WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 9, Issue 3, 1472-1496. Research Article ISSN 2277– 7105

A PROSPECTIVE STUDY ON "DRUG UTILIZATION STUDY ON ANTIBIOTICS USE IN LOWER RESPIRATORY TRACT INFECTION AND PNEUMONIA

***Saeideh Gomroki, Pharm D**

India.

Article Received on
21 Jan. 2020,

Revised on 10 Jan. 2020,
Accepted on 01 March 2020,

DOI: 10.20959/wjpr20203-16966

***Corresponding Author**
Saeideh Gomroki, Pharm D
India.

ABSTRACT

Objective: To conduct study on medication safety study on antibiotics use in lower respiratory tract infection and pneumonia. **Methodology:** it was a prospective observational study conducted in: MEDICAL, ICU, HICU AND SURGERY WARDS of Bangalore Baptist hospital, conducted for a period of 6 months from March 2017 to October 2017. All inpatients who are diagnosed with LRTI or PNEUMONIA. The patient data collection was used to collect all the details like inpatient number, age, sex, social history, past history, laboratory data, diagnosis, therapeutic management. Fulfilling the inclusion criteria will be enrolled into the study and their prescriptions will be Analysed on daily basis. The prescription guidelines, Micromedex, interaction checker, drug interaction database and Shockley's drug interaction book 8 edition. The drug interaction in prescription was collected and then compare with guidelines. When the analysis of prescription was completed then all data entered to the appropriate software and the results were gained. **Result:** Presence study showed from total of 100 patients were included in this study, alcohol/smoking history was confirmed in 66 (38 smoker and 28 alcoholic) patients. From these 53 (53%) of them diagnosed with LRTI, and 13 (13%) Of them with pneumonia. Also most of the patients had history of smoking (n=38) more than using alcohol (n=28). In this study the diagnosis of LRTI (Non Specific LRTI and Acute Bronchitis) accounted for 63% and pneumonia of 37% of total cases analysed. Further it was noted that a majority of the patients have association illness. Majority number was more in diabetic (61%), hypertension (46%) and asthma (18%). **Conclusion:** The majority of mild LRTI had a viral aetiology although mixed viral/bacterial infections were also common, and patients with a bacterial aetiology alone were not clinically distinguishable from those with viral LRTI In the present study bacteria were the most common cause of acute adult

LRTI, occurring in 59% of patients, while respiratory viruses were detected in 41%.The present study find out that, in Medicine Department, for lower respiratory tract infections Antibiotics were commonly prescribed in poly-antibiotics form to treat the infection. The most commonly used antibiotic was ceftriaxone followed by azithromycin and piptaz. Prescribing by generic names has to be encouraged.

INTRODUCTION

Lower respiratory tract infections (LRI) are generally more serious than upper respiratory infections. LRIs are the leading cause of death among all infectious diseases. The two most common LRIs are bronchitis and pneumonia, pneumonia is the fourth leading cause of death.[2]

LRTI, while often used as a synonym for pneumonia, can also be applied to other types of infection including lung abscess and acute bronchitis. Symptoms include shortness of breath, weakness, fever, coughing and fatigue. There are a number of symptoms that are characteristic of lower respiratory tract infections. The two most common are bronchitis and pneumonia. Influenza affects both the upper and lower respiratory tracts. Antibiotics are the first line treatment for pneumonia; however, they are not effective or indicated for parasitic or viral infections. Acute bronchitis typically resolves on its own with time.[14]

Lower respiratory tract infections (LRTI) are an important problem to society. They occur frequently and are associated with significant morbidity and mortality. LRTI impose a considerable cost to the nation.[3]

PNEUMONIA, occurs in a variety of situations and treatment must vary according to the situation. It is classified as either community or hospital acquired depending on where the patient contracted the infection. It is life-threatening in the elderly or those who are immune compromised. The most common treatment is antibiotics and these vary in their adverse effects and their effectiveness. Pneumonia is also the leading cause of death in children less than five years of age.

The most common cause of pneumonia is Pneumococcal bacteria, *Streptococcus pneumonia* accounts for 2/3 of bacteraemia pneumonias. This is a dangerous type of lung infection with a mortality rate of around 25%. For optimal management of a pneumonia patient, the following must be assessed: pneumonia severity (including treatment location, e.g., home, hospital or

intensive care), identification of causative organism, analgesia of chest pain, the need for supplemental oxygen, physiotherapy, hydration, bronchodilators and possible complications of emphysema or lung abscess.[5]

Streptococcus pneumonia is the most frequently identified pathogen associated with community acquired pneumonia (CAP) and bacterial lower respiratory tract infection (LRTI). S. pneumonia accounts for an estimated 30% of all hospitalized CAP episodes and for up to half of CAP episodes where aetiology is known (1). Initially LRTIs are usually managed by general practitioners (GPs). Use of Antibiotic prescription in LRTI remains controversial. On the one hand, it is usually of bacterial origin, is associated with a high morbidity and mortality, and needs to be rapidly treated with an antibiotic. On the other hand, in a case of LRTI, it is difficult to exclude the diagnosis of community acquired pneumonia (CAP) in out-patients, and most of the times self-limiting illnesses, and prescription of antimicrobials may cause increased antimicrobial resistance. Because LRTI is one of the major reasons for antibiotic treatment and because changes in Antibiotic resistance patterns are a threat to its effective treatment, there is increasing concern about antibiotic prescription in the community.[2]

Many patients with LRTI use antibiotics, prescribed or self-medicated (left over from previous prescriptions, or bought OTC), 3 despite antibiotics having limited beneficial effects for most patients with LRTI. This overuse of antibiotics has several downsides, including development of bacterial resistance, side effects, and costs. Similarly, there is little conclusive evidence for benefits from symptomatic treatments, which are often used inappropriately10 and can cause side effects.[6]

A comparison of the detection rates of potential viral and bacterial pathogens between patients and matched controls is essential in attributing a pathological role for the organisms detected.[12] Episodes of acute respiratory illness are the most common reason for consulting a general.

Practitioner (GP) in the UK.1 Many are called “acute bronchitis” and are labelled as infection, with little knowledge of the true aetiology, and are treated with antibiotics despite numerous.

Studies demonstrating little overall benefit. No studies have investigated in detail the causes of Community acquired lower respiratory tract illness (LRTI) or acute bronchitis, although viral Infections are generally thought to be the most important cause. This makes it difficult to provide evidence based advice about management strategies for this common condition.[17]

In-hospital diagnostics usually include chest X-ray and blood culturing, but hospitalized pneumococcal LRTI episodes do not always present themselves with bacteraemia or a pulmonary infiltrate. Presence of bacteraemia or a pulmonary infiltrate without bacteraemia in patients with pneumococcal LRTI may be associated with a worse prognosis due to higher acute disease severity, inflammation and hypoxemia, but data on this association are limited.[1]

To improve clinical surveillance and treatment of pneumococcal infections, it is important to improve our understanding of the disease pathogenesis and the clinical course of the entire spectrum of pneumococcal LRTI among hospitalized patients. This includes clarifying whether X-ray findings and blood cultures add extra information on the clinical course and consequences of confirmed pneumococcal infection, or if they are merely of diagnostic value or of importance to researchers.[1]

There are more effective drugs (medicines) today on the market than ever before. Patients are better educated, have greater expectations from health care, and they use multiple sources of health care. Still, drugs are not frequently used to their full potential or according to the generally accepted criteria. All prescribing may not necessarily be based on patient needs and all patient needs are not necessarily met with drug therapy. Consequently, there is as much Concern about inappropriate and expensive prescribing, as about under-prescribing. The development of drug utilization (DU) as a research area made it possible to study drug prescribing and drug usage in a scientific and formal manner.[2]

Lower respiratory tract infection (LRTI) is among the commonest indications for seeking primary health care. It is a frequent driver for the use of a variety of medication .It is doubtful whether the balance between beneficial effects and unwanted side-effects justifies the use of many of these medications. Many patients with LRTI use antibiotics, prescribed or self-medicated .despite antibiotics having limited beneficial effects for most patients with LRTI.[1]

Lower respiratory tract infections (LRTI) are generally more serious than upper respiratory infections. LRTIs are the leading cause of death among all infectious diseases. The two most common LRTIs are bronchitis and pneumonia, pneumonia is the fourth leading cause of death.[2]

Initially LRTIs are usually managed by general practitioners (GPs). Use of Antibiotic prescription in LRTI remains controversial. On the one hand, it is usually of bacterial origin, is associated with a high morbidity and mortality, and needs to be rapidly treated with an antibiotic. On the other hand, in a case of LRTI, it is difficult to exclude the diagnosis of community acquired pneumonia (CAP) in out-patients, and most of the times self-limiting illnesses, and prescription of antimicrobials may cause increased antimicrobial resistance. Because LRTI is one of the major.

