

Available online on 15.04.2021 at <http://jddtonline.info>

Journal of Drug Delivery and Therapeutics

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Research Paper

Use of Antibiotics in Upper Respiratory Tract Infections in Tertiary Care Teaching Hospital of Delhi

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Article Info:



Article History:

Received 04 Feb 2021
 Review Completed 19 March 2021
 Accepted 27 March 2021
 Available online 15 April 2021

Cite this article as:

Md. Zulqarnain, Singh S, Prasad A, Abdullah, Palit T, Use of Antibiotics in Upper Respiratory Tract Infections in Tertiary Care Teaching Hospital of Delhi, Journal of Drug Delivery and Therapeutics. 2021; 11(2-s):36-40
 DOI: <http://dx.doi.org/10.22270/jddt.v11i2-s.4793>

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Abstract

The aim of this study was to evaluate the prescribing pattern of antibiotics in URTI patients attending the OPD and IPD of HAHC Hospital, a tertiary care teaching hospital of Jamia Hamdard, associated with HIMSR, New Delhi.

URTI account for millions of visits to family physicians each year. Although warranted in some cases, antibiotics are greatly overused. In the present study, an overall antibiotic prescription rate for adult patients with URTI was 45.6% whereas 54.4% patients were on non-antibiotic treatment. In our study the antibiotics were prescribed in 10.5% cases of common cold, 76.47% cases of pharyngitis, 63.15% cases of laryngitis, 100% cases of otitis media and 52.38% cases of sinusitis. The most commonly prescribed antibiotic was azithromycin which was prescribed collectively in 70.3% cases of common cold, pharyngitis, laryngitis, and sinusitis. The combination of amoxicillin and clavulanic acid was prescribed in remaining 29.7% cases suffering from pharyngitis, sinusitis, and otitis media. The antibiotic prescription at Hospital is in line with the ICMR guidelines for URTIs.

We found adverse drug reactions in only 9% cases receiving azithromycin and combination of amoxicillin and clavulanic acid. The adverse drug reaction reported with azithromycin was diarrhoea, stomach pain, nausea and vomiting whereas only diarrhoea was reported with amoxicillin and clavulanic acid combination. No other unexpected adverse drug reaction was observed in this study.

Keywords: URTI, Antibiotics, Azithromycin and co-morbidities.

INTRODUCTION:

The rise in antibiotic resistance has become an increasing public health concern worldwide ¹. In developing countries like India, recent hospital and some community based data showed increase in burden of antimicrobial resistance ².

The impact of antibiotic resistance includes increased morbidity and mortality from antibiotic-resistant infections ³, increased socioeconomic burden and greater healthcare costs. ^{1, 4} Poor antibiotic stewardship is a key driver of antibiotic resistance. ⁵ One of the most common causes of visit to physician is Upper respiratory tract infections (URTI).⁶

These infections are often considered to be of little value from a stand point of mortality but these infections are responsible for limited activity and absence from work and school in the general population of nation mainly in a developing country like India, when compared it with other infections. ⁷

URTI are commonly caused by the viruses, common viruses which are responsible are rhinovirus, parainfluenza virus, respiratory syncytial virus, influenza virus, coronavirus, coxsackievirus, adenovirus.⁸ URTI are caused by an acute

infection which affect the upper respiratory tract including the nose, sinuses, pharynx or larynx and causes common cold, sinusitis, otitis media, tonsillitis, pharyngitis, laryngitis.⁹

As mentioned above, viruses are the most common causes of URTI and thus it requires only symptomatic treatment. To thin the respiratory secretions, it is usually advised to consume plenty of fluids, especially warm fluids, it will not only help in thinning the secretions but also have some soothing effect on the throat.¹⁰ Large number of over-the-counter (OTC) agents are available in the market in various combinations, none of them have found to be highly effective.¹¹ Group of drugs usually preferred are nonsteroidal anti-inflammatory drugs (NSAIDs) for providing symptomatic relief from fever, headache, and malaise; expectorant and antitussives for cough or sore throat; decongestants and antihistamines for runny or stuffy nose.¹² Many studies suggest that, the antibiotics are not required, but almost 75% of adults with URTIs are given antibiotics by their consulting doctor.¹³

