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Drug Utilization Pattern in Upper Respiratory Tract Infections in ENT Outpatient Department of Tertiary Care Hospital

KEYWORDS: URTI, E.N.T OPD, drug utilization pattern

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ABSTRACT *BACKGROUND: The aim of this study was to evaluate the drug utilization pattern in Upper Respiratory tract infections in outpatient Department of Otolaryngology in a tertiary care teaching hospital.*

METHODS: This was an observational study conducted at the M.G.M. medical college and hospital, Navi Mumbai for a period of 6 months.

RESULTS: In 200 URTI patients, 132 were male and 68 were female. The total numbers of drugs prescribed were 710. The average number of drugs per prescription was 3.55. Total no. of antibiotics prescribed were 194(27.32%). Out of the total drugs, most commonly prescribed drug was xylometazoline 16.33%. 69.85% drugs were prescribed as FDC. Drugs prescribed by brand name were 100%. The average cost per prescription was Rs.115.

CONCLUSION:

The present study shows the most commonly used drug was combination of Paracetamol+Anhydrase caffine+ Phenylepherine+ Chlorpheneramine Maleate, Nasal decongestant, Antihistamines. Frequent use of FDC and prescriptions by brand name are matters of concern.

Introduction:
Drug utilization research was defined by WHO in 1977 as "the marketing, distribution, prescription and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences". Drug utilization review is defined as authorized, structured and continuing program that reviews, analyses and interprets the pattern of drug use against pre-determined standards. [1]

The problem of overuse of antimicrobials is a global phenomenon. In India, the prevalence of use of antimicrobials varies from 24% to 67% .[2] According to a recent study, acute respiratory infections are the reason for 75% of the antibiotic prescriptions each year and are the most frequent reason for seeking medical attention. This occurs despite the fact that in most cases of URIs (Upper Respiratory Tract infections), antibiotics confer little or no benefit. [3]

Viruses cause most URIs, with rhinovirus, parainfluenza virus, coronavirus, adenovirus, respiratory syncytial virus, Coxsackie virus, human metapneumovirus, and influenza virus accounting for most cases.[4] Group A beta-hemolytic streptococci (GABHS) cause 5% to 10% of cases of pharyngitis in adults. [5] Other less common causes of bacterial pharyngitis include group C beta-hemolytic streptococci, Corynebacteriu diphtheriae, Neisseria Gonorrhoea, Arcanobacterium haemolyticum, *Chlamydophila* (formerly Chlamydia) pneumoniae, Mycoplasma pneumoniae, and herpes simplex virus. Streptococcus pneumoniae, Haemophilus influenzae, and Moraxella catarrhalis are the most common organisms that cause the bacterial superinfection of viral acute rhinosinusitis.[6] Less than 10% of cases of acute tracheobronchitis are caused by Bordetella pertussis, B. parapertussis, M. pneumoniae, or C. pneumoniae.[7]

Some concerns about overuse of antibiotics are that it leads to unnecessary cost and the potential of adverse effects for the individual taking the antibiotics. But even more important concern is the adverse effect on public health, because excessive use of antibiotics has led to the development of antibiotic-resistant bacteria. [8] The present study was undertaken to evaluate the pattern of drugs use in URTI infections in patients of outpatient (OPD) ENT department at MGM Medical College, Navi mumbai, India.

MATERIAL & METHODS:
Aim:
To evaluate the drug utilization pattern in upper respiratory tract infections in outpatient Department of Otolaryngology in a tertiary care teaching hospital.

Sample size:
200 patients

Study design: Observational, Cross-sectional study.
Place of study:
In E.N.T OPD, MGM Hospital, Kamothe, Navi Mumbai. Questionnaire was specifically designed for the study. It included patient particulars, diagnosis, drug details. Cost of drugs was calculated as per price list available in the updated standard pharmacopeia books (MIMS, CIMS).

Duration of study:
The duration of study was 6 months (16-8-2013 to 16-02

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-2014). The study was approved by the Institutional Ethics Committee. Written consent was obtained from the patients before their participation in the study.

Data was analyzed for the prescribing pattern using WHO drug indicators [2].

