

Figure 2: Number of subjects per tribe

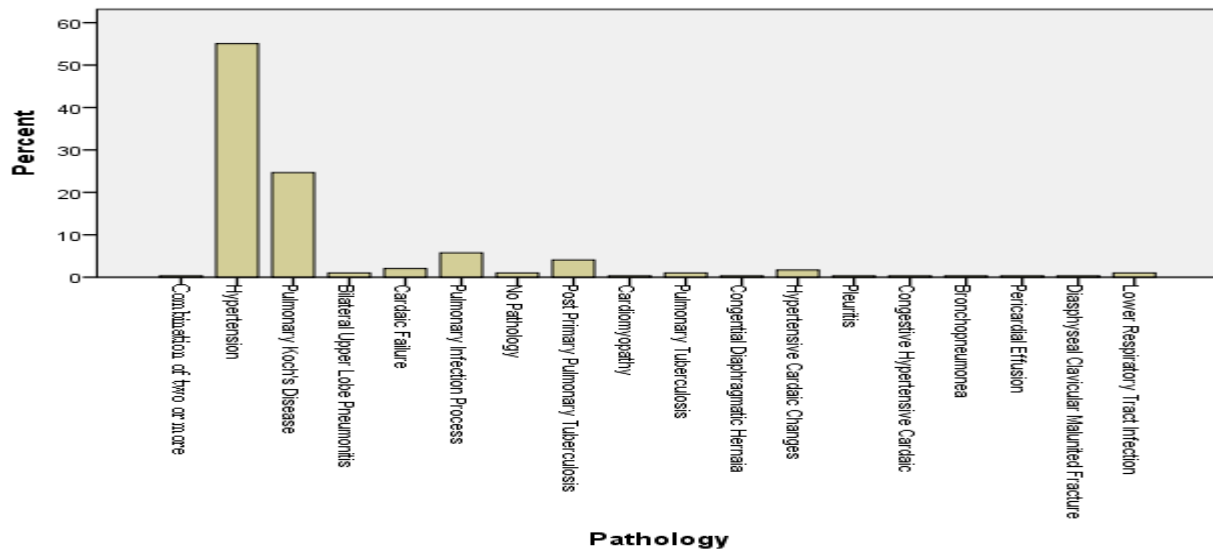


Figure 3: Observed pathologies

Table 1: Prevalence of Chest Pathologies (Gender)

| | | Gender | | | |
|-------------------------------------|----------------------------------|---------------|---------------|--------------|-------|
| | | Male | Female | Total | |
| Pathology | Hypertension | Count | 80 | 83 | 163 |
| | | % of Total | 27.0% | 28.0% | 55.1% |
| | Pulmonary Koch's Disease | Count | 37 | 36 | 73 |
| | | % of Total | 12.5% | 12.2% | 24.7% |
| | Bilateral Upper Lobe Pneumonitis | Count | 1 | 2 | 3 |
| | | % of Total | .3% | .7% | 1.0% |
| | Cardiac Failure | Count | 2 | 4 | 6 |
| | | % of Total | .7% | 1.4% | 2.0% |
| | Pulmonary Infection Process | Count | 11 | 6 | 17 |
| | | % of Total | 3.7% | 2.0% | 5.7% |
| | No Pathology | Count | 1 | 2 | 3 |
| | | % of Total | .3% | .7% | 1.0% |
| Post Primary Pulmonary Tuberculosis | | Count | 7 | 5 | 12 |
| | | % of Total | 2.4% | 1.7% | 4.1% |
| | Cardiomyopathy | Count | 0 | 1 | 1 |
| | | % of Total | 0.0% | .3% | .3% |
| | Pulmonary Tuberculosis | Count | 1 | 2 | 3 |
| | | % of Total | .3% | .7% | 1.0% |
| | Congenital Diaphragmatic Hernia | Count | 1 | 0 | 1 |
| | | % of Total | .3% | 0.0% | .3% |

