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Evaluation of ultrasonographic findings in premenopausal women with pelvic pain in Port Harcourt, South south Nigeria

Emedike EI, *Onwuchekwa RC, Nwankwo NC
Department of Radiology, University of Port Harcourt Teaching Hospital

Abstract
This study was done to determine the frequency and pattern of occurrence of pelvic lesions found in ultrasonography of premenopausal women presenting with pelvic pain.
A population based, cross sectional prospective and descriptive study of 200 patients referred to the Department of Radiology for ultrasound scan because of pelvic pain between January 2015 and December 2015. MINDRAY DC-8 (2013) ultrasound scanner with transducers of frequency 2.5 -5MHz was used to acquire images in transabdominal longitudinal and transverse sections. Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) version 20.
The age of the study population ranged from 18-45 years. Mean age were 31.6± 8.2 years with majority of the patients in the 3rd decade (37%) of life. Of these 200 patients, 118(59%) had chronic pelvic pain while 82(41%) had acute pelvic pain. The undergraduates had the highest frequency of pelvic pain in 90(45%). In the same vein, pelvic pain was found more in single women in 105(52.5%) of the cases.
This study showed pelvic inflammatory disease (PID) having the highest occurrence in 58(29%) subjects of the study population and degenerating Leiomyoma being the second commonest in 54(27%) subjects.
Pelvic inflammatory disease is the most common cause of pelvic pain in premenopausal women in our environment followed by degenerating Leiomyoma and ovarian cysts.

Keywords: ultrasound, pelvic pain, premenopausal, leiomyoma, pelvic inflammatory disease

1. Introduction
Pelvic pain is pain in the area of the pelvis. The conglomeration of clinical conditions it represents in the females, relates mainly to gynaecologic diseases which involve the reproductive organs: Uterus, fallopian tubes and Ovaries [1].
There are other causes of pelvic pain (non-gynaecological) that mimic gynaecologic disorders such as the loops of small bowel, portions of the colon, the urinary bladder and the distal ureters. Many of the pathologic processes affecting these structures also present with pain, mimicking a gynaecologic emergency. Pelvic pain could be characterized based on duration of symptoms as acute, chronic or recurrent [2].
Acute pain is defined as pain lasting for less than 3 months, while chronic pain generally last longer, up to 3 to 6 months [2]. This time line is arbitrary and patients with cyclic episodic pain may be best classified as having recurrent pelvic pain. Pain with an identifiable specific cause is termed organic pain while pain without a clearly identifiable cause that is exacerbated by psychosocial factors is termed functional pain. Chronic pelvic pain is a common ailment affecting up to one in six of the adult female population [3].
Imaging allows rapid and often precise diagnosis, leading to an optimal management especially allowing efficient triaging of patients between medical or symptomatic treatment, gynaecologic consultation or referral to surgery, and interventional radiology.
Despite the presence of multidetector row computed tomography (CT) in an increasing number of emergency departments, ultrasonography (US) remains the frontline imaging modality for those patients [2].
Ultrasonography plays a critical role in the diagnostic evaluation of these women with pelvic pain. Knowledge of the various findings on ultrasound is therefore of great importance as it can help to diagnose the causes of the pelvic pain much earlier than expected and then facilitates early treatment without delay.
Studies have been done in developed countries but there is dearth of data on sonographic evaluation of premenopausal women with pelvic pain in Port-Harcourt in the South-south geopolitical zone. Thus this study has evolved in order to objectively determine the ultrasonographic pattern of findings of pelvic pain in University of Port-Harcourt Teaching Hospital which is a referral centre for South-South region of Nigeria

2. Methodology
A population based, cross sectional prospective and descriptive study of 200 patients referred to the Department of Radiology, University of Port Harcourt Teaching Hospital, for ultrasound scan because of pelvic pain between January 2015 and December 2015. MINDRAY DC-8 (2013) ultrasound scanner with transducers of frequency 2.5 -5MHz was used to acquire images in transabdominal longitudinal and transverse sections. Data recorded included ultrasonographic findings, patient's age and occupation. According to the United Kingdom Registrar General's classification for occupation, patients were classified into the 5 major categories of occupation. (1.Professionals which are made up of Lawyers and doctors, 2.Managerial and technical

occupations, 3.manual skilled include office workers, 4.semiskilled and 5.unskilled).

