

Retrospective Drug Utilization Evaluation Among Patients of Respiratory Disorders

Shalini Rawat, Yogesh Joshi*

Department of Pharmacy Practice, School of Pharmaceutical Sciences, Shri Guru Ram Rai University, Dehradun-248001, Uttarakhand (India)

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ABSTRACT

Respiratory disorder is a pathological condition affecting the organs and tissues of respiratory tract. The study was retrospectively carried out among patients of respiratory disorders in a tertiary care hospital of Dehradun to evaluate drug utilization pattern. A total of 143 patients were included in the study reflecting 54.55% males and 45.45% females. Majority of respiratory disorders belongs to the age group of 65-75 years (29.37%) while age group ≤ 25 years contributed minimum (4.20%). Study showed that respiratory disorders were higher among unemployed as well as uneducated peoples contributing 33.56%. Social habits reflected that 34.26% patients were smoker, 32.86% patients were oral tobacco users and 13.95% patients were alcoholic. A sum of 1230 drugs was prescribed among all patients under study and average number of drugs per patients was found to be 8.6 that reflect the concept of polypharmacy. Most commonly prescribed drugs were antibiotics (28.53%) followed by decongestants (0.48%) as least prescribed drug category. Among all drugs prescribed, 63.82% was prescribed as monotherapy and remaining 36.18% was prescribed as combination therapy. Due to high value of average number of drugs per patient, problem of concern was polypharmacy which requires the control through rational prescribing practices. The drugs prescribed were mostly recommended and also confirm to the rational prescribing practices in the respiratory disorder treatment.

Keywords: Respiratory disorder, drug utilization, polypharmacy, rational, prescribing

INTRODUCTION

Respiratory disorder is a medical term and a pathological condition which affects the organs and tissues of the upper as well as lower respiratory tract. The primary function of the respiratory system is to supply the blood with oxygen so that the blood can deliver oxygen to all parts of the body and this process can be done through breathing. There are several etiologic factors for occurrence of respiratory disorders that may include genetics, allergies, smoking, air pollution and foreign pathogens. Bacterial and viral infection causes chronic obstructive pulmonary disease (COPD), chronic bronchitis, emphysema, asthma, pneumonia and others respiratory disease¹⁻³. The main causes of respiratory problems are smoking and air pollution. Air pollution varies from city to city depending on factors such as the sources of pollutants, climate and the type and size of particles the environment, air quality directly affect respiratory health and inhaled pollutants reach systematic circulation through lungs and cause deleterious effect on various organs and systems⁴⁻⁵.

Respiratory tract infections (RTIs) are one of the major health problems of society because they lead to increased hospitalization, morbidity and mortality. Common clinical problems frequently seen in both children and adults relative to upper and lower respiratory tract are the major cause of morbidity, distress and mortality particularly in patients at the extremes of age, and those with pre-existing lung disease or immune suppression. Respiratory disorders

is a significant threat to public health which posing risks to individuals regardless of age, gender, ethnic background, socioeconomic status, or lifestyle⁶.

Pharmacological Treatment

- ✓ Antibiotics to prevent bacterial infection (amoxicillin+clavulanic acid)
- ✓ Decongestants: Antihistamine and Phenylephrine
- ✓ Non-steroidal anti-inflammatory drugs
- ✓ Dextromethorphan for cough.
- ✓ Steroids Therapy
- ✓ Antitussives
- ✓ Antiviral drugs
- ✓ Cough Suppressants
- ✓ Bronchodilators
- ✓ Inhalation therapy⁷⁻⁹.

Non-Pharmacological Treatment

- ✓ Long Term Oxygen Therapy (LTOT)
- ✓ Smoking Cessation
- ✓ Rehabilitation
- ✓ Non-invasive Positive Pressure Ventilation (NPPV)
- ✓ Physiotherapy
- ✓ Patients should be encouraged to drink fluids prevent dehydration and possible decrease the viscosity of respiratory secretion.
- ✓ Use of vaporization may further promote the thinning and loosening of respiratory secretion.
- ✓ Avoid alcohol and irritants in the air¹⁰.