| | | | | |
|---|------------|-------|-------|--------|
| Hypertensive Cardiac Changes | Count | 1 | 4 | 5 |
| | % of Total | .3% | 1.4% | 1.7% |
| Pleuritis | Count | 0 | 1 | 1 |
| | % of Total | 0.0% | .3% | .3% |
| Congestive Hypertensive Cardiac | Count | 0 | 1 | 1 |
| | % of Total | 0.0% | .3% | .3% |
| Bronchopneumonia | Count | 1 | 0 | 1 |
| | % of Total | .3% | 0.0% | .3% |
| Pericardial Effusion | Count | 0 | 1 | 1 |
| | % of Total | 0.0% | .3% | .3% |
| Diasphyseal Clavicular Malunited Fracture | Count | 0 | 1 | 1 |
| | % of Total | 0.0% | .3% | .3% |
| Lower Respiratory Tract Infection | Count | 3 | 0 | 3 |
| | % of Total | 1.0% | 0.0% | 1.0% |
| Total | Count | 147 | 149 | 296 |
| | % of Total | 49.7% | 50.3% | 100.0% |

Table 2: Prevalence of Chest Pathologies (Age Group)

| | | | Age | | | | | | | | |
|-----------|-------------------------------------|------------|------|------|-------|-------|-------|-------|-------|------|-------|
| | | | 21- | | | | 81- | | | | |
| | | | 1-10 | 30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 | 90 | Total |
| Pathology | Hypertension | Count | 0 | 10 | 18 | 47 | 37 | 42 | 7 | 2 | 163 |
| | | % of Total | 0.0% | 3.4% | 6.1% | 15.9% | 12.5% | 14.2% | 2.4% | 0.7% | 55.1% |
| | Pulmonary Koch's Disease | Count | 1 | 7 | 13 | 13 | 14 | 17 | 5 | 3 | 73 |
| | | % of Total | .3% | 2.4% | 4.4% | 4.4% | 4.7% | 5.7% | 1.7% | 1.0% | 24.7% |
| | Bilateral Upper Lobe Pneumonitis | Count | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 3 |
| | | % of Total | 0.0% | .7% | 0.0% | .3% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% |
| | Cardiac Failure | Count | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 0 | 6 |
| | | % of Total | 0.0% | 0.0% | 0.0% | 1.4% | 0.0% | .7% | 0.0% | 0.0% | 2.0% |
| | Pulmonary Infection Process | Count | 0 | 2 | 6 | 6 | 3 | 0 | 0 | 0 | 17 |
| | | % of Total | 0.0% | .7% | 2.0% | 2.0% | 1.0% | 0.0% | 0.0% | 0.0% | 5.7% |
| | No Pathology | Count | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 |
| | | % of Total | 0.0% | 0.0% | 0.0% | .7% | .3% | 0.0% | 0.0% | 0.0% | 1.0% |
| | Post Primary Pulmonary Tuberculosis | Count | 0 | 0 | 0 | 2 | 7 | 2 | 1 | 0 | 12 |
| | | % of Total | 0.0% | 0.0% | 0.0% | .7% | 2.4% | .7% | .3% | 0.0% | 4.1% |
| | Cardiomyopathy | Count | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |

| | | | | | | | | | | |
|----------------------|-------|------|------|------|------|------|------|------|------|------|
| | % of | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | .3% | 0.0% | 0.0% | .3% |
| | Total | | | | | | | | | |
| Pulmonary | Count | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 3 |
| Tuberculosis | % of | 0.0% | 0.0% | .3% | 0.0% | .3% | 0.0% | .3% | 0.0% | 1.0% |
| | Total | | | | | | | | | |
| Congenital | Count | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Diaphragmatic | % of | 0.0% | 0.0% | .3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | .3% |
| Hernaia | Total | | | | | | | | | |
| Hypertensive | Count | 0 | 0 | 1 | 2 | 1 | 0 | 1 | 0 | 5 |
| Cardaic Changes | % of | 0.0% | 0.0% | .3% | .7% | .3% | 0.0% | .3% | 0.0% | 1.7% |
| | Total | | | | | | | | | |
| Pleuritis | Count | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| | % of | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | .3% | 0.0% | 0.0% | .3% |
| | Total | | | | | | | | | |
| Congestive | Count | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| Hypertensive | % of | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | .3% | 0.0% | .3% |
| Cardaic | Total | | | | | | | | | |
| Bronchopneumonea | Count | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| | % of | 0.0% | 0.0% | .3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | .3% |
| | Total | | | | | | | | | |
| Pericardial Effusion | Count | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| | % of | 0.0% | .3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | .3% |
| | Total | | | | | | | | | |
| Diasphyseal | Count | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Clavicular | % of | 0.0% | 0.0% | 0.0% | 0.0% | .3% | 0.0% | 0.0% | 0.0% | .3% |

