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Prevalence of Pelvic Inflammatory Disease among Women Attending the Gynecology Clinic at Kampala International University Teaching Hospital, Uganda.

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ABSTRACT

Pelvic inflammatory disease (PID) is major health problem in developed and developing country involving more young women. It is associated with high rate of female reproductive health morbidity; it can complicate with ectopic pregnancy, infertility and chronic pelvic pain. A poor response therapy increases the likelihood of these complications; this could be due to an increase in antimicrobial resistant pathogens. The aim of this research was to determine the prevalence of PID pattern of women at Kampala International University Teaching Hospital. This was a cross-sectional study conducted among women who attended gynecology clinic at Kampala International University Teaching Hospital. Consecutive enrolment of 324 participants who consented to participate was done daily until a required sample size was realized from November 2019 to January 2020. Structured questionnaires were used to collect data on associated factors; endocervical swab was taken from patient clinically diagnosed with PID. Data was analyzed using STATA VERSION 14.2. The result showed that prevalence of pelvic inflammatory disease was 19.1%. In conclusion, the prevalence of pelvic inflammatory disease is high and good measures has to be taken.
Keywords: Prevalence, Pelvic, Inflammatory, Disease and Women.

INTRODUCTION

In this study, the prevalence of pelvic inflammatory disease refers to the number of patients who have the symptoms and signs of this condition among all the patients who will be attending gynecology outpatient clinic. Pelvic inflammatory disease is a major health problem in developed or developing countries of the world. However since it is not a reportable disease accurate statistics on disease prevalence are rarely available [1]. Pelvic inflammatory disease usually affects young women and the peak incidence occurs in women in their late teens and early 20s and it is considered to be a major source of gynecological morbidity in the world [2]. Globally, specific international data concerning the incidence and prevalence of pelvic inflammatory disease are not available for several countries, although, WHO established that almost 48 million of new cases occur annually in 15-49 years aged women [3], with an incidence varying between 0.58% to 1.67 percent, taking 5-20% of all gynecological admissions globally [4]. In the U.S.A. the prevalence of pelvic inflammatory disease (PID) was reported to be 4.4% among sexually experienced women equating to 2.5 millions of women of reproductive age between 18 to 44 years [5]. The prevalence has also been reported as high as 32% among indigenous women in a remote community in the northern territory of Australia [6]. [4] in a cross-sectional study showing differences in the clinical diagnosis of pelvic inflammatory disease according to the experience of clinicians, reported that pelvic inflammatory disease represent 17-40% of all gynecological admissions. It is reported to be common in developing countries because of high prevalence of sexually transmitted infections and the same study above reported a prevalence of 15- 37% of gynecological admissions due to PID in South East Asia. [8] conducted a study in Akola- Washim city in India on the incidence of pelvic inflammatory diseases and associated clinical consequences in

which it was found that the incidence of pelvic inflammatory disease was 36.71% in the study area,

[8] in Cameroon carried out a study on prevalence of PID in reproductive age women and found that 70 patients had acute pelvic inflammatory disease out of 1344 women who were seen for gynecological, problems giving a hospital based prevalence of pelvic inflammatory disease at 5.2%. [9] in their study conducted at Kenyatta national referral hospital on endometrial histopathology in patients with laparoscopic proven salpingitis it was found one hundred and sixty women were diagnosed with clinical pelvic inflammatory disease with 88% having laparoscopically confirmed salpingitis, 89% of whom underwent endometrial biopsy among them, 45% had mild endometritis, with one polymorphonuclear cell per high powered field; 25% had moderate endometritis with two to three polymorphonuclear cell per high powered field and 30% of them had a severe form with more than five polymorphonuclear cells per high powered field, this show that previous endometritis is a surrogate marker of salpingitis. In the same country, [10], in a study on complication of pelvic inflammatory disease at Kenyatta national referral hospital showed that tubo-ovarian abscess, was a significant complication of pelvic inflammatory disease (PID), occuring in 22% of women hospitalized with salpingitis.

