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Research

A Multispecialty Hospital Investigation Into Prescription Pattern And Drug Interaction For COPD Patients

Nivetha S R*[1], Harisaran S S[2], Karthikeyan S[3], Palanivel R[4]

[1]Assistant Professor, Department of Pharmacy Practice, PGP College of Pharmaceutical Sciences and Research Institute, Namakkal, Tamilnadu, India
[2,3,4]Department of Pharmacy Practice, PGP College of Pharmaceutical Sciences and Research Institute, Namakkal, Tamilnadu, India

*Author for Correspondence: Nivetha S R
Email: nivethaarivu19@gmail.com

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Abstract

Chronic obstructive pulmonary disease (COPD) is a lung disease that is characterized by a persistent blockage of airflow from the lungs. Drug utilization studies are also called as prescription pattern monitoring studies (PPMS) primarily concentrate on the prescription, dispensing, and administration of medications. The aim of the study is to optimize the drug therapy for the COPD patients in a multispecialty hospital by analyzing the drug prescribing pattern and by evaluating the drug interaction in the prescriptions. Based on study population, out of 150 patients, males were more susceptible to this disease than female. The average age of patients were found to be 45.73 ± 30.57 years. The cases were analyzed based upon class of drugs prescribed, antibiotics, bronchodilators, antihistamines, mucolytic agent, nasal decongestants and corticosteroids were commonly prescribed. Out of which, 38.2% (n=104) antibiotics and 34.5% (n=94) bronchodilators were most commonly prescribed class of drugs. Clarithromycin, theophylline+ forgyln, montek LC, ambrodil, oxynoz and dexa were the commonly prescribed antibiotics, bronchodilators, antihistamines, mucolytic agents, nasal decongestants and corticosteroids respectively. Nearly 59 patients were given three drugs and 14 patients were given 4 drugs at a time which shows the practice of polypharmacy. The cases were also analysed for drug interaction which shows 32.7% (n=49) of minor, 27.3% (n=41) of monitor closely drug interactions respectively. The findings provide a valuable foundation for refining COPD interventions and highlight the necessity for vigilant monitoring of drug interactions during treatment.

Keywords: Chronic Obstructive Pulmonary Disease, Prescribing Pattern Monitoring Studies, Drug Interactions, Polypharmacy, Antibiotics, Bronchodilators, Antihistamines.

INTRODUCTION

WHO defines, "Chronic Obstructive Pulmonary Disease (COPD) is a lung ailment that is characterized by a persistent blockage of airflow from the lungs. It is an under diagnosed life-threatening lung disease that interferes with normal breathing and is not fully reversible. COPD is one of the progressive lung diseases (1). The most common symptoms are emphysema and chronic bronchitis. Many people with COPD have both of this condition. In COPD, the chronic airflow obstruction occurs that is because it is cost by a mixture of a small airway disease (chronic bronchitis) and destruction of lung parenchyma (emphysema) the relative contribution of which vary from patients to patient. COPD is a non-communicable disease which poses continue burden in health of human (2). According to 2017 research more than 3 million people died by COPD in which Indian males are approximately 3.2% among Indian females over 35 years of age (3).

Drug utilization studies are also called as prescription pattern monitoring studies (PPMS) primarily concentrate on the prescription, dispensing, and administration of medications. Drug treatment forms a major portion of health practice. Drug utilization evaluation is defined as authorized, structured, ongoing review of healthcare provider prescribing, pharmacist dispensing and patient medication (4). To achieve the optimal benefit of drug therapy in patient's health care system, rational drug use is considered as an important factor that has to be checked (5)(6). COPD is a complex disease with various stages and symptom severity. Understanding the right combination of medications and inhalers is crucial to managing COPD effectively. Studying drug therapy allows for personalized treatment plans, which can lead to better symptom management and quality of life for patients(7). The aim of the study is to optimize the drug therapy for the COPD patients in a multispecialty hospital by analyzing the drug prescribing pattern and by evaluating the drug interaction in the prescriptions.

METHODOLOGY

Study site

The study entitled "A Multispecialty Hospital Investigation into Prescription pattern and Drug Interactions for COPD patients" was conducted in Thangam Cancer center, Namakkal. This hospital is regarded as one of the best health care providers in Namakkal District. It is equipped with advanced medical equipment and technologies. It provides specialized services in fracture, rheumatology, oncology, urology, thyroid, radiology, pediatrics. The hospital is also equipped with the modern diagnostic facilities like CT scan, MRI scan, ultrasound sonography, Digital Subtraction Angiography (DSA), ECG, Treadmill, Colour Doppler etc. The hospital also has three hi-tech operation theatres, Intensive care unit.

