Original Article

MENSTRUAL ABNORMALITIES IN UNDERGRADUATES WITH PELVIC INFLAMMATORY DISEASE ATTENDING IRRUA SPECIALIST TEACHING HOSPITAL, IRRUA

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Abstract

Background: Pelvic Inflammatory Disease (PID) is a common global gynaecological problem. It requires immediate and early diagnosis and treatment in order to prevent long term sequelae. It is mainly diagnosed clinically as both laboratory and radiologic investigations are either not available or unaffordable or both. Menstrual abnormalities are common clinical presentations in patients PID. This study was to determine the pattern of menstrual abnormalities among undergraduates with PID.

Materials and Method: The study was a descriptive cross-sectional study of 360 Female undergraduates who presented to ISTH over a six-month period. They were evaluated for the presence or absence of menstrual abnormalities using a pretested, semi structured questionnaire. They were also evaluated for the presence of PID using the WHO criteria for the clinical diagnosis of PID. Information obtained were analysed with epi info 3.5.4.

Results: A total of 182 (79.5%) out of the 229 patients with PID had at least a form of menstrual abnormality compared to 47 (35.9%) of the 131 patients without PID (p < 0.001). Menorrhagia (p < 0.001), Metrorrhagia (p < 0.03) and Dysmenorrhea (p < 0.001) were found to be associated with PID.

Conclusion: Menstrual abnormalities were found to be commonly present in patients with PID particularly menorrhagia, metrorrhagia and dysmenorrhoea. They should therefore be seriously considered while evaluating patients for PID particularly in resource constrained settings.

Key Words: Menstrual Abnormalities, Undergraduates, PID

INTRODUCTION

Pelvic Inflammatory Disease (PID) is common among women of reproductive age globally.[1] It is an infectious and inflammatory disorder affecting the upper female genital tract.[2] PID could involve the endometrium, both fallopian tubes, ovaries and the peritonium.[3] PID commonly results from infections of the lower female genitalia that ascend to the upper genital tract.[3] It is among the commonest infections that occur among non-pregnant women of childbearing age. It is and remains a major public health concern.[3] Sexually Transmitted Infections (STIs) in women, if not promptly treated can, and usually progress to PID[1] which if not diagnosed and treated early could lead to infertility, ectopic pregnancy, or chronic pelvic pain.[1,4]

PID is commonly associated with sexually transmitted organisms especially *Neisseria gonorrhoea* and *Chlamydia tracchomatis*[5] and is in fact one of the most common and serious complications of sexually transmitted infections (STIs) in women. It has however been associated with microorganisms that comprise the vagina flora such as anaerobes, *Gardnerella vaginalis, Haemophilus influenzae*, enteric Gram-negative rods, and *Streptococcus agalactiae.*[5] In some cases of PID, cytomegalovirus (CMV), *M. hominis*, *Ureoplasma urealyticum*, and *M. genitalium* have been implicated.[5]

There is increased occurrence of PID in our society, particularly among youth with a quarter of sexually active female adolescents having STI annually.[6] The prevalence of PID among undergraduates was found to be 11% in a study done in Port Harcourt, Nigeria.[7] Another study conducted by Olowe et al in Osogbo, South-Western Nigeria found the prevalence of PID to be as high as 70%.[6]

The reasons for increased prevalence of PID among students, particularly those in tertiary institutions may be due to their engagement in sexual behaviours that expose them to risks of developing PID. Most students are adolescents and young adults who engage in sexual adventures as a result of the freedom from direct parental control in school. Other possible reasons for increased likelihood of PID in adolescents and young adults include biological factors like increased permeability of the cervical mucous, a large zone of cervical ectopy, reduced protective antichlamydial antibodies, and greater tendencies to take risks.[8] Occurrence of PID during the adolescent and youthful age increases the risk of developing complications from the disease (infertility, ectopic pregnancy, chronic pelvic pain etc) later in life (after marriage when fertility is desired).

