

## **Examining Acute Pelvic Pains among Patients in Two Selected Hospitals in The Western Region Of Ghana**

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### **Abstract**

Pelvic pain is one of the commonest Out-Patient Department (OPD) cases in most hospital. Comparably, women experience pains in one or two parts of the body which may be due to excess stretch of the muscles, minor or major accidents and old age than men. The main objective of the study was to examine acute pelvic pains among patients in the Effia-Nkwanta and European hospitals in Takoradi. Descriptive survey was employed for the study. The population of the study comprises all patients who were undergoing pelvic ultrasound at Effia-Nkwanta and European hospitals in Takoradi as part of their management plan for pelvic disease or pain. A purposive sampling technique convenience sampling were used to select 400 patients for the study. The study employed the collection of previous pelvic ultrasound reports and reports obtained during the time of the study to obtain the data from the Radiologic Department at select hospitals with the SAL-30 A (Toshiba, Japan) and Philips Clear Vue real time ultrasound machines. The study found out that females are prone to pelvic pain than males, the most common presenting pathologies that cause pelvic pain are uterine fibroid, PID, Ectopic pregnancy, follicular cyst, BPH, Cystitis, colitis and Appendicitis and the organs that are mostly affected in cases of pelvic pain are uterus, ovaries, prostate, colon and bladder. It was therefore recommended that patients should be educated and encouraged to report to the hospital when there is any sign or symptom of pelvic pain.

*Keywords: pelvic pain; ultrasound; diseases; prostrate; Effia Nkwanta ; european hospitals*

### **Introduction**

Pelvic pain is one of the commonest Out-Patient Department (OPD) cases in most hospital. Comparably, women experience pains in one or two parts of the body which may be due to excess stretch of the muscles, minor or major accidents and old age than men. Acute Pelvic pain is a common symptom in women of all ages. However, there are cases of pelvic pains in males. Ultrasonography is the least invasive investigative tool available to the clinician. Transvaginal probes produce high-resolution images of the pelvic organs, providing reliable and reproducible information without the need for a full bladder. It therefore means that pelvic pain does not connote only pains of the pelvic alone but all areas associated with the pelvic part of the human body (1).

Treede, et al., (2015) stated that chronic pain has been recognized as pain that continues past normal healing time and hence lacks the acute warning function of physiological

nociception. Usually, pain is regarded as chronic when it lasts or recurs for more than 3 to 6 months. Chronic pain is a frequent condition, affecting an estimated 20% of people worldwide and accounting for 15% to 20% of physician visits. A comprehensive examination should include clinical history, physical examination, laboratory result, and suitable imaging studies, all of which should be accessible to the radiologist for assessment (2). The selection of imaging in the evaluation of pelvic pain is determined by the clinically suspected differential diagnosis after careful evaluation (1).

A pelvic ultrasound is a noninvasive diagnostic exam that produces images that are used to assess organs and structures within the female and male pelvis. A pelvic ultrasound allows quick visualization of the pelvic organs and structures including the uterus, cervix, vagina, fallopian tubes ovaries, bladder, prostate and urethra. Ultrasound uses a transducer that sends out ultrasound waves at a frequency too high to be heard. The ultrasound transducer is placed on the skin, and the ultrasound waves move through the body to the organs and structures within. The sound waves bounce off the organs like an echo and return to the transducer. The transducer processes the reflected waves, which are then converted by a computer into an image of the organs or tissues being examined (3).

Further imaging such as Computed Tomography (CT), Magnetic Resonance Imaging (MRI) including MR Decography or MR Neurography, positron emission tomography (PET) and Nuclear Medicine (Radionuclide) may be useful for the assessment of pelvic pain. However, the major advantages of ultrasound (US) over other medical imaging equipment or modalities is that ultrasound is safer, low cost, portable, non-ionizing, non-invasive and non-traumatic. This has made diagnostic ultrasound machine become more popular and powerful tool than the other diagnostic tools (4). Ultrasound is an ideal front-line tool for diagnostic and evaluative imaging in the field of medicine and is considered a safer-tool due to its lack of ionizing and mutagenic biological effects on internal body tissues that may lead to the development of benign or malignant neoplastic diseases. It is also a dynamic and an interactive examination that causes diminutive or no extra pains to the patient.

