

## Prevalence of Chest Diseases on X-Ray Pa View in Mirpur (AJK)

Nadia Bushra<sup>1\*</sup>, Rehan Afsar<sup>2</sup>, Nosheen Arshad<sup>2</sup>, Dr. Abid Ali<sup>3</sup><sup>1</sup>Medical Imaging Doctor, Department of Radiological Sciences, the University of Lahore, Gujrat, Pakistan<sup>2</sup>Lecturer, Department of Radiology and Medical Sciences, the University of Chenab, Gujrat Pakistan<sup>3</sup>Associate Professor, Department of Allied Health Sciences, the University of Chenab, Gujrat, PakistanDOI: [10.36348/sjimps.2022.v08i09.006](https://doi.org/10.36348/sjimps.2022.v08i09.006)

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\*Corresponding author: Nadia Bushra

Medical Imaging Doctor, Department of Radiological Sciences, the University of Lahore, Gujrat, Pakistan

### Abstract

**Background:** Basis of recurring chest radiography and admission to sanatorium started at some stage in World War 2, for the prognosis of pulmonary tuberculosis in asymptomatic sufferers/soldiers of battle. Meanwhile the declining incidence of Tuberculosis and discovery of recent screening exams result in decrease in chest radiographs screening method. Chest radiographs account for majority of clinical expenditures international. **Objective:** The objective of this study is to determine the prevalence of chest radiographs PA view in general population of Mirpur Azad Kashmir. **Methodology:** This cross-sectional study was performed in District Mirpur. The data has been collected from patients at radiology department of DHQ Hospital Mirpur. The study duration was three months after the approval of supervisors. Total 180 patients participated in this study. This included males and females. Convenient sampling technique was used for the collection of data during October 2021-December 2021. **Conclusion:** In our study mostly patients came with symptoms if cough and according to radiographic findings must patient have cardiomegaly. It is concluded that all patients with the symptoms of SOB ,cough and fever must not have chest infection there could be another cause of these symptoms .Most patients were with cardiomegaly so prevalence if cardiomegaly is higher than chest infections like TB and other infections.

**Keywords:** Tuberculosis, Chest x-rays, Pneumonia, Cardiomegaly, Posterior Anterior View, Anterior Posterior View.**Copyright © 2022 The Author(s):** This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

## INTRODUCTION

Chest X-ray is a useful imaging device and the maximum usually performed radiological examination [1]. The World Health Organization (WHO) estimates that half of all radiological approaches done global are CXR [2]. Traditionally, CXR were taken prior to insurance, employment, surgical procedure, all through immigration and for the evaluation of lungs, heart and chest wall. Tuberculosis, pneumonia, coronary heart failure, emphysema, lung most cancers and different scientific conditions may be recognized on a CXR. However, from the evaluation of the beyond literature it's been observed that CXRs on people without cardiopulmonary disease has not been shown to improve sickness outcome and isn't price-powerful. In addition, many things seen on a CXR come to be artifacts or benign problems [3]. Even many insurance companies now not pay for these "recurring" x-rays acquired in the absence of particular symptoms, signs and symptoms or clinical conditions [4]. During the medical examinations, every candidate is in habitual subjected to CXR in accordance with the laid down

standards, although no other clinical indication exists [5]. The motive of this examine changed into to evaluate the suitability or in any other case of CXR as a sole screening tool for pulmonary related sicknesses. Several communicable illnesses are more common among inmates than among the general population. PTB (pulmonary tuberculosis) disease transmission risk is influenced by a number of variables. The situational and environmental vulnerabilities of the prison environment (such as overcrowding, inadequate ventilation, etc.) are a significant factor that raises the risk of PTB among prisoners. Inmates have PTB prevalence rates that are up to 83.6 times greater than those in the general community [6]. Several communicable illnesses are more common among inmates than among the general population. PTB (pulmonary tuberculosis) disease transmission risk is influenced by a number of variables [7] Interstitial lung disease is among PM/significant DM's pulmonary complications (ILD). The prognosis and frequently the choice of immunosuppressive therapy are both impacted by the existence of ILD in myositis patients.

Therefore, understanding the frequency and determinants of ILD is clinically very important [8]. We don't know the prevalence of ILD in patients with recently developed PM/DM since no research has specifically targeted this population in the past [9].