A substantial proportion of all antibiotics are prescribed in the community ¹⁴, and URTI are one of the commonest

conditions in the primary care setting for which antibiotic prescriptions have been reported to be high worldwide¹⁵⁻¹⁷

The decision to prescribe antibiotics is intricate and involves number of factors. Apart from clinical factors, others like patient, provider and community characteristics, regulatory practices, cultural influences do play a role.¹⁸

However, current evidence-based guidelines do not support antibiotic use in the majority of URTI cases^{19, 20}, as URTIs are frequently of viral etiology²¹⁻²³ are often self-limiting^{24, 25}, and seldom lead to serious complications²⁶. Inappropriate expectations of antibiotics by patients have been commonly observed in primary healthcare, and is a key factor driving over-prescription of antibiotics in such settings. A study found that physicians are more likely to prescribe antibiotics to patients who desire antibiotics²⁷. Furthermore, another study observed that various inappropriate behaviours by patients often pressured physicians to prescribe antibiotics²⁸, such as direct request for antibiotics, portraying severity of illness, or volunteering previous positive experience with use of antibiotics and it is also observed in study that primary healthcare physicians over-prescribe antibiotics in order to satisfy their patients²⁹. These studies underscore how patient's expectations for antibiotics influence prescriptions by physicians.

By creating awareness and preventing the irrational prescription we can increase the effectiveness of the drugs and thus decreasing the morbidity associated with URTI. The objective of present study is to focus on the trends in the prescription pattern of antibiotics in URTI and to monitor adverse drug reaction associated with the use of these antibiotics.

MATERIALS AND METHOD:

Study was carried out in the medicine OPD/IPD patient in Hakeem Abdul Hameed (HAHC) Hospital associated with Hamdard Institute of Medical science and Research (HIMSR) Jamia Hamdard. It was a prospective, cross sectional, non-interventional, qualitative drug utilization evaluation of antibiotics utilized in URTI patients. Total 103 URTI patients, including 51 males and 52 females were enrolled according to the inclusion criteria. This research was carried out in accordance with the Basic Principles defined in ICH 'Guidance for good clinical Practice' and the principles enunciated in Declaration of Helsinki (Edinburgh, October 2000).

RESULTS

A total of 103 patients of URTIs were studied for patient demographics, prescribing pattern and adverse drug reactions.

Demographic Details of the Patients

Gender Distribution of Patients with URTI

Among the total of 103 patients, 51 (49.2 %) were male patients with the mean age of 35.25 years \pm 11.26 and 52 (50.8 %) were female patients with the mean age of 35.19 years \pm 8.96.

Table 1: Gender Distribution of Patients with URTI

GENDER	No of Patients	Percentage (%)
MALE	51	49.2
FEMALE	52	50.8
TOTAL	103	100

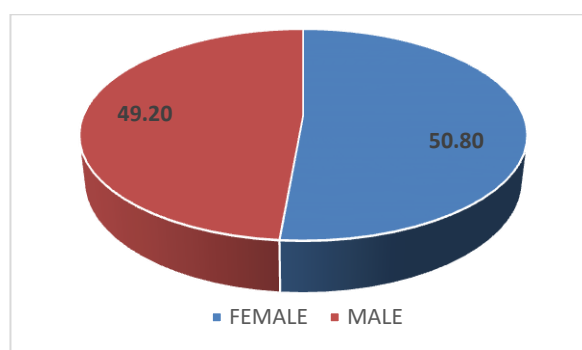


Figure 1: Gender Distribution of Patients with URTI

Distribution of Patients with URTI according to Different Age Group

Among the total of 103 patients enrolled approximately 40 % of the patients were from the age group of 20-29 years and above, 27 % of patients were in the age group of 30 - 39 years, 12 % of patients were in the age group of 40 - 49 years, and 15 % of patients were in the age group of 50-59 years. So these four groups contributed almost 94 % of the total patients enrolled. This was followed by the patients of age group 60+ years that contributed almost 5 % of total patients. The number of elder patients diagnosed with URTI was very small, that is 1%.