Reasons for antibiotic treatment and because changes in antibiotic resistance patterns are a threat to its effective treatment, there is increasing concern about antibiotic prescription in the community.[3-2]

OBJECTIVES

Primary objective

- Drug utilization study on antibiotics use in lower respiratory tract infection.

Secondary objectives

- Impact of positive chest X-ray findings and blood cultures on LRTI

-To determine demographic details of inpatients using antibiotic in LRTI

-Investigate a comparison of LRTI patients with Pneumonia, focusing on clinical sign, number of hospitalization, and mostly antibiotic used.

REVIEW OF LITERATURE

Marlene Skovgaard et.al[1] conducted study on Impact of positive chest X-ray findings and blood.

Cultures on adverse outcomes following Hospitalized pneumococcal lower respiratory tract Infection. They studied a population-based multi-centre cohort of 705 adults hospitalized with LRTI and Streptococcus pneumonia in LRT specimens or blood: 193 without pulmonary infiltrate or bacteraemia, 250 with X-ray confirmed pneumonia, and 262 with bacteraemia. We compared adverse outcomes in the three groups and used multiple regression analyses to

adjust for differences in age, sex, comorbidity, and lifestyle factors. Hospitalization with confirmed pneumococcal LRTI is associated with substantial morbidity and mortality even without positive chest X-ray findings and blood cultures. Still, there is a clinically important outcome gradient from LRTI patients with pneumococcal isolation only to those with detected pulmonary infiltrate or bacteraemia which is partly mediated by higher acute disease severity and inflammation.[1]

Harish Govind Naik et.al[2] conducted study on drug utilization study on antibiotics use in Lower respiratory tract infection. 96 case records were examined of which 46.87% were LRTI (nonspecific LRTI & acute bronchitis) and 51% were pneumonia. Female accounted for 53.12% and male for 46.87% of total cases. The World Health Organization (WHO) indicators (utilization in defined daily doses (DDD); DDD/1000inhibitant/day) were used and the ATC/DDD method was implemented. The most frequently prescribed antibiotic was ceftriaxone, followed by Azithromycin. The DDD/1000inhibitant/day of Azithromycin was the highest (5.74). Average treatment period was found to be 5.42 and 6.52 for LRTI (nonspecific LRTI and Acute Bronchitis) and pneumonia respectively. A total of 96 cases studied; in which 33cases had mono-antibiotic therapy (33.37%) and rest contained poly-antibiotics therapy (66.63%).Prescribing by generic names has to be encouraged.[2]

Tsutomu Yamazaki et.al[3] conducted study on epidemiology of *mycoplasma pneumoniae* infections in japan and therapeutic strategies for macrolide-resistant *m. pneumoniae*. The nationwide surveillance of *M. pneumoniae* pneumonia in Japan is based on reports collected from approximately 500 sentinel hospitals, and is thus not reflective of the total number of patients. However, this weekly monitoring can detect previous epidemics and patterns, and has played a significant role as an alert system for medical and public health workers as well as researchers. Therefore, the effort for this surveillance program should be continued.[3]

Pablo Santibanez et.al[4] conducted study on acute care utilization due to hospitalizations for Paediatric lower respiratory tract infections. During 2008–2010, LRTI as the primary diagnosis accounted for 32.0 and 75.9% hospitalizations for diseases of the respiratory system in children <19 years of age and infants <1 year of age, respectively. Infants <1 year of age accounted for 47 and 77% hospitalizations due to paediatric LRTIs and paediatric LRTI hospitalizations specifically Due to respiratory syncytial virus (RSV), respectively. The average length of stay was 3.1 days for otherwise healthy infants <1 year of age and 9.1 days for high-risk infants (P <0.0001). 73.1% paediatric LRTI hospitalizations occurred between

November and April. Over the study timeframe, 19.6 acute care beds were required on average to care for paediatric LRTIs which Increased to 64.0 beds at the peak of LRTI hospitalizations. Increases in LRTI bed-days of 5.5 And 16.2% among <19 year olds by 2020 and 2030, respectively, were predicted. Implementation of appropriate prevention strategies could cause 307 and 338 less LRTI hospitalizations in <19 year olds in 2020 and 2030, respectively. Paediatric LRTI hospitalizations require significant use of acute care infrastructure particularly between November and April. Population projections show the burden may increase in the next 20 years, but implementation of effective public health prevention strategies may contribute to reducing the acute care demand and to supporting efforts for overall paediatric healthcare sustainability.[4]

Phan Le Thanh Huong et.al conducted study on First report on prevalence and risk factors of Severe atypical pneumonia in Vietnamese children aged 1–15 years. 722 hospitalized children with CAP were recruited for detecting those atypical pathogens, using multiplex PCR and ELISA. Clinical and epidemiological data were collected. Multivariate logistic-regression analyses were performed to evaluate the associations of potential risk factors with severe-ApCAP. Severe-ApCAP presented at a significant rate in Vietnamese children. More than 50% of severe-ApCAP cases were associated with pure atypical pathogen infection. M. pneumoniae appeared most frequently. The highest rate of severe-ApCAP was in children younger than two years. Younger age and co-infection with typical bacteria or viruses were the most significant risk factors, while respiratory/cardiac system malformation and neonatal pneumonia were additional potential risk factors, associated with severe-ApCAP in Vietnamese children.[5]

Marleen Hamoen. al conducted study on medication use in European primary care patients with lower respiratory tract infection. A total of 2530 adult patients presenting with LRTI in 12 European countries filled in a diary on any medication used before and after a primary care Consultation. Patient characteristics related to self-medication were determined by unavailable And multivariable logistic regression analysis. A considerable amount of medication, often with no proven efficacy, was used by adults presenting with LRTI in primary care. There were large differences between European countries. These findings should help develop patient information resources, international guidelines, and international legislation concerning the availability of over-the-counter medication, and can also support

interventions against unwarranted variations in care. In addition, further research on the effects of symptomatic medication is needed.[6]

David Gillespie et.al conducted study on adherence-adjusted estimates of benefits and harms from treatment with amoxicillin for LRTI. 2061 participants were randomized to the amoxicillin or placebo group. On average, 88% of the prescribed amoxicillin was taken. The original analysed demonstrated small increases in both Benefits and harms from amoxicillin. Minor improvements in the benefits of amoxicillin were observed when an adjustments for adherence were made (mean difference in symptom severity −0.08, 95% CI −0.17 to 0.01, OR for new/ worsening symptoms 0.81, 95% CI 0.66 to 0.98) as well as minor increases in harms. Adherence to amoxicillin was high, and the findings from the original analysis were robust to non-adherence. Participants consulting to primary care with an acute uncomplicated LRTI can on average expect Minor improvements in outcome from taking amoxicillin. However, they are also at an increased risk of experiencing side effects.[7]

Mackie godycki-cwirko et.al[5] conducted study on Sickness certification for patients with acute cough/LRTI in primary care in Poland and Norway. GPs recorded similar symptoms and signs in patients in the two countries. Antibiotics were prescribed more often in Polish than in Norwegian patients (70.4% vs. 27.1%, p _ 0.0001). About half of the patients received a formal sickness certificate (50.5% in Norway and 52.0% in Poland). The proportion of patients advised to stay off work was significantly higher in the Polish sample compared with the Norwegian sample (75.2% vs. 56.1%, p _ 0.002). Norwegian GPs less often issued sick certificates for more than seven days (5.6% vs. 36.9%, p _ 0.0001). The overall proportion of sickness certification for acute cough/LRTI was similar in Norwegian and Polish patients. However, in the Polish sample, GPs more often advised patients to take time off work without issuing a sick note. When sickness certificates were issued, duration of longer than seven days was more common in Polish than in Norwegian patients.[9]

METHODOLOGY

STUDY DESCRIPTION & STUDY SITE: Bangalore Baptist hospital, Bellary road, Hebbal, BANGALORE-560 024, INDIA a 500 bedded multi- specially tertiary care teaching hospital the hospital has various wards like intensive care unit, medical wards, surgical wards, paediatric.

- **Study wards:** intensive care unit, medical wards, surgical wards and HICU ward.

- **Study period:** study was conducted for a period of 6 months from October 2016_march 2017.
- **Study design:** prospective observational study.
- **Study criteria.**

Inclusion criteria

All in patients who are diagnosed with LRTI and pneumonia.

Exclusion criteria

All in patients who are not diagnosed with LRTI and pneumonia.

Materials used

- Inpatient prescriptions
- Medication charts
- Medication history charts
- Medicine strips

Study procedure

The study consisted of the following procedure:-

1. Selection of the topic
2. Literature survey
3. Approval from the Institutional Ethics Committee and permission from the hospital was obtained before starting the study.
4. The first step after selection of topic in the study was to design a data collection form (annexure 1) the patient data collection was used to collect all the details like inpatient number, age, sex, social history, past history, laboratory data, diagnosis, therapeutic management.
5. All inpatients diagnosed with LRTI and pneumonia. Fulfilling the inclusion criteria will be enrolled into the study and their prescriptions will be analysed on daily basis
6. The prescription guidelines, MICROMEDEX, INTERACTION CHECKER,

DRUG INTERACTION DATABASE AND STOCKLEY'S DRUG INTERACTION BOOK 8TH EDITION.