The study was approved by the our institutional ethical committee on research.

Nigerian females between the ages of 18-45 years with clinical history of pelvic pain (Acute or Chronic) were included in the study.

Patients who do not meet the inclusion criteria were excluded and these include: Females less than 18years of age and above 45 years, history of trauma, premenopausal women who are pregnant and females presenting with a known pathology for a repeat ultrasound scan. Also females presenting with known foreign objects in the pelvis which can cause pain.eg urinary catheter, intrauterine contraceptive device or pelvic congenital abnormalities were excluded.

Statistical analysis was performed using Statistical Package for Social Sciences (SPSS) version 20.

3. Results

A total of two hundred (200) patients were evaluated during the study period. Their age ranged from 18-45 years with a mean of 31 ± 8.2 years. (Table 1)

Of the total number of subjects, 105(52.5%) were single, 73(36.5%) were married and living with their husbands while, 8(4%), 5(2.5 %) and 9(4.5%) were separated, widowed and divorced respectively.

Professionals which are made up of Lawyers and doctors were 15(7.5%), Managerial and technical occupations were 30(15%), manual skilled include office workers were 21(10.5%), semiskilled were 57(28.5%) and unskilled 77(38.5%) (Table 2).

Ninety (45%) patients were undergraduates while 56(28%) were graduates. Secondary education level were 24(12%) and primary education level were 23(15%).

Pelvic pains was acute (<3 months) in 82(41%) of the patients but chronic (>3 months) in 118(58%). It was non-cyclical in 126(63%) and cyclical in 74(37%).

Ultrasound finding was normal in 19(9.5%) of the study population but were found to be abnormal in 181(91.5%). Pelvic inflammatory disease was the most frequent finding observed in 58 (29%) of the subjects. The peak incidence was in the 3rd decade of life. Leiomyoma was the second commonest as was visualised in 54 (27%) of the subjects, its peak incidence was also in the 3rd decades of life. Many of them were found in the fundal region of the uterus; however, a good number were seen in the anterior and posterior walls. Ovarian cysts were noted in 25 (12.5%) of the patients. It was found more in the right adnexa in 17 (8.5%) of the study population while it was observed in the contralateral side in 8 (4%). It coexisted with pelvic inflammatory disease in 3 (1.5%) of the cases. Cystitis was present in 12 (6%) of the subjects while bladder calculus was seen in 5 (2.5%). Appendicitis was noted equally in 5 (2.5%) of patients. Endometrioma was demonstrated in 3 (1.5%) of the subjects. Ectopic pregnancy was seen in 4 (2%) of the patients. These patients subsequently conducted a pregnancy test which confirmed the diagnosis.

Other less common findings included ovarian torsion, dermoid cyst and serous cystadenomas. These findings were observed in 6 (3%) of the study population collectively

Table 1: Age distribution

Age	Frequency (%)
10-20	22(11)
21-30	74(37)
31-40	66(33)
41-50	38(19)
Total	200(100)

Table 2: Occupational distribution.

