

Original Article

Evaluation of Common Ultrasound Findings of Female Patients with Pelvic Pains in Port-Harcourt Metropolis

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ABSTRACT:

Background: Pelvic pain is known well as a common symptom of women of all ages mostly and is often associated with morbidity and even mortality. Pelvic pain may be either acute or chronic and may be due to a wide spectrum of causes. This work was designed to evaluate common pelvic pain among female patient of child bearing age in Port-Harcourt Metropolis using ultrasound modality. **Materials and Methods:** A retrospective non-experimental design was adopted to analyzed result of data collected from Radiology Departments of selected Health facilities in Port-Harcourt Metropolis, Rivers State. The study was done with a sample size of 400 conveniently selected and the data collected using request form and patient's folders who were diagnosed of some common pelvic pain complications such as Ovarian cyst, Pelvic Inflammatory Disease (PID), Leiomyoma, Hydrosalpinx, Endometritis, Endometrioma, Endometriosis, Retained Product of Conception (RPOC), Uterine Adhesion, Uterine Synechiae, Dermoid cyst, Hemorrhagic cyst and Salpingitis using ultrasound from 2016-2019 in Port-Harcourt Metropolis, Rivers State. The data was analyzed using simple percentage, mean, standard deviation and standard error. The findings were represented in graphics (bar chart), and statistical calculation inputted in micro-soft excel 2017, SPSS and ANOVA for easy comprehension. **Discussions:** Findings from the study conducted shows that out of 400 out patients (women) diagnosed of pelvic pain complications from 2016-2019, PID was the most prevalent pelvic pain complications with 130(32.5%) cases; while Salpingitis and Hemorrhagic cyst were the lowest with 1(0.25%) cases. The study also showed that pelvic pain was most prevalent 82(20.5%) in women under the age of 33-37 years. 2019 recorded the highest cases of pelvic pain complications 159(39.75%), while 2017 recorded the least cases 69(17.25). **Conclusion:** In this study, TAS was widely used 226(56.5%) than TVS which had 174(43.5%) in the diagnoses of pelvic pain. Ultrasound is an important imaging modality for the diagnosis of acute pelvic pain, as it can easily show the causes of pelvic pain. It is readily availability, affordable and radiation free.

Keywords: Descriptive study, Ultrasound, Pelvic pains, Female, Port Harcourt.

1. INTRODUCTION

Pelvic pain is known well as a common symptom of women of all ages mostly and is often associated with morbidity and even mortality [1]. Pelvic pain may be either acute or chronic and may be due to a wide spectrum of causes. No matter what the underlying cause is, a through history and physical examinations are critical [2].

Ultrasound is the imaging equipment or rather modality of choice in women presenting with pelvic pain. Then transabdominal and transvaginal ultrasound scan are ideal for diagnosis in both the emergency room and the out-

patients setting given the relatively high sensitivity due to lack of ionizing radiation, it is relatively low in cost and widespread availability [3].

Moreover, the female pelvis is divided anatomically into two bony parts: false pelvis (above the pelvic brim and has no obstetric importance. The true pelvis: below the pelvic brim and related to the child-birth, the female pelvic area contains a number of organs and structures: The endometrium, uterus, ovaries, cervix, vagina, vulva and fallopian tube [4]. A routine female pelvic examination of an ultrasound scan should include transabdominal and transvaginal. As reported by Walvekar & Hegdepatil, [5] transvaginal scan provides a

more detailed evaluation of structures not well seen by transabdominal ultrasound study, including the ovaries and the endometrial canal. Transvaginal scanning technique separates adjacent structures from a lesion to help identify its origin as well as determine organ mobility, determine site of maximal pelvic tenderness and compress the bowel, thereby eliminating artifacts [6].

There are existing works on similar studies done by previous authors [7-11].

2. MATERIALS AND METHOD

2.1 Research design

The research work was a retrospective non-experimental design.

2.2 Method of Data Collection

Data was collected from scan records of four (4) different diagnostic centers namely; Nwiko Medical Diagnostic Laboratory Ltd, Total Check Diagnostic Center, Sudi Medical Services and Safe Motherhood Diagnostic Center with their patients request form Indicating, age, gender, clinical history and sonologist's report form indicating diagnosis of female patients age 18-45years with pelvic pains between 2016-2019.

2.3 Sample Size

The sample size for this research was 400 out-patients with pelvic pains in different diagnostic centers in Port-Harcourt metropolis from 2016-2019 records.