Drug Utilization Evaluation

Table 1: Demographic Analysis

Prevalence factors		Number of subjects (%) (n=143)
Gender		
Male		78 (54.55)
Female		65 (45.45)
Age (Years)		
≤25		06 (4.20)
26-35		09 (6.29)
36-45		13 (9.09)
46-55		27 (18.88)
56-65		37 (25.87)
66-75		42 (29.37)
>75		09 (6.29)
Occupation		
Employed	Educated	42 (29.37)
	Uneducated	29 (20.27)
Unemployed	Educated	24 (16.78)
	Uneducated	48 (33.56)
Social Habit		
Smoking		49 (34.26)
Oral Tobacco		47 (32.86)
Alcoholic		20 (13.98)

According to World Health Organization (WHO), drug utilization research is defined as the marketing, distribution, prescription and use of drug in a society with an importance given to resulting medical, social and

economic consequences. Drug utilization study is an important aspect of medical review, plays a role in pharmacoepidemiological investigation and describes the practice of prescription written by physicians. Drug use evaluation (DUE) is an ongoing, authorized and systemic quality improvement process, which is designed to review drug use and prescribing patterns and promote appropriate drug use through education and other interventions. Drug utilization research (DUR) provides insights into different aspects of drug use and drug prescribing such as pattern of use, quality of use, determinants of use, and outcomes of drug use. DUR is a review of patient’s prescription and medication data before, during, and after dispensing to ensure appropriate medication, decision making and positive patient outcomes. The effects of drug utilization, as well as studies of how drug utilization relates to the effects of drug use, beneficial or adverse effect. The aim of drug utilization study is to promote rational and appropriate use of drugs at lowest possible dose and cost. DUE studies are classified into three categories:
 i. Prospective- evaluation of a patient’s therapy before medication is dispensed.
 ii. Concurrent- ongoing monitoring of drug therapy during the course of treatment.
 iii. Retrospective- review of therapy after the patient has received the medication¹¹⁻¹⁵.

DUE information may assist healthcare system and hospitals to design educational programmers that may improve prescribing and drug use. Intermittent monitoring of drug use patterns is one of the measures which is