Occupation	Frequency distribution	Total %
Professionals	15	7.5%
Managerial	31	15.5%
manual-skilled	21	10.5%
semi-skilled	56	28%
Unskilled	77	38.5%
Total	200	100%

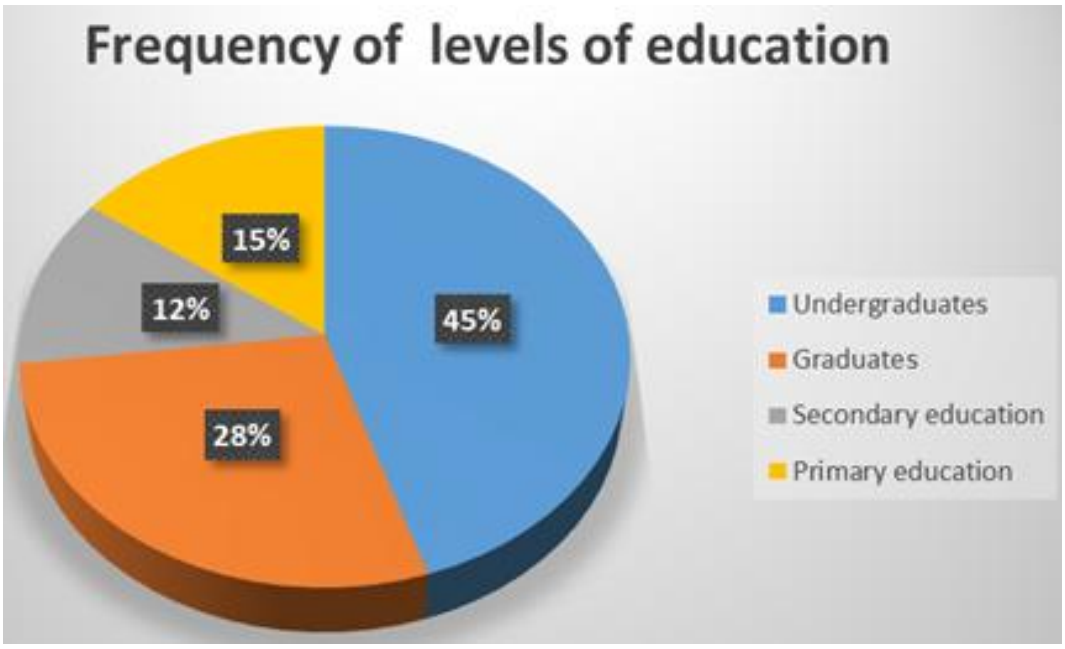
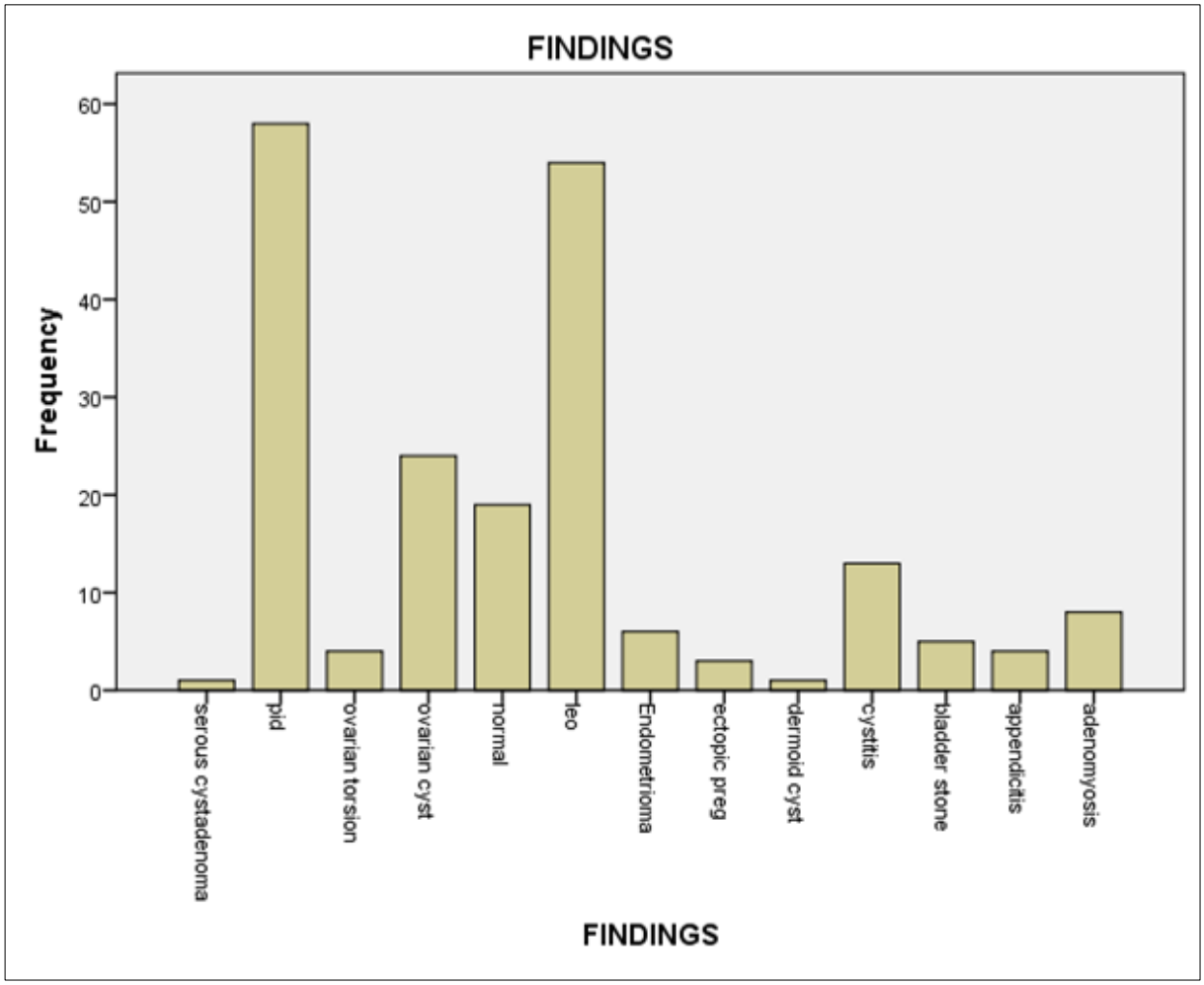


