



PRESCRIPTION PATTERN AND DRUG UTILIZATION STUDY IN PATIENTS ATTENDING OTORHINOLARYNGOLOGY OUTPATIENT DEPARTMENT AT A TERTIARY CARE HOSPITAL.

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ABSTRACT

Background: Ear, nose, and throat (ENT) diseases affect all the age groups ranging from children to adults with significant disability-adjusted life-year (DALY) of patient. Ear, nose, and throat (ENT) diseases are the most common causes of hospital visits globally and are responsible for absenteeism from school and work and unnecessary medical care, and at times associated with serious consequences. Many infectious diseases have been controlled in 20th century by improving living conditions, public health measures and with the use of antimicrobial agents. There has been alarming concern over the injudicious use of antimicrobial worldwide. The practice of indiscriminate prescribing of antibiotic has led to ineffective and unsafe treatment, prolongation of illness, distress and harm to the patients as well as additional burden of a medical cost. The objective of the present study is to evaluate the drug utilization & the patterns of drug prescribing practices in ENT OPD. **Methods:** Data was collected from patients treated in Otorhinolaryngology outpatient department from January 2021 to June 2022. Drug utilization pattern was analysed with appropriate statistical tests. **Results:** Antibiotics were the most prescribed class of drugs 32.53% (Oral+Topical) followed by Analgesics 22.50% then Antihistaminics 20.02% followed by Antacids 18.80% and Vitamins 6.26%. Amoxicillin with clavulanic acid was the most prescribed Fixed Drug Combination among the Antibiotics prescribed; while Polyvitamin tablet was also observed in many patient's prescription followed by FDC of Levocetirizine with Monteleukast. **Conclusions:** The present study showed that among antimicrobial agents, β lactams were the commonly prescribed drugs in the Department of Otorhinolaryngology. Maximum number of cases was diagnosed with ear infections and majority of the drugs were prescribed orally.

KEYWORDS : ENT, Antibiotics, Polypharmacy.

INTRODUCTION

Drug utilization research 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 (1). They provide a sound pharmacoeconomic basis for making better health-care decisions. The current variations in the drug prescribing pattern, concerns over adverse drug reactions and escalation in the pricing of drugs have increased the importance of drug utilization studies (2). Drug utilization research holds a crucial place in clinical practice as it forms the basis for making amendments in the drug dispensing policies at local and national levels. Also, since it helps in developing strategies to utilize health resources in the most efficient manner, it is particularly needed in a developing economy like India where 72% of all health care burdens is borne by the patients(3). The ultimate purpose of drug utilization research is to estimate the optimal quality of drug therapy by identifying, documenting, analyzing problems in drug utilization and monitoring the consequences(4). Ear, nose, and throat (ENT) diseases affect all the age groups ranging from children to adults with significant disability-adjusted life-year (DALY) of patient(5). According to the world health report of 2010, it has been estimated that respiratory infections generated 94.6 disability adjusted life years lost worldwide and were the fourth major cause of mortality responsible for global number of deaths(6). Ear, nose, and throat (ENT) diseases are the most common causes of hospital visits globally and are responsible for absenteeism from school and work and unnecessary medical care, and at times associated with serious consequences(7). Ear disorders also have the disability to impair equilibrium. Nasal disorders can cause changes in facial features and interfere with breathing and tasting. Diseases arising in the throat may threaten airway patency and interfere with speech(8). In general hospital, acute RTIs are responsible for 20%–40% of outpatient and 12%–35% of inpatient admissions. URTIs including nasopharyngitis, pharyngitis, tonsillitis, and otitis media constitute 87.5% of the total episodes of respiratory infections (5). Weakening of the immune system of the body due to diabetes mellitus and other immune deficiency states may predispose the person to develop these infections(9).

METHODS

Permission from HOD of otorhinolaryngology department and Ethics Committee for Academic Research Projects (ECARP) was taken.

Blanket consent from Head of the department of Otorhinolaryngology and the Nodal officer of institute was taken to retrieve the digital data from HMIS System. Subjects fulfilling the inclusion / exclusion criteria enrolled in the study. Upon enrollment, each patient was assigned a study number & only required details enquired for the CRF in the Otorhinolaryngology Department and recorded in the study Case Report Form. All the details were filled in Microsoft excel sheet. Confidentiality of all the data maintained. Data was collected from patients treated in Otorhinolaryngology outpatient department from January 2021 to June 2022. Data was analysed with descriptive statistics.

