) selected randomly in Albeheira Governorate to assess women's awareness of danger signs of obstetric complications. The study subjects consisted of 200 pregnant women attending the previously mentioned setting for tetanus toxoid immunization during pregnancy were enrolled in the study (100 from each). A structured interviewer administered questionnaire was used and the results revealed that slightly more than one quarter of the study subjects (26.5 %) were unaware of obstetric danger signs compared to almost the same proportion (26.0 %) that had good awareness about such signs, while 47.5 % of the study subjects exhibited fair awareness. Lack of awareness about obstetric danger signs was related to younger age, low level of education, gravidity and parity, previous experiences with any obstetric complications and lack of antenatal care [8].

A community based cross-sectional study was conducted in 2010 to assess the knowledge about physiological changes and obstetric danger signs among pregnant women in Aleta Wondo District, Sidama zone, Southern Ethiopia. Data was collected by using structured knowledge questionnaire from 743 pregnant women. The findings of the study showed that 146 (19.65%) of women had knowledge about physiological changes. A total of 226 (30.4%), 305(41.3%) and 279(37.7%) knew at least two danger signs during pregnancy, childbirth and postpartum period, respectively. The study also identified that the knowledge level of pregnant women was low and affected by residential area. Therefore, the identified deficiencies in awareness should be addressed

through maternal and child health services by designing appropriate strategies including provision of targeted information, education and communication [9].

A cross-sectional community-based study was conducted by means of a questionnaire survey among 340 black pregnant women from the province of KwaZulu-Natal to assess the level of knowledge on pregnancy "danger signs", estimate the proportion of pregnant women that use health care facilities, and identify sociodemographic predictors. The results showed that the mean age of the pregnant women was 26 years where teenage pregnancy rate was 13%. Most of the pregnant women were single (78%), less educated (60%), and unemployed (92%). Though most of the study population (92%) attended health care facilities, only half (52%) of them knew about some of the "danger signs" of pregnancy, and 39% of them knew about their HIV status. Known HIV status was related to the knowledge of pregnancy complication ($P = 0.018$). Knowledge of "danger signs" of pregnancy was significantly ($P = 0.012$) associated with the age of the expectant mother [10].

A community based cross-sectional study was conducted from November 20, 2012 to June 30, 2013 on a randomly selected sample of 485 women who had at least one delivery in the past two years to assess the status of knowledge of danger signs of pregnancy and childbirth among mothers who gave birth in the past two years prior to the survey in Tsegedie district, Tigray regional State, Ethiopia. Multistage sampling technique was employed to select the study participants. A pre-tested structured questionnaire was used to collect quantitative data. Focus group discussion and in-depth interviews were utilized to supplement the Quantitative data. It was found that four hundred eighty-five (485) mothers participated in the study making a response rate of 100%. Vaginal bleeding was the most commonly mentioned danger signs of pregnancy (49.1%) and childbirth (52.8%). Two hundred eighty-five (58.8%) and 299 (61.6%) of respondents mentioned at least two danger signs of pregnancy and childbirth respectively. One hundred seventy (35.1%) and 154 (31.8%) of respondents didn't know any danger signs of pregnancy and childbirth respectively. Educational status of the mother, place of delivery and having functional radio were found to be independent predictors of knowledge of women about the danger signs of pregnancy and childbirth [11].

A cross-sectional survey was done in 2014 to establish baseline proportions for knowledge of at least four danger signs of pregnancy, delivery and postpartum period respectively amongst women age 15-49, residing within 25 selected communities in Zaria. A pre-tested structured questionnaire was used for interview. Most 617 (94.5% response) eligible women participated in the study. Only 113 (18.31%) knew at least four danger

signs during pregnancy. 61 (9.89%) knew at least four danger signs that can occur during labour and delivery and only 57 (9.24%) knew at least four danger signs that can occur during the postpartum period [12].

Institutional based cross-sectional study was conducted among 422 pregnant mothers to assess awareness of danger signs of pregnancy and its associated factors in Mekelle public hospitals, 2014. Data was collected using interviewer administered questionnaire and the results showed that out of the total participants of this study 79.6% mothers had information about danger signs of pregnancy from which 61.9% mothers had information about vaginal bleeding followed by sudden gush of fluid before labour which was mentioned by 41.9% of respondents. Severe unusual abdominal pain was the least known danger signs as mentioned by 19 % of mothers. The main source of information for the danger signs was health personnel and Negligence was the main reason for not having good awareness about danger signs of pregnancy [13].