7. The drug interaction in prescription was collected and then compare with guidelines.

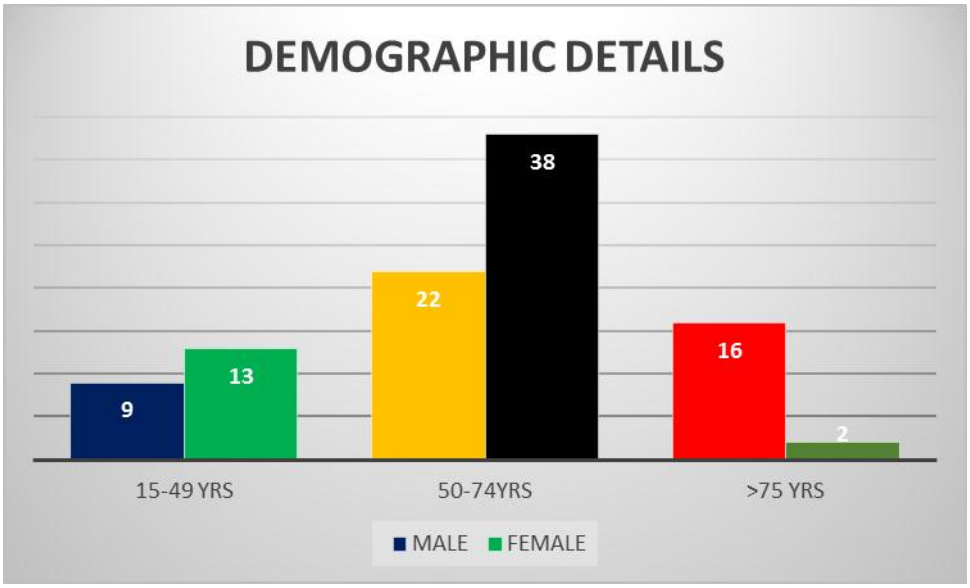
1. When the analysis of prescription was completed then all data entered to the appropriate software and the results were gained.

RESULTS

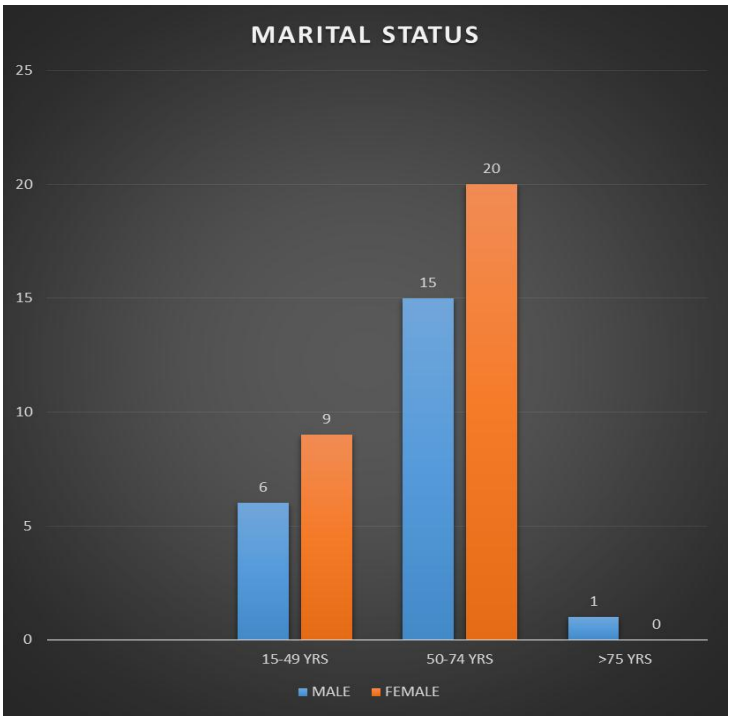
1) DEMOGRAPHIC DETAILS (GENDER, AGE, MARITAL STATUS AND EDUCATION): Out of 100 patients 53 of them are female (13 of them are between 15-49 years 38 of them are between 50-74 years and 2 of them are >75 years, 31 of them are educated and 22 are non-educated) and 47 of them are male (9 of them is between 15-49 years, 22 are between 50-74 years and 16 of them are >75 years old, 25 of them are educated and 22 of them is non-educated).

Table No 1: Demographic Details.

AGE GROUP(YRS)	MALE	FEMALE
15-49 YRS	09	13
50-74YRS	22	38
>74 YRS	16	02



b) GRAPH NO2: (GENDER AND MARITAL STATUS)

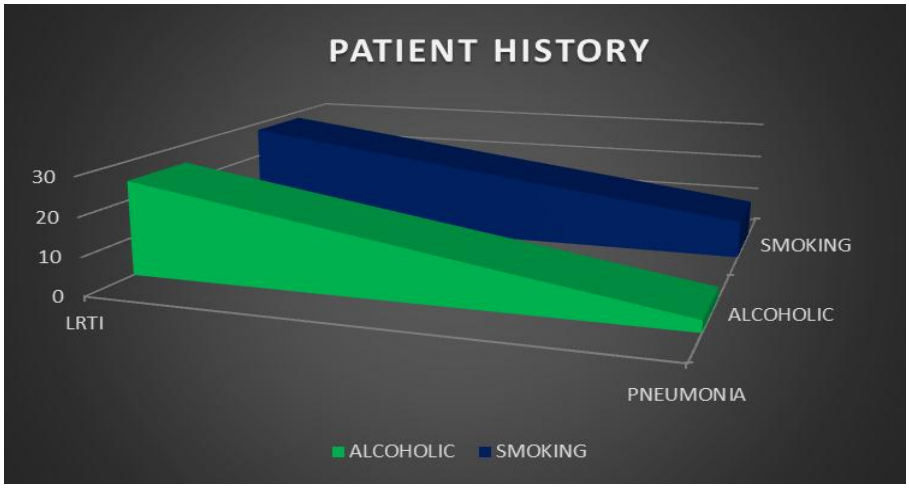


PATIENT HISTORY

Table No 2: Patient History (Smoking Or Alcoholic).

HISTORY	LRTI	PNEUMONIA	TOTAL
ALCOHOLIC	25	3	28
SMOKING	28	10	38

From total 100 cases, 28 of them had history of using alcohol, 25 of them were LRTI patients, 3 of them diagnosed with pneumonia, and 38 of them had history of smoking from these 28 of them were diagnose with LRTI and 10 of them with pneumonia.



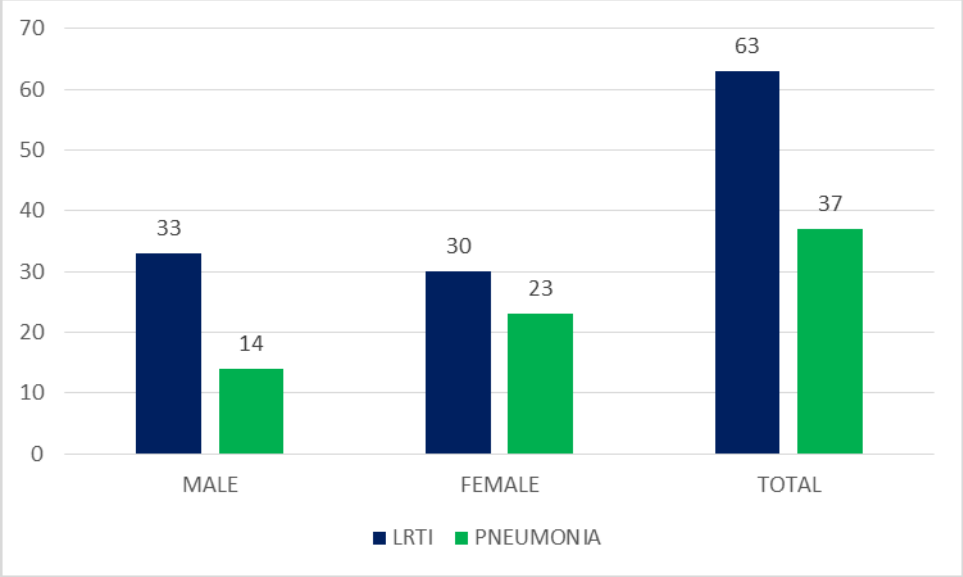
Graph No 4: Patient History.

Table no 3: Diagnosis.

Out of 100 patients 63 of them were diagnosed with LRTI (33 male and 30 Female) and 37 of them with pneumonia (14 male and 23 female).

Table No 3: Diagnosis.