Department of study

The departments selected for the study are general medicine, medical radiation and oncology, pediatrics and surgical oncology. The reason for selection of these departments was, it has plenty of patients with different co morbid conditions being dealt with COPD patients which are the actual requirement for the study. Pharmacy Practice Department provides services to the department and a good cooperation from the medical team added up to the reason for selecting this department for conducting the study.

Literature survey

Literature survey was carried out regarding the different aspects that should be considered while doing a study based on prescribing pattern of COPD patients. These include various drug utilization studies, prescribing patterns, identifying the adverse effects, sensitivity patterns, developing questionnaires and cost comparison studies. The literature supporting the study was gathered from various journals.

Study Site : General Medicine Department
Study Design : Prospective observational study
Study Duration : 10 months
Sample Size : 150 patients

Inclusion Criteria

Patients of all age of either sex getting admitted in the study site during the study period, who have been diagnosed with COPD and are willing to participate, are included in the study.

Exclusion Criteria

Patients who are not diagnosed with COPD and those who are not willing to participate in the study are excluded.

Data entry format

A specially designed data entry format was used to enter all patient's details like patient name, age, sex, date of admission, date of discharge, reason for admission, past medical history, medication history, social history, vital signs like temperature, BP, and pulse. Provision is given in the format to enter laboratory investigations like Blood sugar level (FBS, PPS, RBS), Blood counts (Hb, TLC, ESR, Platelet count, Clotting time, Bleeding time), Liver function test, Renal function test, Electrolytes, urine examination, Diagnosis, Co-morbidities associated, Drugs prescribed, Drug interactions, Adverse effects and any interventions (8).

Method

The data was collected during regular ward round participation in the department of General Medicine. Standard data entry format was used to enter all the patient details collected during ward rounds. The prescriptions were individually screened to assess the prescribing pattern of COPD patients.

Statistical analysis

The data are statistically analyzed by using Microsoft excel 2013.Drug- Drug interaction was checked via Medscape online Drug Interaction Checker.

RESULT AND DISCUSSION

Analysis of the cases based on gender

The cases were analysed based upon gender, the study population shows 26.7% (n=40) of female patients and 73% (n=110) of male patients. This parameter correlates with the study conducted by Nathish belbase *et.al.,*(9) which concludes that, out of their study population, 73.3% were male more than 26.7% were female patients. Figure. No: 1 shows analysis of the cases based on gender.

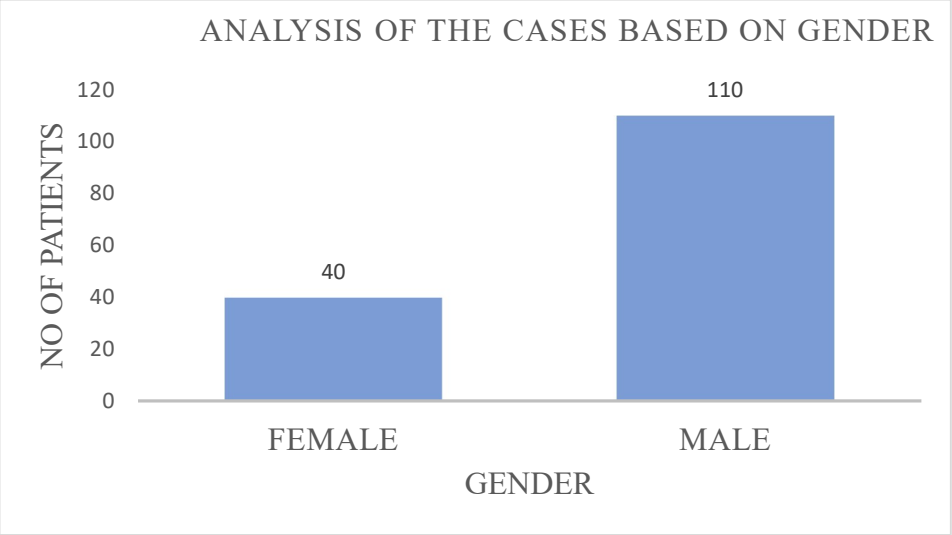

Fig 1: Analysis of the case based on gender

Analysis of the cases based on age category

The cases were analysed based age category. Among a total number of 150 patients, the study population shows 68% (n=102) of adult patients, 0.67% (n=1) of aldolescence patients and 31.3% (n=47) of child patients. Figure No. 2 shows analysis of the cases absed on age category.