Due to the widespread use of imaging methods, pulmonary artery (PA) dilatation is increasingly being seen in individuals with congenital heart disorders (CHD) [10]. PA dilatation in these individuals is thought to be a result of hemodynamic changes, although its occurrence and prognosis haven't been well investigated [11]. The clinical relevance of pulmonary artery aneurysm (PAA), which is defined as a PA dilatation to a diameter of at least 1.5 times the usual size, is also unknown [12]. There are probably multiple causes for this. Although asymptomatic community-based populations have reported gender-specific reference values for the main PA dimensions, the diagnosis is still difficult, and current criteria do not link the diagnostic thresholds to body measurements or the diameter of other arteries [13]. Low bone mass and micro architectural alterations in the bone are characteristics of osteoporosis, which increases the risk of fractures [14]. Hip, wrist, thoracic and lumbar spine fractures are the most common osteoporosis-related fracture sites. Significant morbidity is brought on by fractures for the patient, including excruciating pain, impairments, limited movement, compromised respiratory function, and in the worst scenario, death [15]. Due to increased mucus production, patients with COPD initially experience a cough as a result of a multiorganic disease. Although these individuals frequently have a history of excessive tobacco use over a long period of time, environmental and occupational variables may also have an impact on the condition, most likely in addition to the negative consequences of cigarette smoking [16].

### Screening Chest Radiographs

Screening chest radiograph is used for prognosis in asymptomatic sufferers before they begin of symptoms and assist in improvement of fitness status in humans. In placing of habitual screening examination, Anteroposterior (AP) or Lateral perspectives are taken.

### Diagnostic Yield of Routine Radiographs

There are various conditions that are effortlessly visualized on Chest radiography however are not commonly apparent on scientific assessment of the patient. Some of these conditions have an effect on the operative or anesthetic selections.

These sicknesses are as follows:

- Pulmonary nodules.
- Mediastina loads.
- Tuberculosis.
- Pneumonia.
- Tracheal deviation.

- Aortic Aneurysm.
- Cardiomegaly.

### Chest Radiography Technique

Chest radiography is initiated with the aid of directing x-ray tube at affected person's chest in the meantime the affected person is positioned in front of the X-ray detector. Each tissue of human frame absorbs various amounts of radiation. Remaining photons are pondered and are detected by way of the detector [17].

These detectors convert seen light into radiographic photograph and shows varying degree of attenuation (gray) relying upon the area being imaged. Effective dose in sufferers is defined as radiation dose during examination. It is measured in millisieverts (Msv) [18].

Chest radiograph typically makes use of very small radiation of 0.1 Msv, as compared to other radiologic strategies and a number of radiations is scattered.

All possible overseas bodies eliminated (rings and bra) Entire lung field from apices to angles visualized CR have to input at the extent of T7 Watch for rotation Evident from sternoclavicular joint symmetry Trachea have to be midline Use spinouts approaches as a guide to align the patient Collimate every time possible Adequate suggestion and method settings Lung markings visualized 9-10 ribs visualized Patient positioned close to receptor to limit magnification [19].

The occurrence of chest infections is growing every yr because of surroundings elements and it's causing a variety of deaths in the society. Chest radiography is valuable in diagnosis of all the chest infections. Chest Radiography is gold popular in diagnosis of higher breathing tract infections. The locating of this observes may assist in figuring out the frequency and incidence of chest radiographs in conjunction with chest infections and charge of its unfold in our society.

## MATERIAL AND METHOD

This cross-sectional study was performed in District Mirpur. The data has been collected from patients at radiology department of DHQ Hospital Mirpur. The study duration was three months after the approval of supervisors. Total 180 patients participated in this study. This included males and females. Convenient sampling technique was used for the collection of data during October 2021-December 2021. Primary data collection method will be applied in this study. Data is collected from patients attending the Radiology department of DHQ Hospital Mirpur, who meet the inclusion criteria. A Performa was specifically predesigned according to the variable set for my study to gather data. The data is collected under the

supervision of Dr Majeed and Dr Rifat (Radiologist). A digital Toshiba X-Ray machine is used to perform scan and data is collected with the permission of Radiologist.

Data was collected from March 2022 to May 2022 from Radiology department of DHQ Hospital Mirpur. The statistical Package for Social Sciences (SPSS) version 21 was used to examine and interpret the statistical data. Graphs, tables and chart were used to summarize the findings. Frequency and percentages were used to compute variables. Descriptive statistics were used to get the mean, mode, minimum, maximum range and standard deviation of Age.

