



Original Article

## Knowledge of risk factors for ectopic pregnancy among female undergraduates in Southeastern Nigeria

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### ABSTRACT

**Objectives:** Ectopic pregnancy is a leading cause of maternal death during the first trimester of pregnancy, accounting for approximately one in ten pregnancy-related deaths. Knowledge of potential risk factors can improve early detection and avoid morbidity and complications. This cross-sectional study determined the knowledge level and prevalence of risk factors of ectopic pregnancy among female undergraduates.

**Material and Methods:** Three hundred and ninety female students were randomly selected from the various hostels through multistage sampling.

**Results:** The study found that 234 (60%) respondents were aware of ectopic pregnancy. The majority of the respondents (72.1%) had moderate to a good knowledge level of ectopic pregnancy and the risk factors. There was no significant difference in knowledge level based on marital status of the respondents ( $P = 0.642$ ). Predominant risk factors for ectopic pregnancy identified among respondents were use of oral contraceptives – 151 (38.8%), frequent alcohol intake – 105 (26.9%), prior pelvic inflammatory disease 94 (24.1%), and induced abortion 52 (13.3%). Initiation of oral contraceptive use was between age 13 and 20 years for about 118 (77.7%) respondents.

**Conclusion:** Health education interventions on the knowledge of symptoms and risk factors of ectopic pregnancy need to be targeted at women of reproductive age to reduce the associated morbidity and mortality.

**Keywords:** Ectopic pregnancy, Knowledge level, Risk factors

### INTRODUCTION

Ectopic pregnancy (EP) is defined as a pregnancy, in which the implantation of the embryo occurs outside the uterine cavity, most frequently in one of the two fallopian tubes or, more rarely, in the abdominal cavity.<sup>[1,2]</sup> EP is a leading cause of maternal death during the first trimester of pregnancy, accounting for approximately one in ten pregnancy-related deaths.<sup>[3]</sup> It, thus, represents a serious health problem for women of reproductive age, especially as it reduces subsequent fertility and increases the likelihood of additional ectopic pregnancies.<sup>[4]</sup> EP places a larger burden on women in developing countries compared to women in the developed world. This is due to late detection which is mostly after the rupture has occurred.

Risk factors that have been associated with EP include older maternal age, prior EP, previous tubal surgery, documented tubal pathology, pelvic surgery, postabortal sepsis, complications associated with the use of intrauterine devices (IUDs), female sterilization, history of pelvic inflammatory disease (PID), history of infertility and cigarette smoking at the time of conception, assisted reproduction technologies, multiple lifetime sexual partners, and *in utero* diethylstilbestrol (DES) exposure.<sup>[5-7]</sup>

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Signs and symptoms classically include abdominal pain (sharp, dull, and crampy) and vaginal bleeding. Less than half of affected women have both of these symptoms.<sup>[8]</sup> In most cases, it results in the death of the fetus. Detection of ectopic pregnancies is typically by blood tests for human chorionic gonadotropin (hCG) to confirm pregnancy and ultrasound to identify the exact location of the pregnancy.<sup>[8]</sup>

However, a large percentage of women of reproductive age (15–44 years) are oblivious to the factors that put them at risk. Recent findings identify that most women with severe morbidity from EP do not have recognized risk factors and this may be contributory to their late presentation. Thus, education of the women population regarding the symptoms of EP, even in the absence of risk factors, will aim to reduce severe morbidity by encouraging earlier presentation.<sup>[9]</sup>

This study, therefore, aimed to determine the knowledge level of risk factors of EP among female undergraduates in Calabar, Nigeria, as well as the prevalence of these risk factors among these female undergraduates.

## MATERIAL AND METHODS

### Study design, setting, and population

The study was carried out at the University of Calabar, Calabar, Nigeria. The University consists of one postgraduate school, four institutes, and 15 faculties. The research was a cross-sectional survey and respondents were selected by multistage sampling from various hostels. First, all three female hostels and all three floors of each hostel were purposively selected. Then, 15 rooms per floor were randomly selected giving a total of 135 rooms and three respondents per room were randomly selected by lottery method giving a total of 405 respondents.

### Survey instrument

A semi-structured and self-administered questionnaire was used for the collection of data. Data were obtained on socio-demographic characteristics of respondents, awareness, knowledge of EP, and prevalence of risk factors for EP.