2.4 Sample Size Determination

The sample size was determined using Slovin's Formula Sampling Technique.

$$n = \frac{N}{1+Ne^2}$$

Where: n=sample size

N=Total population size of Port-Harcourt (2019)

e=margin of error, 1=constant value, n=?, N=2873000,

e=0.05, showing 95% confidence level

$$n = \frac{2873000}{1+2873000 \times 0.05^2} = \frac{2873000}{7103.5} = 400$$

$$n = 400$$

2.5 Sampling Technique

Convenient sampling technique was adopted for the study.

2.6 Scope of the Study

The scope of the study was of female patients between the ages of 18y-45years of an existing record from 2016-2019 in Port-Harcourt metropolis.

2.7 Method of Data Analysis

The data collected was analyzed using microsoft excel 2017 to determine the causes of pelvic pains as well as the distribution according to age group and the prevalence. SPSS (Statistical Package for Social Science), and ANOVA test was used in the analysis of the hypothesis.

3. RESULT

The findings on pathological causes of pelvic pain on ultrasonographic examination in female patients showed in table 1 and figure 1, that PID (pelvic inflammatory disease) was the most prevalent cause of pelvic pain 130(32.5%), while Salpingitis and Haemorrhagic cyst had the same prevalence value 1(0.25%). On age-group classification of female patients with pelvic pain table 2 and figure 2, revealed that pelvic pain was most prevalent in women within the age of 33-37 years. In table 3 and figure 3 on pathological conditions base on pain rating of female patient with pelvic pain, it was revealed that ovarian cyst with was the most prevalent condition causing more pelvic pain among women, while three other conditions like Amenorrhagea, Uterine Adhesion and Ovarian Mass had the lowest rate of female pelvic pain among others.

In table 3 under figure 3 on pathological conditions base on pain rating of female patient with pelvic pain, it was revealed that ovarian cyst was the most prevalent condition causing pelvic pain among women, while three other conditions like Amenorrhagea, Uterine Adhesion and Ovarian Mass had the lowest rate of pelvic pain among females.

Moreover, from the result (findings) under ultrasonographic technique of female pelvic pain examination, TAS (transabdominal scan) was the most frequent technique used, while TVS (transvaginal scan) technique was the lowest (least). But on sonographic image quality and best sonographic female pelvic examination, TVS technique was found to be the best compared to TAS technique

Table 1: Pathological Conditions causing Female Pelvic Pain Sonographically and the Prevalence

Pathology	No. Patients	Mean	%	S. D	SE
PID	130	8.125	32.5	27.11	6.77
RPOC	77	4.8125	19.25	13.51	0.87
Ovarian Cyst	73	4.5625	18.25	12.39	3.09
Hydrosalpinx	27	1.6875	6.75	0.51	0.12
Leiomyoma	20	1.25	5	1.02	0.255
Endometritis	21	1.3125	5.25	1	0.25
Endometrioma	14	0.875	3.5	2.83	0.70
Dermoid Cyst	11	0.6875	2.75	3.61	0.90
Uterine Adhesion	6	0.375	1.5	4.90	1.225
Uterine Synaechiae	5	0.3125	1.25	5.16	1.29
Polycystic Ovary	5	0.3125	1.25	5.16	1.29
Ovarian Mass	4	0.25	1	5.42	1.355
Endometriosis	3	0.1875	0.75	5.67	1.41
Adnexa Mass	2	0.125	0.25	5.93	1.48
Haemorrhagic Cyst	1	0.0625	0.25	6.19	1.54
Salpingitis	1	0.0625	0.25	6.19	1.54
Total	400	25	100	106.24	26.56

Table 2: Age Group Classification of Female Patients with Pelvic Pain

Age(yrs)	No. Patients	%	Mean	S. D	SE
18-22	61	15.25	10.16	2.53	1.03
23-27	59	14.75	9.83	3.42	1.40
28-32	77	19.25	12.83	4.62	1.89
33-37	82	20.5	13.66	6.86	2.81
38-42	65	16.25	10.83	0.73	0.29
43 & above	56	14	9.33	4.76	1.95
Total	400	100	67	29.92	9.37

Table 3: Pathological Condition based on Pain Rating according to patients complain