Acute pelvic pain can reduce the quality of life and general wellbeing, there is a need to establish the true extent of the problem by performing a systematic review of all community-based prevalence studies. Ultrasound is a very good modality for acute pelvic pain, as it can easily diagnose and characterise the causes of pelvic pain. The wide availability, radiation free

and cost effectiveness makes it a first line investigation in acute pelvic pain. The main objective of the study is to analyze the common ultrasound findings in patients that present with pelvic pain in the Effia-Nkwanta and European hospitals in Takoradi.

## **Research Methods**

### **Research Design**

The present study adopted the quantitative approach. A descriptive survey deals with the collection of data so as to provide answers to the research questions or hypothesis. The descriptive survey presents issues as it is on the ground with less or no personal sentiments. That is to say, a descriptive study reports findings the way they exist. Typical descriptive studies are concerned with the assessment of attitudes, opinions, demographic information, conditions and procedures. The descriptive survey basically enquires into the status quo. It attempts to measure what exists with respect to variables or conditions in a situation . The population of the study comprises all patients who were undergoing pelvic ultrasound at Effia-Nkwanta and European hospitals in Takoradi as part of their management plan for pelvic disease or pain. These patients should fit into the inclusion criteria of no history of trauma and female with no pregnancy. A purposive sampling technique were used to select Effia-Nkwanta and European hospitals in Takoradi because they are the leading hospitals in the Sekondi-Takoradi metro with sophisticated equipments. With this it was possible for the researcher to have records of the status of the patients with regard to pelvic pains in the municipality. A purposive sample is a non-representative subset of some larger population, and is constructed to serve a very specific need or purpose (5) also stated that purposive sample is used in situations where a specific target is to be reached. That is when respondents are expected to meet criteria for being in the sample.

A convenience sampling was used to select 400 patients who visit the two facilities for services. The respondents were selected as and when they visit the facilities. According to Gyamfi (2018), convenience sampling involves choosing the nearest or available individuals to serve as respondents and continuing the process until the required sample size has been obtained. This type of sampling is employed in qualitative research and in other studies where representativeness is not an issue. The sample size for the study was 400 and the use of convenience sampling technique was employed since not all people who had pelvic scan were recruited in this study but only those who gave us the required information for the study.

Inventory was used as the main instrument for the study for acquisition of data. The study employed the collection of previous pelvic ultrasound reports and reports obtained during the time of the study to obtain the data from the Radiologic Department at select Effia-Nkwanta and European hospitals in Takoradi. SAL-30 A (Toshiba, Japan) and Philips Clear Vue real time ultrasound machines with a 3.5-5.0 MHz curvilinear probe was used to scan participants. A brief interview was used to collect the bio-data on the patients at the sonography departments. Ethical approval or clearance was sought from the UCCIR and research protocol review committee of the imaging board of the allied health sciences of Klintaps University College prior to the enrolment before the study was carry out. The nature and purpose of the study was explained to participants and only participants whose consent were giving were part of the study and appeared their signatures to the consent forms were recruited. The privacy of the patient was assured by accommodating only the Sonographer and the investigators in the scanning room. The researcher spent one month at each facility to take records of the data needed for the study as the patients visits the unit. Patients were asked to drink water 30-45minutes prior to the examination as in routine pelvic scan. This study was routinely pelvic scan and each examination took about 15-20 minutes.

The standard statistical analysis software, Statistical Product and Service Solution (SPSS) was used to analyze the data that was gathered. Frequencies and percentages were used analyze data on the research questions. This is because the research question sought to find the distribution of pelvic pain and related diseases with respect to gender.

