ASSESSMENT OF KNOWLEDGE OF RISK FACTORS FOR ECTOPIC PREGNANCY AND ASSOCIATED FACTORS AMONG FEMALE UNDERGRADUATES OF UNIVERSITY OF JOS.

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ABSTRACT

Background: Ectopic pregnancy a major gynaecological problem and leading cause of maternal mortality. It is assuming greater importance from increasing incidence and impact on women's fertility; as late presentation makes its burden larger among women in developing countries.

Objective: To assess the level of knowledge and prevalence of risk factors for ectopic pregnancy among female undergraduates of the University of Jos.

Method: A cross-sectional survey carried out among 347 students who lived in the hostels of the University of Jos using a multistage sampling technique. Data was analyzed using SPSS. Descriptive statistics was presented as frequencies and percentages. Other statistical tests used include Chi-square and Fisher's exact at $p<0.05$ level of significance.

Results: Almost a quarter (24.8%) of the participants had good knowledge, about half (49.0%) had moderate knowledge while slightly above a quarter (26.2%) had poor knowledge of ectopic pregnancy. A statistically significant relationship was observed when multiple sexual partners (X^2=63.42; p=0.000); prior PID (X^2=117.22; p=0.000); OCP use (X^2=93.50; p=0.000); induced abortion (X^2=140.62; p=0.000); tubal surgery(X^2=88.09; p=0.000); smoking (X^2=7.76; p=0.021); and the number of sexual partners was compared with knowledge of ectopic pregnancy (X^2=36.20; p=0.003), but none when marital status was compared with knowledge ($X^2$12.302; p=0.138). The most prevalent risk factors included the use of oral contraceptives, prior PID 37(10.7%), alcohol intake 34 (9.8%), induced abortion 33(9.5%) and multiple sexual partners 43(16.3%) of 264 sexually active respondents.

Conclusion: Women of reproductive age group should be educated on the knowledge of symptoms and risk factors of ectopic pregnancy to reduce the morbidity and mortality associated with it.

Key words: Ectopic pregnancy, Risk factors, Knowledge level, Fallopian tubes.

Introduction

Ectopic pregnancy (EP) is defined as 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;[1,2] a life-threatening emergency with a rising incidence of maternal mortality especially in resource-poor settings.[3] It is a major gynaecological problem of public health importance all over the world. EP is the leading cause of maternal mortality in industrialized countries in the first trimester, and possibly the second most frequent cause in developing countries after complications of induced abortion.[4, 5, 6.] Between 93 and 97% of ectopic pregnancies are located in a fallopian tube and 75% are located in the ampulla,13% in the isthmus and 12% in the fimbriae.[4, 7] It is a major health problem for women of childbearing age not only because it causes maternal mortality but of greater clinical importance is the indirect morbidity of poor fertility prognosis and adverse outcome in subsequent pregnancies with a 7-15% chance of recurrence and only 40-60% chance of conceiving after surgery.[8,9.] The common risk factors associated with ectopic pregnancy include pelvic inflammatory disease (PID), complications associated with the use of Intrauterine Contraceptive Device (IUCD), increased maternal age, previous pelvic surgery, history of infertility, early age of intercourse, multiple sexual partners, cigarette smoking, post-abortal sepsis , puerperal sepsis and peritonitis arising from other causes like appendicitis.[10,11,12,13,14] Affectation of the ciliary functions of the fallopian tube is the mechanism upon which these risk factors cause EP with pelvic inflammatory disease as the most common.[15]

Symptoms usually depend on the evolution of the pathology; from an asymptomatic state of the unruptured early ectopic gestation through chronic pelvic pain in the slow leaking variety to sudden collapse in acute ruptured EP. Other symptoms include a missed period and vaginal bleeding.[16,17]

Diagnosis of ectopic pregnancies is by serial detection of serum human chorionic gonadotropin (hCG) to confirm pregnancy and ultrasound to identify the exact location of the pregnancy, but when in doubt, the gold standard for the diagnosis is laparoscopy.[16]

Ectopic pregnancy is assuming greater importance because of its increasing incidence and its impact on women's fertility.[5,18] It is a leading cause of maternal death during the first trimester of pregnancy, accounting for approximately one in ten pregnancy-related deaths.[6] It contributes to poor reproductive performance amongst women of child bearing age.[19] The risk of death among those in the developed world is between 0.1 and 0.3 per cent while in the developing world it is between 1 and 3%.[20]

A significant percentage of women of reproductive age (15–44 years) are ignorant of the risk factors of EP.[1] Absence of recognizable risk factors is responsible for the late presentation identified recently in most women with severe morbidity from EP. Most undergraduates are young and nulliparous, hence the need to assess their knowledge of risk factors for ectopic pregnancy aimed at increasing their understanding of the subject matter and encouraging preventive measures which will in-turn reduced the menace cause by ectopic pregnancy in them as they advance in age and their reproductive life.

