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Research article

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### The study of prescription pattern in respiratory tract infection diseases in a tertiary care hospital

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#### ABSTRACT

##### Introduction

A respiratory tract infection is an infection anywhere in the respiratory tract (i.e nose, throat, lungs). The infection can be caused by bacteria, viruses or fungi. Respiratory infections are very common. They are believed to be one of the main reasons why people visit their General Physician (GP) or Pharmacist. Respiratory tract infection is of two types Upper Respiratory Tract infection and Lower Respiratory Tract infection.

##### Aim

To study the prescription monitoring in respiratory tract infections in a tertiary care hospital.

##### Methodology

The data were collected in a prescribed performa from the medical case sheets, Drug charts, Laboratory investigations of 119 Inpatients. This was a prospective observational study carried out for Inpatients in Pulmonology department.

##### Results

119 patients in Pulmonology department are administered with different types of antibiotics. Majorly Macrolide antibiotics are administered. Corticosteroids are administered in patients of age group 79-88 years. 60(50.4%) patients were administered with Macrolides, 52(43.6%) were administered with Cephalosporins, 37(31.09%) patients were administered with Pencillins, 11(9.24%) were administered with Flouroquinolones, 7(5.88%) patients were administered with Tetracyclins and the rest of patients were administered with other types of antibiotics like Carbapenems, Glycopeptides, Sulphonamides, Oxazolidines, Antimicrobials.

##### Conclusion

It was observed that the patients were prescribed rationally with antibiotics, Corticosteroids(particularly in elderly patients). A prescription based survey is considered to be one of the scientific methods to access and evaluate the rationality of the prescription for observation of drug utilization study. This observational, prospective study on drug use reflects the actual clinical practice in the communication.

**Keywords:** Respiratory tract infection, Antibiotics, Prescription, Rational, Inpatients, Pulmonology

## INTRODUCTION

### Respiratory tract infections

Respiratory tract infections are very common. They are believed to be one of the main reasons why people visit their GP (General Physician) or pharmacist. The respiratory tract is much more vulnerable to infection than other parts of the body. This is because it is easy for bacteria or viruses to enter the tract when someone breathes in. Respiratory tract infections are more common during the winter. This is possibly due to the fact that during the winter month people are more likely to stay inside and in close contact with each other. The outlook for respiratory tract infections is generally good. Most infections are self-limiting, which means that they will pass without the need for treatment. However, extra care and additional treatment may be required for people who are more vulnerable to the effects of infection. Those who may require this include: [1-5]

Number of vaccines are available for some of the viruses and bacteria that cause infection, such as the flu vaccine and the pneumococcal vaccine (pneumococcal bacteria is a family of bacteria that can cause pneumonia).

A respiratory tract infection is an infection anywhere in the respiratory tract (i.e. the nose, throat and lungs). The infection can be caused by bacteria, a virus or even fungi. The respiratory tract is a general term that is used to describe all the parts of the body that are involved in helping a person to breathe. Health professionals generally make a distinction between: [6-10]

1. Upper respiratory tract
2. Lower respiratory tract

## AIM AND OBJECTIVES

### Aim

To evaluate the prescription monitoring in respiratory tract infection in a tertiary care hospital.

### Objectives

- To assess the rationality of prescription.
- To assess the rationality and efficacy of antibiotics in respiratory tract infections.
- To assess the rationality and efficacy of corticosteroids in respiratory tract infections.
- To assess prescription errors in respiratory tract infections.

## RATIONALITY OF STUDY

Respiratory infections are of two types URTI affecting nose, sinus, throat. LRTI affecting airways and lungs. Generally antibiotics, corticosteroids, anticholinergics and antihistamines are prescribed. Antibiotic overuse and its inappropriate selection are associated with increased drug resistance among respiratory pathogens, progression to chronic disease and increased treatment costs. Use of low dose corticosteroids are associated with improved mortality and morbidity outcomes in RTI's without increased ADR's. Cost effectiveness is influenced by use of antibiotics. Based on review of literature it is clear that prescribing patterns has a crucial role in improving disease condition. The study is aimed at monitoring drug prescription in RTI's and patients with comorbid conditions, because failing it could lead to worsening of disease and increased risk of complications. [11-15]

## METHODOLOGY

### Study site

Study site was carried out in Global Hospital is a tertiary care hospital, L.B.Nagar, Hyderabad.