Fig 1: Pie chart showing distribution of levels of education.



Key: PID- pelvic inflammatory disease, Leo- leiomyoma

Fig 2: bar chart showing the pelvic ultrasound findings

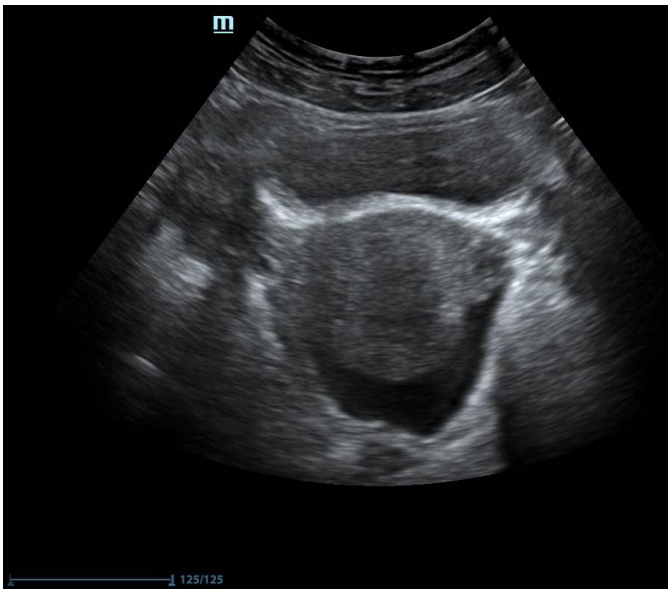


Fig 3: A transverse pelvic (transabdominal) grey scale ultrasound image showing fluid collection in the pouch of Douglas in a patient with pelvic inflammatory disease.