Diagnosis of PID is difficult particularly in rural settings due to dearth of facilities or manpower or both.[3] Clinical diagnosis is therefore strongly relied upon. This is also difficult as it may be asymptomatic or may present with atypical symptoms. A good history including history of lower abdominal pain, dyspareunia, abnormal discharge per vaginum, fever, abnormal vaginal bleeding and clinical examination to elicit cervical excitation tenderness, uterine tenderness and adnexal tenderness are key to clinical diagnosis of PID.[3,9,10] The above clinical features have a positive predictive value of 65 – 90% in the diagnosis of PID.[9] The World Health Organisation (WHO) and the Centre for Disease Control (CDC) have identified the presence of cervical excitation tenderness, uterine tenderness and adnexal tenderness in a patient with no other identifiable cause as diagnostic of PID.[3,8,11]

From hospital records, majority of patients with PID in Irrua Specialist Teaching Hospital are adolescents and young adults. Majority of undergraduates are adolescents and young adults. Clinical diagnosis of PID is usually relied upon in ISTH being in a rural community with inhabitants mainly from low socioeconomic class. Even those who can afford laboratory and radiological investigations are treated empirically based on clinical diagnosis, while the outcome of the laboratory and radiological investigations is awaited. This study therefore seeks to determine the correlation between the menstrual abnormalities and the development of pelvic inflammatory disease among undergraduates attending Irrua Specialist Teaching Hospital (ISTH), Irrua, Edo State in order to determine if its presence is significant in patients with PID.

METHODOLOGY
Study Design
It was a descriptive cross-sectional study conducted among female undergraduates presenting to the Family Medicine Clinic, Accident and Emergency Unit and Gynaecology Clinic.

Location of study
The study was conducted in ISTH, a tertiary hospital in Irrua, the headquarters of Esan Central Local Government Area. It is a semi urban community and receives patients from three major tertiary institutions – Ambrose Alli University, Ekpoma, Auchi Polytechnic, Auchi and College of Education, Igueben. Patients with PID are usually seen in the Family Medicine Clinic (commonest), gynaecological clinic and the Accident and Emergency unit of the hospital.

Female undergraduates presenting to ISTH during the period of the study were recruited for the study. They were all evaluated for menstrual abnormalities using a semi structured pretested questionnaire. Patients with one or more of the complaints enunciated by WHO in its syndromic approach for the diagnosis of PID {Lower abdominal pain and Pelvic tenderness (Cervical Excitation Tenderness, Uterine Tenderness or Adnexal Tenderness)}[9,11] were categorised as those having PID. Patients who did not meet the WHO criteria for the

clinical diagnosis PID were categorised as not having PID.

Study Population
The study population comprised undergraduates attending the Family Medicine Clinic, Gynaecological Clinic and Accident and Emergency unit of Irrua Specialist Teaching Hospital.

Sample Size
A sample size of 360 was used. The sample size was determined using the formula

$N = Z^2pq/d^2$ where
N = estimated sample size
Z = standard normal deviate corresponding to a confidence interval of 95% (1.96)
p = prevalence of PID (Olowe, Alabi and Akindele reported a PID prevalence of 70% among patients attending a tertiary hospital in Osogbo, South western Nigeria)[6]
q = the proportion of those without PID in the population = 1 – p = 1 – 0.70 = 0.30
d = allowable relative error (5%)
$N = (1.96)^2 \times 0.70 \times 0.30/(0.05)^2 = 0.806736/0.0025 = 323$

Response Rate: A response rate of 90% was anticipated and so the sample size to be selected (n_s) was calculated using the formula
$n_s = n/0.9$ where
n_s = sample size to be selected,
 n = calculated sample size and
0.9 = anticipated response rate of 90%
$n_s = n/0.9 = 323/0.9 = 359$.
This was rounded up to **360**

Sampling Method
Consecutive patients who meet the selection criteria during the period of the study were recruited for the study.