Methods

The study was carried out in the Yenagoa metropolis which is the capital of Yenagoa Local Government Area of Bayelsa State, Nigeria. Bayelsa State is one of the 36 States, which along with the FCT, Abuja, made up the Federal Republic of Nigeria. Bayelsa has a riverine and estuarine setting. A lot of her communities are almost (and in some cases) completely surrounded by water, hence making these communities inaccessible by road. Yenagoa lies in the south at 4°55'29" North and 6°15'51" East. It has a total land area of 706 square kilometers and a population of 353,344 at the 2006 census [14]. Yenagoa is the traditional home of the Ijaw people. The Ijaw form the majority in Bayelsa State. English is the official language but Epie/Atissa language is the major local language spoken in Yenagoa. Yenagoa has 6 Primary Healthcare Centres, 2 secondary healthcare centres and 1 tertiary healthcare centre and many private clinics that offer antenatal services. Other services offered at these centres include Health education, immunization, family planning counselling, treatment of minor ailments and first aid, referrals, ante-natal, delivery and post-natal care services.

The study was across-sectional descriptive study amongst pregnant women of child bearing age attending antenatal clinic in Government hospitals in Yenagoa metropolis. All government hospitals in Yenagoa metropolis were included in this study. The women were in their 3rd trimester of pregnancy. Pregnant women attending antenatal clinic in whom a viable outcome of the pregnancy is expected and pregnant women with gestation period between 28 and 42 weeks at the time of data collection were included in this study. While, pregnant women attending antenatal clinic that are ill-looking and pregnant women who did not give their

consent were excluded from this study. The study was carried out over an 18-month period (January 2015 - June 2016).

The minimum sample size for this study was determined by using the formula for studying one proportion [15].

$$n = \frac{z^2 pq}{d^2}$$

Where:

n = The desired sample size when population is greater than 10,000

z = Standard normal deviate (1.96 at 95 % confidence level)

p = The prevalence or proportion of event of interest for the study

d = Degree of precision desired which is set at 5% (0.05)

In a previous study in Zaria, the knowledge of obstetric danger signs was 18.3% [12].

Taking p to be 0.183

q = 1.0 - p = 0.817

Therefore,

$$n = \frac{(1.96)^2 \times 0.183 \times 0.817}{(0.05)^2} = 229.7 \approx 230$$

The minimum sample size was 230 respondents.

To make adjustment for possible non-response, we assumed 10% non-response, the formula for non-response rate was used:

$n/(1 - nrr)$ where:

n = calculated sample size = 230

nrr = 10% non-response rate

Therefore, $230 / (1 - 10/100) = 255.6 \sim 256$

n = 256

However, to broaden the base of the study the total number of women who met the criteria within the study period were used, hence a sample size of 277 questionnaires was administered. A systematic sampling method was used in the selection of participants in the tertiary secondary and primary health care facility. Hence, pregnant women attending routine antenatal clinics at the three levels of health care namely Federal Medical Centre, Yenagoa (a tertiary health facility); Diète Koki Memorial Hospital, Yenagoa (a secondary health facility); King Malla Sasime Medical Centre Igbogene, Yenagoa (a secondary health facility); Agadama-epie Health Centre, Yenagoa (a primary health centre); Yenezue-gene Health Centre, Yenagoa (a primary health facility); Opolo Health Centre, Yenagoa (a primary health facility); Amarata Health Centre, Yenagoa (a primary

health facility); Azikoro Health Centre, Yenagoa (a primary health facility); Women's Affairs Clinic, Ovum, Yenagoa (a primary health facility).

Based on the average monthly ANC attendance of the different facility, sampling proportion to size was done.

Federal Medical Centre Yenagoa average monthly ANC attendance is 210 which equates to 84 of the 260 respondents. Diете-Koki Memorial Hospital average monthly ANC attendance is 100 which equates to 40 of 260 respondents. King Malla Sasime Hospital average monthly ANC attendance is 20 which equates to 8 respondents. Women Affairs Clinic average monthly ANC attendance is 50 which equates to 20 respondents. Azikoro Health Centre average monthly ANC attendance is 20 which equates to 8 respondents. Amarata Health Centre average monthly ANC attendance is 10 which equates to 4 respondents. Yenizue - Gene Health Centre monthly ANC attendance is 200 which equates to 80 respondents. Opolo Health Centre average monthly ANC attendance is 10 which equates to 4 respondents. Agudama Health Centre average monthly ANC attendance is 30 which equates to 12 respondents. Based on the average ANC monthly attendance of each health facilities, the proportions of the sample size from each facility were calculated. For every 10 ANC attendance, 1 respondent was allotted.

Insert [Table 1](#) here

At the facilities level, the first client was chosen by simple random sampling followed by a systematic random sampling with every fifth client being interviewed.