#### Inclusion Criteria

Patients of all age groups patients came to the radiology department for chest radiography and chest infections within the stipulated period of study. Patients who were willing to participate

#### Exclusion Criteria

Patients who were not willing to participate patients came for other than radiologic examinations.

## RESULTS

In the period from March to May 2022 180 patients with lungs diseases were evaluated in our institution. The 180 patients included in this study were different in age, sex during this study period about 180 candidates were declared males and females age ranging from 5-6 years. Majority of the candidates belonged to lower socioeconomic status and were mostly skilled and unskilled laborers.

**Table 1: Statistics**

		Gender	Symptoms	Diagnosis
N	Valid	180	180	180
	Missing	0	0	0

**Table 2: Gender**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	130	72.2	72.2	72.2
	Female	50	27.8	27.8	100.0
	Total	180	100.0	100.0	

Table shows the frequency of male and female. It shows that 130 male patients and 50 female

patients were enrolled in research that were 72% and 27 % respectively.

**Table 3: Symptoms**

		Frequency	Percent
Valid	SOB	6	3.3
	Fever	24	13.3
	Cough	59	32.8
	Chest Pain	16	8.9
	SOB & Fever	19	10.6
	Cough & Fever	25	13.9
	SOB, Cough, Fever	31	17.2
	<b>Total</b>	<b>180</b>	<b>100.0</b>

Table 3 shows the frequency of symptoms that presenting in patients. In this table 6 patients having shortness of breath, 24 with fever, 59 patients with cough, 16 having chest pain, 19 patients of breath plus fever, 25 patients with cough and fever and 31 patients which have shortness of breath plus cough and fever

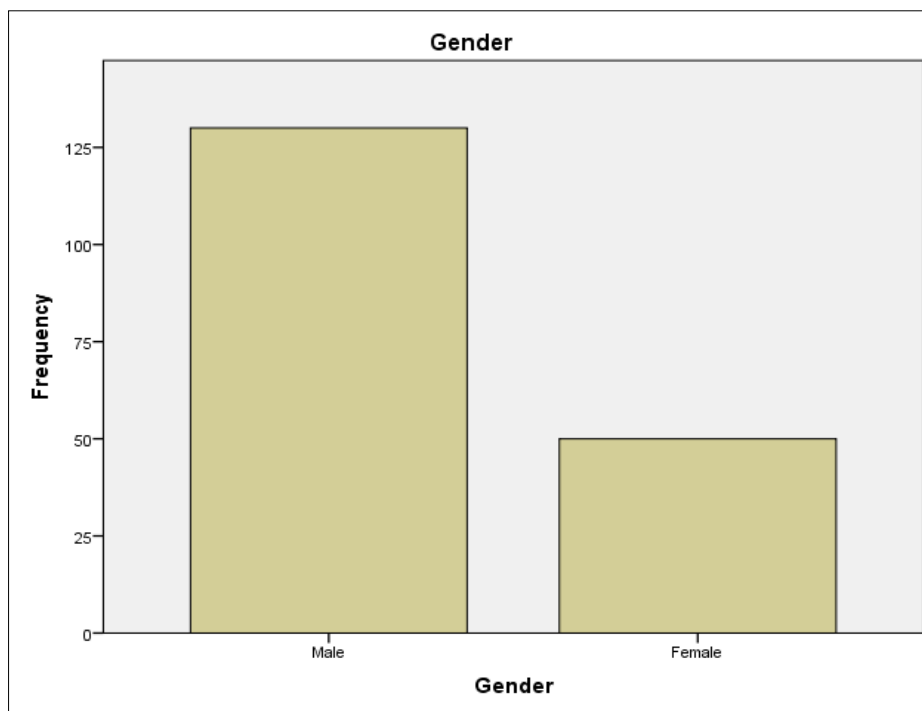
combination. In total research 3.3% patients having shortness of breath, 13.3% with fever, 32.8% of cough, 8.9% of chest pain, 10.6% of SOB and fever, 13.9% of cough and fever, 17.2% of SOB with the combination of cough and fever.