1) Average number of drugs per encounter
2) Average drug cost per encounter
3) Percentage of drugs prescribed by generic name
4) Percentage of encounters with an antibiotic prescribed
5) Percentage of encounters with an antihistaminics prescribed
6) Percentage of encounters with oral route of drug administration
7) Percentage of encounters with topical route of drug administration
8) Percentage of encounters with FDC prescribed

Inclusion Criteria: patients with URTI
Exclusion Criteria :
patients not willing to give consent

Statistical analysis
The data were subjected to descriptive statistical analysis using Microsoft Excel and presented as percentage.

RESULTS:
A total of around 750 patients visited the ENT OPD over a period of 6 months. On the basis of inclusion & Exclusion criteria, 200 patients were analyzed. Among the 200 URTI patients, 132 were male and 68 were female.

Table 1: Distribution of cases according to age and sex:

Age	Male	Female	Total no. f patients
0<14	20 (10%)	10 (5%)	30 (15%)
15-35	48 (24%)	44 (22%)	92 (46%)
36-60	52 (26%)	8 (4%)	60 (30%)
>60	12 (6%)	6 (3%)	18 (9%)
Total	132(66%)	68 (34%)	200 (100%)

Table -1 shows the distribution of URTI infections in different age groups. The highest no. of patients was in the age group of 15-35=92(46%), following 36-60=60(30%) respectively.

Table-2:Distribution of cases according to illness

Organ	Infections	No. of patients
Ear	Acute Suppurative Otitis Media (ASOM)	12
	ASOM + Lt & Rt CSOM (chronic Suppurative Otitis Media)	12
	ASOM + mild sensory hearing loss	2
	ET catarrh	6
Nose	Allergic rhinitis	26
	Allergic rhinitis +ASOM & URTI	8
	Allergic rhinitis + chronic pharyngitis +Rt CSOM	6
	Acute rhino sinusitis	26
	B/L ethamoidal nasal polyps + panosinusitis	2
Throat	Acute pharyngitis	10
	Acute granular pharyngitis	6
	Acute pharyngitis + Rt CSOM + ASOM+ Rhinosinusitis	8
	Chronic pharyngitis	18
	Chronic pharyngitis + Lt ASOM + Lt otomycosis + rhinosinusitis	8
	Acute tonsillitis	18
	Acute tonsillitis +ASOM	4
	Acute adenotonsillitis	6
	Chronic adenotonsillitis	2
	Chronic tonsillitis	4
	Chronic tonsillitis + ASOM	2
	Acute tonsillo pharyngitis	14
	Total	200

Table 2: shows prevalence of infections. The incidence of URTI infections were the throat (50%) 100, followed by nose (34%) 68, ear 32 (16%) in that 200 patients. Chronic Suppurative Otitis Media(CSOM), AcuteSuppurative Otitis Media(ASOM), B/L(Bilateral).

Table-3: Prescribing indicators among outpatients

Parameter	No. and (%)
Total no. of prescriptions	200
Total no. of drugs prescribed	710
Mean no. of drugs per prescriptions	3.55
Oral route of drug administration	500(70.42%)
Topical route of drug administration	210(29.57%)
Total no. of antibiotics prescribed	194(27.32%)
Total no. Antihistamines	218(30.70%)
No. of drugs prescribed by generic name	0%
No. of drugs prescribed by brand name	100%
% of FDC prescribed	496(69.85%)
Average cost per prescription	115 Rs/-

Table-3 shows the total number of drugs prescribed 710 and mean number of drugs per prescription was 3.55. 70.42% of drug were prescribed by oral route and 29.57% by topical. Antibiotics 194 (27.32%), followed by antihistamines 218(30.70%) were the most commonly prescribed group of drugs.

Out of total 194 prescribed antibiotics, 156 (80.41%) were prescribed by oral route. The most common antibiotic was amoxicillin with clavulanic acid 88(56.41%) and followed by Azithromycin 28(17.94%),ciprofloxacin 16(10.25%), cefixime & levofloxacin 12(7.69%) (Fig. 1).

