

# Knowledge of Obstetric Danger Signs Among Women of Reproductive Age in Rural Communities in Enugu State, Nigeria

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**Abstract:** *Background:* Lack of knowledge of obstetric danger signs, resulting in inability to recognize and probably react to the needs for accessing quality health care remains a major cause of preventable maternal deaths. *Objective:* To determine the knowledge of obstetric danger signs and its determinants amongst women of reproductive age in rural communities in Nigeria. *Materials and methods:* A total of 602 women of child bearing age were studied. Data collection employed a pretested, self-administered structured questionnaire and was analysed using statistical package for social sciences version 17. Bivariate analysis was done to identify factors associated with good levels of knowledge of danger signs. Logistic regression was used to identify determinants of a high knowledge score among women. A p value of < 0.05 was considered significant. Results were presented in tables and summary indices. *Results:* Majority of respondents had a poor level of knowledge of obstetric danger signs 286(47.5%). The most mentioned symptom was vaginal bleeding; 358(59.5%). Factors associated with knowledge of obstetric danger signs include: age (p=0.000), marital status (p=0.000), educational level attained (p=0.049) and parity (p=0.000). Attaining tertiary level of education (OR: 3.906), teaching profession (OR: 15.104) self-employed business engagement (OR: 16.144) and a high level of knowledge of disease causation (OR: 3.336) were predictors of the level of knowledge of danger signs among them. *Conclusion:* We recommend that effective and sustained health education and behavioral change programs with high local content be instituted in our rural communities.

**Keywords:** Enugu, Obstetric Danger Signs, Rural Women, Knowledge, Predictors

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## 1. Introduction

Every year more than 200 million women globally become pregnant and some 10% of them are likely to develop complications that will require skilled obstetric care to prevent death or serious ill health [1]. It has also been documented that each day some 14,000 women and girls lose their lives to complications from pregnancy and childbirth [2]. This picture is further worsened by the fact that about 99% of the causes of maternal mortality in the developing

countries are preventable [1, 2]. The maternal mortality ratio in Nigeria is one of the highest in the West African sub-region and despite efforts which have been made to reduce it women are still dying from pregnancy related causes [3].

Maternal deaths are strongly linked in terms of place of deaths and the four “delays” associated with health care delivery- the delay in recognizing danger signs, the delay in deciding to seek care, the delay in reaching care and the delay in receiving care [4, 5]. In many situations, not getting to the health facility early enough is mainly due to the inability of the woman and family members in recognizing

symptoms and signs of a life threatening condition [6]. Even when most of the causes of these deaths are either preventable or treatable, it is sad to note that the maternal mortality ratio in Nigeria have shown only marginal reductions in the last ten years, from 704 deaths per 100,000 livebirths to 545 deaths per 100,000 livebirths, such that even as we look beyond 2015 towards the Sustainable Development Goals (SDGs), this picture ab initio defeats the attainment of the Millennium Development Goals (MDGs) targets related to maternal health [7].

In recent decades, many strategies have been implemented in an attempt to improve maternal health outcomes around the world [4]. The basic objectives of focused antenatal care for instance are to detect and manage symptomatic and even symptomless but potentially serious complications of pregnancy, and to meet the pregnant woman's need for information, advice and reassurance [8]. However, people need to understand the danger signs and symptoms of these complications of pregnancy, to enable them seek care appropriately and promptly [9].

A 2010 study by Hailu *et al.*, on the knowledge of danger signs of pregnancy by women of reproductive age in Ethiopia concludes that early identification of these danger signs are key to the survival of women in whom these causes of mortality occur [10]. When there is imbalance between the demand and the supply sides of barriers to maternal health care services, demand barriers such as lack of knowledge and awareness of obstetric danger signs may compound the effects of supply barriers via inability to recognize and probably react to the needs for accessing quality health care. Kabakyenga *et al.*, in an assessment of the knowledge of danger signs of pregnancy and birth preparedness practices among rural women in Uganda concurred that all women should be made aware of the danger signs of pregnancy, childbirth and the puerperium so as to empower them and their families to take prompt decisions to seek health care [11].

Effective increase in the knowledge of obstetric danger signs among women through facility and community –based behavioral change strategies which include educational and community mobilization strategies when properly implemented, will influence their ability to seek help early [12]. An assessment of the level of knowledge of obstetric danger signs among rural women will identify the gaps in knowledge and form the basis for putting in place appropriate and timely interventions. It is against this backdrop that this survey will determine the level of knowledge of obstetric danger signs and its determinants among rural women in Enugu Nigeria.