### Study design

This is a prospective observational study conducted over a period of six months using questionnaires as tool. The study conducted in Global Hospital, LB Nagar, and Hyderabad. Patients who admitted in the hospital and those visiting OPD during a six month period October 2016 to march 2017 will be eligible for enrolment. [15-21]

### Inclusion criteria

- Patients with above 18 years of age.
- Patient with acute and chronic respiratory infections.
- Patients of respiratory tract infections with comorbid conditions.

### Exclusion criteria

### Pregnant women and lactating mothers

- Pediatric patients.
- Psychiatric patients

### Plan of work

The entire study was planned to be carried out for a period of 6 months from October 2016

to March 2017. The proposed study was designed as given below:

**Phase I: (October 2016)**

- Selection of study,
- Collection of Literature review.
- Selection of Study objectives.
- Fix the location of study.
- Approval of study from ethics committee.
- Designing of a standard data entry form required for studies.

**Phase II: (November 2016 to February 2016)**

- Data collection.

- Presentation on study.
- Arrange data collection.
- Data analysis.

**Phase III: (March 2016)**

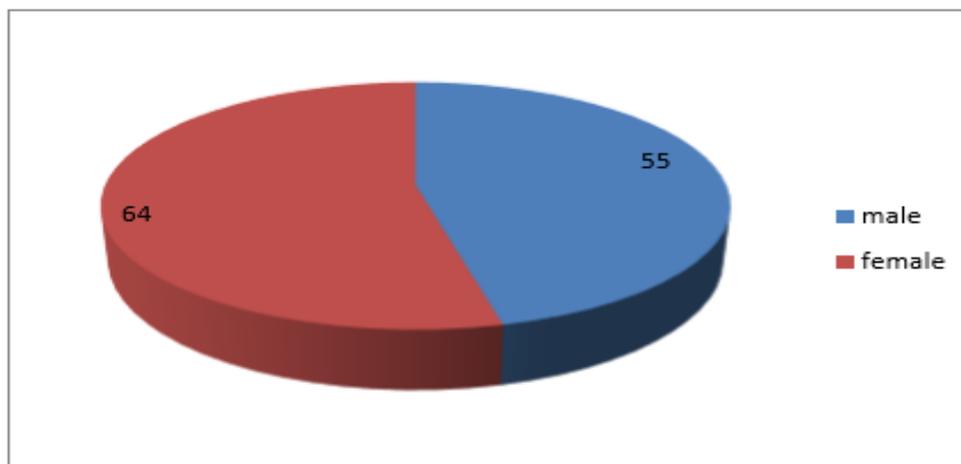
- Implement data in a format.
- Submission of report.

**RESULTS**

Among the 119 patients treated, majority of the female patients (53.78%) are more prone to the respiratory infections compared to male (46.22%)

**TABLE 1:** Respiratory infections in different sexes.

SR No	GENDER	Number of patients	Percentage (%)
1	Male	55	46.22 %
2	female	64	53.73 %
3	Total	119	100 %



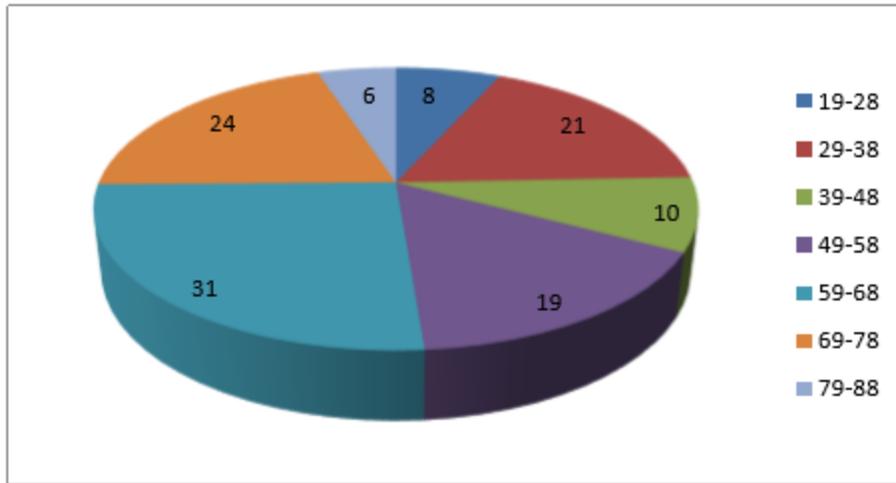
**FIGURE 1: Total number of patients (n=150)**