| Malunited Fracture | | Total | | | | | | | | | |
|-----------------------------------|------------|-------|------|-------|-------|-------|-------|------|------|------|--------|
| Lower Respiratory Tract Infection | Count | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| | % of Total | .7% | .3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 1.0% |
| Total | Count | 3 | 23 | 41 | 77 | 66 | 65 | 16 | 5 | | 296 |
| | % of Total | 1.0% | 7.8% | 13.9% | 26.0% | 22.3% | 22.0% | 5.4% | 1.7% | | 100.0% |

Table 3: Prevalence of Chest Pathologies (Tribe)

| | | Tribe | | | | | | | | | |
|----------------------------------|--------------|------------|-------|-------|-------|-------|----------|--------|------|------|------|
| | | Urhobo | Igbo | Ijaw | Isoko | Hausa | Itsekiri | Yoruba | Esan | Efik | Tiv |
| Pathology | Hypertension | Count | 52 | 53 | 21 | 16 | 1 | 5 | 3 | 4 | 4 |
| | | % of Total | 17.6% | 17.9% | 7.1% | 5.4% | .3% | 1.7% | 1.0% | 1.4% | 1.4% |
| Pulmonary Disease | Koch's | Count | 23 | 17 | 9 | 14 | 5 | 2 | 0 | 1 | 0 |
| | | % of Total | 7.8% | 5.7% | 3.0% | 4.7% | 1.7% | .7% | 0.0% | .3% | 0.0% |
| Bilateral Upper Lobe Pneumonitis | | Count | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | % of Total | .3% | .7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Cardiac Failure | | Count | 0 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 |
| | | % of Total | 0.0% | .7% | .7% | .7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Pulmonary Infection Process | | Count | 6 | 4 | 2 | 2 | 0 | 1 | 2 | 0 | 0 |
| | | % of Total | 2.0% | 1.4% | .7% | .7% | 0.0% | .3% | .7% | 0.0% | 0.0% |

| | | | | | | | | | | | |
|-----------------|-------|------|------|------|------|------|------|------|------|------|------|
| | Total | | | | | | | | | | |
| No Pathology | Count | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | % of | .7% | .3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | Total | | | | | | | | | | |
| Post Primary | Count | 6 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| Pulmonary | % of | 2.0% | .7% | .7% | 0.0% | .7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Tuberculosis | Total | | | | | | | | | | |
| Cardiomyopathy | Count | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | % of | .3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | Total | | | | | | | | | | |
| Pulmonary | Count | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Tuberculosis | % of | 0.0% | 0.0% | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | Total | | | | | | | | | | |
| Congenital | Count | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Diaphragmatic | % of | 0.0% | .3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Hernaia | Total | | | | | | | | | | |
| Hypertensive | Count | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Cardaic Changes | % of | 1.4% | 0.0% | 0.0% | 0.0% | 0.0% | .3% | 0.0% | 0.0% | 0.0% | 0.0% |
| | Total | | | | | | | | | | |
| Pleuritis | Count | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | % of | .3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| | Total | | | | | | | | | | |
| Congestive | Count | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hypertensive | % of | 0.0% | .3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Cardaic | Total | | | | | | | | | | |

| | | | | | | | | | | | |
|-----------------------------------|------------|-------|-------|-------|-------|------|------|------|------|------|------|
| Bronchopneumonea | Count | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | % of Total | .3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Pericardial Effusion | Count | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | % of Total | .3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Diasphyseal | Count | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Clavicular | % of Total | 0.0% | .3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Malunited Fracture | Count | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lower Respiratory Tract Infection | % of Total | 0.0% | 1.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Total | Count | 99 | 87 | 36 | 37 | 8 | 9 | 5 | 5 | 4 | 2 |
| | % of Total | 33.4% | 29.4% | 12.2% | 12.5% | 2.7% | 3.0% | 1.7% | 1.7% | 1.4% | 2.0% |