### Study procedure

The participants were given a brief introduction to the purpose of the study, after which their consent was sought and obtained. Three hundred and ninety copies of the questionnaire were retrieved giving a response rate of 96.3%. Respondents were informed that their participation was voluntary and that they had the right to opt out without any consequences. They were also assured of confidentiality and anonymity.

## Statistical analyses

All returned copies of the questionnaire were entered using Epi-info-7 and analyzed with Statistical Package for the Social Sciences (SPSS version 22). Furthermore, the knowledge level was determined by assigning scores to correct answers given by respondents. The highest possible score was 19 with equal weight assigned to all questions. Each correct response was assigned a score of 1, while each incorrect response was scored 0. Knowledge level was categorized into poor knowledge (for scores between 0 and 6), moderate knowledge (for scores between 7 and 12), and good knowledge (for scores between 13 and 19). Data were summarized using descriptive statistics and presented as percentages, tables, and charts. All statistical tests were at a significance level of 5% ( $P < 0.05$ ).

## RESULTS

About half of the respondents, 194 (49.7%) were aged between 20 and 24 years and the mean age of the respondents was  $22 \pm 4.61$  years. Almost all respondents 381 (97.7%) were Christians and unmarried 357 (91.5%) [Table 1]. Sixty percent (234) of the respondents 234 had heard of EP.

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

Variables	Frequency (n=390)	Percentage (100%)
Ages of the respondents (years)		
15–19	101	25.9
20–24	194	49.7
25–29	81	20.8
30–34	11	2.8
35–39	3	0.8
Ethnicity		
Efik	76	19.5
Ejagham	75	19.2
Hausa	9	2.3
Ibibio	59	15.1
Igbo	91	23.3
Yoruba	23	5.9
Others	57	14.6
Religion		
Christianity	381	97.7
Islam	7	1.8
African traditional	2	0.5
Marital status		
Married	32	8.2
Unmarried	358	91.8
Class level		
Year 1	84	21.5
Year 2	101	25.9
Year 3	87	22.3
Year 4	100	25.6
Year 5	18	4.6

**Table 2:** Knowledge of the risk factors of ectopic pregnancy.

Variables	Frequency (n=234)	Percentage (100%)
Early age at first intercourse		
Yes	58	24.8
No	176	75.2
Early age at 1 <sup>st</sup> pregnancy		
Yes	83	35.5
No	151	64.5
Family history		
Yes	52	22.1
No	182	77.9
Multiple sex partners		
Yes	58	24.8
No	176	65.2
Prior PID		
Yes	149	63.7
No	85	36.3
Contraceptive use		
Yes	114	48.7
No	120	51.3
Cigarette smoking		
Yes	74	31.6
No	160	68.4
Induced abortions		
Yes	157	67.1
No	77	32.9
Tubal surgery		
Agree	122	52.1
Disagree	112	47.9
Infertility		
Yes	30	12.8
No	204	87.2

The main source of information was family and friends 88 (37.6%).

Slightly over a third, 73 (31.7%) of the respondents had good knowledge, half of them 116 (50.4%) had moderate knowledge, and 41 (17.8%) had poor knowledge of the risk factors for EP. Knowledge of the risk factors for ectopic pregnancy was poor among the respondents. The risk factors most correctly identified by respondents were prior PID (63.7%), contraceptive use (48.7%), induced abortions (67.1%), and tubal surgery (52.1%) [Table 2].

Ninety-four (24.1%) of the respondents reported prior occurrence of PID. One hundred and fifty-one respondents (38.8%) reported current use of oral contraceptives. Twenty-two (5.6%) of the respondents reported being current smokers, while 105 (26.9%) of the respondents reported frequent alcohol use. Only 6 (1.5%) of the respondents reported ever having an EP, while 13 (3.3%) reported prior tubal surgery. Seventy-three (29.9%) of the respondents reported having multiple sexual partners in the past 3 months and 52 (13.3%) of the respondents reported having induced abortions [Table 3].