**Result 2**

Among the 119 patients treated, age group ranging from 59-68 are more affected with respiratory infections (26.0%)

**TABLE 2: Patients of different age groups affected with respiratory infections .**

Age groups	18-28	29-38	39-48	49-58	59-68	69-78	79-88
Number of patients	8	21	10	19	31	24	6
Percentage	6.7%	17.6%	8.4%	15.9%	26.0%	20.1%	5.04%



**FIGURE 2: Distribution of patients age (n=150)**

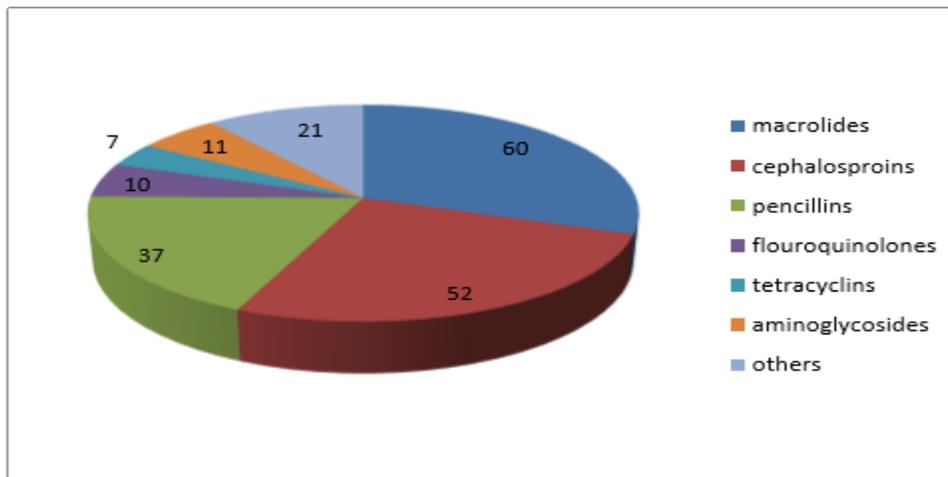
**RESULT 3**

Macrolides (50.4%) are found to be most commonly administered among the patients with

respiratory infections; here the other drugs (17.6%) include carbapenems, antimicrobials, glycopeptides, oxazolidinones, sulphonamides classes of antibiotics.

**TABLE 3: Different types of antibiotics used in respiratory infections**

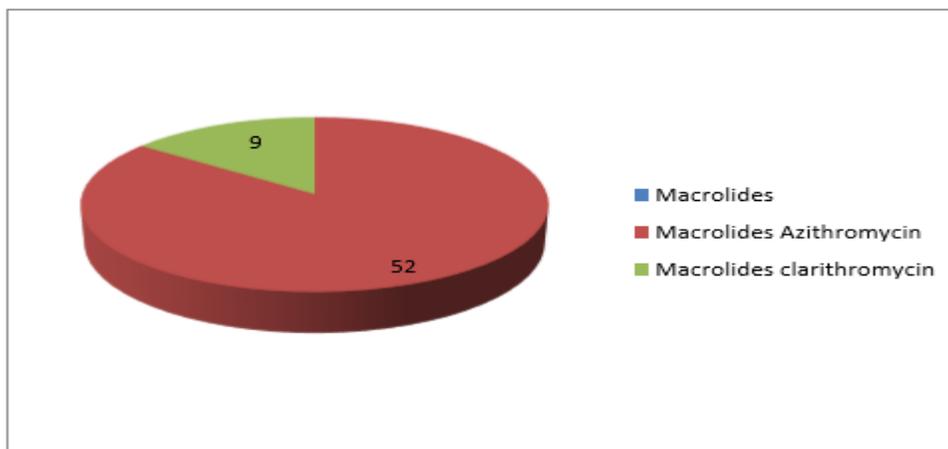
Drugs	No. of patients	Total patients	Percentage (%)
Macrolides	60	119	50.4
Cephalosporins	52	119	43.6
Pencillins	37	119	31.0
aminoglycosides	11	119	9.24
Flouroquinolones	10	119	8.4
Tetracyclins	7	119	5.88
others	21	119	17.6