Quantitative data collection was used to obtain information and data relevant to the study objectives. This was done with the aid of a semi-structured interviewer-administered questionnaire. The questionnaire consisted of open and closed ended questions. The questionnaire for the study was pre-tested using 30 respondents in a primary healthcare facility in Gbarantoru community which is located about

8km from Yenagoa. This was done to help to reduce areas of ambiguity in the tool thereby refining the final tool for the main study. The questionnaires were then screened for completeness by the researcher, coded, entered into the IBM SPSS version 20.0 software and analyzed.

The socio-economic status of the respondents was computed based on the occupation of the respondent's spouse and the level of education of the respondents. A score of 1 was given for spouses who had skilled professions, 2 for spouses with semi-skilled profession occupation and 3 for spouses with unskilled profession. A score of zero was given to respondents with tertiary education, 1 to respondents with secondary education and 2 to respondents with primary education or none. An addition of the scores gave a composite score for social class with the highest class being I and the least class, V.

Knowledge score

A total of 10 questions were used to assess knowledge of obstetric danger signs, a score of 1 was awarded for a correct answer and 0 for a wrong answer. Then the total score of each individual, out of the total 10 marks, were again computed on the SPSS software package. Then the mean, median, maximum value and minimum value was computed. Histogram with normal distribution curve was done for the total score of the study participants and the distribution of the score of the respondents was seen. Since the distribution was normal distribution, the median value was used as reference to classify the study respondents. Accordingly, those respondents who score above the median value were classified as having good knowledge and those who score median and below the median value were classified as having poor knowledge.

Attitude score

A total of 13 questions were used to assess Attitude towards obstetric danger signs. To assess summarized extent of Attitude of the study subjects; on the first place each attitude questions were re coded into the same manner; those who responded correctly were re coded

Table 1: The average monthly ANC attendance of the different facility, sampling proportion to size was done.

	Health facility	Average monthly attendance	Proportion	Total respondents allotted
1.	Federal medical centre Yenagoa	210	21	84
2.	Diете Koki Memorial Hospital	100	10	40
3.	King Malla Sasime Hospital	20	2	8
4.	Women Affairs Clinic	50	5	20
5.	Azikoro Health Centre	20	2	8
6.	Amarata Health Centre	10	1	4
7.	Yenizue-Gene Health Centre	200	20	80
8.	Opolo Health Centre	10	1	4
9.	Agudama Health Centre	30	3	12
	Total	650	65	260

as '3' and those who responded wrongly were re coded as '1. Those who responded "not sure" were coded as '2'. Then the total attitude score for each respondent was computed on SPSS software package. Then the total attitude score for each respondent was computed on SPSS software package. Then the mean, median, maximum value and minimum Value was computed. Histogram with normal distribution curve was done for the total score of the study subjects and the distribution of the score of the respondents was seen. Since the distribution was normal distribution, the median value was used as reference to classify the study respondents. Accordingly, those respondents who score above the median value were classified as having Positive Attitude and those who score median and below the median value were classified as having Negative Attitude.

Ethical approval to conduct this research was sought and obtained from the Federal Medical Centre, Yenagoa Hospital Research Ethics Committee (Appendix 2). Permission was also sought from the heads of the various health facilities in Yenagoa metropolis and both verbal and written consent was obtained from the respondents and they were health educated on the obstetric danger signs. The benefit of the study to participant was the opportunity to verbalize their views on information they got from the Antenatal care sessions.

Results

A total of 277 mothers were enrolled in the study and 260 (93.9%) of them consented to the study. This gives a response rate of 93.9% which cut across the levels.

The mean age was 28.4 (sd = 4.8), 29.3 (sd = 4.2), 28.5 (sd = 5.3) for respondents from primary, secondary and tertiary health care facilities respectively. Overall, the age of the subjects ranged from 16 years to 42 years (range 26 years) with a mean of 28.7 (sd = 4.8).

Insert [Table 2](#) here

Table 2: Socio-demographic characteristics of the respondents.

Variable	Frequency (n = 260)	Percentage (%)
Age (years)		
15 - 19	6	2.3
20 - 24	41	15.8
25 - 29	99	38.1
30 - 34	80	30.8
≥ 35	34	13.1
Marital status		
Single	10	3.8
Married	239	91.9
Cohabiting	11	4.2
Type of marriage		
Monogamous	235	90.4
Polygamous	4	1.5
Single or cohabiting	21	8.1

Almost all the women 258 (99.2%) were Christians, 1 (0.4%) Muslim and the other 1 (0.4%) Traditional Religion. Majority 239 (91.9%) of the women were married and of monogamous setting. One hundred and thirteen (43.5%) respondents were Ijaw in their ethnic group, followed Igbo; 71 (27.3%).

