

Study of drug utilization trends in respiratory tract infections in a tertiary care teaching hospital: a retrospective study

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ABSTRACT

Background: Drug utilization studies play crucial role in the health sector and ultimately it provides insight into the efficiency of drug use and results of such research can be used to help to set priorities for the rational use of medicines and allocation of health care budgets. Respiratory tract infections (RTIs) contributing to significant mortality and morbidity of populations especially in developing countries like India. Polypharmacy and irrational prescription are significant negative fallouts in treatment of RTIs. Keeping in view of this, our study was undertaken to analyze the drug utilization pattern of RTIs.

Methods: The study was conducted at Gandhi Hospital, after obtaining permission from the Institutional Ethics Committee. We have collected data of 600 case records of the patients diagnosed with respiratory tract infection and evaluated for prescribing patterns in consonance with WHO indicators.

Results: Out of the total case records 348 (58%) were of male patients and 252 (42%) of female patients. Age wise distribution was done; 79 (13.16%) 0-15 years, 46 (7.67%) 16-30 years, 123 (20.50%) 31-45 years, 194 (32.33%) 46-60 years and 158 (26.33%) patients belongs to >60 years of age group respectively. A total of 4682 drugs were prescribed, 2468 (52.71%) antibiotics, 768 (16.4%) bronchodilators, 581 (12.4%) corticosteroids, 323 (6.89%) antacids, 542 (11.57%) in miscellaneous category respectively. With regard to formulations 2463 (52.60%) oral, 1463 (31.24%) injectable and 756 (16.14%) inhalational drugs were prescribed. Numbers of Fixed dose combinations were 712 (15.20%). 7.8 drugs were prescribed per prescription. 2493 (53.24%) drugs were prescribed from National Essential Medicine List. 4168 (89.02%) drugs were prescribed by their brand names.

Conclusions: Prescription of drugs with branded names, Irrational prescribing, poly pharmacy were observed in our study. So there is an urgent need for creating awareness among the health care professionals regarding rational prescription by using data from drug utilization studies.

Keywords: Drug utilization studies, Respiratory tract infections, Rational prescription

INTRODUCTION

Drug utilization study defined as marketing, distribution, prescription, and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences.¹ It plays crucial role in the health sector as it deals with the patterns of prescription, quality, determinants and outcomes of usage of drugs. Ultimately it provides insight into the efficiency of drug use and

results of such research can be used to help to set priorities for the rational allocation of health care budgets.

Infections of the upper and lower respiratory tract are a major cause of morbidity and mortality particularly in patients at the extremes of age, and those with pre-existing lung disease or immune suppression.² In India, acute respiratory tract infections (ARTI) are responsible for one million deaths. Out of these 10-15% is due to acute lower

respiratory tract infections (ALRTIs). The RTIs includes Upper respiratory tract infection (URTI), it is a nonspecific term used to describe acute infections such as common cold, pharyngitis, sinusitis, and tracheobronchitis.

Lower respiratory tract infections (LRTIs) are frequent and include community acquired pneumonia, exacerbations of chronic bronchitis, acute bronchitis, and viral lower respiratory tract infections.³ LRTIs 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.⁴

In India, we do not have adequate data on the lower respiratory tract pathogens, their resistance patterns and proper guidelines for rational use of antibiotics.⁵ At this juncture Drug utilization studies provide good opportunity to generate data on the aforementioned issues. Increase in prescription of antibiotics in the clinical practice even for the mild cases, selling of antibiotics over the counter without prescription by the pharmacies, poor patient compliance or non compliance with medicines further enhanced the development of antibiotic resistance.

The study of prescribing patterns is a part of medical audit and seeks to monitor, evaluate and if necessary, suggest modifications in prescribing practices to make medical care rational.⁶ Antibiotics are being prescribed for either prophylactic or therapeutic reasons. Irrational prescription of antibiotics might lead to drug resistance. By considering the above facts our study will be used as a tool to assess the rational prescribing pattern in our tertiary care teaching hospital.

METHODS

This project is a retrospective, non interventional and observational study. The study was conducted at Gandhi Hospital, Secunderabad, Telangana during October 2014 to February 2015 after obtaining permission from the Institutional Ethics Committee. We have collected data of 600 case records of the patients diagnosed with respiratory tract infection after getting the permission from officer of medical record department.

Inclusion criteria

Only those case records of the patients admitted with Respiratory Tract Infections (RTIs) were included in the study.

Exclusion criteria

Case records of patients diagnosed with non RTIs and other diseases and prescriptions of outpatients were excluded from the study.

The selected case records were evaluated for prescribing patterns in consonance with the WHO indicators and other

parameters like Age wise distribution of diseases and incidence. The WHO indicators are average number of drugs per encounter, percentage of drugs prescribed by generic names, number of fixed dose combinations, percentage of drugs prescribed from Essential Medicine List and different drug formulations etc. All the case records were analyzed accordingly and results were tabulated by using simple statistical measures like percentages, averages, divisions and multiplications.

RESULTS

We collected and observed a total of 600 case records of patients diagnosed with respiratory tract infections from the hospital. Analyzed these case records in consonance with the WHO prescribing indicators. Our final interpretations from the study are as follows.

Out of total number of case records 348 (58%) patients were male and 252 (42%) were female, the most commonly affected age group of patients from our study:46-60years age group (Table 1).

Table 1: Age wise distribution of patients with RTIs.