DIAGNOSIS	MALE	FEMALE	TOTAL
LRTI	**33**	**30**	**63**
PNEUMONIA	14	23	37



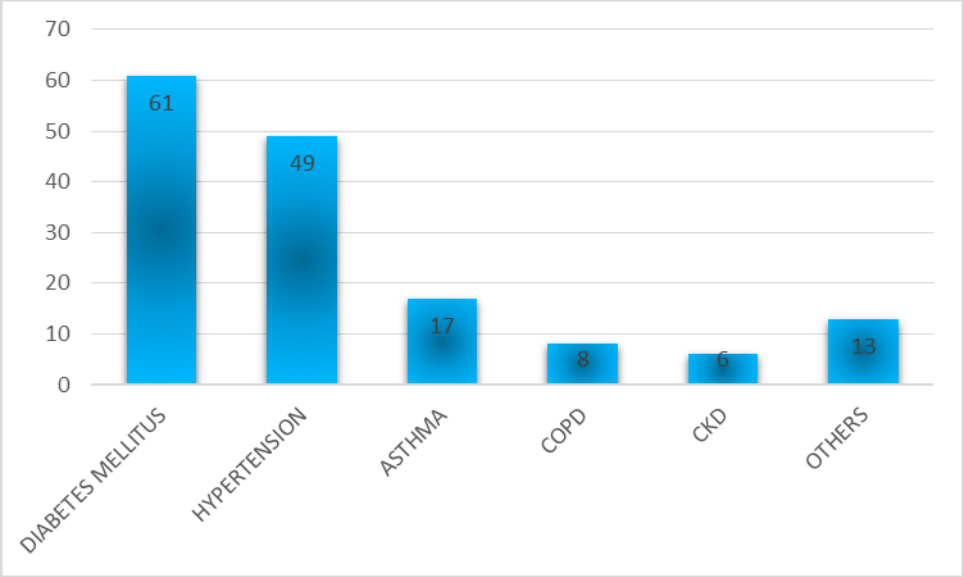
Graph 05: Diagnosis of Patients.

ASSOCIATED ILLNESS

Out of 100 patients, 61 of them have medical history of DM, 49 of them has HTN, 17 of them has ASTHMA, 8 with COPD, 6 with CKD and 13with other medical history.

Table No 4: Associated Illness.

MEDICAL HISTORY	NUMBER
DM	61
HTN	49
ASTHMA	17
COPD	8
CKD	6
OTHER	13



Graph 06: Medical History of Patients.

DRUG USED IN TREATMENT OF LRTI AND PNEUMONIA

Out of the drugs used in treatment of patients 238 were antibiotics, 108 of them were PPI'S, 46 of them was ant diabetics.

Table No 5: Drugs Used.

DRUG CLASS	DRUG NAME	PNEUMONIA	LRTI	TOTAL
ANTIBIOTICS	COLISTIN	3	8	11
	MEROPENEM	4	6	10
	PIPTAZ	22	26	48
	AZITHROMYCIN	17	27	44
	CEFTRIAXONE	23	29	52
	CLARITHROMYCIN	3	6	9
	OSELTAMAVIR	19	11	30
	AUGMENTIN	7	6	13
	FLUCONAZOLE	4	7	11
	METRONIDAZOLE	4	6	10
PPI	PANTOPRAZOLE	23	21	44
	RANITIDINE	17	14	31
	OMEPRAZOLE	15	18	33
ANTIHYPERT	LASIX	22	24	46
ENSIVE/DIABE				
TIC				
HYPOLIPIDEM	ATORVASTATIN	7	15	22
IC DRUGS				
ANTIEMETIC	ONDANSETRON	13	21	34
	DOMPERIDONE	6	9	15
ANALGESICS	ASPIRIN	9	14	23
	PARACETAMOL	11	16	27

ANTIASTHMA	HYDROCORTISONE	5	11	16
TIC	AMINOPHYLLINE	7	10	17
	DOXOPHYLLINE	7	6	13
THYROID	THYRONORM	7	11	18
HORMON				
OTHER		10	16	26

✓ The usage of different types of drugs in patients with LRTI and PNEUMONIA are given below in form of graphs and charts.

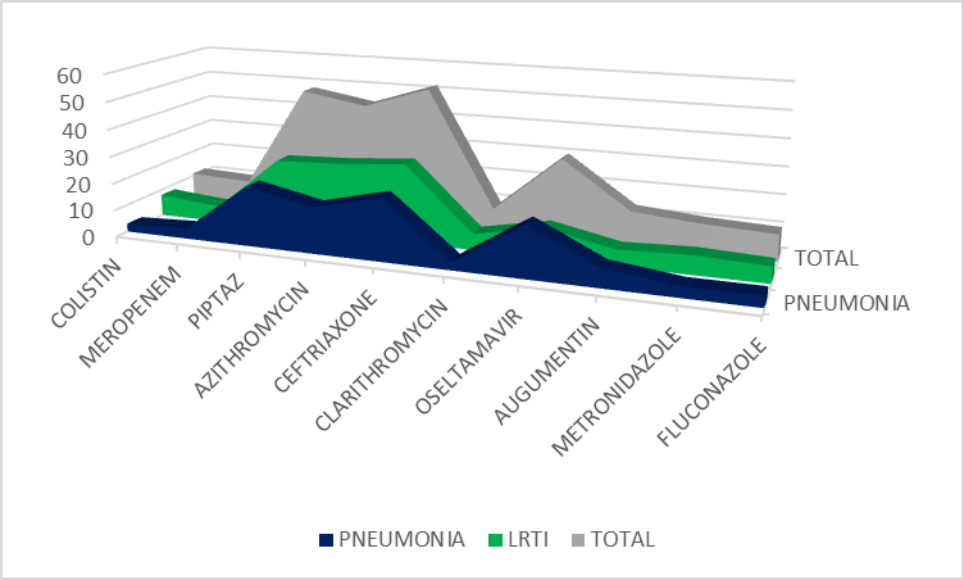


FIG 07: Antibiotics and other drugs given to patients with LRTI and pneumonia.

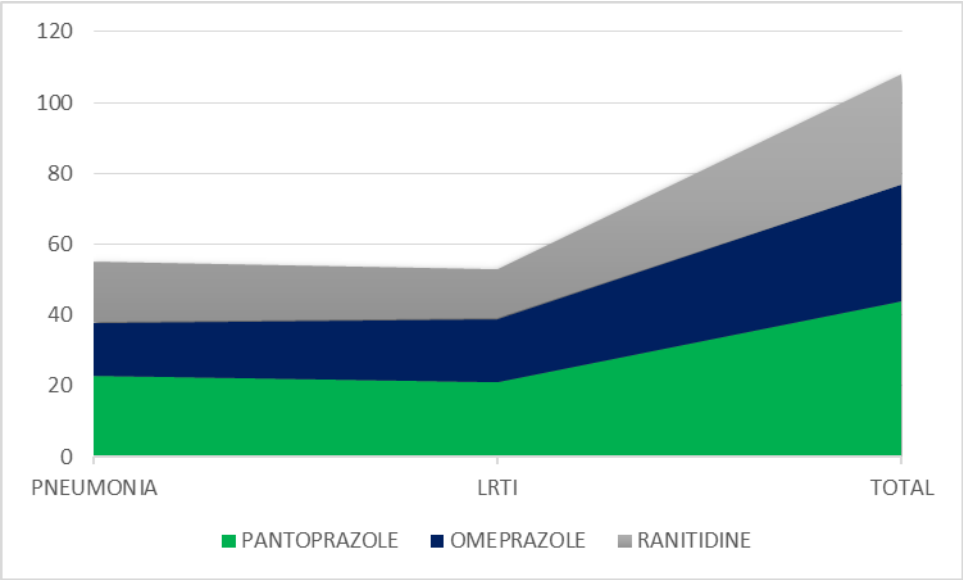


FIG 08: Different types of PPI's given to patients.