Selection Criteria
Female undergraduates between the ages of 15 to 45 who consented to participate were included in the study.

Chronically ill patients, patients with conditions with competing diagnosis such as ectopic pregnancy, appendicitis and urinary tract infection as well as patients with history of pelvic surgeries such as myomectomy, salpingectomy, caesarean section etc, were excluded from the study.

Data Analysis
Data was analysed using **Epi info 3.5.4** statistical software designed by the Centre for Disease Control (CDC), Atlanta, USA. Results were presented using tables, charts, frequency distribution and percentages. Chi-square test was used to compare the variables, and $P \leq 0.05$ was considered statistically significant.

Duration of Study
The study lasted for a period of six months. The study being a consecutive study continued until the required sample size was achieved.

Ethical Clearance
Ethical clearance was obtained from the Ethics and Research Committee of Irrua Specialist Teaching Hospital, while informed consent was obtained from patients after details of the study including the aim and objectives have been explained to them.

RESULTS
Table 1: Sociodemographic Characteristics of Respondents

Sociodemographic Characteristics	PID (%) N=229 (63.6)	No PID (%) N=131 (36.4)	Total (%) N=360 (100)	χ^2 Test
Age				
15 – 19	27 (73)	10 (27)	37 (100)	$\chi^2 = 4.05$
20 – 24	129 (65.8)	67 (34.2)	196 (100)	df=3
25 – 29	57 (58.2)	41 (41.8)	98 (100)	p = 0.20
30 and above	16 (55.2)	13 (44.8)	29 (100)	
Marital Status				
Single	214 (63.3)	124 (36.7)	338 (100)	$\chi^2 = 0.67$
Married	15 (71.4)	7 (28.6)	21 (100)	df = 1, p = 0.72

As shown in Table 1, majority of the respondents who had PID were aged 20 to 24 years (129) followed by 25 to 29 years (57) and 15 to 19 years (27) age-group. PID occurred least among those aged 30 years and above (16). However, within the age-groups, PID was highest among those aged 15 to 19 (73%) followed by 20 to 24 years (65.8%) and 25 to 29 years (58.2%). It was least among those aged 30 years and above (55.2%). The difference between the ages of respondents and age-based occurrence of PID was not found to be statistically significant ($\chi^2 = 4.05$, df = 3, p = 0.20)

Most of the respondents with PID were single. There were 214 (63.3%) respondents with PID compared to 124 (36.7%) of respondents without PID who were single. There were 15 (68.2%) married respondents with PID compared to 7 (31.8%) of married respondents without PID. The proportion of PID among married women was higher (71.4%) than that of single ladies (63.3%). There was however, no statistically significant difference between single and married respondents who had PID and those who did not ($\chi^2 = 0.67$, df = 1, p = 0.72). See Table 1.
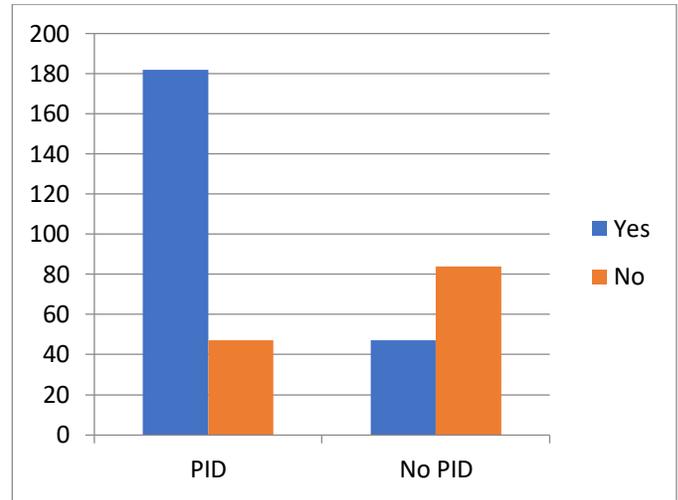

Figure 1: Presence of Menstrual Abnormalities among Respondents

A total of 182 (79.5%) patients with PID had at least a form of menstrual abnormality compared to 47 (35.9%) patients without PID (Figure 1). The difference was statistically significant (p < 0.001). The breakdown of the various forms of menstrual abnormalities is as outlined in Table 2 below.