**FIGURE :3 Different types of antibiotics used in respiratory infections**

**TABLE 4: Different types of macrolides used in respiratory infections.**

Macrolides	No. of patients	Total no. of patients	Percentage(%)
Azithromycin	52	61	85.25%
Clarithromycin	09	61	14.75%



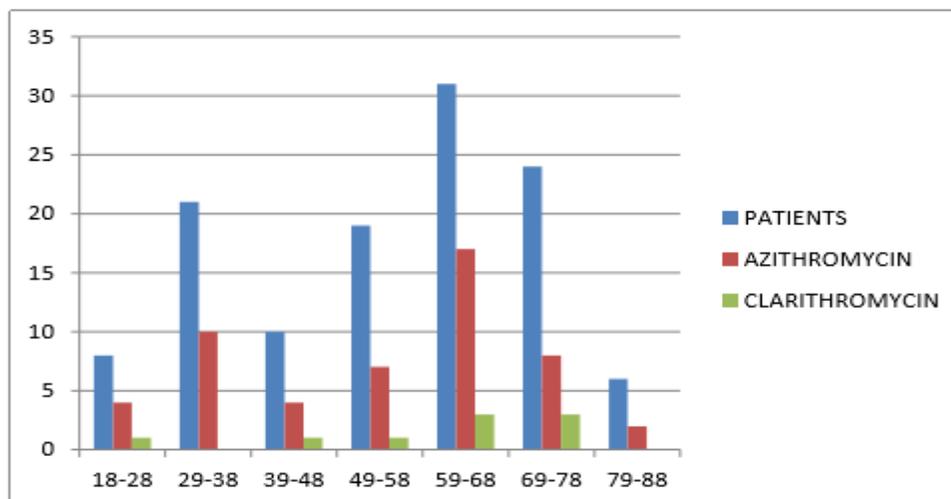
**FIGURE 4 : Different types of macrolides used in respiratory infections.**

### Result 5

Azithromycin is administered majorly in age group 59-68 and clarithromycin administered equally in age groups 59-68 and 69-78.

**TABLE 5: Macrolides administration in different age groups**

Sr no	Ages	No. of patients	Azithromycin	Clarithromycin
1	18-28	8	4	1
2	29-38	21	10	0
3	39-48	10	4	1
4	49-58	19	7	1
5	59-68	31	17	3
6	69-78	24	8	3
7	78-88	8	2	0



**FIGURE 5 : Macrolides administration in different age groups**

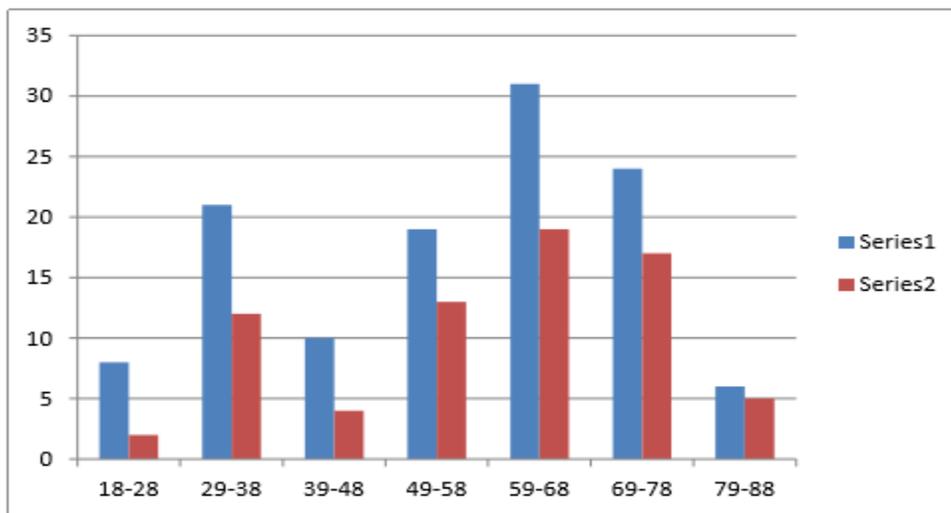
### Result 6

Corticosteroids administered in different age groups, in age group (19-28) 25% are given with corticosteroids, (29-38) 57.1% are given with corticosteroids, (39-48) 40% are given with

corticosteroids, (49-58) 68.4% are given with corticosteroids, (59-68) 61.2% are given with corticosteroids, (69-78) 70.3% are given with corticosteroids, (79-88) 83.3% are given with corticosteroids.