## Results

### Analysis of Research Questions

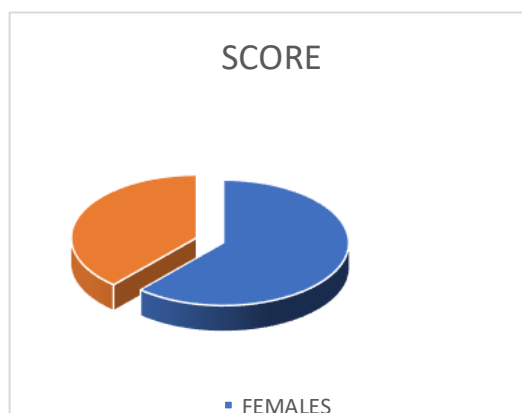
Research question one sought to determine the distribution of pelvic pain with respect to gender. That is to find out which gender is predominant with regard to pelvic pains. Frequency and percentages and pie charts were used to analyze the data on the research question. The frequency and percentage of the distribution is presented in Table 1.

**Table 1: Distribution of pelvic pain with respect to gender**

<b>Gender</b>	<b>Number</b>	<b>Percentage</b>
Female	246	61.5%
Male	154	38.5%
<b>Total</b>	<b>400</b>	<b>100.0</b>

Table 1 shows the distribution of pelvic pain among gender. The table shows that that of the 400 patients, about 246 constituting 61.5% were females who reported higher cases of pelvic pain. Whereas 154 (38.5%) of the reported pelvic pain were males. A pie chart that graphically shows the distribution is presented in Figure 3.

**Figure 4: Distribution of Gender with Pelvic pain**



This means that the number of females with pelvic pain out number that of male. It can be said that females are prone to pelvic pain than males. This may be due to the numerous gender roles such child birth and care taking, domestic chores that put pressure of the pelvis.

Pelvic Pain is one of the most common complaints that gynecologists, urologists general surgeons, sonographers and emergency service specialists encounter and for female patients to visit the emergency service. In general, acute pelvic pain is experienced in the lower abdomen or pelvis and lasts less than three months and it is the most common cause of all pelvic pain especially in the reproductive non-pregnant females. This current study evaluated 400 patients in both males and females.

In this study, there were 154 males and 246 females with the male-to-female ratio of 1:2, so predominantly the pelvic pain occurred in female patients. The statistic of our data showed that the highest incidence of pelvic pain occurred in the females 246 (61.50%). This finding support existing literature as stated by(Liddle & Davies, 2007) who stated in their findings that women of child bearing age are most affected with Pelvic pain as a result of endocrine and mechanical factors. This also goes in accordance with the previous study by (Newton, 1990) saying men rarely experience pelvic discomfort, whereas women frequently do. Other literatures like that of Kaakaji *et al.*, (2000) and Herter *et al.*, (2002) all agree that women are the most affected with pelvic pain

**Research question two**

The research question sought to determine the distribution of gender with pelvis related diseases. Data were taken from the inventory of patients' health records. Frequencies and percentages was used to analyzed the data. The organs considered are related to the pelvis. These were ovary, uterus, prostrate, bladder, colon. The distribution of diseases in the organs around the pelvis due to gender is presented in Table 2.

**Table 2: Distribution of gender affected with diseases in the organs.**

Variables (Organs)	Gender	
	Male (n/%)	Female (n/%)
Ovary	--	71(17.75%)
Uterus	--	145(36.25%)
Prostate	106(26.50%)	--
Bladder	21(5.25%)	6(1.50%)
Colon	27(6.75%)	24(6.00%)
<b>Total</b>	<b>154(38.50%)</b>	<b>246(61.50%)</b>

The table 2 shows that pelvic pain diseases in the organs often occur in females than in males. The data revealed that pelvic pain and/or associated diseases in the organs were found to be higher in females than in males constituting a total of 246(61.50%) and 154(38.50%) in the females and males respectively. In females, the uterus had the highest occurring pathology with 145(36.25%) whereas in males, the highest occurring pathology of pelvic pain was recorded in the prostate indicating 106(26.50%). The data also revealed that 71(17.75%) females had pathology in their ovaries which was causing pelvic pain. Again, pelvic pain disease associated with the bladder were common in males with 21(5.25%) than in females with 6(1.50%) respectively. The pelvic pain or diseases in the colon were also found to be higher with 27(6.75%) among males than in females with 24(6.00%) recorded. The distribution of pathologies in the uterus of female is presented in Table 3.