Pathology	Pain Rating	Total No.	Total %	Mean	S. D	SE
Ovarian Cyst	10 30 19 41	100	25	6.25	19.36	4.84
RPOC	8 32 24 6	70	17.5	4.375	12.13	3.03
PID	- 34 22 1	66	16.5	4.125	10.58	2.64
Polycystic Ovary	3 24 13 16	62	15.5	3.875	9.55	2.38
Endmetritis	9 12 7 -	22	5.25	1.375	0.77	0.19
Salpingitis	- 11 4 5	20	5	1.25	1.288	0.322
Haemorrhagic Cyst	- 7 5 2	14	3.3	0.875	2.83	0.70
Endometriosis	- 7 4 -	11	2.75	0.6875	3.61	0.90
Hydrosalpinx	- 3 1 4	8	2	0.5	4.38	1.09
Uterine Synechia	- 4 3 -	7	1.75	0.4375	4.64	1.16
Endometrioma	- - 4 2 6	6	1.5	0.375	4.90	1.22
Dermoid Cyst	1 3 2 -	5	1.25	0.3125	5.15	1.28
Leiomyoma	3 - 1 -	4	1	0.25	5.42	1.355
Ovarian Mass	- - 2 -	2	0.25	0.125	5.93	1.48
Adhesion Mass	2 - - -	2	0.5	0.125	5.93	1.48
Uterine Adhesion	- 2 - -	2	0.5	0.125	5.93	1.48
Total	45 169 109 77 400	100	25	102.39825	59	15.25

Source: Author's Computations

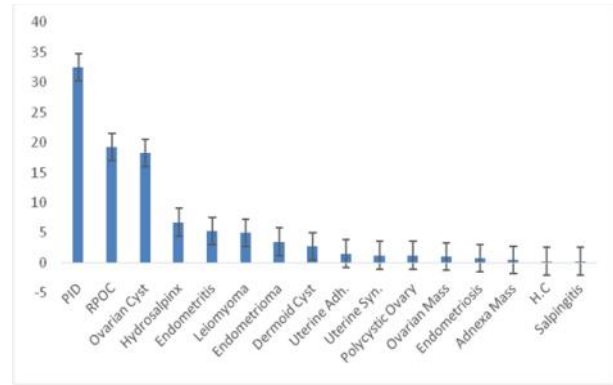


Fig 1: Pathological Conditions causing Female Pelvic Pain Sonographically and the Prevalence.

In figure 1, the pathological conditions leading to pelvic pains were shown. Patients with PID (pelvic inflammatory disease) was 130(32.5%) being the most prevalent of all, while salpingitis and haemorrhagic cyst with the same prevalence value 1(0.25%) were found the least among all.

Table 4: Clinical History of Female Patients with Pelvic Pain

History	No. Patient	%	Mean	S. D	SE
Pain	130	32.5	21.66	28.32	11.60
Amenorrhea	77	19.25	12.83	4.62	1.89
Menorrhagia	72	18	12	2.38	0.97
Oligomenorrhea	49	12.25	8.16	7.89	3.23
Dysmenorrhea	38	9.5	6.33	14.60	5.98
Leiomyoma	34	8.5	5.66	12.81	5.25
Total	400	100	67	70.62	28.94

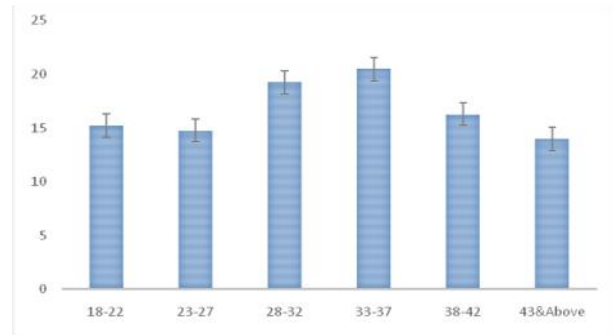


Fig 2: Age Group Classification of Female Patients with Pelvic Pain

In figure 2 above, frequency of the various age groups was seen. Age groups 18-22yrs was 61(15.25%), 23-27yrs 59(14.75%), 28-32yrs 77(19.25%), 33-37yrs 82(20.5%), 38-42yrs 65(16.25%), and 43yrs& above were 56(14%).