This study hopes to increase literature availability that discusses risk factors on ectopic pregnancy which is currently scarce in our region; and by so doing reduce the incidence of EP and the morbidities associated with late presentation.

The study aimed to assess the level of knowledge and prevalence of risk factors for ectopic pregnancy among female undergraduates of the University of Jos.

Methodology

Study Area/Population: The study was carried out at University of Jos, Plateau State, Nigeria. Currently the University has three major hostels, Abuja, Village and Naraguta hostels providing accommodation for most of the students. Abuja hostel has five blocks, A to E with blocks C, D allotted to females, each block has ground, first and second floor with 37 rooms on each floor and each

room has 5 students. In Naraguta hostel there are blocks A, B, C, D and Zion (A and B blocks); Blocks D and Zion (A and B) are allotted to females each block has four floors with 16 to 20 rooms per floor containing a student each while Village hostel is organized in to compounds with 10 compounds allotted to females each compound has 27 to 30 rooms containing 4 students per room.

Study Design

A cross-sectional survey was carried out among the undergraduate female students who lived in the hostels.

Sampling Technique

Respondents were selected by multi-staged sampling from the three major hostels of the institution.

Stage one: All three major hostels and all floors/compounds of each hostel were purposively selected to provide a good spread of the respondents across Levels and age groups.

Stage two: Ten rooms per floor, 4 rooms per floor, and 3 rooms per compound were selected by simple random sampling by balloting in Naraguata, Abuja, and Village hostels respectively.

Stage three: All occupants of all the selected rooms were interviewed for the research giving a total of 384 participants.

Instrument of Data Collection

Data was collected through a pre-tested, semi-structured self-administered questionnaire on the sociodemographic characteristics of respondents, knowledge of EP, and prevalence of risk factors for EP obtained from the literature review.

Study Process: A brief introduction to the purpose of the study was given to participants, after which informed consent was sought and obtained. A total of 374 self-administered questionnaires were distributed to the respondents and 347 were filled and returned giving a response rate of approximately 93%. Respondents were assured of confidentiality and anonymity and informed that their participation was voluntary and that they had the right to opt-out without any consequences.

Sample Size Determination

The sample size was calculated using the formula,[21]

$n = z^2 pq/d^2$

Where n= minimum sample size for population

z= standard normal deviate (which corresponds to 1.96 at a 95% confidence interval)

p= prevalence was set based on a similar study conducted at the University of Calabar that showed that only 31.7% of the respondents had good knowledge of the risk factors of ectopic pregnancy.[1]

q = complementary probability

d = level of significance, which was set at 5% = 0.05

Non-response rate of 10% was used to get the minimum sample size as shown below.

$n = Z^2 pq/d^2$

$n = \frac{(1.96)^2 \times 0.317 \times 0.683}{(0.05)^2}$

$n = \frac{0.8317}{0.0025}$

$n = 332.699$

At a non-response rate of 10%, the minimum sample size becomes

$N = \frac{332.699}{1 - 0.1}$

$N = 369.665$

N= 370

Data Processing and Analysis

All returned copies of the questionnaires were entered in to Microsoft Excel; and were subsequently imported into the IBM Statistical Package of Social Sciences (SPSS) version 23.0; (Armonk, NY, USA) for analysis. Based on their responses, scores were assigned for correct answers given by respondents to assessed their level of knowledge. Equal weight was assigned to all questions and the highest possible score was 10. 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 3), moderate knowledge (for scores between 4 and 6), and good

knowledge (for scores between 7 and 10), based on a previous study.[1] Data were summarized using descriptive statistics and presented as percentages, tables, charts, Chi-square, and Fisher's exact at p-value<0.05 level of significance.