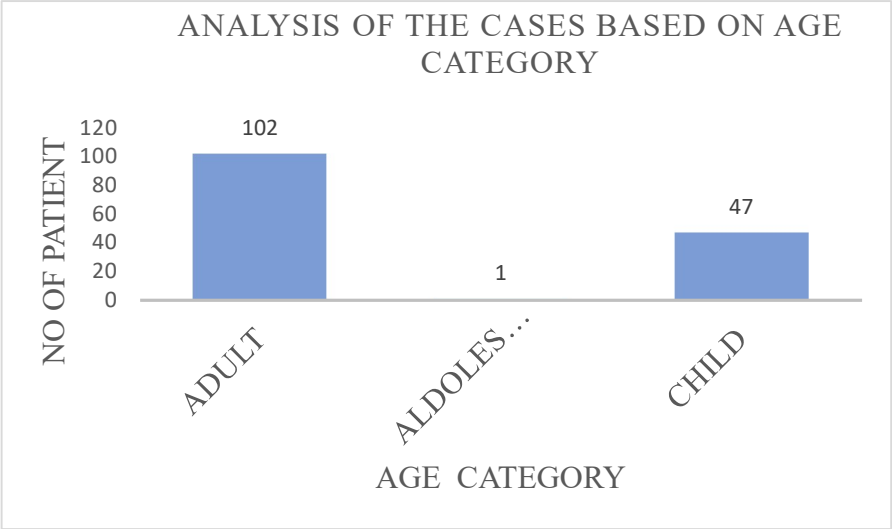

Fig 2: Analysis of the case based on age category

Analysis of the cases based on age group

The cases were analysed based upon age group as shown in figure 3. Among a total number of 150 patients, the study population shows 3.3% (n=5) of patients from the age group below 1 year, 28% (n=42) of patients were under 1-10 category, 0.671% (1) of patients were under 11-20 category, 0.67% (n=1) of patients were under 21-30 category, 0.67% (n=1) of patients were under 31-40 category, 4.67% (n=7) of patients were under 41-50 category, 20% (n=30) of patients were under 51-60 category, 17.3% (n=26) of patients were under 61-70 category, 16.7% (n=25) of patients were under 71-80 category, 8% (n=12) of patients were under 81-90 category. The average age of study population was found to be 45.73±30.57. Based on this analysis, patients under the age of 1-10 shows increased use of COPD drugs when compared to other age category. This result is almost like the study conducted by Nathish belbase *et.al.,*(9) which describes, out of 150 patients, nearly 33.33% of the patients lies under the age group of 61-70.