The available and current information about the prevalence of pelvic inflammatory disease in Uganda is limited. However, [11] did a study on screening of sexually transmitted disease especially genital Chlamydia in reproductive women in Mbarara Regional Referral Hospital, but this study did not determine the prevalence of PID among these women [11]. The above literature agrees that the prevalence of pelvic inflammatory disease is high especially in reproductive aged women. However, limited researches have been conducted in Uganda especially in western region to demonstrate the prevalence of PID among reproductive age women [12,13,14, 15,16].

Aim of the study

To determine the prevalence of PID among women of reproductive age presenting at Kampala International University Teaching Hospital.

Research questions

1. What is the prevalence of pelvic inflammatory disease among women attending gynecology clinic at Kampala International University Teaching Hospital?

METHODOLOGY

Study design

This was a cross sectional study. Laboratory investigations was done to achieve the prevalence pattern in women with pelvic inflammatory disease attending gynecology clinic at Kampala international university teaching hospital. Association between PID and different factors was established.

Study area

The study was conducted at Kampala International University Teaching Hospital found in Ishaka Bushenyi Municipality at approximately 60km from Mbarara town along Mbarara Kasese highway. The study population were coming from the districts of Bushenyi, Rubirizi, Sheema, and Mitooma as well as from the nearby districts.

Study site

The study was conducted in the gynecological outpatient clinic in the department of obstetrics and gynecology. The department runs daily from Monday to Friday and receives an average of 20 patients of which 25% are diagnosed with pelvic inflammatory disease. It is run by specialists, residents, intern doctors and midwives. The main laboratory of KIU-TH has a microbiology section which is well equipped and staffed to carry out culture and sensitivity as well as other microbiological tests like growth and isolation of several microorganisms. The equipment that helps to perform different exams within the microbiology laboratory in this hospital includes incubator, microscope, hot air oven, refrigerator, autoclave, and safety cabinet and gas

cylinder. It is also well facilitated with enough stains which help in identifying different microorganisms.

Study population

The study populations were all women of reproductive age in the catchment area

Target population

All women of reproductive age attending gynecology clinic at Kampala international university teaching hospital shall be considered for inclusion in this study.

Accessible population

All women of reproductive age attending gynecology clinic who meet the inclusion criteria of the study

Selection criteria

Inclusion criteria

All the women at the reproductive age attending gynecology clinic of Kampala international university teaching hospital as well as emancipated minors.

Exclusion criteria

Women on antibiotics, pregnant women, unconscious patients who cannot consent and minors were excluded from the study.

Sample size determination

Objective number 1, the sample size was determined using [13] formula with the estimated prevalence of 50%, because the of lack of current prevalence of PID in Uganda

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

Where;
n = Desired sample size
z = Standard normal deviation at 95% level of confidence;
z= 1.96. p = Prevalence of pelvic inflammatory disease in Uganda, assumed at 50%, and d= Level of precision=0.05

$$n = \frac{(Z_\alpha)^2 x\, p(1-p)}{(d)^2}$$

$$n = \frac{(1.96)^2 \times 0.5(1-0.5)}{(0.05)^2}$$

N_1= 384 this is considered as an assumption of sample size**.**

Sampling technique

Consecutive sampling method was used to select participants who consented to be part of the study. All the women of reproductive age who met the inclusion criteria was invited to participate in the study, the participants was enrolled according to their order of arrival in gynecology clinic and this was carried out on a daily basis until the required sample size was achieved.

Data collection instruments

A pretested questionnaire was administered to each participant who consented to participate to the study in order to collect information on socio-demographic, gynecological and sexual behavior factors that related to the development of pelvic inflammatory disease in. A detailed history was taken in English, translated in local language where necessary for women who could not understand English physical examination was carried out and the endocervical sample was taken from patient with symptoms and of PID in order to achieve all the objectives.