Table 4: Prevalence of Chest Pathologies (Study Period)

| | | Year | | | | Total | |
|--------------|----------------|-------|------|------|------|-------|-------|
| | | 2019 | 2018 | 2017 | 2016 | | |
| Radiographic | Unfolded Aorta | Count | 19 | 28 | 16 | 1 | 64 |
| Features | | % of | 6.4% | 9.5% | 5.4% | .3% | 21.6% |

| | Total | | | | | |
|--|-------|------|------|------|------|-------|
| Patchy Opacity | Count | 20 | 24 | 17 | 1 | 62 |
| | % of | 6.8% | 8.1% | 5.7% | .3% | 20.9% |
| | Total | | | | | |
| Streaky & Patchy Opacity | Count | 3 | 3 | 3 | 0 | 9 |
| | % of | 1.0% | 1.0% | 1.0% | 0.0% | 3.0% |
| | Total | | | | | |
| Enlarged heart | Count | 12 | 14 | 8 | 0 | 34 |
| | % of | 4.1% | 4.7% | 2.7% | 0.0% | 11.5% |
| | Total | | | | | |
| Hazy Opacity | Count | 2 | 0 | 0 | 0 | 2 |
| | % of | .7% | 0.0% | 0.0% | 0.0% | .7% |
| | Total | | | | | |
| Streaky Opacity | Count | 0 | 1 | 1 | 0 | 2 |
| | % of | 0.0% | .3% | .3% | 0.0% | .7% |
| | Total | | | | | |
| Hilar and Perihilar Vascular Accentuation | Count | 0 | 3 | 0 | 0 | 3 |
| | % of | 0.0% | 1.0% | 0.0% | 0.0% | 1.0% |
| | Total | | | | | |
| Enlarged Aorta | Count | 0 | 1 | 0 | 0 | 1 |
| | % of | 0.0% | .3% | 0.0% | 0.0% | .3% |
| | Total | | | | | |
| No Lung Hilia Mediastinal Cardaic | Count | 0 | 1 | 1 | 0 | 2 |
| | % of | 0.0% | .3% | .3% | 0.0% | .7% |
| | Total | | | | | |

| | | | | | | |
|--|------------|------|------|------|------|------|
| Patchy Paramediastial | Count | 0 | 1 | 3 | 0 | 4 |
| | % of Total | 0.0% | .3% | 1.0% | 0.0% | 1.4% |
| Unfolding and Curvilinear Calcification of the Aorta | Count | 0 | 0 | 2 | 0 | 2 |
| | % of Total | 0.0% | 0.0% | .7% | 0.0% | .7% |
| Bony Chest Abnormality | Count | 0 | 0 | 3 | 0 | 3 |
| | % of Total | 0.0% | 0.0% | 1.0% | 0.0% | 1.0% |
| Multiple Coin Opacity | Count | 0 | 0 | 1 | 0 | 1 |
| | % of Total | 0.0% | 0.0% | .3% | 0.0% | .3% |
| Pleural Effusion | Count | 4 | 1 | 0 | 0 | 5 |
| | % of Total | 1.4% | .3% | 0.0% | 0.0% | 1.7% |
| Prominent Transverse Fissure | Count | 0 | 0 | 1 | 0 | 1 |
| | % of Total | 0.0% | 0.0% | .3% | 0.0% | .3% |
| Patchy Streak with Cystic Component | Count | 1 | 0 | 1 | 0 | 2 |
| | % of Total | .3% | 0.0% | .3% | 0.0% | .7% |
| Tenting at Right Hemidiaphragmatic | Count | 0 | 1 | 0 | 0 | 1 |
| | % of Total | 0.0% | .3% | 0.0% | 0.0% | .3% |
| Accentuated Hila Vessel | Count | 3 | 3 | 3 | 1 | 10 |

| | | | | | | | | |
|-------|-------------------------|-----------|------------|-------|-------|-------|------|--------|
| | | | % of Total | 1.0% | 1.0% | 1.0% | .3% | 3.4% |
| | Mid-Clavicular Fracture | Malunited | Count | 1 | 0 | 0 | 0 | 1 |
| | | | % of Total | .3% | 0.0% | 0.0% | 0.0% | .3% |
| Total | | | Count | 95 | 101 | 96 | 4 | 296 |
| | | | % of Total | 32.1% | 34.1% | 32.4% | 1.4% | 100.0% |