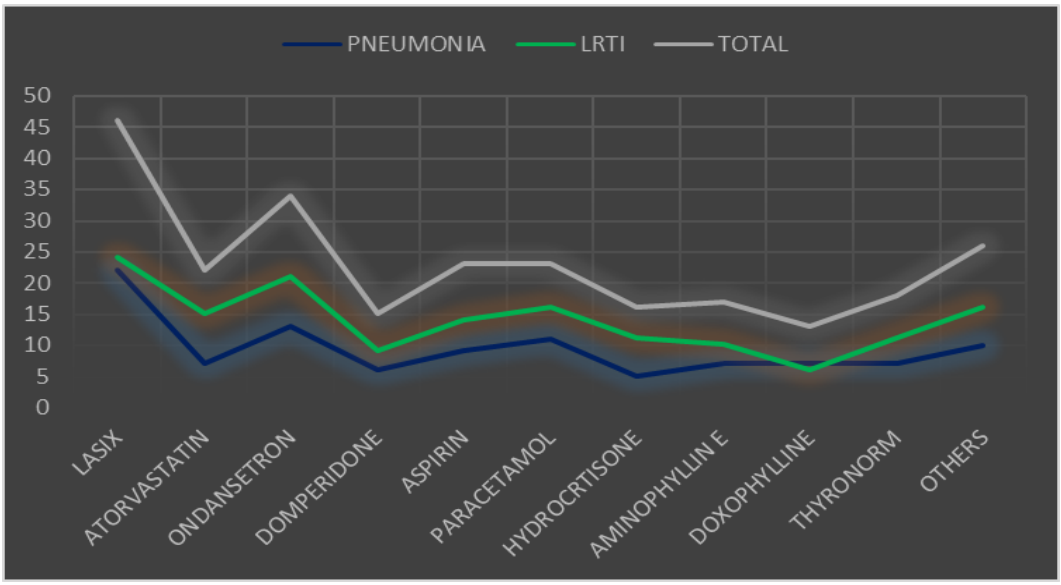


Fig 09: Other type of drugs given to patients excluding antibiotics.

1. LAB DATA (BLOOD GASES)

Out of 100 patient's lab data result shows 55 of them have <35 level of pco2, 49 of them have <79 level of po2 and 37 of them have <7.3 level of PH.

Table No 6: Lab Data.

NAME	LEVELS	LRTI	PNEUMONIA	TOTAL
PC02	<35	32	23	55
	35-45	18	7	25
	>45	13	7	20
P02	>79	30	21	51
	<79	33	16	49
P^H	<7.3	29	8	37
	7.3-7.4	16	15	31
	>7.4	18	14	32

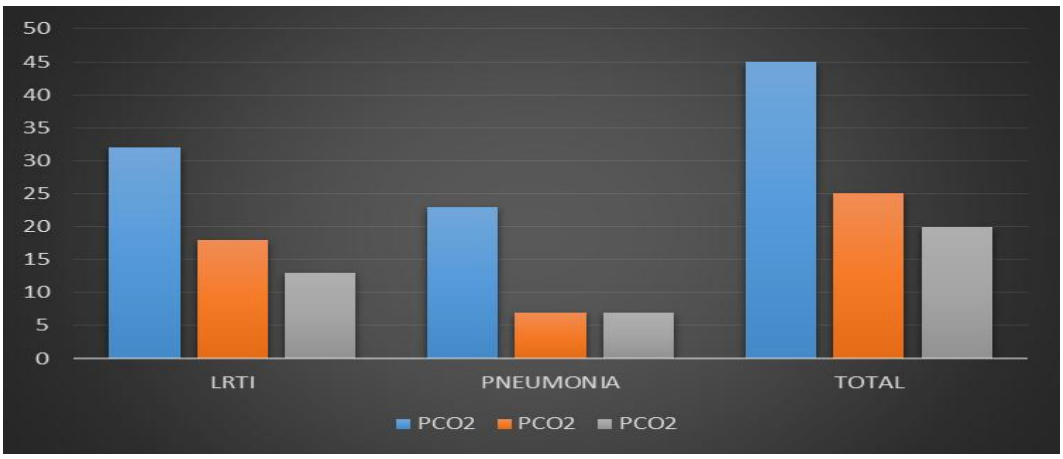


Fig. 10: patients with levels of pco2.

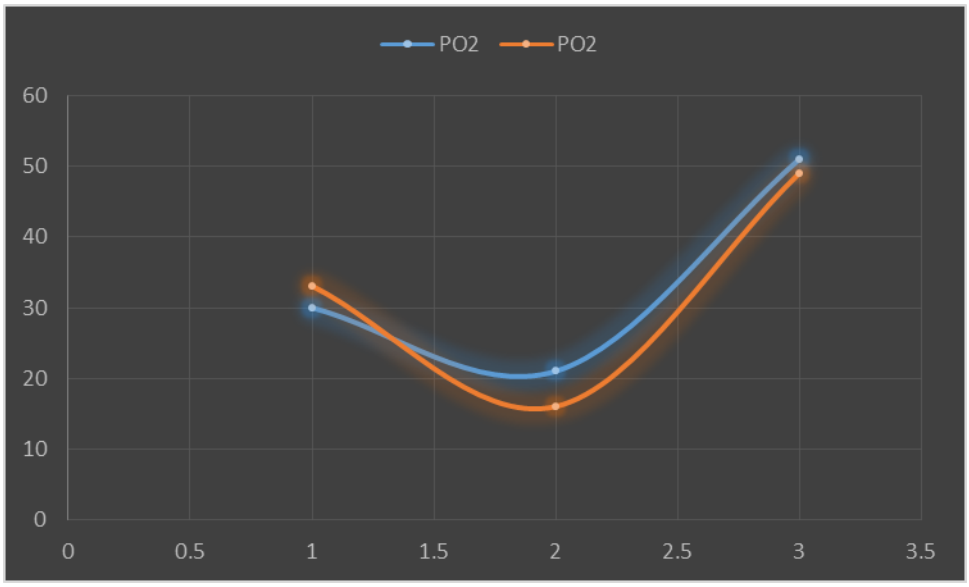


Fig. 11: Patients With Levels Of Po2.

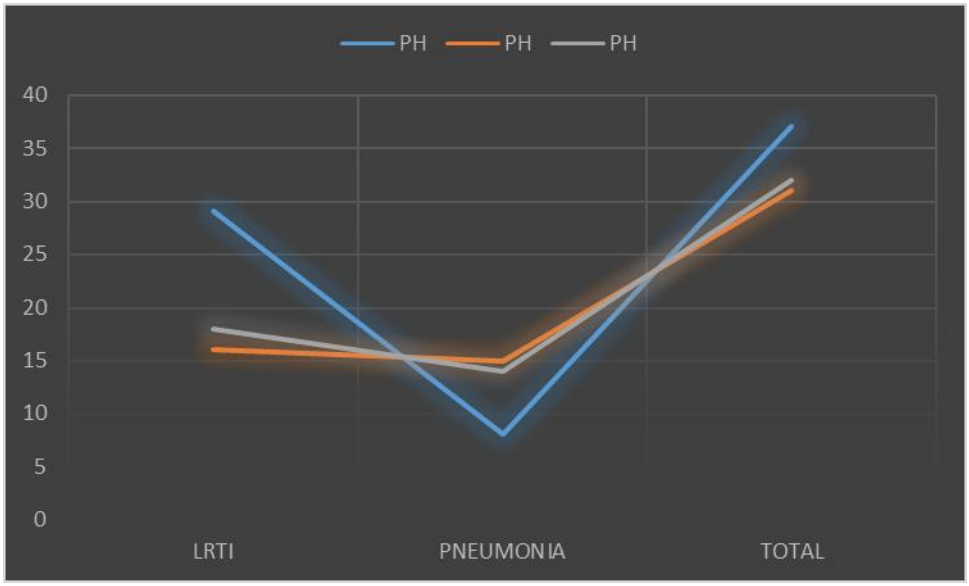


Fig. 12: Patients With Different P^h Levels.

Table No 7: Lab Data (Wbc, Colour Of Sputum, Crp)

From 100 patient we found out 84 of them have high level of neutrophil from these 54 of them was diagnose with LRTI and 30 of them with pneumonia. Also 44 of patients had low level of eosinophil from these 24 of them were LRTI patients and 20 of them were diagnose with pneumonia. in most of the patient (n=54) CRP level was between 100-199 and the majority number was more in LRTI patients (n=33).

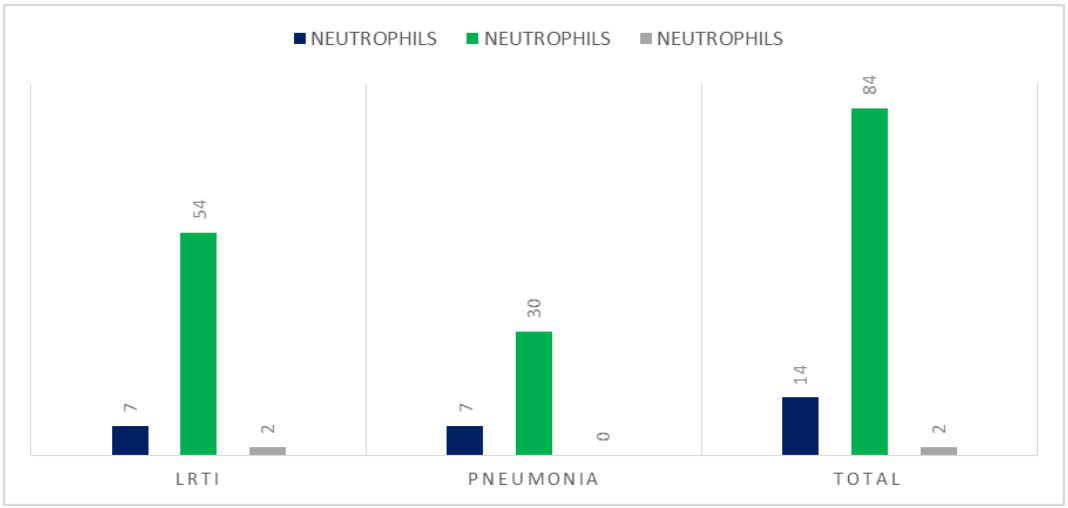


Fig.13: Range Of Neutrophils Observed In Patients With Lrti And Pneumonia.