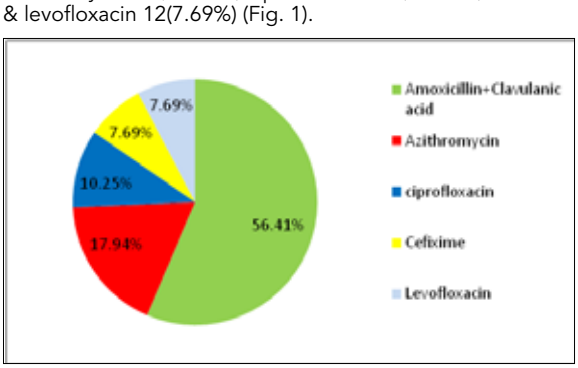

Figure-1Pattern of prescribed oral antibiotics

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Table-4: Pattern of prescribed Topical preparation

Drug name	Frequency	Percentage
Xylometazolline	116	55.23
Povidone iodine	52	24.76
Azelastine+fluticasone	18	8.57
Polymyxin-Bsulphate+Dexamethasone+ Chloramphenicol	14	6.66
chloramphenicol+ Beclomethasone+ Clotrimazole+ Lignocaine	10	4.76

Table-4 shows, The most common topical preparation was Xylometazoline 116(55.23%) followed by Povidone iodine 52(24.76).

Table-5 Pattern of prescribing syrups

Drug name	No. of prescribed=56	Percentage
Amoxicillin+Clavulanic acid	14	25
Paracetamol+caffine+Phenylehrine+ Chlorpheneramine Maleate	12	21.42
Oxethazaline+Aluminium hydroxide + Magnesium hydroxide	12	21.42
Levocloperastine+Fendizoate	10	17.85
B-complex	08	14.28

Table-5 shows, the most common drug prescribed by syrup was Amoxicillin+Clavulanic acid 14(25%), Paracetamol + caffine+Phenylehrine+Chlorpheneramine Maleate 12(21.42%).

Table -6 Patterns of prescribed Antihistaminics drugs

Drug name	No. of prescribed =218	Percentage
Paracetamol+caffine+Phenylepherine+Chlorpheneramine Maleate	112	66.27
Loratidin+Ambroxol	44	20.18
Montelukast+Levocetrizine	28	12.84
Levocetrizine	18	8.25
Fexofenadine	16	7.33

Table-6 shows, the most common antihistaminic was Chlorpheneramine Maleate n=112(66.27%) followed by Loratidin 44(20.18%) and Levocetrizine 28(12.84%).

Table -7: Pattern of prescribed other drugs

Drug name	No. of prescribed	Percentage
Diclofenac+Paracetamol +serratiopeptidase	26	3.66
Pantoprazole	22	3.09
Ambroxol	16	2.25
Paracetamol	06	0.84

Table-7, Shows most commonly used other drug was Diclofenac+Paracetamol+serratiopeptidase 26(3.66%) followed by pantoprazole n=29(4.08%).

Out of 710 drugs, most commonly prescribed drug was Xylometazoline n = 116 (16.33%) followed by Paracetamol + caffine + Phenylepherine + Chlorpheneramine Maleate n= 112(15.77%), amoxicillin with clavulanic acidn = 88 (12.39%) and Povidone iodine n=52(7.32%) (fig.2).

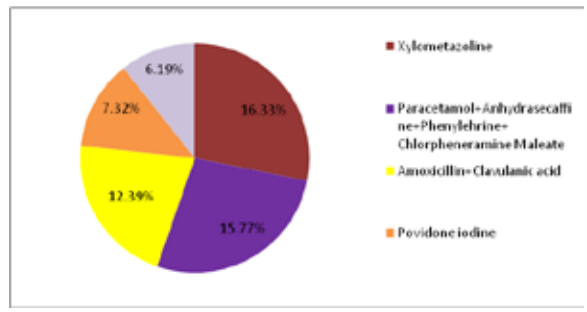

Figure-2 provides most commonly prescribed drugs.

In incidence of polypharmacy, three drugs were prescribed in 50% of prescriptions and five drugs in 22% of prescriptions (fig.3).