Insert [Table 3](#) here

The vast majority 141 (54.2%) of respondents had secondary level of education, followed by tertiary education 101 (38.8). In regard to their husbands, 203 (78.1%) were of class I status, next to class III status 49 (18.8%). Socioeconomic status II had the highest

Religion		
Christianity	258	99.2
Islam	1	0.4
Traditional religion	1	0.4
Ethnicity		
Igbo	71	27.3
Ijaw	113	43.5
Yoruba	6	2.3
Ibibio	9	3.5
Urhobo	16	6.2
Anang	3	1.2
Epie/Atissa	17	6.5
Ukwuani	1	0.4
Ogbia	4	1.5
Ogoni	5	1.9
Edo	1	0.4
Kalabari	2	0.8
Igala	1	0.4
Ikwere	3	1.2
Idoma	2	0.8
Nembe	4	1.5
Ogoja	1	0.4
Ndoni	1	0.4

Table 3: Socio-economic characteristics of the respondents.

Variable	Frequency (n = 260)	Percentage (%)
LOE		
None	1	0.4
Primary	17	6.5
Secondary	141	54.2
Tertiary	101	38.8
Occupation of spouse		
I	203	78.1
II	8	3.1
III	49	18.8
SES		
I	94	36.2
II	97	37.3
III	26	10.0
IV	39	15.0
V	4	1.5

frequency 97 (37.3%), then status I, 94 (36.2%) and the least was status V, 4 (1.5%).

Obstetric characteristics of the respondents

Insert [Table 4](#) here

From the total number of mothers, 69 (26.5%) are nulliparous, majority 185 (71.2%) had 1 - 4 children while 6 (2.3%) mothers had 5 and more children. In the case of index history of pregnancy, 249 (95.8%) had ANC follow up, among those who had ANC follow up, 150 (57.7%) had 4 and more visits while 110 (42.3) had less than 4 visits. Majority 239 (91.9%) of the mothers knows the distance of their home from the nearest health centre, among these category, 235 (90.4%) have 2 hours or less distance from home to nearest health centre and whereas 4 have more than 2 hours distance

Table 4: Obstetric characteristics of the respondents.

Variable	Frequency (n = 260)	Percentage (%)
Parity		
0	69	26.5
1 - 4	185	71.2
≥ 5	6	2.3
Antenatal visits		
Yes	249	95.8
No	11	4.2
Antenatal visits		
< 4	110	42.3
≥ 4	150	57.7
Time to nearest health facility		
2 hours or less	235	90.4
More than 2 hours	4	1.5
I don't know	21	8.1

from home to the nearest health centre.

Insert [Table 5](#) here

Over three-quarters, 201 (77.3%) of the mothers are aware of obstetric danger signs. Over two-thirds 178 (68.5%) got danger signs information from health workers followed by family and friends, mass media, books and internet with 36 (13.8%), 8 (3.1%), 8 (3.1%), 5 (1.9%) and 1 (0.4%) respectively.

Insert [Table 6](#) here

Almost half, 129 (49.6%) of the respondents mentioned vaginal bleeding as dangersigns followed by fever 51 (19.6%), severe and lasting abdominal pain/cramps 31 (11.9%), hypertension 28 (10.8%), while the least mentioned was prolonged labour 1 (0.4%), heavy vaginal bleeding 1 (0.4%) and cervix pain 1 (0.4%).

Insert [Table 7](#) here

Table 5: Awareness and source of information of obstetric danger signs.

Variable	Frequency (n = 260)	Percentage (%)
Awareness		
Yes	201	77.3
No	59	22.7
Source of information		
Health workers	178	68.5
Family and friends	36	13.8
Mass media	8	3.1
Seminars/workshops	3	1.2
Books	8	3.1
Internet	5	1.9
School	1	0.4

Table 6: Danger signs in pregnancy, during and after child birth mentioned by respondents without prompting.

Danger signs	Frequency	%
Vaginal bleeding before labour	129	49.6
Fever	51	19.6
Severe and lasting abdominal pain/ abdominal cramps	31	11.9
Hypertension		
No fetal movement	28	10.8
PROM	15	5.8
Oedema of the hands and face	13	5.0
Convulsions	10	3.8
Malpresentation	10	3.8
Smelly vaginal discharge	7	2.7
Dizziness	5	1.9
Heart burn	4	1.5
Infection	3	1.2
Loss of consciousness	3	1.2
Prolonged labour	2	0.8
Heavy vaginal bleeding	1	0.4
Cervix pain	1	0.4
	1	0.4

Table 7: Obstetric danger signs in pregnancy, identified and listed by mothers in Yenagoa.