**Table 3: Distribution of gender affected with pathologies in the uterus.**

Variables (Uterus)	Frequency	Percentage (%)
Threatened abortion	2	1.4
Uterine fibroid	85	58.6
Endometrial hyperplasia	1	0.7
Endometrial calcification	1	0.7
Endometriosis	5	3.4
Endometrial polyp	1	0.6

Spontaneous abortion	4	2.8
Incomplete abortion	2	1.4
Pelvic Inflammatory Disease(PID)	37	25.5
Cervicitis	2	1.4
Pregnancy	5	3.4
<b>Total</b>	<b>145</b>	<b>100.0</b>

Source: Field study (2020)

The table indicates that among the 145 patients who had uterine pathologies, 85 of them constituting 58.6% had uterine fibroid. Uterine fibroid was recorded most in female patients who reported to the hospital with pelvic pain. It followed by Pelvic Inflammatory Disease (PID) with 37 patients representing 25.5%. The Threatened abortion, endometrial hyperplasia, endometrial calcification, endometriosis, endometrial polyp, spontaneous abortion, incomplete abortion, cervicitis and pregnancy recorded incidence of 2(1.4%), 1(0.6%),1(0.6%), 5(3.4%), 1(0.6%), 4(2.8%), 2(1.4%), 2(1.4%) and 5(3.4%) respectively. The distribution of pathologies in the ovaries of female is presented in Table 4.

**Table 4: Distribution of gender affected with diseases in the ovaries.**

<b>Variables(Ovaries)</b>	<b>Frequencies</b>	<b>Percentages (%)</b>
Ovarian torsion	2	2.8
Corpus luteal cyst	4	5.6
Follicular cyst	19	26.8
Tubo ovarian abscess	8	11.3
Ectopic pregnancy	30	42.3
Dermoid cyst	8	11.3
<b>Total</b>	<b>71</b>	<b>100.0</b>

Table 4 indicated that ectopic pregnancy is the highest occurring sonographic pathology in the ovaries. Among the 71 ovarian pathologies, ectopic pregnancy was prevalent with 30(42.3%) patients. Follicular cyst recorded 19(26.8%) and it was the second highest recorded in the ovaries. Tubo ovarian abscess and dermoid cyst recorded 8(11.3%) each. Corpus luteal cyst had 4(5.6%) occurrence. The least recorded pathology in the ovary revealed by the data was ovarian torsion which was 2(2.8%). The distribution of pathologies in the prostate of male is presented in Table 5.

**Table 5: Distribution of gender affected with diseases in the prostate.**

<b>Variables (Prostate)</b>	<b>Frequency</b>	<b>Percentages</b>
BPH	98	92.5
Prostate cancer	1	0.9

Prostatitis	7	6.6
<b>Total</b>	<b>106</b>	<b>100.0</b>

Table 5 showed that benign prostate hyperplasia is the highest occurring finding in the prostate. Out of the 106 who reported of prostate, 98(92.5%) were presented with Benign Prostate Hyperplasia and it was the pathology with highest outcome. Prostate cancer and prostatitis recorded 1(0.9%) and 7(6.6%) respectively. In all, prostate cancer is rarely recorded in the hospital than that of BPD and prostatitis. The distribution of gender affected with diseases in the colons is presented in Table 6.