## 2. Materials and Methods

Enugu State is one of the 36 states in Nigeria. It is an inland state situated in South-eastern Nigeria and is made up of 17 (five urban and 12 rural) Local Government Areas (LGAs). It has an area dimension of 7, 181 km<sup>2</sup> and an approximate total population of 4, 267, 837 people [13].

This was a community based cross-sectional descriptive

study carried out in May 2012. The study population comprised women of reproductive age who reside in rural communities of Enugu State. Only females aged 15 – 49 years who had resided for at least a year in the study area irrespective of their marital status and parity were included in the study. Women who declined consent were excluded.

In a previous study in Uganda among similar population, level of knowledge of obstetric danger signs (p) was 52.0% [11]. Therefore,  $p = 0.52$ . The sample size was determined using the Leslie Fischer's formula for the calculation of sample size in populations greater than 10,000,  $n = z^2 pq/d^2$ , [14] where  $n$  = minimum sample size;  $p$  = proportion of women that knew at least one obstetric danger sign;  $d$  = desired precision at 5%;  $z$  = a constant at 95% confidence interval  $z = 1.96$ . Substituting values,

$$n = \frac{(1.96)^2 \times 0.52 \times 0.48}{(0.05)^2} = 383.55 = 384 \text{ women}$$

However, 610 questionnaires were distributed.

A multistage sampling technique was used to enrol respondents into this study.

*Stage I:* A simple random sampling technique was used to select one local government area (LGA), Udi out of the 12 rural LGAs in Enugu State.

*Stage II:* One community within the LGA (Obinagu community) was selected by simple random sampling technique.

*Stage III:* Systematic sampling technique was used. Within the community, the number of houses recorded under the house numbering system, 1,931 in number, was ascertained from the State headquarters of the National Population Commission. This was divided by the sample size to give a sampling interval of 5. The index compound was then selected by simple random sampling using the balloting method and subsequently the sampling interval was used to select the next compound.

*Stage IV:* Then, eligible and consenting respondents within each compound were interviewed. Where there were more than one eligible woman in the compound, one was selected by simple random sampling using a ballot method.

A pretested standardized semi- structured interviewer administered questionnaire was used to obtain information on socio-demographic characteristics of the respondents and their knowledge of danger signs of pregnancy. These were administered by two trained interviewers. Data was checked at the end of each day for completeness, consistencies, outliers and missing values.

Data collected was cleaned, coded, entered and analyzed using SPSS for windows version 17 [15]. A scoring system was constructed to measure the degree of knowledge of danger signs in pregnancy among respondents using 4 categories; poor (0-2), fair (3-4), good (5-6) and very good (7-8) ranging from scores of 0 to 8 correctly mentioned danger signs. Bivariate analysis using chi square test was done to identify factors associated with good and very good levels of knowledge of danger signs. Logistic regression was used to identify determinants of a high knowledge score among women. A p

value of < 0.05 was considered significant. Results were presented in tables and summary indices.

Ethical approval was obtained from the Enugu State Ministry of Health Ethical Committee. Written permission to carry out this study was sought and obtained from the appropriate authorities in the community. Consent and co-operation of the respondents was solicited and obtained for the conduct and publication of this research study. All authors hereby declare that the study has therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

### 3. Results

*Table 1. Socio-demographic characteristics of respondents.*

Variable	Frequency (%)
<b>Age group (years):</b>	
15 – 19	108(18.0)
20 – 24	124(20.7)
25 – 29	160(26.7)
30 – 34	124(20.7)
35 – 39	54(9.0)
40 – 44	20(3.3)
45 – 49	10(1.7)
Mean	27.2
Standard deviation	6.66
Range	35
educational level:	
None	12(2.0)
Primary	72(12.0)
Secondary	382(63.7)
Post-secondary	134(22.4)
Marital status:	
Married	492(82.0)
Single	104(17.3)
Widowed	4(0.7)
Religion	
Christian	602(100.0)
Muslim	0(0.0)
Others	0(0.0)
No of children	
None	62(10.3)
1-4	450(75.0)
5-8	82(13.6)
9-11	8(1.2)
Ever lost a pregnancy?	
Yes	468(77.7)
No	134(22.3)
Occupation:	
Unemployed	314(52.7)
Trader	178(29.7)
Civil servant	94(15.7)
Artisan	8(1.3)
Farmer	2(0.3)
Student	2(0.7)
Husband's Occupation	N=492
Civil Servant	148(30.1)
Artisan	168(34.1)
Trader	80(16.3)
Farmer	42(8.5)
Professional eg. Doctor, Lawyer	32(6.5)
Pensioner	26(5.3)