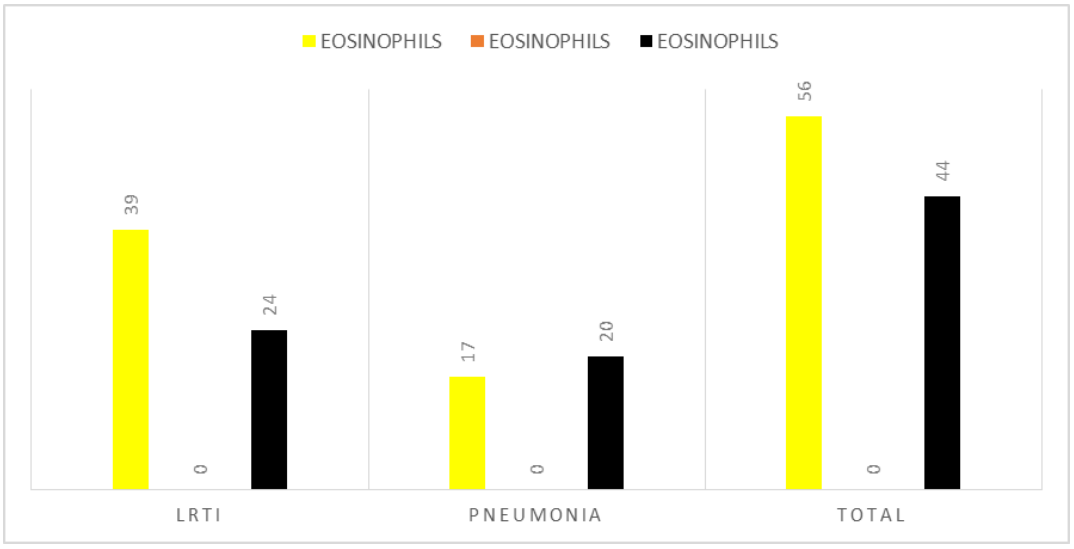


Fig.14: Range Of Eosinophils Observed In Patients With Lrti And Pneumonia.

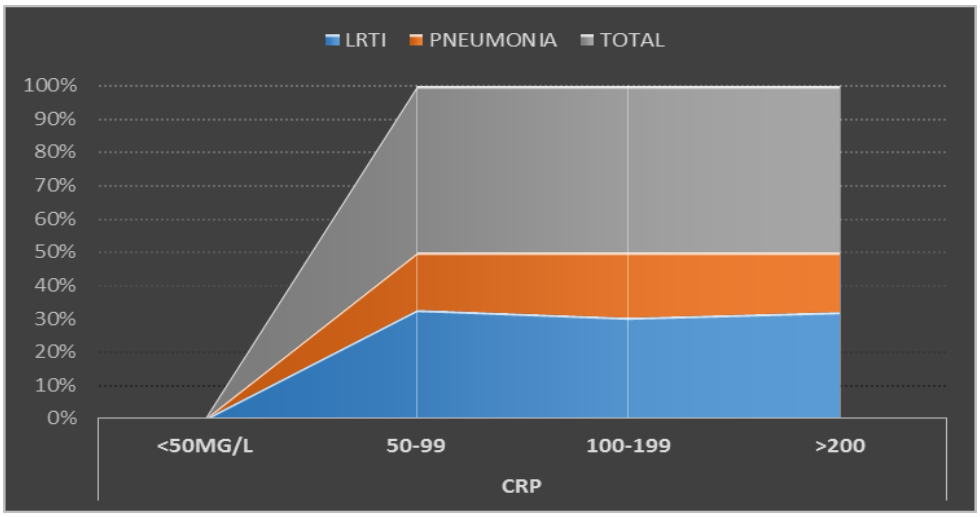


Fig.15: Range Of Crp Observed In Patients With Lrti And Pneumonia

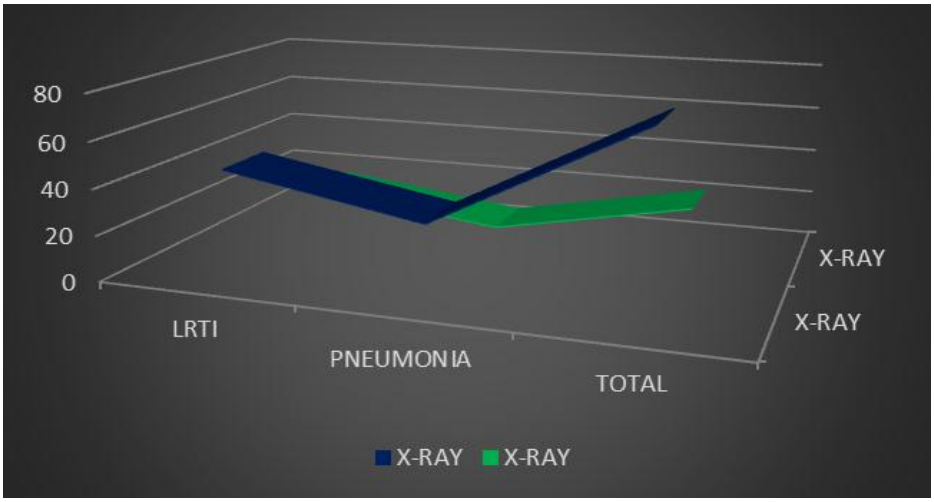


Fig.16: X-Ray Performed In Patients With Lrti And Pneumonia.

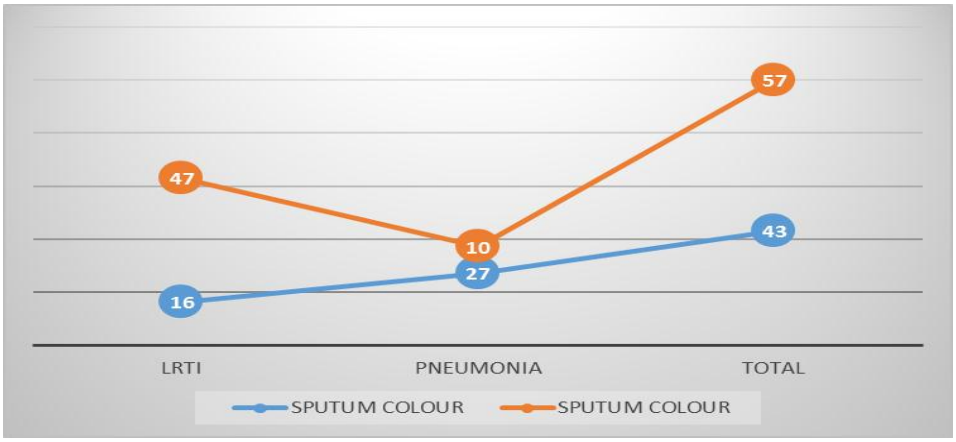


Fig.17: Types Of Sputum Observed In Patients With Lrti And Pneumonia.

Table No 8: Cause (Bacterial, Viral).

CAUSES	LRTI	PNEUMONIA	TOTAL
VIRAL	14	27	41
BACTERIAL	49	10	59

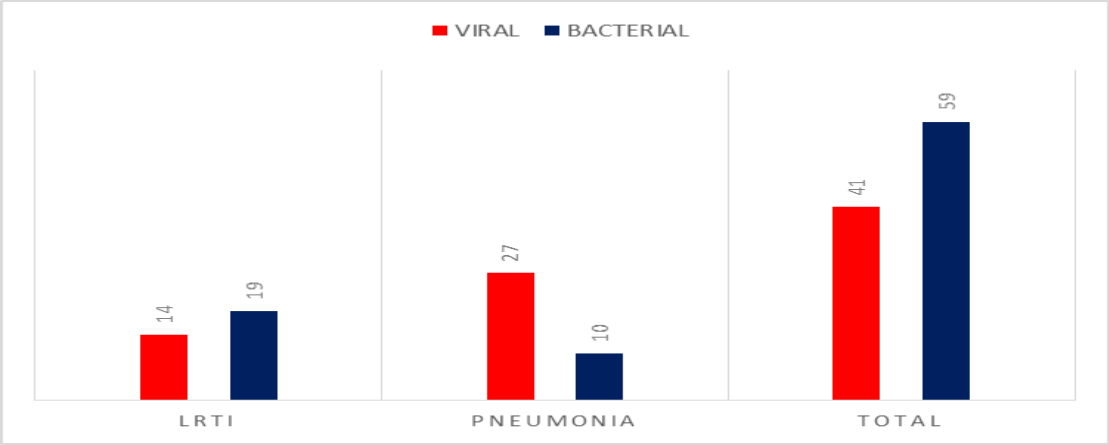


Fig.18: Causes of Lrti and Pneumonia.