Ethical Consideration

Institutional clearance was collected from the Health Research Ethical Committee of the Jos University Teaching Hospital with Reference number JUTH/DCS/IREC/127/XXXI/2385 and selected respondents were asked to sign a written informed consent if they agreed to be part of the research.

Permission was verbally obtained from all the hostel staff and also from the hostel Excos before administering the questionnaires to respondents.

Results

Table 1: Awareness of Risk Factors of Ectopic Pregnancy Among Female Undergraduates of the University of Jos

Variable	Frequency (n= 374)	Percent (100%)
Prior PID		
Yes	240	69.2
No	107	30.8
Abortion		
Yes	221	63.7
No	126	36.3
Contraceptive use		
Yes	214	61.7
No	133	38.3
Tubal surgeries		
Agree	190	54.8
Disagree	157	45.2
Early age at First Pregnancy		
Yes	171	49.3
No	176	50.7
Family History		
Yes	162	46.7
No	185	53.3
Cigarette smoking		
Yes	125	36.0
No	222	64.0
Early age at sexual debut		
Yes	123	35.4
No	224	64.6
Infertility		
Yes	113	32.6
No	234	67.4
Multiple sexual partners		
Yes	107	30.8
No	240	69.2

From Table 1(above), only a tenth of respondents were able to correctly identify all 10 questions asked to assess knowledge while about a third could not identify any question correctly. A good number (>60%) were able to identify PID and previous history of abortion as a risk factors for ectopic pregnancy.

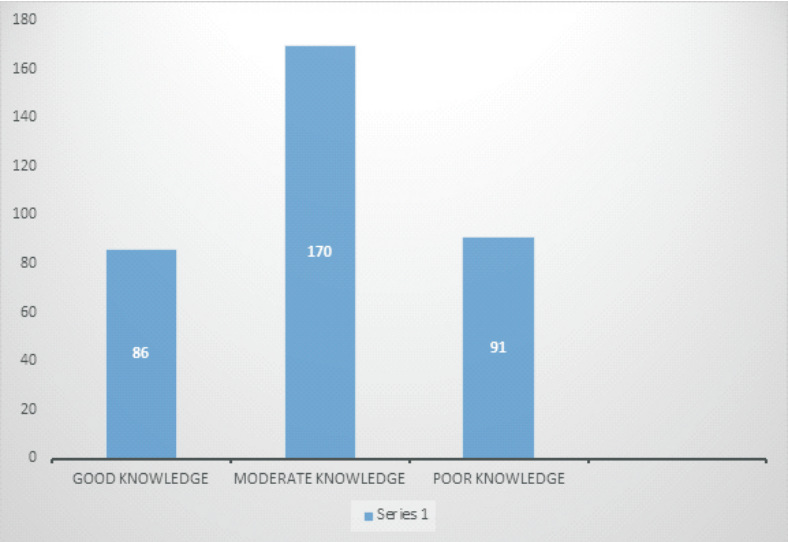

Figure 1: Level of knowledge of Risk Factors of Ectopic Pregnancy Among Female Undergraduates of University of Jos

From Figure 1(above), slightly less than a quarter (24.8%) of the respondents had good knowledge of the risk factors for ectopic pregnancy, almost half (49%) had moderate knowledge while slightly above a quarter (26.2%) had poor knowledge of the risk factors of ectopic pregnancy.

Table 2: Pattern of Risk factors for Ectopic Pregnancy among Female Undergraduates of the University of Jos.

Variables	**Frequency (n=374)**	**Percent (100%)**
Use of Oral Contraceptives		
Yes	54	15.6
No	293	84.4
Age at First Use of Oral Contraceptives		
	12	22.2
19 – 21	26	48.1
22 – 24	13	24.1
>24	3	5.6
Prior PID		
Yes	37	10.7
No	310	89.3
Frequent Alcohol intake		
Yes	34	9.8
No	313	90.2

Induced Abortion		
Yes	33	9.5
No	314	90.5
Smoking		
Yes	26	7.5
No	321	92.5
Previous Ectopic Pregnancy		
Yes	8	2.3
No	339	97.7
Previous Tubal Surgery		
Yes	8	2.3
No	339	97.7
Number of Sexual Partners in the Past 3 Months		
None	165	62.5
One	56	21.2
Two and above	43	16.3

From Table 2(above), the most prevalent risk factor for ectopic pregnancy among the respondents is the use of oral contraceptives identified in above a tenth of the respondents, Prior PID was identified in a tenth while frequent alcohol consumption and induced abortion were identified in about a tenth of the respondents. The least prevalent risk factor for ectopic pregnancy among the respondents was a previous ectopic pregnancy and previous tubal surgery, 2.3% each.