Variable	Yes	No
	Frequency (%)	
Convulsions	158 (60.8)	102 (39.2)
Vaginal bleeding	234 (90.0)	26 (10.0)
Severe and lasting abdominal pain/cramps	174 (66.9)	86 (33.1)
Severe headache	156 (60.0)	104 (40.0)
Absence of fetal movement	206 (79.2)	54 (20.8)
Edema of face and hands	112 (43.1)	148 (56.9)
High fever	176 (67.7)	84 (32.3)
Loss of consciousness	165 (63.5)	95 (36.5)
Difficulty with breathing	163 (62.7)	97 (37.3)
Blurred vision	141 (54.2)	119 (45.8)

Table 8: Knowledge composite score.

	Frequency	Percent
0	5	1.9
1	15	5.8
2	9	3.5
3	24	9.2
4	18	6.9
5	17	6.5
6	26	10.0
7	27	10.4
8	40	15.4
9	32	12.3
10	47	18.1
Total	260	100.0
Mean = 6.5 Minimum value = 0 Standard deviation = 2.9		
Median = 7.0 Maximum value 10 Total mark = 10		

Table 9: Obstetric danger signs during pregnancy; overall knowledge category of mothers in Yenagoa.

Overall knowledge	Frequency	%
Good knowledge	119	45.8
Poor knowledge	141	54.2

Majority of the respondents, 167 (64.2%) reported that they got information about obstetric danger sign during pregnancy. From the 260 respondents, 234 (90.0%) identified vaginal bleeding, 206 (79.2%) absence of fetal movement, 176 (67.7%) high fever, 174 (66.9%) severe and lasting abdominal pain, 165 (63.5%) loss of consciousness, 163 (62.7%) difficulty with breathing, 141 (54.2%) blurred vision while edema of face and hands 112 (43.1%).

Insert [Table 8](#) and [Table 9](#) here

More than half, 141 (54.2%) of the study participants were found to have poor knowledge scoring median and below the median value.

Attitude towards obstetric danger signs

Table 10: Attitude towards obstetric danger signs during pregnancy among mothers in Yenagoa (Obstetric emergencies).

Emergency danger signs	Category	Frequency	Percentage (%)
Convulsions	Agree	201	77.3
	Not sure	42	16.2
	Disagree	17	6.6
Vaginal bleeding	Agree	243	93.5
	Not sure	13	5.0
	Disagree	4	1.6
Abdominal pains/cramps	Agree	199	76.5
	Not sure	40	15.4
	Disagree	21	8.1
Severe headache	Agree	185	71.1
	Not sure	40	15.4
	Disagree	35	13.5
Absence of fetal movement	Agree	233	89.6
	Not sure	15	5.8
	Disagree	12	4.6
Edema of face and hands	Agree	135	51.9
	Not sure	76	29.2
	Disagree	49	18.8

Insert [Table 10](#) here

Over three-quarters, 201 (77.3%) of the study participants considers convulsion as obstetric emergency during pregnancy. Almost all 93.5% of the participants considers vaginal bleeding as obstetric emergency during pregnancy. Abdominal pains/cramps, severe headache or blurry vision, absence of fetal movement, oedema on the face and hands were regarded as an obstetric emergency by 199 (76.5%), 185 (71.1%), 233 (89.6%), 135 (51.9%), respectively.

Insert [Table 11](#) here

[Table 11](#) shows that 78.5% of the study participants considers high fever as medical emergency during

Table 11: Attitude towards obstetric danger signs during pregnancy among mothers in Yenagoa (Medical emergencies).

Emergency during pregnancy	Category	Frequency	Percentage (%)
High fever	Agree	204	78.5
	Not sure	36	13.8
	Disagree	20	7.7
Loss of consciousness	Agree	216	83.1
	Not sure	32	12.3
	Disagree	12	4.6
Difficulty with breathing	Agree	207	79.6
	Not sure	43	16.5
	Disagree	10	3.9
Blurred vision	Agree	173	66.5
	Not sure	62	23.8
	Disagree	25	9.7

Table 12: Attitude towards obstetric danger signs during pregnancy among mothers in Yenagoa (Action that will be taken during emergencies in pregnancy).