Study procedure

History taking

Women of reproductive age who attended gynecology clinic of Kampala international university teaching hospital were informed about the study, a written consent were sought then, and demographic data were inquired. Their chief complaints were taken and detailed history to look for symptoms and risk factors of developing pelvic inflammatory disease.

Physical examination and sample collection

Patient were counseled for the examination a written consent was sought and signed then a physical examination for features of pelvic inflammatory disease which are; lower abdominal tenderness, adnexal tenderness and cervical motion tenderness. The patient were put on

examination bed in lithotomy position, vulva was inspected for the presence of any discharge, A sterile speculum was inserted to look for the presence of cervical discharge. During this time a sterile swab stick was used, to collect the endocervical sample, the sterile swab was inserted in the endocervical canal 20 to 30 millimeters and rotated at 360^0 on the endocervical walls, immediately swab was put in the amies transport medium to ensure the possibility of capturing all the bacteria [1]. This sample was collected by the principle investigator in the presence of a female nurse as a research assistant, it was labeled with patient`s serial number and taken to the laboratory by the research assistant for immediate analysis of the specimen. The patient was given treatment according to Uganda clinical guideline as the researcher continued to follow up the result in the laboratory for a period of 72 hours. Laparoscopy is not going to be considered since it is not available in the research setting.

Sample processing and analysis

Isolation

Samples collected using a sterile procedure with the endocervical swab stick was inoculated on blood agar, chocolate agar, Mac Conkey agar, Thayer Martin medium, and different biochemical tests were used. After, they were incubated both aerobically and anaerobically at 37^oC for 24-48hrs. Colony morphology were observed according to shape, size, elevation, margin and surface characteristics. Rapid diagnostic test was used in order to identify the *Chlamydia trachomatis* antibody careers within the endocervical sample of the participants, the isolation of Chlamydia which uses living cells (McCoy cell) was not done due lack of this specific media to culture *Chlamydia trachomatis,* this rapid Chlamydia test was used to determine the percentage of Chlamydia carriers among the patient with pelvic inflammatory disease.

Data analysis plan

Data from questionnaires were entered in Microsoft Excel 2010, and thereafter exported to STATA 14.1. Socio-demographic, sexual behaviors and gynecologic factors were summarized as means and mediams, standard deviations and interquartile range (for continuous variables) were determined. Proportions, percentages and frequencies were used for categorical variables using STATA 14.1.

Prevalence of pelvic inflammatory disease among reproductive aged women attending Kampala international university teaching hospital were summarized as frequencies and percentages and presented using pie chart. The 95% confidence interval was used for estimation purposes**.**

Ethical considerations

Informed consent

Informed consent and respect for participant's voluntary recruitment was observed. Informed consent for participants were obtained and signed after fully explaining the details of the study to them in English and local languages where necessary (copy attached at Appendix). Participants were not forced to enroll themselves if they don't want to, they were free to withdraw from the study any time they wish without coercion or compromise of care they are entitled to.

Risks and adverse events to study participants

Patients may undergo pain during swabbing and speculum examination, however, the process of obtaining a swab was done gently and professionally to minimize risk of pain and minimize re-infection as far as possible. Additionally, culture and sensitivity are the recommended guidelines prior to antibiotic therapy to minimize the risk of antibiotic resistance.

Benefits of the research

The community benefited from dissemination of findings on the most active antibiotic that should be prescribed to these patients at KIU-TH. Such finding has significant role in contributing to reduction of mortality and morbidity due to PID.

Privacy and confidentiality

Identification of participants was by means of numerical codes. Details of respondents were kept confidential for privacy purpose throughout the course of research. Respect of the respondents'

rights and fair treatment were strictly adhered to thus minimizing harm and discomfort to them. There was no disclosure of participant's information to the public without their consent; the endocervical swab was collected in presence of a female nurse as a research assistant with the agreement of the participant.