*Table 1 summarizes the socio-demographic*

*characteristics of respondents.* Out of 610 respondents, 602 were successfully interviewed giving a response rate of 98.7%. The mean and modal age groups of respondents were 27.2 years and 25-29 years (26.7%) respectively. Of the respondents 492 (82%) were married at the time. All respondents were Christians with 382(63.7%) of them having attained secondary level of education. About 314(52.7%) were unemployed or full time house wives while 178(29.7%) were traders. Up to 450 (75 %) had between 1-4 children. As much as 468(77.7%) reported ever having lost a pregnancy.

*Table 2 summarizes the respondents' access to Mass Media.* When questioned about their access to mass media, 493 (81.8%) indicated ownership of a television. An equally large number of respondents 554[92%] also had a radio in their homes.

*Table 2. Respondents access to Mass Media.*

Access to mass media	Frequency	Percent
Television	493	81.8
Radio	554	92.0

*Table 3 summarizes the awareness of danger signs of pregnancy among respondents.* When asked to mention danger signs during pregnancy, the most commonly mentioned symptoms were vaginal bleeding; 358(59.5%), severe headache; 290(48.2%) and absence of fetal movements; 282(46.8%). The least known danger signs were breathlessness; 116(19.3%), drainage of liquor; 166(27.6%) and yellowness of the eyes; 43(7.1%). All respondents mentioned at least one danger sign.

*Table 3. Awareness of danger signs of pregnancy among respondents.*

Danger sign in pregnancy	Frequency	Percent
Vaginal bleeding	358	59.5
Drainage of liquor without labor	166	27.6
Severe headache	290	48.2
Breathlessness	116	19.3
Severe abdominal pain	190	31.6
Absence of fetal movements	282	46.8
EDD passed	140	23.3
Yellowness of eyes	43	7.1

*Table 4 summarizes the levels of knowledge of respondents.* Forty three (7.1%) respondents had a high level of knowledge, 103(17.1%) had good knowledge scores, 169(28%) of them had a fair level of knowledge and majority; 286(47.5%) had a poor level of knowledge of danger signs.

*Table 4. Levels of knowledge of respondents.*

Level of knowledge of danger signs in pregnancy	Frequency	Percent
Poor (0-2)	286	47.5
Fair (3-4)	170	28.2
Good (5-6)	103	17.1
Very Good (7-8)	43	7.1

*Table 5 shows the factors associated with knowledge of obstetric danger signs and Predictors for knowledge of obstetric danger signs.* Factors associated with knowledge of

obstetric danger signs include: age ( $p=0.000$ ), marital status ( $p=0.000$ ), educational level attained ( $p=0.049$ ) and parity ( $p=0.000$ ). Attaining tertiary level of education (OR: 3.906), being a member of the teaching profession (OR: 15.104) or a self-employed business woman (OR: 16.144) as well as having a high level of knowledge of disease causation (OR: 3.336) were all identified as predictors of the level of knowledge of danger signs among the women.

**Table 5.** Factors associated with knowledge of danger signs and Predictors for knowledge of danger signs.

Factors associated with knowledge of danger signs		
Variable	X <sup>2</sup>	P value
Age	96.355	0.000
Marital status	50.293	0.000
Educational level attained	66.795	0.049
Parity	99.996	0.000
Predictors for knowledge of danger signs		
Variable	OR(95% CI)	P value
Is not educated	OR = 1	
Has tertiary level of education	OR = 3.906	0.003
Is unemployed	OR = 1	
Is a teacher	OR = 15.104	0.000
Is a self-employed business woman	OR = 16.144	0.000
Has a poor level of knowledge of causes of disease	OR = 1	
Has a high level of knowledge of causes of disease	OR = 3.336	0.000

## 4. Discussion

This survey was designed to identify the baseline level of knowledge among women in the community before the commencement of a behavioral change intervention which was aimed at correcting some misconceptions held not only by the women but also by the community in general. This study has identified not only what the level of knowledge of pregnancy danger signs are among rural women but also what factors significantly determine the level of that knowledge.