Table 2: Menstrual Abnormalities among respondents

	PID N=229(100%)	No PID N=131(100%)	Total N=360(100%)	χ^2 Test
Menorrhagia				
Present	58(25.3)	14(10.7)	72(44.8)	$\chi^2 = 11.16$
Absent	171(74.7)	117(89.3)	288(55.2)	P < 0.001
Metrorrhagia				
Present	38(16.6)	11(8.4)	49(13.6)	$\chi^2 = 4.77$
Absent	191(83.4)	120(91.6)	311(86.4)	P = 0.03
Dysmenorrhoea				
Present	153(66.8)	42(32.1)	195(54.2)	$\chi^2 = 40.52$
Absent	76(33.2)	89(67.9)	165(45.8)	P < 0.001
Oligomenorrhea				
Present	17(7.4)	5(3.8)	22(6.1)	$\chi^2 = 1.89$
Absent	212(92.6)	126(96.2)	338(93.9)	P = 0.16
Inter-menstrual bleeding				
Present	8(3.5)	2(1.5)	10(2.8)	$\chi^2 = 1.19$
Absent	221(96.5)	129(98.5)	350(97.2)	P = 0.28

Respondents reported various menstrual abnormalities. Menorrhagia was present in 58 (25.3%) of the respondents with PID compared with 14 (10.7%) of control. The difference was statistically significant (p < 0.001). Metrorrhagia was present in 38(16.6%) of

respondents with PID compared to 11 (8.4%) of control. The difference was statistically significant (p < 0.03). Dysmenorrhea was reported by 153(66.8%) respondents with PID compared to 42(32.1%) of control. There was a statistically significant difference between respondents

with PID and those without (p < 0.001). There was no significant difference between PID patients 17(7.4%) presenting with oligomenorrhea compared to those without PID 5(3.8%), (p = 0.16). Inter-menstrual bleeding was present in 8(3.5%) respondents with PID and 2(1.5%) respondents without the disease. The difference was not statistically significant (p = 0.28).

DISCUSSION
Menstrual abnormalities were significantly present in patients with PID. This gives credence to menstrual abnormality as a cardinal feature that should be considered in the clinical diagnosis of PID. Vanthuyne et al, in their guideline for the diagnosis of PID identified abnormal vaginal bleeding as an important symptom of PID.[3]

The most common menstrual abnormality in the study was dysmenorrhoea. It was significantly higher in patients with PID. This is similar to findings by Khan et al in a Bangladeshi study which found over 70% of patients with PID presenting with dysmenorrhoea.[1] A study by Ahmed et al also found dysmenorrhoea as the most common menstrual abnormality in patients with PID.[2]

Other menstrual abnormalities found to be significantly higher in patients with established clinical PID were menorrhagia and metrorrhagia. Khan et al[1] and Ahmed et al[2] in separate studies also reported menorrhagia among PID patients in their study. These abnormalities should be sought after in patients presenting with features suggestive of PID particularly when facilities for laboratory and radiologic diagnosis are absent or beyond the reach of the patient due to financial constraint.

CONCLUSION
Menstrual abnormalities were found to be commonly present in patients with PID particularly menorrhagia, metrorrhagia and dysmenorrhoea. It is therefore important that these abnormalities be evaluated for during clinical assessment of patients with suspected PID.

AUTHORS' CONTRIBUTIONS
OTIA: Developed the concept, conducted the study and participated in the write up. FNF: Participated in the writing of the manuscript. MMO: Conducted the study, read through the manuscript. OMA: Developed the concept, supervised the study, read through the manuscript.

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