Male	Female	Age in years	No. of patients	Percentage
58%	42%	1-15 years	79	13.16
		16-30years	46	7.67
		31- 45 years	123	20.5
		46-60 years	194	32.33
		above 60 years	158	26.33

The respiratory tract infections prevalence, 218 (36.33%) patients were diagnosed as chronic obstructive pulmonary disease (COPD), 152 (25.33%) pneumonia, 112 (18.67%) pulmonary tuberculosis, 76 (12.67%) bronchial asthma, and 42 (7.00%) of upper respiratory tract infection (URTI) respectively (Table 2).

Table 2: Respiratory Tract Infections (RTIs) prevalence.

RTIs	No. of patients	%
COPD	218	36.33
Pneumonia	152	25.33
PTB	112	18.67
BA	76	12.67
URTIs	42	7

RTIs-Respiratory tract infections, COPD-chronic obstructive pulmonary disease, PTB-pulmonary tuberculosis, BA-Bronchial Asthma, URTIs- Upper Respiratory Tract Infections.

Our study observed that a total of 4682 drugs were prescribed, out of the total 2468 (52.71%) antibiotics, 768 (16.40%) bronchodilators, 581 (12.40%) corticosteroids,

323 (6.89%) antacids and 542 (11.57%) from the miscellaneous category (Table 3).

Table 3: Pattern of drug prescription in RTIs.

Drug	Number of drugs prescribed	%
Antibiotics	2468	52.71
Bronchodilators	768	16.4
Corticosteroids	581	12.4
Antacids	323	6.89
Other miscellaneous drugs	542	11.57

The most commonly prescribed Corticosteroid was Prednisolone 519(89.32%), and Antibiotics were Cephalosporins 637 (25.81%) Levofloxacin 498 (20.17%), Piperacillin plus tazobactam 468(18.96%), Amoxicillin plus clavulanic acid 567 (22.97%) and Ofloxacin 298 (12.07%) respectively (Table 4).

Table 4: Most frequently prescribed antibiotics in RTIs.

Antibiotic	No. (%)	Percentage
Cephalosporins	637	25.81
Amoxicillin + clavulanic acid	567	22.97
Levofloxacin	498	20.17
Piperacillin + tazobactam	468	18.96
Ofloxacin	298	12.07

Table 5: Different drug formulations prescribed.

Oral formulations		Injectable for mutations		Inhalational for mutations	
No. of drugs	%	No. of drugs	%	No. of drugs	%
2463	52.60	1463	31.24	756	16.14

Table 6: Other drug utilization parameters.

Drug utilization parameter	No. (%)	Percentage
Fixed dose combinations	712	15.20
Drugs per prescription	7.8	
Drugs from National Essential Medicine List (NEML)	2493	53.24
Drugs prescribed by brand names	4168	89.02

Drug formulations prescribed, 2463 (52.60%) oral, 1463 (31.24%) injectables and 756 (16.14%) inhalational (Table 5). With regard to other prescribing indicators 712 (15.20%) fixed dose combination was prescribed, 7.8 drugs were prescribed per case record, 2493 (53.24%) drugs were from the National Essential List of Medicine

and 4168 (89.02%) drugs were prescribed by brand names (Table 6).

DISCUSSION

Drug utilization studies are essential part of pharmaco-epidemiological studies which provide a proper understanding usage pattern of drugs, quality and efficiency use of drugs and its outcomes.⁷ These studies can play a key role in helping the healthcare system to understand, interpret and improve the prescribing administration and to maintain the rational use of drugs which assist the physician's prescribing attitude in accordance with the predetermined standards by allocating them with the feed-back and also in designing, conducting and imparting educational programmes for healthcare providers.⁸ These studies should become a method of increasing job satisfaction and means of education for health professionals, rather than being perceived as threat or another bureaucratic burden.⁹

In present study, the most common diseases were chronic obstructive pulmonary disease (COPD), Pneumonia, Pulmonary tuberculosis, Bronchial asthma, and upper respiratory tract infections (URTIs), which is almost similar to the previous studies.¹⁰ The most commonly affected patients age group was 46-60 years group.

The antibiotics were most commonly prescribed drugs in treatment of RTIs which is in accordance with the other previous studies.¹¹ In the present study, the most commonly prescribed antibiotics were cephalosporins which is in line with the study by Errabelly P et al.¹² In present study 52.60% oral, 31.24% injectables and 16.14% inhalational formulation of drugs were prescribed, while in another study 86% drugs were prescribed by oral and 14% by nasal route.¹³

Number of drugs per prescription were 7.8, which is in contrast to the study by Gogoi S et al, where average number of drugs per prescription was 6.92.¹⁴ In the present study 2493 (53.24%) drugs were prescribed from national essential list of medicines and 4168 (89.02%) drugs were prescribed by brand name, which is in accordance with the study by Mungrue K et al, where all the drugs were prescribed by brand names.¹⁵

Prescribing drugs by brand names may undermine some of the goals of Essential Medicine concept. Prescribing by generic name helps the hospital pharmacy to have a better inventory control and are often more economical than the branded ones. Regarding the prescribing of FDCs, Potential advantages of FDC's include reduced side effects, increased patient compliance, synergy and increased efficacy and reduced cost, potential disadvantages include inflexible fixed dose ratio, incompatible pharmacokinetics, increased toxicity, physician and pharmacist's ignorance.

At the study site, the prescribers are not having any standard antibiotic prescribing guidelines for the treatment of RTIs nor are they following any standard guidelines available. Hence there is an urgent need of educational programmes in order to bring rational use of antibiotics that requires development of standard guidelines for antibiotic prescription.

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