Table 5: Ultrasonographic Technique of Pelvic Pain Examination

Technique	No. Patients	%	Mean	S. D	SE
TAS	226	56.5	113	26	18.43
TVS	174	43.5	87	26	18.43
Total	400	100	200	52	36.87

Table 6: Indicate the Year with the Highest Rate of Pelvic Pain among Female Patients in Port-Harcourt Metropolis

Year	No. Patient	%	Mean	S. D	SE
2019	159	39.75	39.75	34.06	17.03
2016	87	21.75	21.75	50.22	25.11
2018	85	21.25	21.25	49.07	24.53
2017	69	17.25	17.25	17.89	8.94
Total	400	100	100	151.24	75.62

Table 7: Summary Statistics for the ANOVA test for Hypothesis

Variation	Degrees of Freedom	Mean Square	F-statistics
Between Treatment	$V_1 = (\alpha - 1) = 2$	$S_b^2 = \frac{0.225}{11} = 0.112$	$F_{rat} = \frac{\phi_b^2}{\phi_w^2} = \frac{0.112}{0.071} = 1.577$
Within Treatment	$V_2 = b(\alpha - 1) = 12$	$S_w^2 = \frac{0.847}{12} = 0.071$	$F_{0.05} = 3.68$
Total Mean	$V_3 = ab - 1 = 11$	$S^2 = 1.072$	

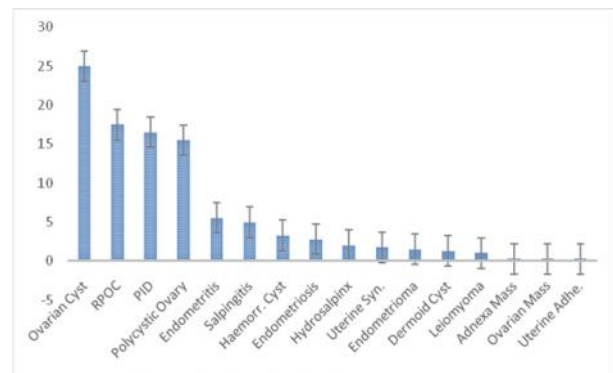


Fig 3: Histogram showing pathological condition base on pain rating of female patients with pelvic pain.

In the figure 3 above, the pathological condition of female patients on pain rating of pelvic pain, revealed that Ovarian Cyst were 100(25%) respondents, RPOC 77(17%) respondents, PID 66(16.5%) respondents, Polycystic Ovary 62(15.5%) respondents, Endometriosis 11(2.75%)

respondents, Hydrosalpinx 8(2%) respondents, Uterine Synechiae 7(1.75%) respondents, Endometrioma 6(1.5%) respondents, Dermoid Cyst 5(1.25%) respondents, while Uterine Adhesion, Ovarian Mass and Adnexa Mass 2(0.25%).

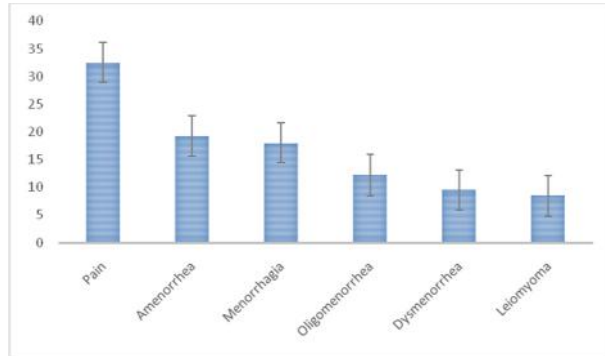


Fig 4: Indicating Clinical History of Female Patients with Pelvic Pain

In figure 4 concerning clinical history for female patients on pelvic ultrasonographic examination, those with clinical history that indicate pain was 130(32.5%), Amenorrhoea 77(19.25%), Menorrhagia 72(18%), Oligomenorrhoea 49(12.25%), Dysmenorrhoea 38(9.5%) and Leiomyoma 34(8.5%) respondents respectively.

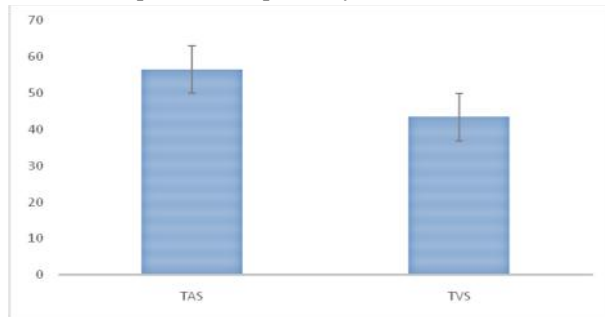


Fig 5: Ultrasonographic Technique of Pelvic Pain Examination

In figure 5 the result indicates that TAS 226(56.5%) and TVS had 174(43.5%).