Table 2: Distribution of Patients with URTI according to Different Age Group

S.No.	Age in Year	Male Patients (n=51)		Female Patients (n=52)		No. of Patient (n=103)	
		Total	%	Total	%	Total	%
1	20-29	22	20.9	20	19.4	42	40
2	30-39	12	11.4	16	15.2	28	26.6
3	40-49	06	5.7	06	5.7	12	11.4
4	50-59	08	7.6	07	6.6	15	14.3
5	60+	03	2.8	03	2.8	06	5.7

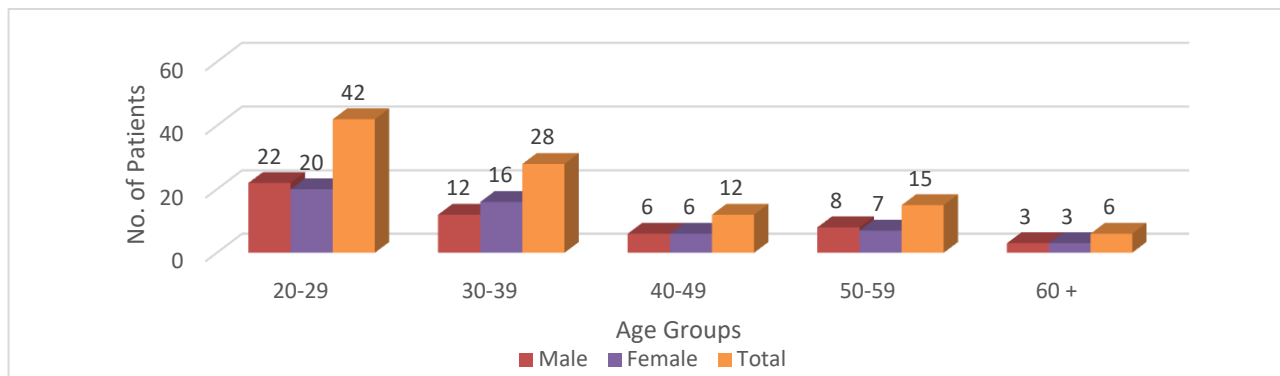


Figure 2: URTI among Different Age Groups

Comorbid Conditions

Out of total patients enrolled (n=103), 18 patients were observed with co-morbid conditions.

Table 3: Co-morbid conditions of the patients

Co-morbid Conditions	Total (n=18)	Percentage
Diabetes	06	33
Multiple Sclerosis	01	5
Thyroid Dysfunction	07	38
Leucoderma	01	5
Tuberculosis	01	5
Diarrhoea	02	11

Drug Utilization

Drugs Utilized for Treatment of URTI

Out of 103, 47 patients (45.6%) were on Antibiotic Treatment and 56 patients (54.5%) were on Non-

Antibiotics. Among total patients enrolled, highest number of patients were diagnosed with common cold (n=38), followed by Sinusitis (n=21). The number of patients with Pharyngitis (n=17) and Laryngitis (n=19) were almost equal. Least number of patients were diagnosed with Otitis Media (n=07).

Table 4: Treatment for different types URTI

Type of URTI	Number of Patients on Antibiotic treatment (45.6%) (n =47)	Number of patients on Non - Antibiotic treatment (54.4%) (n=56)	Total (n=103)	Percentage (%) Receiving Antibiotic
Common Cold	04	34	38	10.5
Pharyngitis	13	04	17	76.47
Laryngitis	12	07	19	63.15
Otitis media	07	00	7	100
Sinusitis	11	10	21	52.38