From the findings of this study, it was evident that the commonest obstetric danger sign reported by respondents was vaginal bleeding. This finding is similar to that of a study by Hailu *et al.*, in 2010 in Southern Ethiopia where vaginal bleeding was the most commonly known danger sign among women with 49.5% of their respondents mentioning it [10]. It is also consistent with the findings of a study by the Johns Hopkins School of Public Health Program in 2004 which sought to measure the effect of a behavioral change intervention in Indonesia and reported that 30.7% and 16.7% of respondents mentioned vaginal bleeding as a danger sign in the pregnancy and post-partum periods [16]. However our finding differs from that of the study by Shobo *et al.*, in Zaria, Northern Nigeria in 2012, where only a quarter of the women mentioned vaginal bleeding as a danger sign [17]. While it may be tempting to attribute this to geographical differences between the study populations, this variation may also be supported by the fact that levels of female education vary within Nigeria, being higher in the Southern than in the

Northern part of the country.

Less than ten percent (7.1%) of the respondents had a high level of knowledge of obstetric danger signs, as was shown by this study. This finding is consistent with the findings of Kabakyenga *et al.*, [11] who in a 2011 study on knowledge of danger signs in pregnancy in rural Uganda reported that only 6.9% of women had knowledge of 3 or more danger signs of pregnancy and Shobo *et al.*, [17] in Northern Nigeria, who reported 9.9% of women with knowledge of 4 or more danger signs.

From our study, factors associated with knowledge of obstetric danger signs include: age ( $p=0.000$ ), marital status ( $p=0.000$ ), educational level attained ( $p=0.049$ ) and parity ( $p=0.000$ ).

This finding agrees with the findings in a study by Pembe *et al.*, which reported that the likelihood of awareness of obstetric danger signs was increased with age, parity, when delivery was at a health institution and when the mother had been informed about complications during an antenatal visit, while attaining at least secondary education was associated with a six fold increase in awareness of obstetric danger signs [18]. Also Hailu *et al.*, reported an association between respondents who were married and a knowledge of obstetric danger signs [10]. Shobo *et al.*, concurred with a report of a three to four- fold likelihood of knowing four or more danger signs among women who could read English or Hausa as well as three fold likelihood of good knowledge of obstetric danger signs among respondents having children, compared to those who had no children [17]. This suggests that more exposure to pregnancy and childbirth improves the knowledge of women, probably through exposure to information at antenatal clinics and their personal exposures and experiences.

This study revealed predictors of the level of knowledge of obstetric danger signs such as attaining tertiary level of education, a high knowledge score of causation of disease as well as occupations (self- employed business and the teaching profession). These findings could be as a result of the higher levels of education in these individuals resulting in better awareness of what constituted an obstetric danger sign. However this does not explain the significant regression with business women who may be, but are not necessarily well educated.

*Limitations of the study:* The questionnaires were interviewer administered and this might have influenced the responses from the participants. However, in the training of research assistants it was ensured that efforts were made by these research assistants to assure respondents of confidentiality of their responses.

## 5. Conclusions

This study reveals that the commonest obstetric danger sign reported by respondents was vaginal bleeding, less than ten percent of the respondents had a high level of knowledge of obstetric of danger signs thus the number of women with a less than satisfactory knowledge of danger signs of

pregnancy are still in the majority. Also, increasing age, marital status, educational level attained and parity were factors associated with knowledge of obstetric danger signs while predictors of the level of knowledge of obstetric danger signs include: attaining tertiary level of education, a high knowledge score of causation of disease as well as occupations (self - employed business and the teaching profession).

The implication of this finding is that most women are still likely to delay seeking healthcare in the eventuality that any of these danger signs occur and this puts them at risk of maternal morbidity and mortality. It is therefore recommended that health education and behavioral change programs be implemented within rural areas where majority of Nigerians live. Efforts should be directed towards increasing the scope of communication strategies and via local media which gets the messages directly to the women in a form they can understand and relate to.

## Authors' Contributions

Author CCA was involved in the design, implementation, analysis of data and interpretation of results, author CCN was involved in the design and write up of this study, while authors CBD, PNA, UUA and COI were involved in the design and editing of the main paper. All authors read and approved the final manuscript.

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