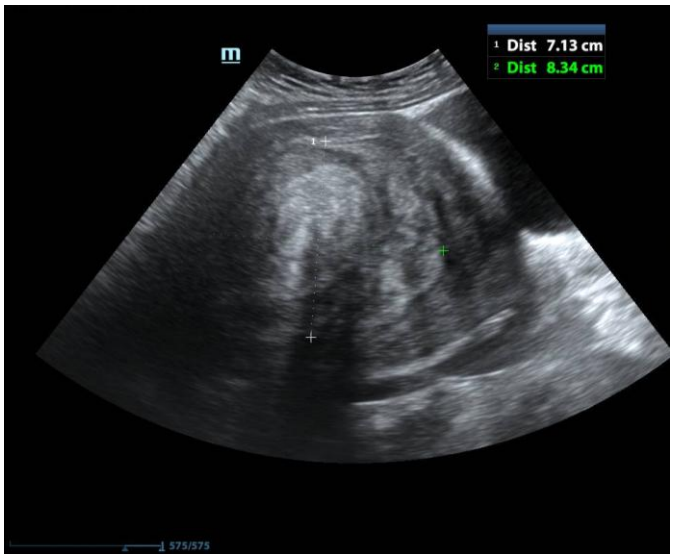


Fig 4: A longitudinal pelvic (transabdominal) grey scale image showing a well defined echocomplex mass with posterior acoustic shadows from calcific deposit in the posterior wall of the uterus in a 32 year old patient with Leiomyoma.

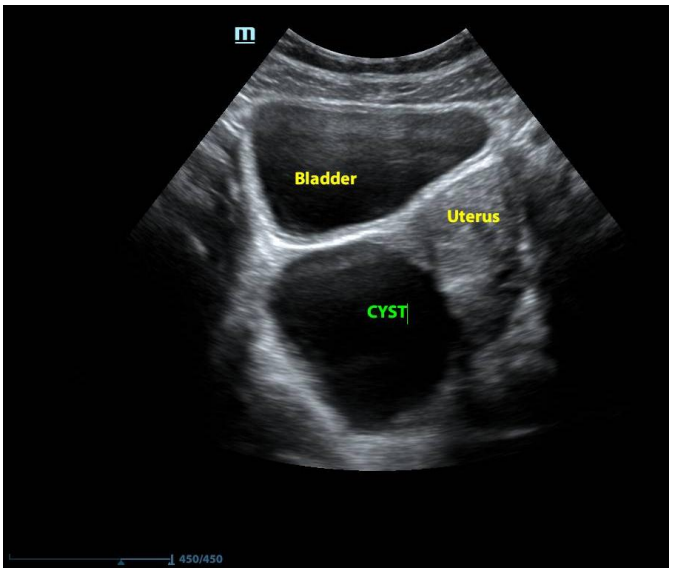


Fig 5: A transverse pelvic (transabdominal) grey scale ultrasound image showing a well defined thin-walled cystic (anechoic) mass in the right adnexea. No septations noted. This was noted in a 19 year old woman with right simple ovarian cyst.

4. Discussion

Chronic pelvic pain is a common ailment affecting up to one in six of the adult female population [3]. The conglomeration of clinical conditions that present with pelvic pain in premenopausal women are mainly gynaecologic related diseases. The result from this study showed that patients within the age group 21-30 years had the highest frequency of pelvic pains with 37% (n=74), followed by patients within the age group of 31-40 years who had 33% (n=66). This could be attributed to increased sexual activity or hyperactivity of hormonal secretion by the patient in this age group which could predispose them to increased rate of sexually transmitted diseases. This finding agrees with a retrospective ultrasonographic pelvic pain study of 1035 patients in Aminu Kano Teaching Hospital, Kano, Nigeria, by Yusuf *et al*. [4] who reported the same mean age of 31.6 years and a high prevalence of diseases within the age group 30-39 years though their subjects consisted of both premenopausal and postmenopausal women.