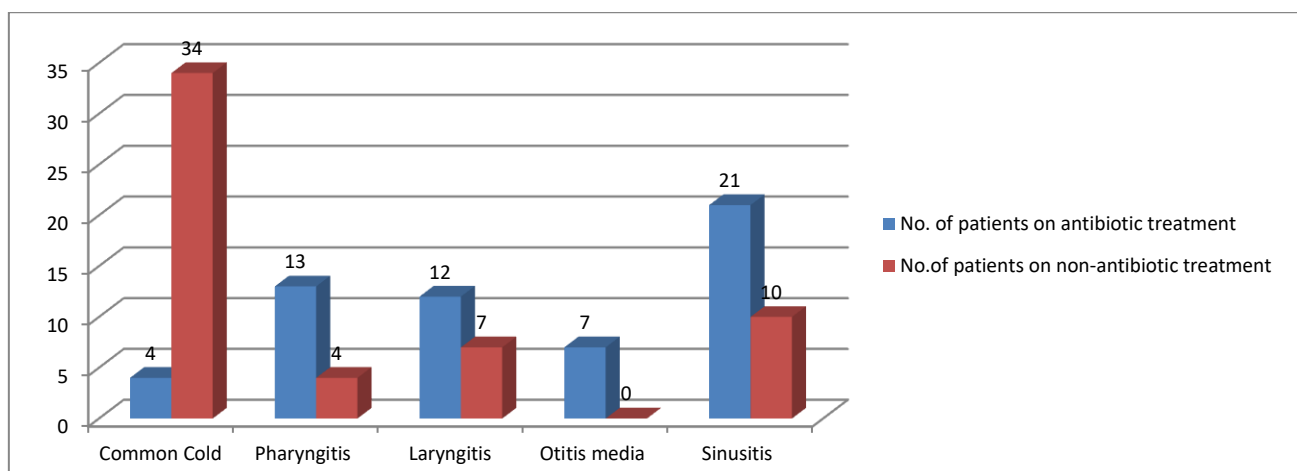


Figure 3: Treatment for different types URTI

Antibiotics prescribed for different types of URTI

Antibiotic were prescribed in 47 patients, that is (45.6%) of the total patient enrolled. The remaining 56 patients that is (54.4%) patients were on non-Antibiotic treatment. The

most commonly prescribed antibiotic throughout the study was found to be Azithromycin (n=33) i.e. 70.3% of the total prescriptions. This was followed by combination of Amoxicillin and Clavulanic Acid which was prescribed to 14 patients i.e. 29.7% of the total Antibiotics prescribed.

Table 5: Antibiotics prescribed for different types of URTI

Type of URTI	Antibiotics Prescribed	Number of Patients	Total Number of Patients on Antibiotic
Common Cold	Azithromycin	04	04
Pharyngitis	Azithromycin	09	13
	Amoxicillin + Clavulanic Acid	04	
Laryngitis	Azithromycin	12	12
Otitis Media	Amoxicillin + Clavulanic Acid	07	07
Sinusitis	Amoxicillin + Clavulanic Acid	03	11
	Azithromycin	08	

Table 6: Antibiotics Prescribed for treatment of URTI

Therapy	Number of Patients	Percentage of Total Antibiotics Prescribed (n=47)
Azithromycin	33	70.3
Combination of Amoxicillin + Clavulanic acid	14	29.7

Adverse Drug Reactions of Antibiotics

Out of 103 patients, 10 patients reported adverse drug reactions. Out of which 8 were on Azithromycin and 2 were on Amoxicillin Clavulanic acid.

The adverse drug reactions reported were as follows:

Table 7: Adverse Drug Reactions of Antibiotics

Number of Patients	Antibiotic	Adverse Drug Reaction
6	Azithromycin	Diarrhea and Loose stools
2	Azithromycin	Stomach Pain and Nausea, Vomiting
2	Amoxicillin + Clavulanic Acid	Diarrhea

CONCLUSION

- The common causes of URTI at HAHC Hospital were Common cold, Sinusitis, followed by Pharyngitis, Laryngitis and Otitis Media.
- The antibiotics prescription for URTI was found to be relatively low of 45.6%.
- The most commonly prescribed antibiotic was Azithromycin followed by amoxicillin and clavulanic acid combination
- The antibiotic prescriptions were in accordance with the clinical practice guidelines of Indian council of medical research.

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