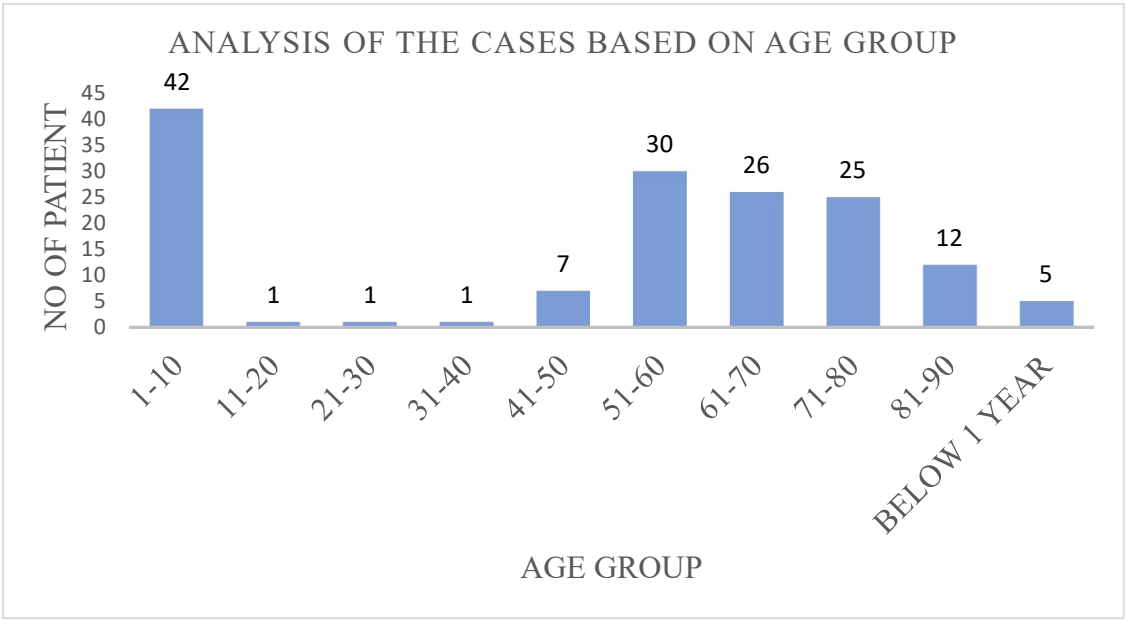

Fig 3: Analysis of the cases based upon age group

Analysis of the cases based on social history

Based on the study population, the cases were analysed based on social history of patients which shows 12% (n=18) of patients were smoker, 5.3% (n=8) of patients were alcoholic, 1.3% (n=2) of patients were tobacco users, 3.3% (n=5) of patients were both smoker+ alcoholic, 9.3% (n=14) of patients were Ex-smoker, 0.67% (n=1) of patients were Ex-alcoholic, 6% (n=9) of patients were both Ex-smoker+alcoholic and 62% (n=93) were found to be non-alcoholic and non-smoker. Figure No: 4 shows analysis of the cases based on social history.

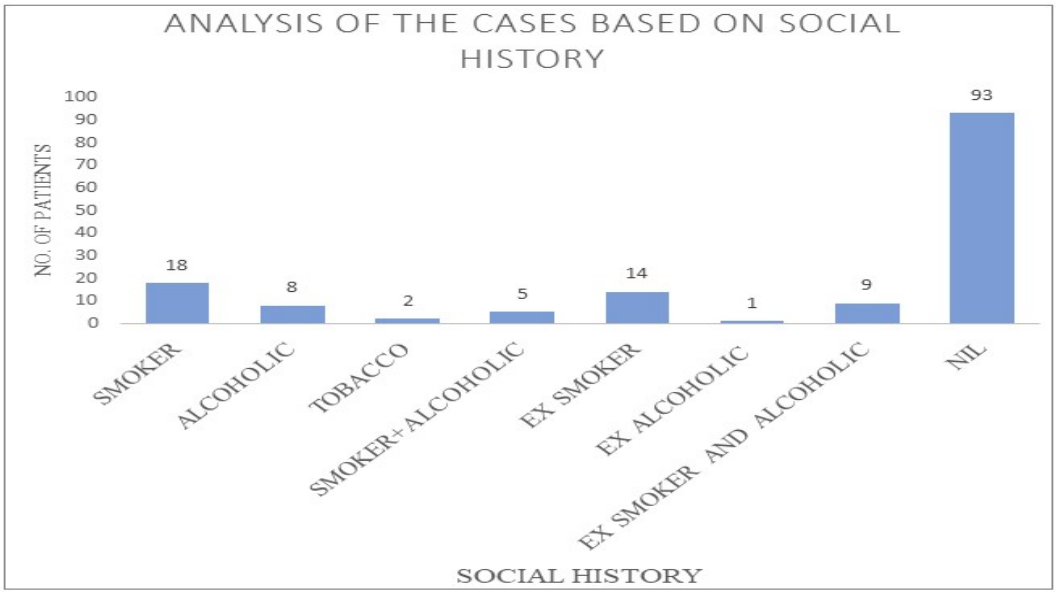

Fig 4: Analysis of the caes based on social history

Analysis of the cases based on occupation

The cases were analysed based on occupation as shown in figure no: 5. Among a total number of 150 patients, the study population shows 10.7% (n=16) of patients were housewife, 64.7% (n=97) of patients were unemployed, 2% (n=3) of patient were retired teacher, 20.7% (n=31) of patients were self employed and 2% (n=3) of patients were teacher.