**Table 6: Distribution of gender affected with diseases in the colons.**

Variables (Colons)	Gender	
	<i>Male (n/%)</i>	<i>Female (n/%)</i>
Colitis	10 (37.0%)	17(70.8%)
Crohn's disease	5(18.5%)	1(4.2%)
Appendicitis	12(44.4%)	6(25.0%)
<b>Total</b>	<b>27(99.9%)</b>	<b>24(100.0%)</b>

The table 6 indicated that colitis is the common sonographic finding in the colon. Colitis occurs more in female than males. In all, males recorded the most pathologies in the colon with 27 out of the 51 representing 52.9%. However, in males, appendicitis was common with 12 (44.4%) occurrences. Females recorded 6(25.0%) in appendicitis. Crohn's disease was mostly found in males with 5(18.5%) than females, 1(4.2%). The distribution of gender with disease in the bladder is presented in Table 7.

**Table 7: Distribution of gender and findings in the bladder**

Variables (Bladder)	Gender	
	<i>Male (n/%)</i>	<i>Female (n/%)</i>
Cystitis	21 (100.0%)	4(66.7%)
Ureterocele	--	1(16.7%)
Bladder mass	--	1(16.7%)
<b>Total</b>	<b>21(100.0%)</b>	<b>6(100.0%)</b>

Source: Field Study (2020)

Table 7 showed that Cystitis is the most occurring pathology seen during the research in the Bladder and it was seen to occur most in males than in females. The number of patients who had bladder pathologies were 27 patients approximately (5.25%+1.50%=6.75%. Out of these 28(6.75%) patients, 21(5.25%) was recorded in men and 6(1.50%) was recorded in females.



Cystitis was seen both in men and women. However, ureterocele and bladder mass was only found among indicating 1(0.25%).

### **Discussion**

In this study, the most common associated symptom with acute pelvic pain is nausea and vomiting. The next common symptoms are fever, dysuria, vaginal discharge, constipation, hematuria and distension. In clinical signs, tenderness is the most common sign of acute pelvic pain. The rebound tenderness, palpable mass in pelvis, guarding are also seen (6). In their study showed the associated symptoms to be nausea, vomiting, diarrhea, fever, flank pain, dysuria, hematuria, frequency, urgency, vaginal bleeding and vaginal discharge. Andreotti and Harvey (2012) showed that the clinical diagnosis of acute pelvic pain in the female patient can be challenging because of nonspecific signs and symptoms, and imaging has been found to be valuable in narrowing the differential diagnosis (1).

The findings of our study suggest that the uterus is the organ with the highest occurring sonographic findings. This correlates well with the study by Anderson, (2018) that showed that the uterus is the most affected organ in the certain of pelvic pain. A similar research by Bau and Atri (2000) disagreed with the findings, deducing that the common sonographic findings were related to the ovaries. The study cemented the fact that uterine fibroid, pelvic inflammatory disease (PID), ovarian cyst and follicular cyst are the most frequently occurring ultrasound findings in patient with pelvic pain (7).

A study by Sarkodie et al., (2016) confirmed this findings by stating that uterine fibroids are the most common benign tumours affecting premenopausal women and are often associated with considerable hospitalization and morbidity (8). Another research work by Cicchiello et al., (2011) showed that the most common gynecological cause of pelvic pain are adenomyosis, endometriosis, leiomyoma, adhesion and pelvic congestion syndrome (9).

In this study there were total 18 confirmed cases of acute appendicitis, out of which 16 were correctly diagnosed with ultrasound with a sensitivity of 88.9%. It correlates with the study of Birnbaum and Stephanie (2000) who reported sensitivities of 75%–90%, specificities of 86%–100% for the diagnosis of acute appendicitis (10). Out of these, the inflamed appendix was visualized as a non-compressible, aperistaltic tubular structure blind ended with an average diameter of more than 6 mm in cases. It correlates well with the study of (Jerry, Reginald, Wendell, & Dirks, 2005) Jerry, Reginald, Wendell and Dirks (2005) showing that the most

useful finding on ultrasonography that is suggestive of appendicitis is an outer appendiceal diameter of 6 mm or greater on cross section.