**Table 4: Diagnosis**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Normal	161	89.4	89.4	89.4
	Hydro Nomia Thorax	1	.6	.6	90.0
	Nemo Thorax	2	1.1	1.1	91.1
	Cardiomegaly	5	2.8	2.8	93.9
	Bronchitis	2	1.1	1.1	95.0
	Lower Zone Consolidation	3	1.7	1.7	96.7
	Pleural Effusion	2	1.1	1.1	97.8
	TB	1	.6	.6	98.3
	Pneumonia	3	1.7	1.7	100.0
	<b>Total</b>	<b>180</b>	<b>100.0</b>	<b>100.0</b>	

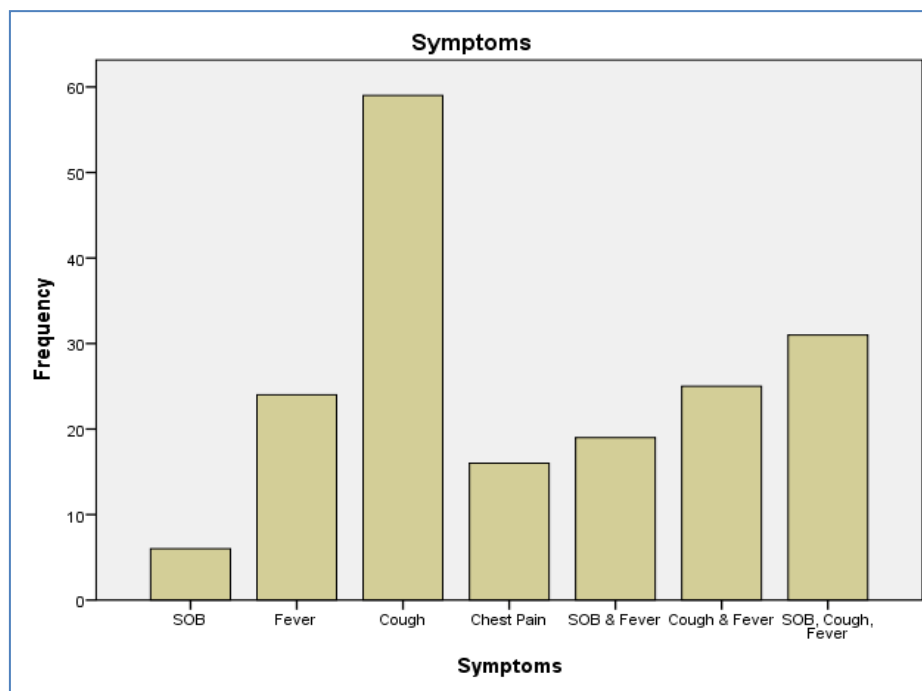
Table 4 shows the Diagnostic frequency of patients that are included in this study. 161 patients were found normal on X-ray. According to this table 1 patient with hydro Nomia thorax, 2 patients with nemo thorax, 5 patients having cardiomegaly, 2 patients with

Bronchitis, 3 patients suffering from lower zone consolidation, 2 patients with pleural effusion, 1 patient with TB and 3 patients having Pneumonia were diagnosed.