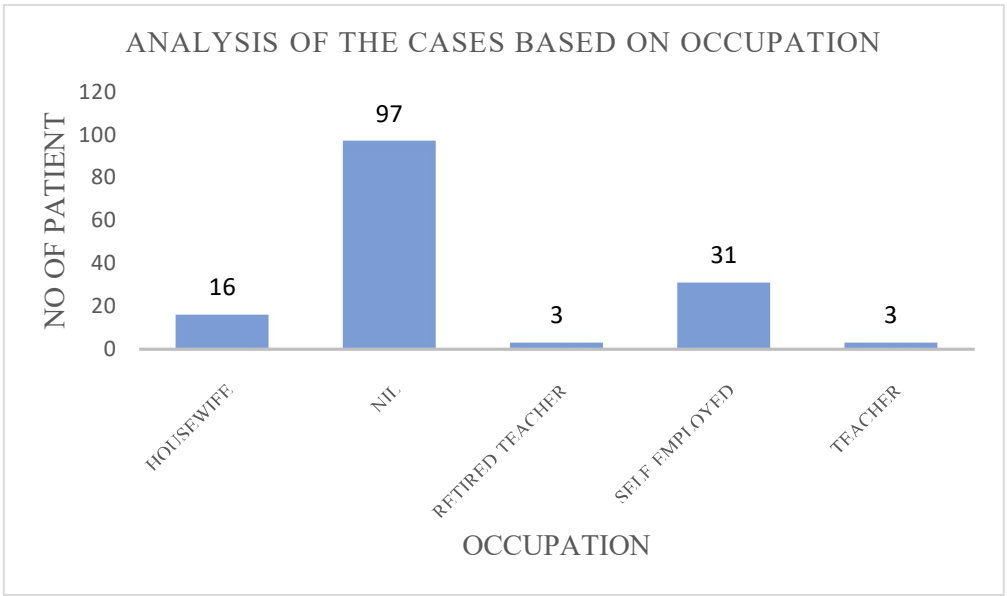

Fig 5: Analysis of the cases based on occupation

Analysis of the cases based on department

The cases were analysed based on department as shown in figure no: 6. Among a total number of 150 patients, the study population shows 59.3% (n=89) of patients were from general medicine, 3.3% (n=5) of patients were from medical radiation and oncology, 32% (n=48) of patient were from paediatrics and 4.7% (n=7) of patients were fron surgical oncolgy.