In this study, five cases diagnosed on ultrasonography, there were localized collection in the right iliac fossa. Sivit (1993) showed in their study that localized periappendiceal collections are seen in the right lower quadrant or pelvis. Appendicolith was seen in 4 cases (11). It correlated well with Balthazar et al., (1994) study on patients with acute appendicitis revealing appendicoliths in 17% of cases of acute appendicitis. Inflamed appendix presented as heterogeneous mass in right iliac fossa in 6 cases (33.3%). It was ill defined in 4 and well defined in 2 cases. It correlated well with the study of Sivit, (1993) showing periappendiceal mass in 17% of cases of acute appendicitis. Another study by Balthazar et al., (1994) showed paracaecal inflammatory mass and/or abscess in 5 out of 18 cases representing 27.8%. Fluid filled lumen was seen in 8 cases of appendicitis amounting to 44.4%. This correlated well with the study of (Sivit, 1993), in which 47% cases show fluid filled lumen (11).

Enlarged lymph nodes were seen in 2 cases (11.1%) in our study. Kessler et al., (2004) had shown that right lower abdominal quadrant adenopathy is a common reaction to ileal, caecal or appendiceal inflammatory disease that is encountered in both patients with appendicitis and those without it (12). Study by Lem and Nolan (2000) stated that the common sonographic finding in pelvic pain is attributed to the Bladder. Bau and Atri (2000) from their findings in their research work suggested that ectopic pregnancy, appendicitis, diverticulitis and incarcerated hernia are the common ultrasound finding in patient with pelvic pain. This result is however in line with our study (13).

In this study, a total 71 cases of adnexal pathologies constituted acute pelvic pain cases. Pelvic Inflammatory Disease (PID) are the most common in Adnexal pathologies constituting acute pelvic pain. These constitute 37 cases, that is 52.1% of Adnexal lesions in acute pelvic pain. This correlated well with a previous study by (Nippon, 1997), in which salpingitis and hemorrhagic ovarian cysts are most commonly diagnosed gynecologic conditions presenting as an acute abdomen (14). Ectopic pregnancy constituted 30 cases, that is 42.2% of cases. Least common Adnexal pathology constituting acute pelvic pain in this study is ovarian torsion making up only 2.8% of cases (2 cases). It also correlated well with the Brady and Carusi (2016) that Gynecologic 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 torsion (15). In this study, total of 27 patients presented with acute pelvic pain with pathologies related to urinary system. Thickened bladder wall and internal echoes (cystitis) were seen in 25 cases. It correlated well with the study of Sty et al., (1987) which stated that irregular bladder wall thickening is seen in acute cases of urinary tract infections (16) .

Lastly, our study revealed that the prostate is the most common organ affected in areas of pelvic pain in men followed by the bladder, appendix and the colon. The study also showed that Benign Prostatic Hyperplasia (BPH) is the commonest pathology followed by Cystitis, Appendicitis and Colitis. A study by Musa Salim Ahmed et al., (2015) revealed that in a trans-abdominal ultrasound in men a high incidences of BPH, cancer and prostatitis were found which correlate well with our study .

### **Conclusions and Recommendation**

The use of ultrasound as a complementary diagnostic modality (tool) for pelvic pain, in most hospitals in Ghana should be encouraged. Ultrasonography is a non-invasive and non-ionizing imaging tool hence it should be the first line diagnosis in the cases of pelvic pain.

### **Recommendation**

- a. There should be an improvement in the record keeping of ultrasound report.
- b. Patient should be educated and encouraged to report to the hospital when there is any sign or symptom of pelvic pain. This will help reduce the incidence of complications.
- c. Hospital and diagnostic centres should purchase ultrasound machines with higher resolution with affordable price that can be easily accessible by patients.

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