Emergency during pregnancy	Category	Frequency	Percentage (%)
Go to nearest health centre in the presence of obstetric danger signs	Agree	259	99.6
	Disagree	1	0.4
In the presence of obstetric danger signs, I will wait and report on the next antenatal visit	Agree	19	7.3
	Not sure	9	3.5
	Disagree	232	89.2
In the presence of obstetric danger signs, I will wait because it will resolve on its own	Agree	10	3.9
	Not sure	9	3.5
	Disagree	241	92.7

pregnancy. Two hundred and sixteen (83.1) of the participants considers loss of consciousness as medical emergency during pregnancy. Difficulty with breathing and blurred vision were regarded as a medical emergency by 207 (79.6%), 173 (66.5%) respectively.

Insert [Table 12](#) here

In the presence of an obstetric danger signs, 259 (99.6%) will go to the nearest health centre, 19 (7.3%) will wait and report on the next antenatal visit while 10 (3.9%) will wait with the feeling that it may resolve on its own.

Insert [Table 13](#), [Table 14](#) here

Majority of the participants 168 (64.6%) had negative attitude towards obstetric danger signs while 92 (35.4%) had positive attitude.

Insert [Table 15](#) here

Knowledge of “danger signs” of pregnancy was

Table 13: Altitude composite score.

	Frequency	Percent
19	1	0.4
23	1	0.4
25	1	0.4
28	4	1.5
29	9	3.5
30	11	4.2
31	12	4.6
32	10	3.8
33	9	3.5
34	13	5.0
35	33	12.7
36	25	9.6
37	39	15.0
38	34	13.1
39	58	22.3
Total	260	100.0
Mean = 35.6 Minimum value = 19 Standard deviation = 3.4		
Median = 37.0 Maximum value 39 Total mark = 13		

Table 14: Obstetric danger signs overall attitude category during pregnancy among mothers in Yenagoa.

Overall attitude	Number (n = 260)	Percentage (%)
Positive attitude	92	35.4
Negative attitude	168	64.6

not significantly ($P > 0.05$) associated with the age of the expectant mother, mother’s educational level and socioeconomic status.

Insert [Table 16](#) here

Knowledge of “danger signs” of pregnancy was significantly ($P < 0.05$) associated with number of antenatal care visit. Knowledge of “danger signs” of pregnancy was not significantly ($P > 0.05$) associated family size, gestational age, antenatal visit and time to the nearest health facility.

Insert [Table 17](#) here

Knowledge of “danger signs” of pregnancy was significantly ($P < 0.05$) associated with information about danger signs from family and friends. Knowledge of “danger signs” of pregnancy was not significantly ($P > 0.05$) associated with information about danger signs from health workers, mass media and seminars/workshops.

Insert [Table 18](#) here

According to the result of the Binary logistic regression, analysis was significantly associated with number of antenatal care visit; respondents who attended antenatal clinic equal to or more than 4 times had two times good knowledge than those respondents

Table 15: Bivariate analysis of Socio-demographic with knowledge of obstetric danger signs during pregnancy among mothers in Yenagoa.

Variable	Knowledge of obstetric danger signs		χ^2	p value
	Good knowledge n (%)	Poor knowledge n (%)		
Age				
15 - 24	19 (16.0)	28 (19.9)	1.219	0.544
25 - 30	66 (55.6)	69 (48.9)		
> 30	34 (28.6)	44 (31.2)		
Mother's LOE				
None	0 (0.0)	1 (0.7)	4.429 [‡]	0.186
Primary	4 (3.4)	13 (9.2)		
Secondary	67 (56.3)	74 (52.5)		
Tertiary	48 (40.3)	53 (37.6)		
SES				
I	44 (37.0)	50 (35.5)	1.779	0.776
II	44 (37.0)	53 (37.6)		
III	10 (8.4)	16 (11.3)		
IV	20 (16.8)	19 (13.5)		
V	1 (0.8)	3 (2.1)		
Ethnicity				
Bayelsa	77 (64.7)	95 (67.4)	0.205	0.650
Non Bayelsa	42 (35.3)	46 (32.6)		

‡: Fisher's Exact Test.

Table 16: Bivariate analysis of Obstetric characteristics with knowledge of obstetric danger signs during pregnancy among mothers in Yenagoa.

Variable	Knowledge of obstetric danger signs		χ^2	p value
	Good knowledge n (%)	Poor knowledge n (%)		
Parity				
0	39 (27.7)	30 (25.2)	0.635 [‡]	0.778
1 - 4	98 (69.5)	87 (73.1)		
≥ 5	4 (2.8)	2 (1.7)		
Gestational age (Mean ± SD)	35.7 ± 9.3	34.9 ± 9.8	0.647 [†]	0.518
Antenatal care follow up				
Yes	116 (97.5)	133 (94.3)	1.583	0.208
No	3 (2.5)	8 (5.7)		
No. of Antenatal visit				
< 4	38 (31.9)	72 (51.1)	9.677	0.002
≥ 4	81 (68.1)	69 (48.9)		
Time to nearest health facility				
≤ 2	93 (79.5)	88 (77.9)	0.089	0.765
>2	24 (20.5)	25 (22.1)		

‡: Fisher's Exact Test; †: t test.