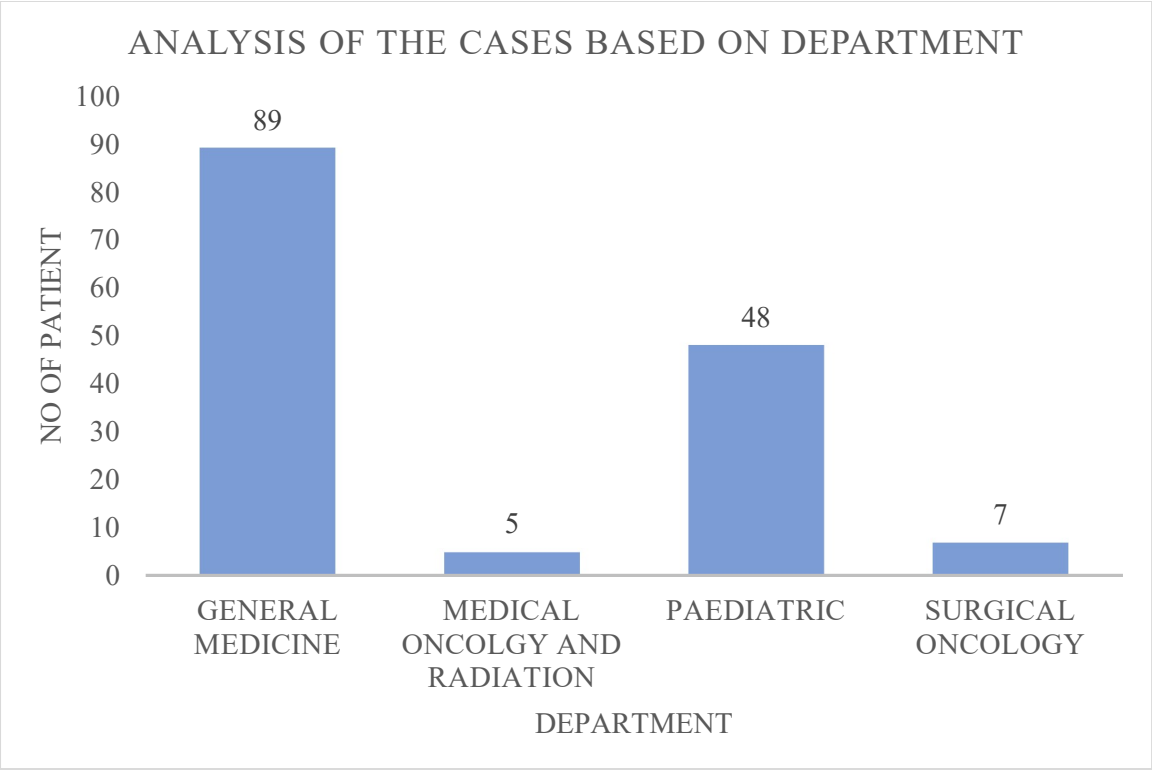

Fig 6: Analysis of the cases based on department

Analysis of the cases based on past medication history

Based on the study population, the cases were analysed based on past medication history of patients, 2.7% (n=4) of patients had COPD, 0.67% (n=1) of patient had diabetes mellitus, wheezing, bronchities, 1.3% (n=2) of patient had hypothyrodism, 94% (n=141) of patient had no past medical history and 11% were tympanoplash. Figure no: 7 shows analysis of the cases based on past medical history.