Majority of the patients presenting with pelvic pain in this study were the unskilled made up of 38.5% (n=77) of the study population which are generally of lower educational level. Roth *et al*. [5] corroborated this as they found a correlation between a lower educational level and stronger pain ‘’worrying’’ emotional suffering and functional impairment. This may be due to lack of information as regards hygiene and safe sexual activity.

Chronic pain was the most common form of pain observed in this study consisting of 59% (n=118) of the subjects. However, the highest incidence of pelvic pain occurred in the 3rd decade, of which most of the patients were in the age range of 21-30 years. A study done by Mathias *et al*. [6] buttressed this finding by stating that chronic pain is a common problem that affects approximately 1 in 7 women. This may be due to the fact that these women believe that it may resolve with time and self-medicate without consulting a Physician. Therefore they sought for medical care late when the pain persisted. At the end of the day, some of them may have by-passed the doctors by presenting to the Radiology department on self-referral for an ultrasound evaluation as observed in 45 (22.5%) of the study population.

The result showed that 9.5% (19) of the patients had normal findings, hence no pathology was discovered. This is similar to the study by Ham *et al*. [7], who corroborated this when they monitored patients who initially presented with pelvic pain and apparently had normal findings for 6-21 months. They confirmed that when there is a normal sonographic finding, there is rarely an organic diagnosis. Hence, women with pelvic pain who have no anatomic abnormalities as assessed by a routine gynaecologic examination also are unlikely to have pelvic pathology when evaluated by ultrasonography.

Pelvic inflammatory disease was the most frequent feature in this study observed in 29% (n=58) with the highest occurrence in the 3rd decade. This is similar to the work by Timor-Tritsch [8], who showed that pelvic inflammatory disease, is the most common cause of pelvic pain in women of reproductive age.

Uterine leiomyoma was also prevalent in the study subjects. Common locations included posterior wall and anterior wall of the uterus. Yusuf *et al*. [4] equally observed a high prevalence of uterine leiomyoma in a similar study.

A study done in America by Brusch [9] found out that approximately 24-40% of women in United States between 20 to 40 years have had urinary tract infection. This study agrees with it as it showed the highest occurrence of Cystitis within the age group of 21-30 years. This may be due to the fact that a woman’s urethral opening is much nearer the anus or may be, these group of women are sexually active, and have a higher risk of bacteria gaining access into the urethra. It may also be due to insertion of tampon or the use of diaphragm for contraception.

In this study, 54% (n=108) of the study population had co-morbidity in the form of low back pain, peptic ulcer disease (upper abdominal pain), knee pains, flank pain, hypertension and Diabetes Mellitus. A Norwegian study[10] agrees with this as they reported a high co-morbidity of musculoskeletal diseases with chronic pelvic pain. This may be due to depression which usually occurs with pain. Therefore, pelvic pain may cause depression which subsequently causes low back pain and other musculoskeletal pain.

Some limitations were encountered in the course of this research which affected the study population. There was incessant power outage which hampered the study because it made patients to be uncomfortable and subsequently increased the patients’ waiting time and thereby led to recurrent depletion of the study population. In addition, no control group was used for this study for comparison which would have enabled us rule out incidental cases.

5. Conclusion

Pelvic inflammatory disease is the commonest cause of pelvic pain in premenopausal women presenting for ultrasound scan in our environment. Other common findings of the study were uterine fibroids and ovarian cysts. Pelvic pain is a medical condition that disrupts daily activities. It is seen mostly among unskilled (undergraduate) single women who should be regularly screened for the various sexually transmissible infections.

Patients presenting with pelvic pain should be routinely evaluated with ultrasound scan as more detailed assessment of the pelvis and its structures can be made thereby making identification of the various findings associated with pelvic pain easier and in turn aiding in proper diagnosis and treatment options.

6. Acknowledgement
We acknowledge all our patients who participated in this study and our colleagues in the department of radiology who assisted in recording our findings as the data were being collected.

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