Table 3: Association between Pattern of Risk factors for Ectopic Pregnancy and Knowledge of Ectopic pregnancy among Female Undergraduates of the University of Jos.

Variable	Knowledge, Frequency (%)			X^2	P
	Good	**Moderate**	**Poor**		
Having MSP					
Yes	54(50.5)	45(42.1)	8(7.4)	63.42	***0.000****
No	32(13.3)	125(52.1)	83(34.6)		
Prior PID					
Yes	84(35)	131(54.6)	25(10.4)	117.22	***0.000****
No	2(1.9)	39(36.5)	66(61.6)		
OCP USE					
Yes	75(35)	120(56.1)	19(8.9)	93.50	***0.000****
No	11(8.3)	50(37.6)	72(54.1)		
INDUCED ABORTION					
Yes	78(35.3)	131(59.3)	12(5.4)		
No	8(6.3)	39(40)	79(62.7)	140.62	***0.000****
TUBAL SURGERY					
Agree	80(42.1)	89(46.8)	21(11.1)	88.09	***0.000****
Disagree	6(3.8)	81(51.6)	70(44.6)		
SMOKING					
Yes	7(26.9)	18(69.3)	1(3.8)	7.76	***0.021****
No	79(24.6)	152(47.4)	90(28.0)		
DRINKS ALCOHOL					
Yes	10(29.4)	17(50)	7(20.6)	0.79	*0.67*
No	76(24.3)	153(48.9)	84(26.8)		
NUMBER OF SEXUAL PARTNERS					
None	28(17)	100(60.6)	37(22.4)	36.20	***0.003****
One	17(30.4)	18(32.1)	21(37.5)		
More than One	41(32.5)	52(41.3)	33(26.2)		

***Significant at <0.05:**
MSP-Multiple Sexual Partners, PID- Pelvic Inflammatory Disease, OCP-Oral Contraceptive Pill, P Significant at <0.05

From Table 3(above), there was statistically significant relationship between having MSP, prior PID, OCP use, induced abortion, tubal surgery, and the number of sexual partners, except drinking alcohol and knowledge of ectopic pregnancy at p values indicated in the table 3.

Table 4: Association between Marital Status and Knowledge of Risk Factors of Ectopic Pregnancy among Female Undergraduates of the University of Jos.

		Knowledge Group F (%)			Total
		Good knowledge	Moderate knowledge	Poor knowledge	
Marital Status	Divorced	1(100%)	0 (0.0%)	0 (0.0%)	1 (100.0%)
	Married	4 (57.1%)	0 (0.0%)	3 (42.9%)	7 (100.0%)
	Separated	0 (0.0%)	2 (66.7%)	1 (33.3%)	3 (100.0%)
	Single	81 (24.2%)	167 (49.9%)	87 (26.0%)	335 (100.0%)
	widow	0 (0.0%)	1 (100.0%)	0 (0.0%	1 (100.0%)
Total		86 (24.8%)	170 (49.0%)	91 (26.2%)	347 (100.0%)

$X^2 = 12.302$, df = 8 p= 0.138

Table 4: Association between Marital Status and Knowledge of Risk Factors of Ectopic Pregnancy among Female Undergraduates of the University of Jos.

DISCUSSION

The study revealed that only about a quarter of the respondents had good knowledge of ectopic pregnancy (EP), slightly below half of them had moderate knowledge while slightly above a quarter had poor knowledge of ectopic pregnancy. These findings were the similar to what was found in a similar study conducted in Southeastern Nigeria;[1] that recorded that, slightly over a third of the respondents had good knowledge, half had moderate knowledge, and almost half had poor knowledge of the risk factors for EP. This similarity was most likely because both studies were carried out among undergraduates who shared similar age ranges and most likely similar social behaviours. This means that a significant number of the undergraduate female population might have been practicing some social habits and sexual behaviours that can put them at risk of ectopic pregnancy without knowing it. Such individuals may only be recognised when they present with long-term complications of EP like chronic pelvic pain or infertility. Therefore, deliberate effort through health education should be done to enlighten them about the risk factors of ectopic pregnancy and how to avoid or treat them.