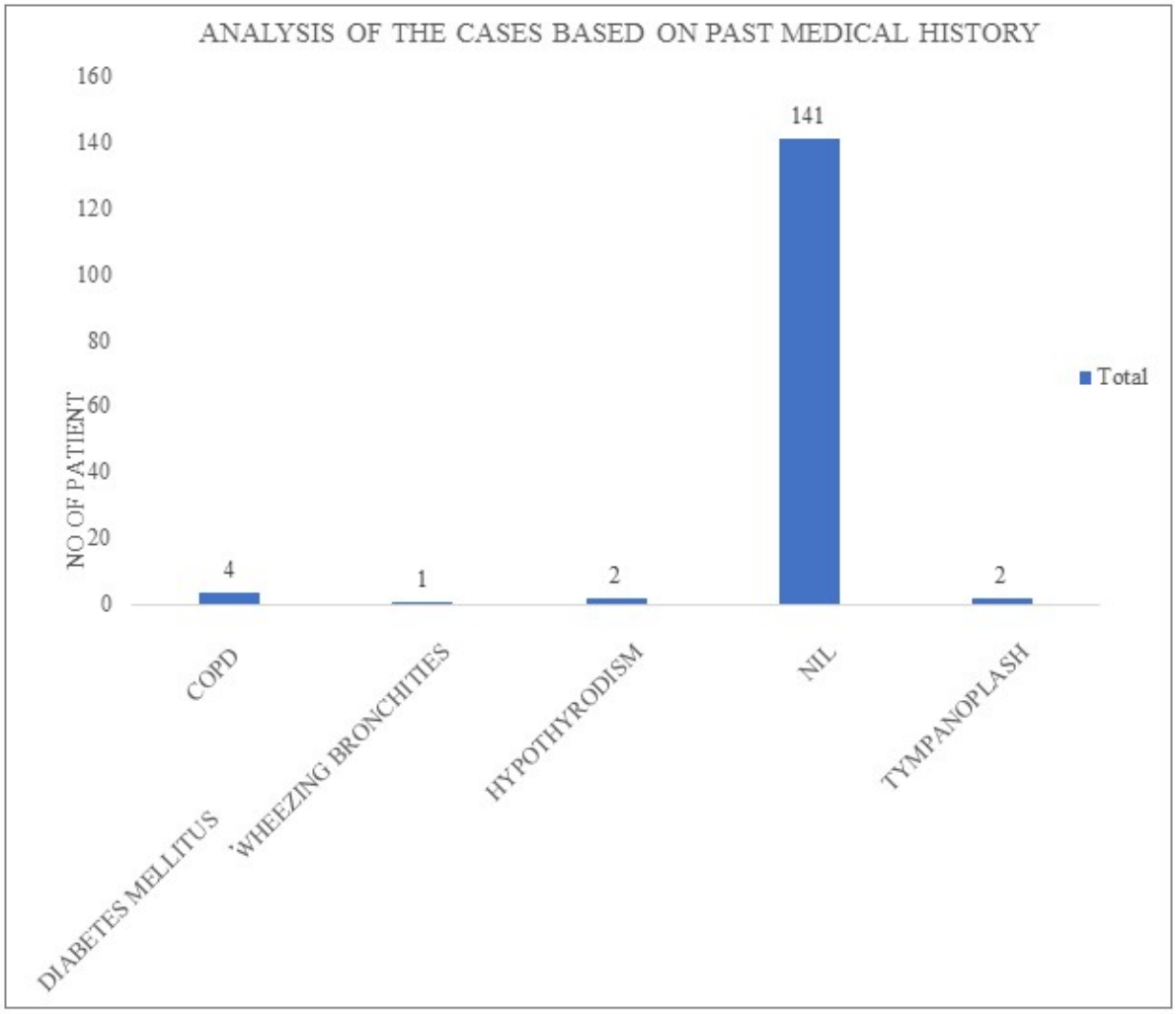

Fig 7: Analysis of the cases based on past medical history

Analysis of the cases based on class of drugs

Based on study population, the cases were analyzed on class of drugs out of which 38.2% (n=104) patients were given antibiotics, 34.5% (n=94) patients were given bronchodilator, 11% (n=30) patients were given antihistamine, 0.73% (n=2) patients were given mucolytic agent, 11.7% (n=32) patients were given nasal decongestant, 3.6% (n=10) patients were given corticosteroid. This parameter correlates with the study conducted by Nathish belbase *et.al.,*(9) where the antibiotic was given to 38.2% (n=104) patients. Figure no: 8 shows analysis of the cases based on class of drug.

Out of 38.2% (n=104) of antibiotics, claribid was the most commonly prescribed antibiotic, ceftum+ Gudcef CV, Levofloxacin+ Gudcef CV were least commonly prescribed antibiotic. A total of 34.5% (n=94) of bronchodilator, Bromosal+ Levolin and Unicontin+ Forglyn were highly prescribed bronchodilator, Brozeet+Forglyn, Budecort+Ipravent, Budecort+Levolin+Brozeet, Budecort+Levolin+Ipravent, Deriphylline+ Unicontin+ Brozeet were least commonly prescribed bronchodilator.

Montek LC, ambrodil, oxynoz, dexa are the commonly prescribed antihistamine, mucolytic agent, nasal decongestants and corticosteroids respectively. The study population also shows oral and inhalation route were prescribed mostly when compared to other route of administrations.

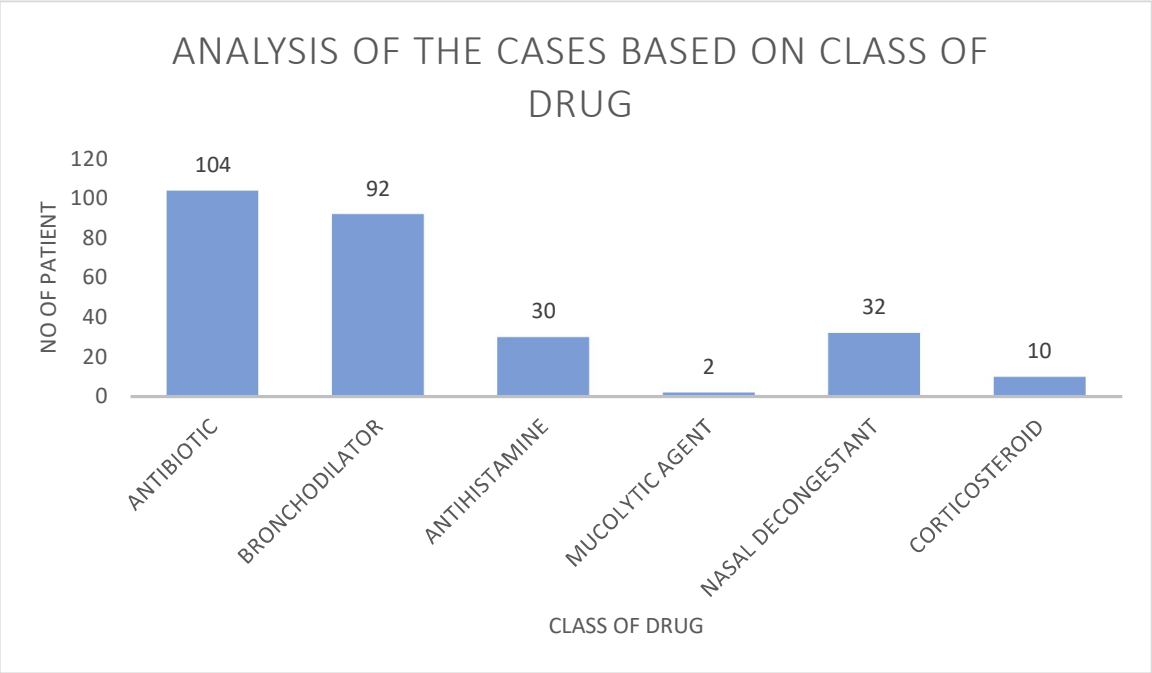

Fig 8: Analysis of the cases based on class of drugs prescribed

Analysis of the cases based on drug interaction

The cases were analysed based upon drug interaction, among a total number of 150 patients, the study population shows 32.7% (n=49) of minor drug interaction, 27.3% (n=41) of monitor closely drug interaction. Figure no: 9 shows the analysis of the cases based on drug interaction