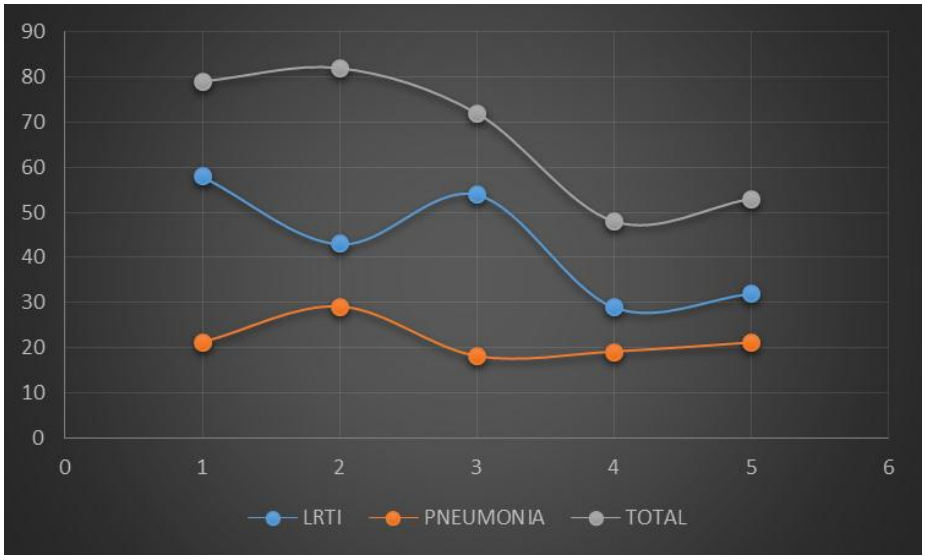


FIG NO 19: Clinical profile and morbidity associated with the LRTI and Pneumonia patients under study.

PARAMETER	LRTI	PNEUMONIA	TOTAL NOMBER
COUGH	58	21	79
FEVER	43	29	82
BREATHLESSNESS	54	18	72
FATIGUE	29	19	
WEAKNESS	32 (>2TIME)	21	53
No of hospital	30 (<2TIME)	21	51
admissions	31	22	53

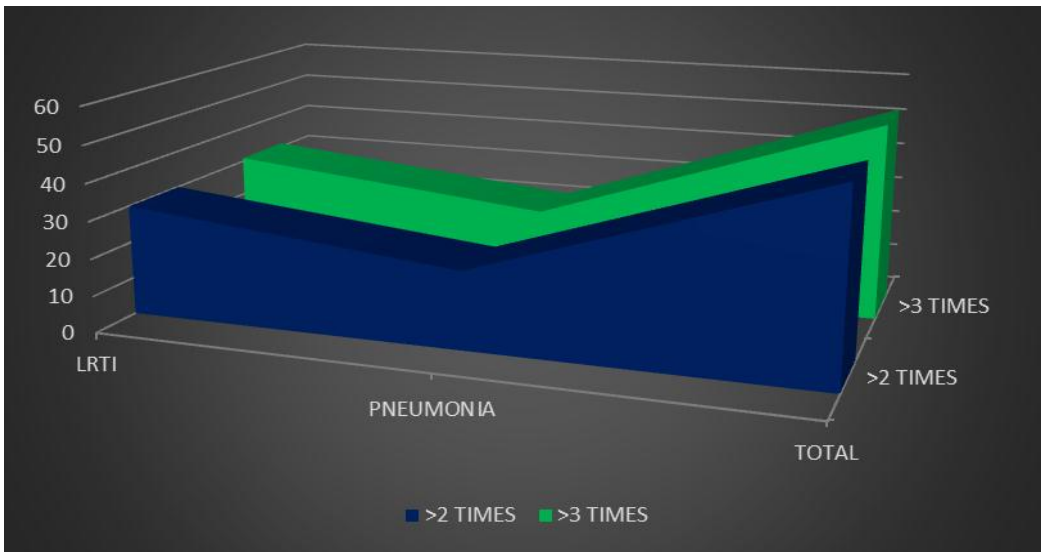


Fig.20: Number Of Admissions By Patients With Lrti And Pneumonia.

Table No 11: Admission In Wards.

WARDS	LRTI	PNEUMONIA	TOTAL
MEDICAL	18	9	27
HICU/ICU	32	21	53
SEMI WARD	13	7	20

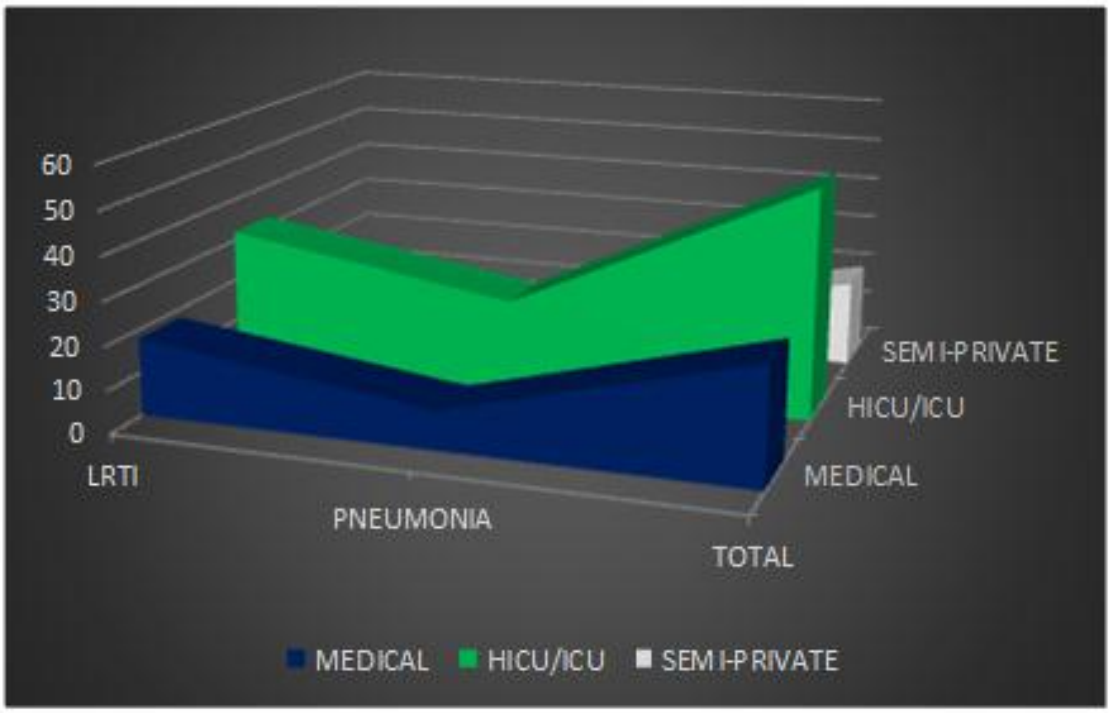


Fig.21: Patients Admitted In Different Wards.

DISCUSSION

Lower respiratory tract infections (LRI) are generally more serious than upper respiratory infections. LRIs are the leading cause of death among all infectious diseases. The two most common LRIs are bronchitis and pneumonia, pneumonia is the fourth leading cause of death. Antibiotics are commonly prescribed for the lower respiratory tract infection. But if antibiotics are not used rationally then there will be increase chances of resistance of bacteria as well as increase in the total cost of treatment.[2]

The present study was focused to find out the medication safety in 100 patients who are diagnosed with LRTI or pneumonia and were admitted in medical, surgical, ICU and HICU wards of BBH (BANGALORE BAPTIS HOSPITAL). to know about antibiotic utilization, incidence, aetiology and outcome of lower respiratory tract illness in the community.

We selected randomly 100 cases during 6 month and analysis various parameters of case sheet like as laboratory data, demographic information, drug interaction, medical history, medical outcomes and number of hospitalization.

-DEMOGRAPHIC DATA

Through this study majority numbers of patients were list in 50-74 years age group (n=60), (60%). most of them are married and the number of female patients (n=53) were more than male patients (n=47). This study has been supported by Marlene Skovgaard *et al and* Harish Govind Naik *et al* who in their study number of patient were listed more in 50-75 years age Group (n=116), (60%), and female patients exceeded male, with (n=51, 53.5%).[1-2]

Also we find out that most of the patients were educated (n=52, 52%), and the majority number was more in female. This result was same as result that found with Amarjargal also the number of educated patients was more than non-educated.[10-13]

PATIENT HISTORY

Present study showed from total of 100 patients were included in this Study, Alcohol/smoking history was confirmed in 66 (38 smoker and 28 alcoholic) patients.