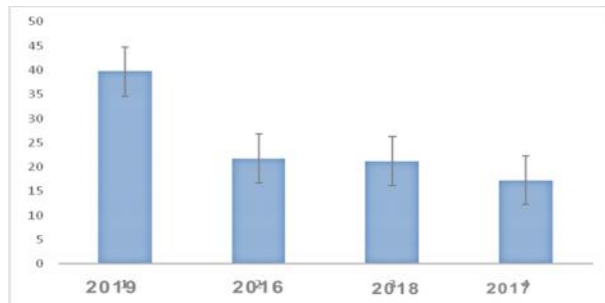


Fig 6: Indicate the Year with the Highest Rate of Pelvic Pain among Female Patients in Port-Harcourt Metropolis.

In figure 6 concerning the year bracket for research of female pelvic Pain, year 2019 were 159(39.75%), year 2016 87(21.75%), 2018 85(21.25%) and year 2017 69(17.25%).

4. DISCUSSION OF FINDINGS

Acute Pelvic Pain (APP) is one of the most common complaints that gynaecologists, general surgeons and emergency service specialists encounter and for female

patients to visit the emergency service. In general, APP is experienced in the lower abdomen or pelvis and lasts less than three months.

Pathological causes of pelvic pain on ultrasonographic examination in female patients as seen in table 1 and figure 1, showed that PID (pelvic inflammatory disease) was the most prevalent cause of pelvic pain, followed by salpingitis and haemorrhagic cyst with the same prevalence value. This finding corroborates the result of Ishihara *et al* [7], which showed that Haemorrhagic Ovarian Cyst (HOC) is often involved in acute pelvic pain and that PID constitute 41.7% of cases. This current study showed that Salpingitis and Haemorrhagic ovarian cysts were the least diagnosed gynaecologic conditions presenting with an acute abdomen. This was also consistent with the study of Gupta *et al.*, [12] on pelvic pain and that of Allison and Lev-Toaff [8] on gynaecologic disorders in the woman with a negative pregnancy test who presents with acute pelvic pain include acute Pelvic Inflammatory Disease (PID), functional ovarian cysts, ovarian endometriomas and adnexal cyst. In addition, our study showed that there were 77 ovarian pathologies and 30 fallopian tube pathologies in Adnexal fluid collection. Considering Ovarian masses, 4 (1%) of ovarian masses were on right side and 2 (0.25%) were on left side. This also agrees with Mawaldi *et al.*, [9] who stated that the right ovary is more likely than the left to undergo torsion. 85.7% of the ovarian masses had size between 3 and 5 cm; and 14.3% had size more than 5 cm. This also agrees with the reports of Jain [10] who maintained that the average diameter of the haemorrhagic ovarian cyst is 3.0 to 3.5 cm. On age-group classification of female patients with pelvic pain under table 2 and figure 2 revealed that women under the age of 33-37 years with 82(20.5%) had pelvic pain as the most prevalent symptom which was probably due to some pre-disposing factors like prolonged untreated infection, early marriage and child-birth, while the ones within the age of 43-45 years recorded the lowest symptoms of pelvic pain resulting from menopausal stage (phase). This correlated well with previous study done by Kurt *et al.* [11] that showed the mean age of 66.9±66.01 years from their study.

In table 3 under figure 3 on pathological conditions based on pain rating of female patient with pelvic pain, it was revealed that ovarian cyst was the most prevalent condition causing pelvic pain among women, while three other conditions like Amenorrhoea, Uterine Adhesion and Ovarian Mass had the lowest rate of pelvic pain among females.

Moreover, from the result (findings) under ultrasonographic technique of female pelvic pain examination, TAS (transabdominal scan) was the most frequent technique used, while TVS (transvaginal scan) technique was the lowest (least). But on sonographic image quality and best sonographic female pelvic examination, TVS technique was found to be the best compared to TAS technique.

5. CONCLUSION

The highest rate of pelvic pain among female patients in Port-Harcourt Metropolis occur in year 2019 with 159(39.75%) cases of female patients presented with pelvic pain, while year 2017 had the lowest rate 69(17.25%) with pelvic pain in Port-Harcourt Metropolis.

The study also showed that pelvic pain was most prevalent 82(20.5%) in women under the age of 33-37 years. The study also showed that PID was the most prevalent pelvic pain complications with 130(32.5%) cases; this was probably due to prolonged untreated infections, while Salpingitis and Hemorrhagic cyst were the lowest with 1(0.25%) cases.

7. ACKNOWLEDGMENT

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CONSENT FOR PUBLICATION: Not applicable.

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HUMAN AND ANIMAL RIGHTS: Not applicable.

RECOMMENDATIONS : We recommend that the findings of this study be used to plan interventions that would educate and encourage people of Port Harcourt metropolis seek medical help early to avoid complications resulting from protracted untreated infections which will in turn help to reduce the prevalence of pelvic pains in women.