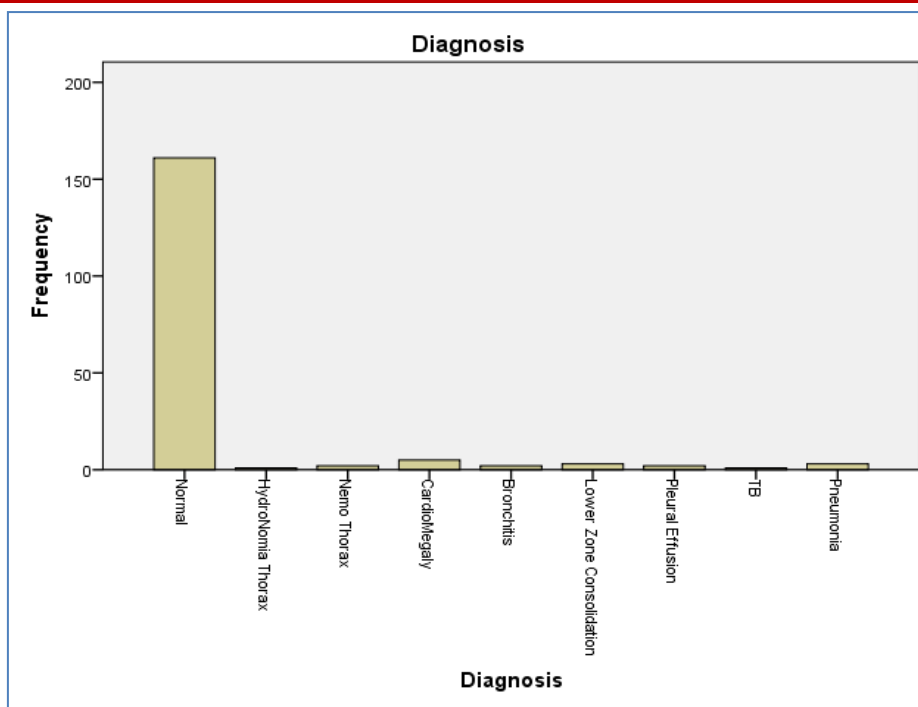
**Graph 1**

This graph shows the frequency of male and female patients that are participated in the research.



**Graph 2**

Graph 2 represents the frequency of total symptoms that are diagnosed during work.



**Graph 3**

Graph 3 shows the frequency of all the diagnosed diseases in the patients.

**Table 5: Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Diagnosis * Gender	180	100.0%	0	0.0%	180	100.0%

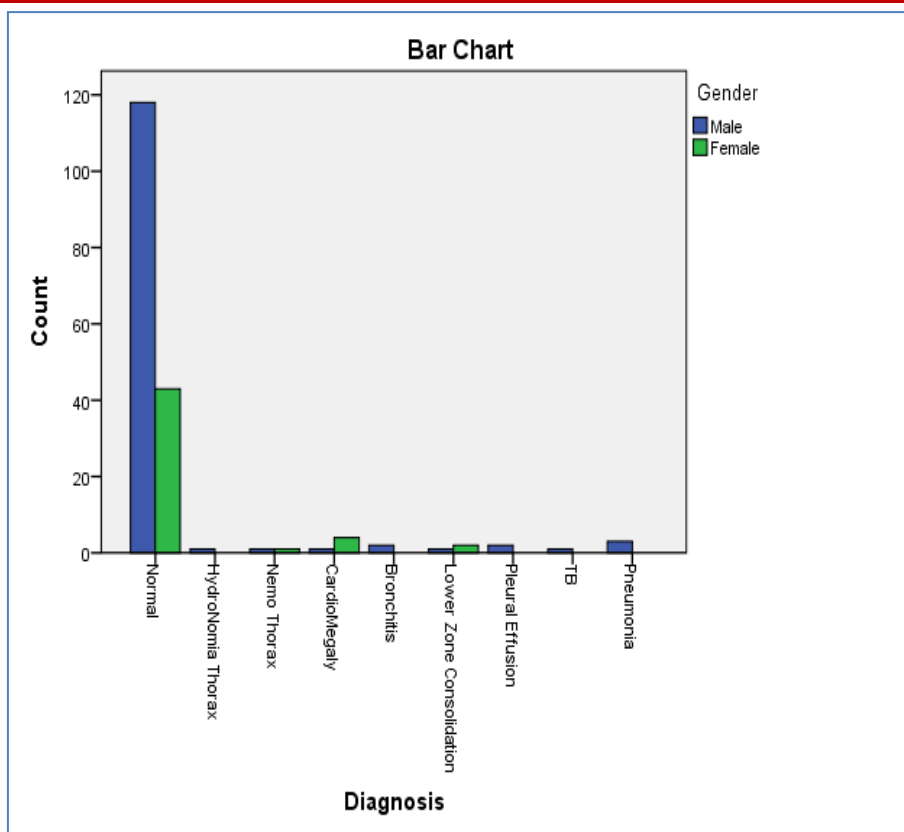
Table 5 Shows case processes Summery between the relationships of Gender/Diagnosis of disease.

**Table 6: Diagnosis \* Gender Cross tabulation**

Count		Gender		Total
		Male	Female	
Diagnosis	Normal	118	43	161
	Hydro Nomia Thorax	1	0	1
	Nemo Thorax	1	1	2
	Cardiomegaly	1	4	5
	Bronchitis	2	0	2
	Lower Zone Consolidation	1	2	3
	Pleural Effusion	2	0	2
	TB	1	0	1
Pneumonia	3	0	3	
<b>Total</b>		<b>130</b>	<b>50</b>	<b>180</b>

Table 6 shows the Comparison of diagnosis of disease between male and female is showing that 118 males were normal and 43 of female were normal. Only 1 male and 0 female diagnosed hydro Nomia thorax, 1 male and 1 female having nemo thorax, 1 male and 4 female diagnosed cardiomegaly, 2 male and 0 female

diagnosed bronchitis, 1 male and 2 female represents lower zone consolidation, 2 male and 0 female diagnosed pleural effusion, 1 male and 0 female diagnosed TB and 3 male, and 0 female diagnosed Pneumonia in total research.