**TABLE 6: Frequency of corticosteroid administration in different age groups.**

Sr No	Ages	No. of patients	Corticosteroids	Percentage
1	18-28	8	2	25 %
2	29-38	21	12	57 %
3	39-48	10	4	40 %
4	49-58	19	13	68 %
5	59-68	31	19	61 %
6	69-78	24	17	70 %
7	78-88	6	5	83 %



**FIGURE 6 : Frequency of corticosteroid administration in different age groups**

## DISCUSSION

Falgas M E et al. Studied on sex differences in the incidence and severity of respiratory tract infections concluded that female are more prone to infections when compared to male because of their low immunity , high cholesterol levels , obesity , insulin levels and estrogen factors. From our study we also concluded that female (53.78%) are more effected with respiratory infections compared to male (46.22%).

Hadley J A, et al. studied on rational use of antibiotics in respiratory infection. The objectives are to identify the appropriate use of antimicrobial agents for respiratory tract infection and to review factors that should help achieve this. Community acquired pneumonia , acute bacterial sinusitis and selected cases of acute exacerbation of chronic bronchitis (50%) warrant antimicrobial therapy , various otitis media with effusion , acute bronchitis , most rhinosinusitis and viral don't require antimicrobial therapy.<sup>12</sup>

Little P, et al. Studied on delayed antibiotic prescribing strategies for respiratory tract infection in

primary care. Objective is to estimate the effectiveness of different strategies involved in delayed antibiotic prescription of acute respiratory infections. Conclusion shows no prescriptions are delayed antibiotic prescriptions result in fewer than 40% of patients using antibiotics.<sup>16</sup>

Akkerman B E, et al. Studied on prescribing antibiotics for respiratory tract infections by general physician. The objective is to assess inpatients with RTIs , the prescribing rates of antibiotics and the relationship between GP charecteristics and antibiotic prescribing and types of antibiotics prescribed. Studies showed 17% of antibiotics prescribed were macrolides. In our study we concluded that macrolides are administered in 50.4% patients.<sup>17</sup> Gohary M R, et al. Studied on corticosteroids for acute and subacute cough following respiratory tract infections. Objective is to carryout a systemic review of randomized controlled trials to evaluate the effect of corticosteroid therapy in otherwise in healthy adults with acute RTI. Conclusion show there is insufficient evidence to recommend the routine use of inhaled corticosteroids for acute RTI in adults. In our study we concluded corticosteroids were less

administered in healthy adult individuals (25%) in 19-28 years, (57.1%) in 29-38 years, (40%) in 39-48 years, (68.42%) in 49-58 years compared to elderly individuals (61.29%) in 59-68 years, (70.83%) in 69-78 years and (83.3%) in age group 79-88 years individuals.<sup>21</sup>

Gulliford M C, et al. Studied on continues high rates of antibiotics prescribing to adults with respiratory tract infection. Objective is to analyse the performance of UK journal practice with respective antibiotic prescribing for respiratory tract infections among young and middle aged adult. Participants were adults range 18-59 years. In our study the respiratory infections were found to be highest in age group 59-68 years (26.0%).<sup>31</sup>

- RTI was found to be highest in Females (53.78%)
- RTI was found highest in age group of 59-68 (26.0%)
- 70.6 % of patients are reported with comorbidities of which diabetes mellitus was found to be highest
- 8 patients were smokers and 5 patients were alcoholic, from this respiratory infections are found to be independent of habit status.
- 96.64% of patients are administered with antibiotics of which macrolides are found to be highest (50.4%)
- Corticosteroids are administered highest in age group 79-88 years (83.33%)

## CONCLUSION

According to the findings and in view of literature the following conclusions are made.

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