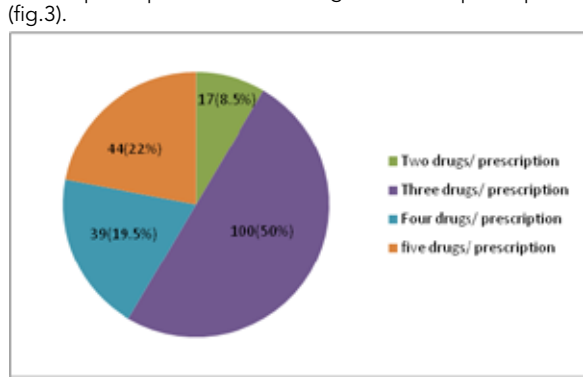

Figure-3 showed incidence of polypharmacy.

In the total no of 200 prescriptions, the cost of 70 prescriptions were in between 101-150 Rs and 50 prescriptions were 151-200 Rs. The average cost per prescription was Rs.115 (fig.4).

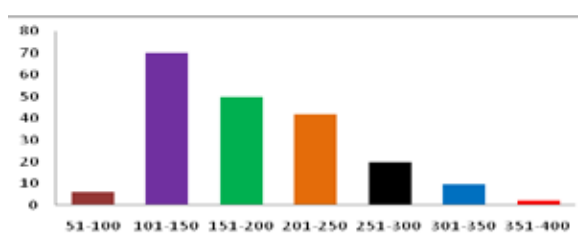

Figure-4 showed cost analysis

Discussions:

A prescription by a doctor may be taken as an indication of the doctor's attitude towards the disease and the role of drugs in its treatment. The mean number of drugs per prescription in our study was 3.55. The average number of drugs per prescription is an important parameter while doing a prescription audit. A hospital based study in India had reported a mean number of two drugs. [10] The mean number of drugs prescribed in this study is more than other studies reported in the literature. [11, 12] The each prescription contains an antibiotic, an antihistamine, analgesics and nasal decongestant on an average. Hence, physicians should preferably keep the mean number of drugs per prescription as low as possible as higher figures always lead to increased risk of drug interaction, development of bacterial resistance and increased cost. [13].

Among the 200 URTI patients 132 were male and 68 were female and the highest no. of patients were in the age

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group of 15-35 (46%), following 36-60 (30%). Our results are in accordance with the other studies[14].

In our study, most common antibiotic was Amoxicillin + Clavulanic acid 12.39%. This is in accordance with other study conducted by Sridevi SA et al reported amoxicillin + clavulanic acid 27%15. Although clavulanic acid is not an antibiotic, it protects amoxicillin from enzymatic destruction by binding to them resulting in potentiating or synergistic effect.

In topical preparation Xylometazolline 116(16.33%) was the highest prescribed, nasal antihistamines, block the action of histamine, which is released on exposure to allergens. They are used to relieve hay fever symptoms such as sneezing, runny nose and other nasal symptoms. The other oral antihistamine was Chlorpheneramine Maleate 15.77% which was found to be the most frequently used drugs. The literature offers very little support for the use of antihistamines for the common cold. [13]

An antibiotic and steroid combination 3.38% (24) was given in active stage of ASOM & CSOM. Here the steroid effectively reduces inflammation, granulation and mucosal oedema .Analgesics were given for severe throat infection associated with pain, and acute sinusitis. Pantoprazole (3.09%) was given to prevent the gastro-oesophageal reflux and drug induced gastritis. Antipyretics like paracetamol was given to reduce the fever associated with most of the throat infection. Mucolytics were given in sinusitis, in combination with anti- histamines, also in case of acute otitis media, or sudden barotraumas to avoid the congestion. In our study 69.85% of drugs were prescribed of FDC, which is high and may leads to increase the cost of prescriptions.

In our study, it was found that all the drugs were prescribed by their brand names only, which could be due to the influence of medicinal drug promotional activities. Prescribing the brand name may undermine some of the goals of essential drug concept. On the other hand, prescribing by generic names may reduce overall expenditure on drugs, especially on newer antibiotics. However, in spite of all these limitations, our study highlighted some rational prescribing practices. Continuing education on rational drug use and development of easy to use treatment guidelines for common diseases is suggested. Educational interventions to improve prescribing for at doctors different levels may be required.

Conclusion:
In our study all drugs were prescribed by brand name. The average costs seem to be high due to high used of FDC(69.85%).

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