From these 53 (53%) of them diagnosed with LRTI, and 13 (13%) Of them with Pneumonia. Also most of the patients had history of smoking (n=38) more than using Alcohol (n=28). This result was same as result that found with Amarjargal Dagvadorj *et al*, in their result also from out of 1000 patients, 490 of them were smoker .(10)Our result also compared with J.B. Kornum *et al*, study showed that from 2000patient 700 had history of smoking and drinking alcohol.[13]

DIAGNOSIS

In this study the diagnosis of LRTI (Non Specific LRTI and Acute Bronchitis) accounted for 63% and pneumonia of 37% of total cases analysed. Further it was noted that a majority of the patients were in the age group of 50-74 years.

This result was compare with Harish Govind *et al*, in their study also majority of the Patients were in the age group of 50-71 but number of pneumonia (53%) patients Was more than LRTI (47%) patients.[2]

Also In this study, we find out that most of the patients have association illness.

Majority number was more in diabetic (61%), hypertension (46%) and asthma (18%).

This result was compare with Chitra C Khanwelkar et al, in their study same result was find out which showed most of the patients have association illness, and diabetes was the major one.[2]

-ETIOLOGY

The majority of mild LRTI had a viral aetiology although mixed viral/bacterial infections were also common, and patients with a bacterial aetiology alone were not clinically distinguishable from those with viral LRTI In the present study bacteria were the most common cause of acute adult LRTI, occurring in 59% of patients, while respiratory viruses were detected in 41%.

This study has been compared with D D Creer *et al*, but in their study the number of respiratory viruses were the most common cause of acute adult LRTI, occurring in 63% of patients, while bacteria were detected in 26%.[12]

-DRG-DRUG INTERACTION

In this study we were found that these are some drug-drug interaction between drugs with each other. We find out49 drug-drug interaction, from these 30 of them were major and 19 of them were moderate, also number of interactions was more in male patients compare to female. interaction between AZITHROMYCIN AND ONDANSETRON was the most major drug-drug interaction, which caused increased risk of Q-T interval prolongation, so ECG monitoring is recommended.

This result was same with the result which founded by STOCKLY'S drug interaction edited by KAREN BAXTER, in their study also the concomitant use of AZITHROMYCIN and ONDANSETRON may increase risk of Q-T interval prolongation and arrhythmia so if co administration is required, monitoring of ECG may be warranted.[18]

- ANTIBIOTICS

The present study find out that, in Medicine Department, for lower respiratory tract infections Antibiotics were commonly prescribed in poly-antibiotics form to treat the infection. The most Commonly used antibiotic was ceftriaxone followed by azithromycin and piptaz.

Prescribing by generic names has to be encouraged.

This result has been supported by Harish Govind Naik, who in their study CEFTRIAXONE was the most commonly used antibiotic. But in their result ceftriaxone followed by azithromycin and cefeixime.[2]

SIGN/SYMPTOMS AND LAB DATA

In this study we find out most of the patients have >3 respiratory symptoms (72-79%), majority number of CRP is between (100-199mg/L) for 54% and x-ray was done for 77% of patients. This result was compared with Marlene Skovgaard et al and J Macfarlane et all in their study also most of the patients have >3 respiratory symptoms (60%). Also 30% of them have CRP LEVEL (100-99MG/L) and x-ray was done for 62% of patients.[1-17]

CONCLUSION

Through this study majority numbers of patients were list in 50-74 years age group (n=60), (60%).most of them are married and the number of female patients (n=53) were more than male patients (n=47).

Presence study showed from total of 100 patients were included in this study, alcohol/smoking history was confirmed in 66 (38 smoker and 28 alcoholic) patients. From these 53 (53%) of them diagnosed with LRTI, and 13 (13%) Of them with pneumonia. Also most of the patients had history of smoking (n=38) more than using alcohol (n=28).

In this study the diagnosis of LRTI (Non Specific LRTI and Acute Bronchitis) accounted for 63% and pneumonia of 37% of total cases analysed. Further it was noted that a majority of the patients have association illness. Majority number was more in diabetic (61%), hypertension (46%) and asthma (18%).

The majority of mild LRTI had a viral aetiology although mixed viral/bacterial infections were also common, and patients with a bacterial aetiology alone were not clinically distinguishable from those with viral LRTI In the present study bacteria were the most common cause of acute adult LRTI, occurring in 59% of patients, while respiratory viruses were detected in 41%.

The present study find out that, in Medicine Department, for lower respiratory tract infections

Antibiotics were commonly prescribed in poly-antibiotics form to treat the infection. The most commonly used antibiotic was ceftriaxone followed by azithromycin and piptaz. Prescribing by generic names has to be encouraged.

LIMITATIONS

- Only LRTI and pneumonia patient were included in this study.
- Conduction of the study in a single centre limit the extension of the findings.
- Limited sample size.
- Paediatrics and pregnant women were not included in this study.

REFERENCES

1. Marlene Skovgaard, Impact of positive chest X-ray findings and blood cultures on adverse outcomes following hospitalized pneumococcal lower respiratory tract infection: a population-based cohort study, 2013; 13: 197.
2. Harish govind naik, drug utilization study on antibiotics use in lower respiratory tract infection, volume 3 | issue 4 | oct – Dec 2013.
3. Tsutomu Yamazaki, Epidemiology of Mycoplasma pneumonia Infections in Japan and Therapeutic Strategies for Macrolide-Resistant M. pneumonia, 23 May 2016.
4. Pablo Santibanez, Acute care utilization due to hospitalizations for paediatric lower respiratory tract infections in British Columbia, Canada, 2012; 12: 451.
5. Phan Le Thanh Huong, Pham Thu Hien, First report on prevalence and risk factors of severe atypical pneumonia in Vietnamese children aged 1–15 years, 2014; 14: 1304.
6. Marleen Hamoen, Berna DL Broekhuizen, Medication use in European primary care patients with lower respiratory tract infection, February 2014.
7. David Gillespie, Kerens Hood, Adherence-adjusted estimates of benefits and harms from treatment with amoxicillin for LRTI: secondary analysis of a 12-country randomized place be controlled trial using randomization based efficacy estimators, 2015; 5: e006160. Doi: 10. 1136.
8. *Maureen H. Diazand Jonas M. Winchell*, The Evolution of Advanced Molecular Diagnostics for the Detection and Characterization of *Mycoplasmapneumoniae*, 08 March 2016.
9. MACIEK GODYCKI, Sickness certification for patients with acute cough/LRTI in primary care in Poland and Norway, 1998; 157: 1791–1797.

10. Amarjargal Dagvadorj, Hospitalization risk factors for children's lower respiratory tract infection: A population-based, cross-sectional study in Mongolia, 2007; 29: 923– 929.
11. Yasuhiro Kawai, Therapeutic Efficacy of Macrolides, Minocycline, and Tosufloxacin against Macrolide-Resistant *Mycoplasma pneumonia* Pneumonia in Paediatric Patients J, 2009; 33: 1165–1185.
12. D D Creer, J P Dilworth, Aetiological role of viral and bacterial infections in acute adult lower respiratory tract infection (LRTI) in primary care, Volume 1 2014 ISSUE 2 June-July AIJCSR.
13. J. B. Kornum, Alcohol drinking and risk of subsequent hospitalisation with pneumonia Southern Ethiopia, 2015; 42: 231–23.
14. Arnab Majhi, Levofloxacin-Ceftriaxone Combination Attenuates Lung Inflammation in a Mouse Model of Bacteremic Pneumonia Caused bMultidrug- Resistant *Streptococcus pneumoniae* via Inhibition of Cytolytic Activities of Pneumolysin and Autolysin, 2016; 11: 3059–3067.
15. Jose L. Sanchez, Respiratory Infections in the U. S. Military: Recent Experience and Control, 2006; 27: 188–20.
16. Catherine M. K., Pneumococcal Colonization Rates in Patients Admitted to a United Kingdom Hospital with Lower Respiratory Tract Infection: a Prospective Case-Control Study, November 15, 2013 Volume 88, Number 10.
17. J Macfarlane, Prospective study of the incidence, aetiology and outcome of adult lower respiratory tract illness in the community, June 5, 2007.
18. V Gomathi1, K Kumaresan2, Parenteral Iron Therapy for Treatment of Moderate to Severe LRTI, 2006 DRUG –DRUG INTERACTION TEXT BOOKEDITION SEVEN. Alhossain A.

ABBREVATIONS

CRP – C-REACTIVE PROTEIN

LRTI – LOWER RESPIRATORY TRACT INFECTION

COPD – CHRONIC OBSTRUCTIVE PULMONARY DISEASE

MAEs - MEDICATION ADMINESTRATION ERRORS