Table 17: Bivariate analysis of Source of information with knowledge of obstetric danger signs during pregnancy among mothers in Yenagoa.

Variable	Knowledge of obstetric danger signs		χ^2	p value
	Good knowledge n (%)	Poor knowledge n (%)		
Information from health workers				
Yes	87 (73.1)	91 (64.5)	2.195	0.138
No	32 (26.9)	50 (35.5)		
Information from mass media (TV, radio, newspaper)				
Yes	2 (1.7)	6 (4.3)	0.701*	0.402
No	117 (98.3)	135 (95.7)		
Family and friends				
Yes	22 (18.5)	14 (9.9)	3.962	0.047
No	97 (81.5)	127 (90.1)		
Seminars/Workshop				
Yes	1 (0.8)	2 (1.4)	0.000	1.000
No	118 (99.2)	139 (98.6)		

*: χ^2 with Yates correction.

Table 18: Binary Logistic Regression of socio-demographic and other factors associated with knowledge of obstetric danger signs during pregnancy among mothers in Yenagoa.

Variable	Knowledge of obstetric danger signs		Odds ratios (95% CI)	
	Good knowledge n (%)	Poor knowledge n (%)	Crude	Adjusted
No. of antenatal visits				
< 4	38 (31.9)	72 (51.1)	1	1
≥ 4	81 (68.1)	69 (48.9)	2.224 (1.339 - 3.695)*	2.386 (1.420 - 4.010)*
Family and friends				
Yes	22 (18.5)	14 (9.9)	2.057 (1.001 - 4.228)*	2.372 (1.127 - 4.993)*
No	97 (81.5)	127 (90.1)		

*: Reminded the significance of the variables (P value < 0.05).

who attended antenatal care less than 4 times [COR = 2.2, 95% CI (1.3 - 3.7)]. Additionally, respondents' obstetric danger signs information from family and friends was significantly associated with obstetric danger signs knowledge of the study participants; respondents who got obstetric danger signs information from family and friends had two times good knowledge than those respondents who didn't get information from the same source [COR = 2.1, 95% CI (1.001-4.228)].

After controlling for confounders, the multivariate analysis also shows that, number of antenatal care visit was significantly associated with their obstetric danger signs knowledge; respondents who attended antenatal care more than 4 times had two times good knowledge than those respondents who attended antenatal care less than 4 times [AOR = 2.3, 95% CI (2.278 - 3.862)]. Additionally, the multivariate analysis showed that obstetric danger signs information from family and

friend were significantly associated with obstetric danger signs knowledge of the study participants: the study participants who got information from family and friends had two times good knowledge than those who did not get information from family and friends [AOR = 2.3, 95% CI (1.106 - 4.937)].

Insert [Table 19](#) here

Attitude of mothers towards "danger signs" of pregnancy was significantly (P < 0.05) associated with number of antenatal care visit. Attitude of mothers towards "danger signs" of pregnancy was not significantly (P > 0.05) associated with the age of the expectant mother, socioeconomic status, antenatal visit, time to the nearest health facility and gestational age.

Insert [Table 20](#) here

On binary logistic regression, study participants

Table 19: Bivariate analysis of Socio-demographic and other factors associated with attitude of obstetric danger signs among mothers in Yenagoa.

Variable	Attitude towards obstetric danger signs		χ^2	p value
	Good knowledge n (%)	Poor knowledge n (%)		
Age				
15 - 24	15 (16.3)	32 (19.0)	2.343	0.310
25 - 30	44 (47.8)	91 (54.2)		
> 30	33 (35.9)	45 (26.8)		
Mother's LOE				
None	0 (0.0)	1 (0.6)	2.351 [‡]	0.514
Primary	4 (4.3)	13 (7.7)		
Secondary	48 (52.2)	93 (55.4)		
Tertiary	40 (43.5)	61 (36.3)		
SES				
I	37 (40.2)	57 (33.9)	3.832	0.429
II	34 (37.0)	63 (37.5)		
III	10 (10.9)	16 (9.5)		
IV	11 (12.0)	28 (26.7)		
V	0 (0.0)	4 (2.4)		
Parity				
0	25 (72.2)	44 (26.2)	0.789 [‡]	0.710
1 - 4	64 (69.6)	121 (72.0)		
≥ 5	3 (3.3)	3 (1.8)		
Gestational age	35.0 ± 8.7	35.4 ± 10.0	0.244 [†]	0.744
Antenatal care follow up				
Yes	91 (98.9)	158 (94.0)	2.376 [*]	0.123
No	1 (1.1)	10 (6.0)		
No. of Antenatal visit				
<4	26 (28.3)	84 (50.0)	11.510	0.001
≥4	66 (71.7)	84 (50.0)		
Time to nearest health facility				
≤2	66 (78.6)	115 (78.8)	0.001	0.972
>2	18 (21.4)	31 (21.2)		
Ethnicity				
Bayelsa	58 (63.0)	114 (67.9)	0.615	0.433
Non Bayelsa	34 (37.0)	54 (32.1)		