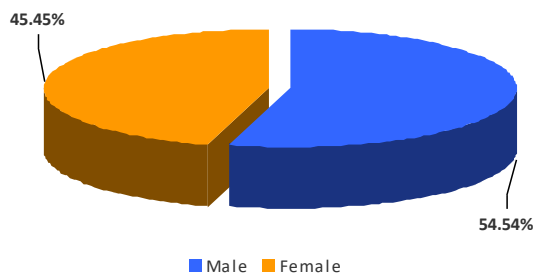


Figure 1: Gender wise distribution of patients

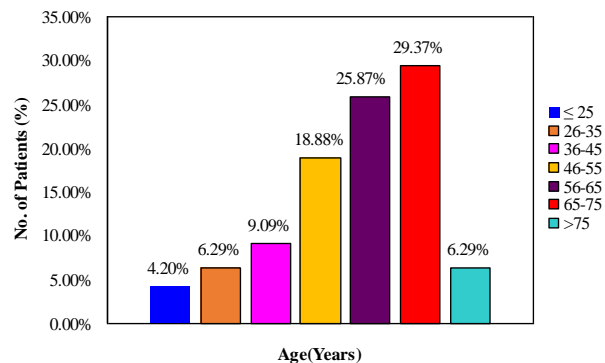


Figure 2: Age wise distribution of patients

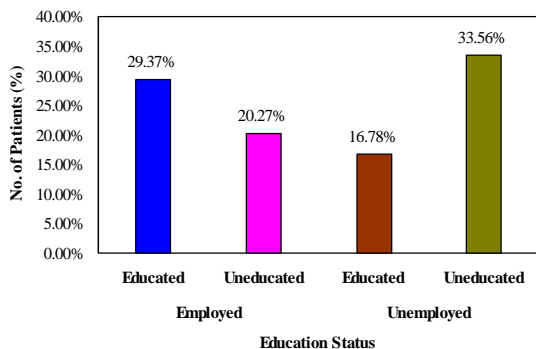


Figure 3: Occupation wise distribution of patients

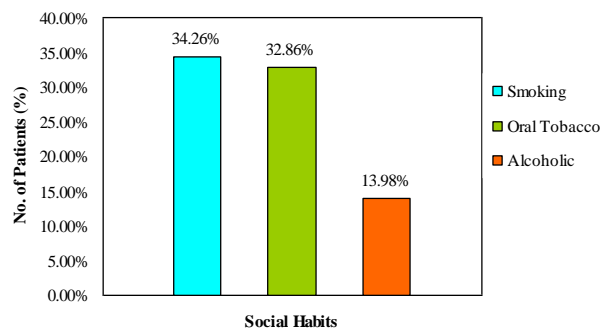


Figure 4: Social habit wise distribution of patients

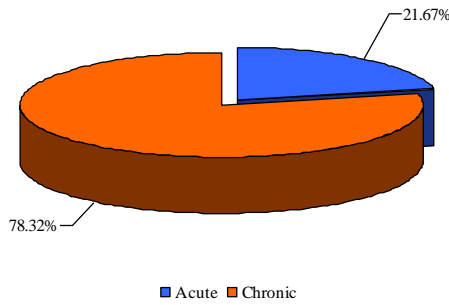


Figure 5: Level of occurrence wise distribution of respiratory disorders

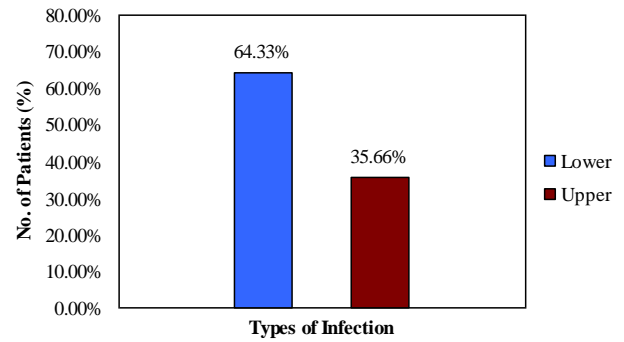


Figure 6: Infection wise distribution of respiratory disorders

Table 2: Severity wise distribution of respiratory disorders

Severity of disease	No. of Patients (%) n=143
Mild	14(9.79%)
Moderate	39(27.27%)
Severe	77(53.84%)
Very Severe	13(9.09%)

Table 3: Categorization of drugs prescribed

Drug Category	No. of Drugs (%)
Bronchodilators	209 (16.99%)
Steroid Therapy	168 (13.65%)
Leukotriene Inhibitors	8 (0.65%)
Antihistamines	28 (2.27%)
Decongestants	6 (0.48%)
Antibiotics	351 (28.53%)
Antitussives	13 (1.05%)
Expectorants	39 (3.17%)
Antitubercular drugs	98 (7.96%)
Miscellaneous	310 (25.20%)

undertaken to analyze the rationality of drug usage and to offer feedback/suggestions to the prescribers. Without a precise knowledge of how drugs are being prescribed and used, it is difficult to suggest measures to improve the prescribing habits^{12, 16}.

Pharmacist role in DUE

Pharmacists play a key role in the overall process of a DUE programme because of their experience in the area of pharmaceutical care. DUE affords pharmacists the opportunity to identify trends in prescribing with in groups of patients such as those with asthma, diabetes or high blood pressure. Pharmacists can then, in collaboration with physicians and other members of the healthcare team, initiate action to improve drug therapy for both individual patients and patient's populations. In addition to assisting in the performance of individual reviews, the suggested roles and responsibilities of pharmacists in a DUE programme¹⁶.

Table 4: Average number of drugs per patient

No. of drugs per Patient	No. of Patients (%) (n=143)
3	04 (2.79%)
4	05 (3.49%)
5	06 (4.19%)
6	19 (13.28%)
7	12 (8.39%)
8	12 (8.39%)
9	12 (8.39%)
10	17 (11.88%)
11	06 (4.19%)
12	15 (10.48%)
13	11 (7.69%)
14	10 (6.99%)
15	06 (4.19%)
16	05 (3.49%)
17	03 (2.09%)

Table 5: Assessment of single v/s combination drug therapy

Drug Therapy	Drugs Prescribed in Males	Drugs Prescribed in Females	Total Drugs Prescribed
Monotherapy	404 (32.85%)	381(30.97%)	785 (63.82%)
Combination Therapy	250 (20.32%)	195(15.85%)	445 (36.18%)
Total	654	576	1230

METHODOLOGY

An observational, retrospective study was carried out to evaluate drug utilization among patients of respiratory disorders. The study was carried out at pulmonary ward of Shri Mahant Indresh Hospital, Patel Nagar, Dehradun, Uttarakhand, India for a period of 6 months. Patients of both genders, admitted in pulmonary ward with age ≥ 18 years were included in the study while patients aged < 18 years and patients of outpatient department were excluded from the study. The study data was collected from the