RESULTS

Socio demographic findings

Table 1: Socio demographic factors

Characteristics	Frequency	%
Age (years)		
<20	31	9.6
20-29	205	63.3
30-39	71	22.0
40-49	17	5.1
Education		
None	11	3.4
Primary	99	30.6
Secondary	111	34.4
Tertiary	103	31.6
Occupation		
None	127	39.2
Farmer	85	26.2
Professionals	51	15.7
Business	31	9.6
Manual laborer	30	2.3
Monthly income (UGX)		
None	10	3.1
<300000	230	71.8
300000-600000	66	26.5
>600.000	18	5.6
Marital status		
Single	86	26.5
Married	238	73.5

The above table illustrates that 63.3% of participants are aged of 20-29 years, 34.4% have secondary education, 39.2% have no occupation, 71.8% of participants have a monthly income of less than 300.000 Uganda Shillings and 73.5% are married.

Table 2 Gynecological factors

Characteristics	Frequency	%
Parity		
Zero	98	30.3
1-3	153	47.2
>3	73	22.5
Had PID before		
No	224	69.1
Yes	100	30.9
Had miscarriage before		
No	264	81.5
Yes	60	18.5
Use Contraceptive		
No	132	40.7
Yes	192	59.3
Intra Uterine Procedure		
No	281	86.7
Yes	43	13.3
Type contraception		
Condoms	38	19.8
Pills	61	31.8
Injectables	65	33.8
IUD	28	14.6
Type of miscarriage		
Spontaneous	41	68.3
Induced	19	31.7

From the above table, 47.2% of the study participants had delivered at least one to three times, 69.1% had had miscarriage of which 68.3% were spontaneous, 59.3% of the study participants had ever used contraceptive methods of which 33.6% had used injectable contraceptive methods and 86.7% had not had intrauterine procedures.

Table 3: Sexual behavior factors

Characteristics	Frequency	Percent
Number of of sexual partners		
None	20	6.2
One	253	78.0
More than one	51	15.8
Age of initiation sexual activity(year)		
< 15	25	7.7
16-20	242	74.7
>20	57	17.6
Condom Use		
Sometimes	84	25.9
Every time	38	11.8
Never	202	62.3
Smoking		
Never smoke	316	97.5
Ever smoke	8	2.5

The above table shows that, the age of initiation of sexual activity for the majority of participants was 16-20years in 74.7%, most of the study participants denied the use of condoms with 62.3% and 97.5% were non smokers.

Prevalence of Pelvic inflammatory disease (PID)

Table 4: Overall prevalence of PID

Prevalence	Fr	%(95% CI)	P-Value
Non PID	262	80.9	NA
PID	62	19.1(15.2-23.8)	

From the above table, the overall prevalence of PID is 19.1%

DISCUSSION OF FINDINGS

Prevalence of pelvic inflammatory disease among women attending gynecology clinic at KIU-TH

In this study we determined the prevalence of pelvic inflammatory disease among women of reproductive age attending gynecology clinic at KIU-TH and found that of the 324 women enrolled 81 presented symptoms and signs of PID they underwent endocervical swabs for culture and sensitivity with also a rapid Chlamydia test, 62 were positive for infection giving a prevalence of 19.1%. This is High compare to 4.4% reported by [5] in USA, it is also high to [13] in Yaounde who found 5.1%, this could be explain by the setting where these studies were conducted in urban areas compare to our study which was conducted in rural setting. This prevalence is lower to the findings of [7] in Akola city in India who found 36.7%, [6] also reported a prevalence of 32% in rural area of Australia, this finding also contrary [14] in Achole northern Uganda who reported a prevalence of 80%. These were all community based studies were the diagnostic criteria of PID was based on the presence of lower abdominal pain as a major parameter. This result fall in the range reported by [4] who reported PID as a cause of gynecological admissions in 17-37%, Therefore, there is a disproportionate prevalence of PID. This could be attributed to the different levels of coverage health services and reporting across countries.

CONCLUSION

In conclusion the prevalence of pelvic inflammatory disease is high

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