**Table 3:** Prevalence of risk factors for ectopic pregnancy.

Variable	Frequency (n=390)	Percentage (100%)
Prior PID		
Yes	94	24.1
No	296	75.9
Use of oral contraceptives		
Yes	151	38.8
No	238	61.2
Age (years) at first use of oral contraceptives		
13–16	48	31.6
17–20	70	46.1
21–24	29	19.1
>24	5	3.3
Smoking		
Yes	22	5.6
No	368	94.4
Frequent alcohol intake		
Yes	105	26.9
No	285	73.1
Previous ectopic pregnancy		
Yes	6	1.5
No	384	98.5
Previous tubal surgery		
Yes	13	3.3
No	377	96.7
Number of sexual partners in the past 3 months		
None	70	28.7
1	101	41.4
2	44	18
3	18	7.4
4 or more	11	4.5
Induced abortion		
Yes	52	13.3
No	338	86.7

There was no significant difference in the knowledge level when single respondents were compared to married respondents ( $P = 0.663$ ), as shown in Table 4.

## DISCUSSION

The respondents identified prior PID, contraceptive use, induced abortions, and tubal surgery as risk factors for EP. Many respondents did not know that an earlier onset of sexual intercourse and pregnancy, multiple sexual partners, cigarette smoking, and infertility were also risk factors for EP. One-third of the respondents, however, knew that family history was not a risk factor for EP. This implies that the respondents would continuously engage in some behaviors and practices that place them at risk of EP due to ignorance.

Findings from data collected revealed that awareness of EP was moderately high, but knowledge of risk factors was moderately low. This means that awareness of EP did not translate to knowledge of the risk factors. This can be

**Table 4: Association between marital status and knowledge level of respondents on ectopic pregnancy.**

Marital status	Knowledge level			Total (%)	P-value
	Good (%)	Moderate (%)	Poor (%)		
Married	10 (40)	11 (44)	4 (16)	25 (100)	0.663 <sup>a</sup>
Single	63 (30.7)	105 (51.2)	37 (18)	205 (100)	
Total	73 (31.7)	116 (50.4)	41 (17.8)	230 (100)	

<sup>a</sup>Fischer's exact test

explained by the fact that the major source of information was family and friends, and as such respondents did not have access to comprehensive information on risk factors but relied only on hearsay.

The study found that the most common practice among respondents that predisposes them to ectopic pregnancy is the use of oral contraceptives. This may relate to increased advocacy by stakeholders in sexual and reproductive health to increase demand for modern contraceptives in Nigeria. The prevalence of oral contraceptive use in this study was similar to other studies conducted in other parts of Nigeria<sup>[10-12]</sup> which found contraceptive use to be between 25 and 29%. A similar study in 2014<sup>[13]</sup> reported oral contraceptives use of 32.6%. In another study in a tertiary institution in Kano state, however, oral contraceptive utilization was 15.6%.<sup>[14]</sup> This difference could be due to the location of the institution and their cultural beliefs regarding contraceptive use.

Oral contraceptive use is a risk factor for EP, and thus, the increasing uptake of modern contraceptives by young females implies that they are at increased risk of EP. A shift from oral contraceptives and other hormonal methods of contraception to non-hormonal methods such as condoms is highly recommended. As such, there is a need to address the knowledge gap between awareness of EP and actual knowledge of the risk factors.

The prevalence of PID in this study was 24.1%. This was much lower than reported in previous studies<sup>[12,15,16]</sup> conducted in Northeastern and Southwestern Nigeria that found the prevalence of PID between 60 and 70%. However, an earlier study carried out at the University of Port Harcourt found the prevalence of PID to be 11%.<sup>[17]</sup>

About three in ten, female undergraduates reported having multiple sex partners. The proportion of female undergraduates reporting multiple sex partners was similar to that found in other studies among undergraduates.<sup>[18,19]</sup> This highlights the risky sexual behaviors or practices among these undergraduates.

There was no significant difference in the knowledge level between single and married female undergraduates. The marital status of respondents did not affect the knowledge level of the respondents.

## CONCLUSION

The findings of this study provide a basis for subsequent health education interventions targeted at women of reproductive age (15–45 years). This population subgroup needs to have in-depth knowledge of the symptoms and risk factors for EP. This would encourage preventive practices and early detection of EP. Effective health education on EP can reduce out-of-pocket expenditure on surgeries required in the management of EP as well as EP-associated mortality. This will contribute positively to concerted efforts at achieving one of the targets for Goal 3 of the Sustainable Development Goals which are to reduce the global maternal mortality ratio to <70/100,000 live births by 2030.

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## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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## Conflicts of interest

There are no conflicts of interest.

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