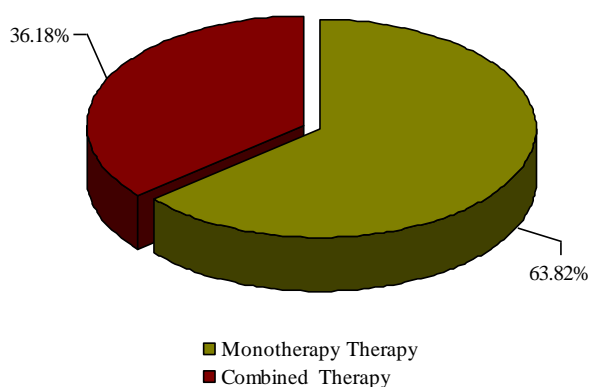


Figure 7: Assessment of single v/s combination drug therapy

patient medical record, direct interview of patients and medical record room.

RESULTS & DISCUSSION

I. Demographic Analysis of Respiratory Disorder Patients

A total of 143 patients diagnosed with any respiratory disorder were included for demographic analysis as shown in Table 1. Gender wise distribution of patients showed that there were 54.55% males and 45.45% females in the study as shown in Figure 1. Figure 2 showed that majority of respiratory disorders belongs to the age group of 65-75 years (29.37%) followed by age group 56-65 years (25.87%) while age group ≤ 25 years contributed minimum patients (4.20%). Occupation wise distribution of patients (Figure 3) showed that respiratory disorders was higher in those who are unemployed as well as uneducated contributing 33.56% followed by employed as well as educated contributing 29.37%. Figure 4 showed distribution of social habits among which 34.26% patients were smoker, 32.86% patients were oral tobacco users and 13.95% patients were alcoholic.

II. Categorization of Respiratory Disorders

From the level of occurrence, it was observed that 112 (78.32%) patients were categorized under chronic disorders whereas 31 (21.67%) patients under acute disorders (Figure 5). On the basis of severity of disease, 9.79% patients were categorized as mild, 27.27% patients as moderate, 53.84% patients as severe and 9.09% patients as very severe (Table 2). According to types of infection, 92(64.33%) patients belongs to lower respiratory disorders while 51 (35.66%) patients belongs to upper respiratory disorders (Figure 6).

III. Categorization of Drugs Prescribed

A sum total of 1230 drugs were prescribed among 143 patients. Table 3 showed that most commonly prescribed drugs were antibiotics (28.53%) followed by bronchodilator (16.99%), steroids (13.65%), antitubercular drugs (7.96%), expectorants (3.17%), antihistamines (2.27%), antitussives (1.05%), leukotriene

inhibitors (0.65%) and decongestants (0.48%) while miscellaneous drugs (25.20%) were unrelated to respiratory conditions. Table 4 showed that average number of drugs per patients was found to be 8.6. Maximum number of drugs per patient was 17 and found among 2.09% patients while least number of drugs per patient was 3 and found among 2.79% patients. Such greater number of drug use per patients reflects the concept of polypharmacy.

IV. Assessment of Single v/s Combination Drug Therapy

Out of 1230 drugs prescribed, 63.82% was prescribed as monotherapy and remaining 36.18% was prescribed as combination therapy. Among monotherapy, 404 (32.85%) drugs were prescribed to males and 381(30.97%) drugs were prescribed to females while among combination therapy, 250 (20.32%) drugs were prescribed to males and 195 (15.85%) drugs were prescribed to females (Table 5 and Figure 7).

CONCLUSION

This study was conducted with the aim to carry out evaluation drug utilization among respiratory disorder patients. The drugs prescribed were mostly recommended and also confirm to the rational prescribing practices in the respiratory disorders. The problem of concern was polypharmacy due to high value of average number of drugs per patient. Rational drug utilization needs training of health professionals as per treatment guidelines and prescriber's education to ensure appropriate therapy. There is a need of education for both the patients and the doctors regarding the limited help of antibiotics and other drugs for the self-limiting condition of the patients. Regular studies have been done for the drug prescribing practices so that an appropriate feedback and awareness can be generated among the patients and the health professionals. Thus, to ensure the rationality of treatment, a time to time monitoring and evaluation is absolutely essential.

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