*: χ^2 with Yates correction; ‡: Fisher's Exact Test; †: t test.

Table 20: Binary Logistic Regression of number of antenatal care visits with attitude towards obstetric danger signs among mothers in Yenagoa.

Variable	Attitude towards obstetric danger signs		Odds ratios (95% CI)
	Good knowledge n (%)	Poor knowledge n (%)	Crude
No. of antenatal visits			
< 4	38 (31.9)	72 (51.1)	1
≥ 4	81 (68.1)	69 (48.9)	2.224 (1.339 - 3.695) [*]

*: Reminded the significance of the variables (P value < 0.05).

number of antenatal care visit was significantly associated with respondents' obstetric danger signs attitude. The subjects with antenatal clinic visit equal to or greater than 4 times have had two times positive attitude than participants who have had antenatal care visit less than or equal 4 [COR = 2.443, 95% CI (1.369 - 4.359)].

Discussion

In this study, 90.0% of the respondents mentioned vaginal bleeding as obstetric danger signs during pregnancy while 49.6% of the respondents identified vaginal bleeding before labour as obstetric danger signs which is higher than the findings in Aleta Wondo district (45.9%), Burkina Faso (39.4%) and Guatemala (31.0%) [16,17]. The different socio-cultural background and the difference in the sample size of the various studies might have been responsible for the various outcomes. Also in this study, 31.9% of the study respondents were unable to mention an obstetric danger sign which is less than the study done in Aleta Wondo district 39.1% and Tsegedie district 35.1% [13,18]. The differences might be due to socio economic of respondents and also maybe due to the health education provided. This study revealed that the respondents' number of antenatal care visit, obstetric danger signs information from family and friends were significantly associated with knowledge of obstetric danger signs during pregnancy.

It was found that obstetric danger signs information from family and friends had significant association with knowledge of obstetric danger signs during pregnancy [2.057, 95% CI (1.001 - 4.228)]. This is consistent with the study done in Debre Berhan, Addis Ababa [19]. Findings from this study showed that the study respondents number of antenatal care visit was significantly associated with obstetric danger signs knowledge of the respondents: those respondents who had antenatal care visits greater than or equal 4 times had two times good knowledge than respondents with less than 4 times [COR, 2.224, 95% CI (1.339-3.695), AOR 2.386, 95% CI (1.420 - 4.1010)]. It is congruent with study done in Mekelle [11].

Two hundred and twenty-seven respondents (87.3%) of the study participants agreed that going to the nearest health centre in the presence of an obstetric danger is important because it will save the baby and mother's life. Regarding the prevention of obstetric danger signs, 57% of the respondents agreed. Most 89.2% disagree with waiting to report on the next antenatal visit in the presence of an obstetric danger signs. Multivariate analysis regression indicated that the number of antenatal care visits of the study participants was significantly associated with participants obstetric danger signs attitude; participants who had antenatal care visits greater than or equal four times have 2.2 times positive attitude than a participant who had

less than 4 antenatal care visits [COR = 2.224, 95% CI (1.339-3.695)]. This is similar to the study done in Debre Berhan, Addis Ababa [19].

Conclusion

Based on the findings from this study, majority of the study participants had heard of obstetric danger signs during pregnancy and greater number had got danger signs information from health personnel. Regarding knowledge of obstetric danger signs knowledge in this study, most of study participants had poor knowledge. Those who had information from health personnel identified vaginal bleeding at any time during pregnancy. Foul smelling vaginal discharge was mentioned by the least of the respondents. Source of information of obstetric danger signs during pregnancy from family and friends was significantly associated with obstetric danger signs knowledge. Regarding the attitude of the respondents most of the study respondents agreed with going to the nearest health centre in the presence of an obstetric danger signs instead of waiting till next antenatal visit or waiting for it to resolve on its own. More than half of the study participants had negative attitude towards obstetric danger signs during pregnancy.

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