Graph 4

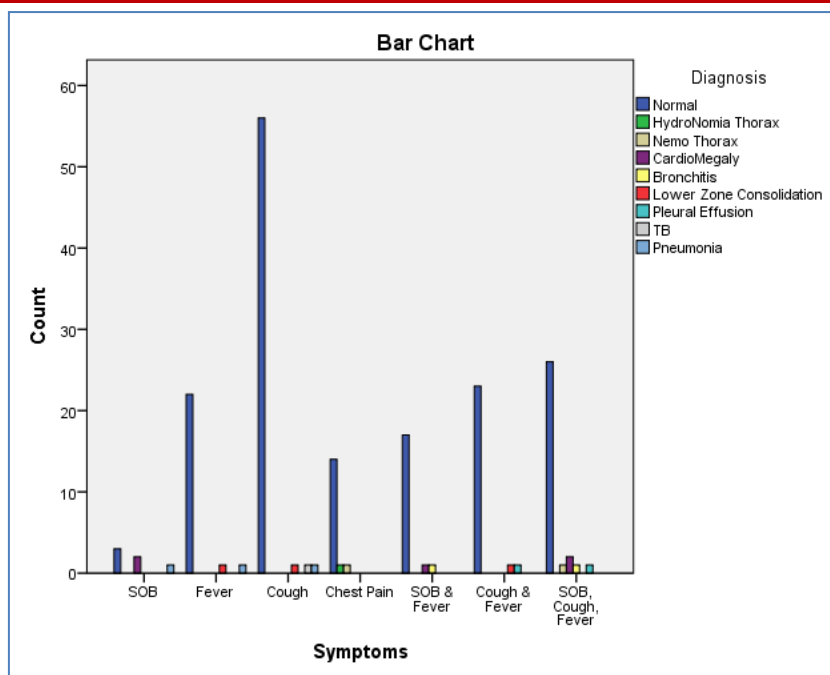
Graph 4 represents the total amount of diagnosis of male and female patient with individual diagnose.

Table 7: Count

		Diagnosis									Total
		Normal	HydroNomia Thorax	Nemo Thorax	CardioMegaly	Bronchitis	Lower Zone Consolidation	Pleural Effusion	TB	Pneumonia	
Symptoms	SOB	3	0	0	2	0	0	0	0	1	6
	Fever	22	0	0	0	0	1	0	0	1	24
	Cough	56	0	0	0	0	1	0	1	1	59
	Chest Pain	14	1	1	0	0	0	0	0	0	16
	SOB & Fever	17	0	0	1	1	0	0	0	0	19
	Cough & Fever	23	0	0	0	0	1	1	0	0	25
	SOB, Cough, Fever	26	0	1	2	1	0	1	0	0	31
<b>Total</b>		<b>161</b>	<b>1</b>	<b>2</b>	<b>5</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>180</b>

Table 7 shows the cross tabulation of diagnosed and symptoms of attended patients during research. The patients having SOB symptoms diagnosed 3 normal, 2 cardiomegaly, and 1 pneumonia. Th symptoms of fever patients 22 were diagnosed normal, 1 diagnosed lower zone consolidation and 1 diagnosed pneumonia. The patients that have only cough symptoms 56 were diagnosed normal, 1 diagnosed lower zone consolidation, 1 diagnosed TB and 1 pneumonia. The patients having chest pain 14

diagnosed normal, 1 nemo thorax and 1 hydro Nomia thorax. SOB and fever patients diagnosed 17 normal 1 cardiomegaly and 1 bronchitis. The patients having cough and fever combination diagnosed 23 normal, 1 lower zone consolidation and 1 pleural effusion. SOB and cough patients were diagnosed 26 normal, 1 nemo thorax, 2 cardiomegaly, 1 bronchitis and 1 pleural effusion. The only fever patients do not diagnose any disease.