Discussion

In this study, out of the 296 radiographs evaluated, the pathology that was observed the most was Hypertension (55.1%) while the least observed were Cardiomyopathy, Congestive hypertensive cardiac, Diasphyseal Clavicular malunited fracture, Bronchopneumonea, Pleuritis, Congenital diaphragmatic hernaia, and Pericardial effusion. This finding is in accordance with a study by Vasan et al. (7) among 1298 subjects found significant association of hypertension with age. The finding from this current study disagreed with a study by Davies et al. (8), who reported pneumonia as the most common radiographic finding (54.92%). These discrepancies could be attributed to the small sample sizes used in the current study and the geographical variation of both studies.

In this study, females accounted for over 50.3% of the total radiographs studied when compared with their male counterparts (49.7%). This is in keeping with the studies conducted by Ugwu, (9) and Garcia et al. (10). In the Ugwu's study, females were highest, 59.75% (n=49) and males were 42.24% (n=23) out of the 82 pathological cases. In a similar study by Garcia et al.

(10), reported females as highest 55.8% (n=24) and males were 44.2% (n=19). The increased female involvement in chest pathologies has been ascribed to Household Air pollution (HAP).

Among the patient samples evaluated, there was a predominance of patients from Urhobo (33.4%) followed by Igbo (29.4). Among all tribes in the present study, hypertension was the most prevalent chest pathology observed while the least were: bilateral upper lobe pneumonitis, cardiomyopathy, pleuritis, bronchopneumonia, and pericardial effusion among the Urhobo; congenital diaphragmatic hernia, congestive hypertensive cardiac and diaphragmatic clavicular malunited fracture among the Igbo; pulmonary infection process and post primary pulmonary tuberculosis among the Ijaw; cardiac failure and pulmonary infection process among the Isoko; hypertension among the Hausa, pulmonary infection process and hypertensive cardiac changes among the Itsekiri; pulmonary infection process among the Yoruba; pulmonary Koch's disease among the Esan; and pulmonary Koch's Disease among the Tiv.

It was observed from the study that among the 1-10yrs age group, the only pathologies observed were pulmonary Koch's disease (0.3%) and lower respiratory tract infection (0.7%). Hypertension was most prevalent among the 41-50yrs age group (15.9%) while it was least among the 81-90yrs age group (0.7%). Pulmonary Koch's disease was most prevalent among the 61-70yrs age group (5.7%) while it was least among the 1-10yrs age group (0.3%). Also, bilateral upper lobe pneumonitis was most prevalent among the 21-30yrs age group (0.7%) while it was least among the 41-50yrs age group (0.3%). In addition, cardiac failure was only observed among the 41-50yrs age group (1.4%) and the 61-70yrs age group (0.7%) while it was absent in the other age groups. The result from this current study is in agreement with a study by Ugwuanyi et al. (11), who reported that patients aged 70 years and above visited the radiology department for chest x-ray querying hypertension more than other groups, with a frequency and percentage of 71(35.5%), while those between (61-70) years were 53 (26.5%), and those with the least were those of the age range of less than 20 and 30 years with 4(2.0%). Although plain x-ray

cannot be described to be an excellent tool for diagnosing hypertension, it revealed a considerable level of abnormal findings that helped in establishing the relative level of prevalence, establishing a relationship between sex and pattern of findings as well as the age range with the highest incidence of hypertension. Therefore, plain chest radiograph can be used where there are no other imaging modalities with higher sensitivity and specificity for picking slight pathological signs of hypertension and where a patient cannot afford for the use of other modalities such as echocardiogram, computed tomography and magnetic resonance imaging.

Conflicts of Interest: The authors declare no competing financial or non-financial interests.

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