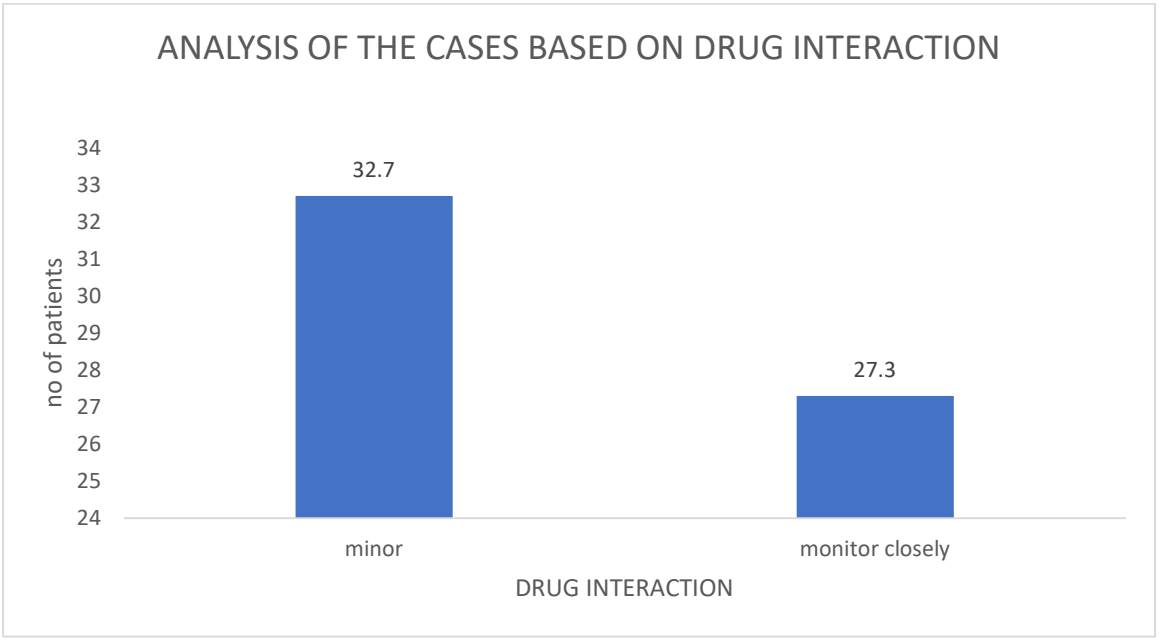

Fig 9: Analysis of the cases based on drug interaction

CONCLUSION

In conclusion, this study in a multispecialty hospital sheds light on the prescribing pattern and drug interaction of COPD patients. Notably, male susceptibility and a higher prevalence in the 1-10 age groups suggest the need for targeted interventions. Lifestyle factors, including non-smoking and non-alcohol use, contribute to the complexity of COPD dynamics. The study emphasizes the importance of early diagnosis, revealing a significant portion of patients with no past medication history. Polypharmacy concerns, coupled with extended hospital stays, underscore the multifaceted challenges in COPD management. Prescription patterns, particularly the common use of antibiotics and bronchodilators, call for nuanced treatment approaches. The findings provide a valuable foundation for refining COPD interventions and highlight the necessity for vigilant monitoring of drug interactions during treatment.

FUTURE ASPECTS

Future directions for COPD research include longitudinal studies to track disease progression and outcomes, pediatric-focused investigations for early diagnosis and risk factors, assessment of COPD's economic impact to guide resource allocation, implementation of patient education programs to enhance awareness and adherence, examination of polypharmacy implications for treatment optimization, exploration of technology's role in remote patient management, promotion of multidisciplinary collaboration for comprehensive care, and investigation of the interplay between genetics and environmental factors for personalized treatment and prevention strategies. These efforts collectively aim to advance COPD understanding and improve tailored approaches to care.

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