Graph 5

Graph 5 represents the comparison of diagnosis disease and the symptoms shows in the patients during the examination.

## DISCUSSION

Chest x-ray is gold standard technique used in chest diseases. Different techniques can be used to view the different sites of chest infection. Chest x-ray also plays vital role in heart patients because cardiomegaly can be very clearly seen in the chest x-ray .it is helpful not only in diagnostic purpose but also used widely in therapeutic purpose.

In this study total 180 patients were included all of them were symptomatic. Mostly patients with the history of fever were diagnosing normal patients with history of SOB and cold had pneumo thorax. The study declares that chest radiograph is basic diagnostic tool for all the major chest infections [20]. Later on we can use CT scan but the first line diagnostic tool is chest x-ray also it is cheaper and convenient technique also readily available so patients easily agree to perform this diagnostic tool. Another important feature of chest radiography is that the results are very quick patients don't have to wait for the long time to get the films or reports. Doctors can perform the management of critical patients after quickly finding the abnormalities on chest radiography [21].

We propose that, moving ahead, borderline individuals should be allowed some time before being deemed unfit if there is any suspicion of active TB on CXR. Sputum smears and TST, albeit they are not trustworthy in and of themselves, must be acquired for cross-checking. Various pleural thickening and effusion

may be caused by conditions other than TB, such as acute pneumonitis or some fungal infections that can be treated with antibiotics for two weeks. If TB is suspected, they should be contacted for a follow-up call in a month or two [22].

Offering a CT scan to a rejected worker with scars is another option to assist them. Even the most skilled radiologist may struggle with the large differential for lung abnormalities. In most cases, a high-resolution CT of the chest is necessary to provide a diagnosis, and occasionally a lung biopsy or PCR of bronchoalveolar lavage (BAL) is also necessary. As a result, earlier PCR on BAL allows for faster diagnosis than with any other test. Adenosine deaminase is a crucial test (ADA). There is a tone of data to back up the very sensitive use of ADA in pleural fluid samples for the diagnosis of pleural TB. ADA tests were more sensitive than any other testing for pleural TB. And this test is quite helpful in ruling out TB in our neighborhood [23].

The American area had the highest estimated COPD prevalence in this study, with estimated prevalences of 13.3% and 15.2% in 1990 and 2010, respectively. Furthermore, we predicted that in the Western Pacific area, there will be 113 million COPD patients in 2010, about twice as many as were predicted in 1990 (60 million). We calculated that there were 66.4 million COPD patients in South East Asia in 2010. Comparing our findings to other estimates from earlier research, the 2005 BOLD study's PLATINO multicenter study, which used the same survey methodology, found that the crude prevalence of COPD ranged from 7.8% in Mexico City to 19.7% in Montevideo. Numerous writers have stated that there is

still a dearth of epidemiological data on COPD in the African continent, which has hampered efforts to address the disease's rising burden there [24]. In 2010, we calculated an approximate 11% prevalence, which amounted to 29 million COPD patients in the area. This is comparable to a recent estimate of more than 26 million cases throughout the whole continent in 2010. In the Middle East and North Africa, there are likewise extremely little epidemiological statistics available. According to the scant information that is currently available, the EMR, with 13 million cases (a 12% prevalence), had the fewest COPD cases overall in 1990. The three main clinical signs of pneumothorax are dyspnea, chest discomfort, and reduced air entry. Some people may exhibit unusual symptoms or continue to be symptom-free. In patients with underlying lung illness, those requiring mechanical ventilation, or after transthoracic needle operations, there should be a high index of suspicion for pneumothorax. Patients who have an underlying lung condition may experience repeated pneumothoraxes [25]. The likelihood that a pneumothorax would repeat after one episode increases significantly, and taller men have been found to have greater recurrence rates.

In this study we checked out the prevalence of chest radiography in AJK our results show that mostly patients have normal Scans and other patients who were have diseases are very low in percentage. Results showed that patients with cough were high in frequency and when we discuss the radiographic findings the number of cardiomegaly patients was high among all.

## CONCLUSION

In our study mostly patients came with symptoms if cough and according to radiographic findings must patient have cardiomegaly. It is concluded that all patients with the symptoms of SOB ,cough and fever must not have chest infection there could be another cause of these symptoms .Most patients were with cardiomegaly so prevalence if cardiomegaly is higher than chest infections like TB and other infections.

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