Concerning awareness of risk factors for ectopic pregnancy, most of the respondents identified prior PID, induced abortion, contraceptive use, and previous tubal surgery as risk factors for ectopic pregnancy. They, however, failed to identify having multiple sexual partners, infertility, early age at sexual debut, and cigarette smoking as risk factors for EP; these findings are similar to what was found in a similar study conducted among female undergraduates in Calabar, Nigeria.[1] This invariably means that, they will continue to ignorantly practice some harmful lifestyles which will put them at risk of having ectopic pregnancy with its attendant complications.

The use of oral contraceptives was the commonest risk factor for EP identified among the respondents of this study, which is not surprising as there is an increase in the number of private and government organizations advocating for an increased uptake of modern family planning methods among all young women of reproductive ages. This will mean an increased incidence of EP as the pills only protect against pregnancy and not sexually transmitted diseases, might well lead to PID; and if not promptly and properly treated lead to tubal damage and EP; hence the need to educate young women on this risk and to advocate for the use of other forms of contraception especially barrier

contraception like condoms to give them dual protection again STDs and pregnancy. This finding is similar to what was found in a study conducted in a tertiary institution in Kano,[22] a lower prevalence was reported in a similar study conducted in Calabar[1] while a higher prevalence was reported in studies conducted in Southwestern and Northeastern Nigeria.[23,24,25] Factors responsible for this variation may be due to cultural and religious beliefs about contraception in regions where these studies were conducted.

Prior PID was the second highest risk factor for ectopic pregnancy identified in this study this is lower than what was reported in a study conducted in India.[5] Induced abortion had a prevalence of less than a tenth, which is lower than the prevalence of more than a quarter reported in a study in India;[5] factors responsible for this variation may be related to the difference in the mean age of the respondents of these studies (21.96+/-3.12 versus 29.1+/- 5.42 respectively). This means the respondents should be educated on the fact that almost 100% of people who had an induced abortion will have a very high risk of developing ectopic pregnancy in the nearest features as some studies have reported that about 63 to 95% of ectopic pregnancies had induced abortion as a risk factor.[19,26,]

One in every four of the respondents reported having multiple sexual partners (MSPs), this is similar to what was recorded in other studies among undergraduates in Southeast Nigeria.[1,27,28] This risky behaviour among them simply means an increased incidence of unwanted pregnancies/induced abortion and PID if barrier contraception is not consistently and correctly used. Therefore, there is need for young women to be given adequate knowledge of this relationship to reduce the incidence of EP with its attendant complications. Possible reasons for this increased number of young women with MSPs include financial and social problems occasioned by increasing poverty and economic instability in Nigeria.

There was a statistically significant relationship observed when smoking and the number of sexual partners were compared with the knowledge of ectopic pregnancy. This is likely linked to the fact that in the pathogenesis of ectopic pregnancy smoking usually causes tubal damage by destroying ciliary motion of fertilize zygote preventing movement of the zygote to the endometrial cavity resulting in EP.[29] Multiple sexual partners on the other hand will lead to STDs, then PID and tubal damage by different mechanisms.

There was no statistically significant relationship seen when the marital status of the respondents was compared with the knowledge of risk factors of EP. Same was the case when age groups were compared with the knowledge of risk factors for EP. A possible explanation for this is that behaviours and activities that put women at risk of EP can be practised by all women regardless of age or marital status.

CONCLUSION

It can be concluded from the study therefore, that awareness of the risk factors for ectopic pregnancy does not translate to knowledge, hence there is a the need to empower women within the reproductive age group with sound knowledge of risk factors for EP; teach them preventive measures and encourage early presentation when they have features suggestive of EP. This will help in reducing the maternal morbidity and mortality that can arise from EP including complications like chronic pelvic pain and infertility.

The study was limited by the fact that there was no means of verifying or confirming the responses given by the respondents and also by the cross-sectional nature of this research, the self-reported nature of the information instrument of data collection, and social desirability bias from the respondents.

It was recommended that public health education on risk factors of ectopic pregnancy and ways of preventing them be carried out by public health officials and health care professionals to women of reproductive age at any level of care or contact and encouragement of safe sexual practices and barrier contraception use among all women of reproductive age regardless of her age or marital

status if they are at risk of contracting STIs.

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