RESULTS

Among total 847 patients 425 were female (50.17 %) & 422 were male (49.83%). Study showed overall maximum number of patients between age group of 31-50 years (39.91%) followed by 18-30 years (28.09%); 65 years(6.26%).

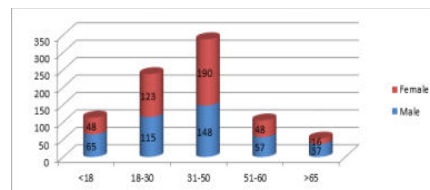


Figure 1 : Age/Gender wise distribution of patients.

Antibiotics were the most prescribed class of drugs 32.53% (Oral+Topical) followed by Analgesics 22.50% then Antihistaminics 20.02% followed by Antacids 18.80% and Vitamins 6.26%.

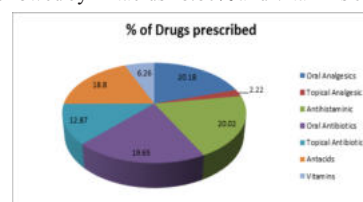


Figure 2: Different class of drugs prescribed.

Various Oral Antimicrobials was prescribed while few patients received anti-fungal agents. The most prescribed Antibiotic was Amoxicillin with Clavulanic Acid (93%) followed by Azithromycin (2.25%) then Cefixime(1.61%) & Ciprofloxacin(1.32%) ; Linezolid(0.88%). Metronidazole prescribed in (1.02%) patients.

Table 1: Different Antibiotics prescribed among patients.

Sr No	Name of drug	No of prescriptions	%
1	Amoxycillin with clavulanic acid 625 mg Tab	619	90.63
2	Amoxycillin Syrup 30ml	6	0.88
3	Amoxy and Potassium clav. Oral Susp. 30ml	10	1.46
4	Linezolid(600 mg)Tablet	6	0.88
5	Cefixime 200 mg Tab	11	1.61
6	Azithromycin 500mg Tablet	14	2.05
7	Azithromycin 250 mg tablet	1	0.15
8	Ciprofloxacin 500mg Tab	9	1.32
9	Metronidazole 400mg Tab	6	0.88
10	Metronidazole 200mg Tablet	1	0.15

Among the topical antibiotics, Neomycin+Clotrimoxazole with Beclomathasone & Lignocaine was most prescribed FDC (79.46%) followed by Neomycin with Polymyxin (12.94%) then Clotrimoxazole with Lignocaine B(4.91%) and Fluconazole(2.69%) was observed.

Majority of the study population received analgesics (779 out of 847). Paracetamol was prescribed maximally in 85.87 % patients, followed by Diclofenac sodium 4.62%. Benzocaine was the topical local anesthetic prescribed as analgesic(10.01%).

Table 2: Different Analgesics prescribed among patients.

Sr. No.	Name of drug	No of prescriptions	%
Oral Analgesics			
1	Paracetamol 500mg Tab	661	84.85
2	Paracetamol Syp 50ml	8	1.03
3	Diclofenac Sodium 50mg	32	4.11
Topical Analgesics			
1	Paradichlorobenzene+Benzocaine + Chorbutol+Turpentine oil	78	10.01
	Total	779	100

Pantoprazole was the most prescribed proton pump inhibitor (76.79%) followed by Omeprazole(22.74%). Pediatric patients was prescribed Oral Antacid Suspension(Simethicone+Alum hydrox+ Mg Hydrox)observed in 0.46% patients.

Table 3: Antacids prescribed.

Sr No	Name of drug	No of prescriptions	%
1	Pantoprazole 40mg Tab	503	76.79
2	Omeprazole Capsule 20mg	149	22.74
3	Simethicone+Alum hydrox+ Mg Hydrox	3	0.46

Tablet Cetrizine HCL was the most prescribed antihistaminic (93.97%) followed by Tablet Levocetirizine(3.16%) then Cough syrup (Dextromethorphan+Ambroxal) (1.87%). Pediatric patient received Syrup Cetrizine(0.43%).The FDC among the antihistaminic prescribed was combination of Tablet Levocetirizine with Monteleukast (0.58%).

Table 4: Different Antihistaminic prescribed among patients.

Sr. No.	Name of drug	No of prescriptions	%
1	Cetrizine HCL Tab 10mg	655	93.97
2	Levocetirizine 5 mg Tablet	22	3.16
3	Levocetirizine + Montelukast Tab	4	0.58
4	Cough Syrup 100 ml	13	1.87
5	Syrup Cetrizine-30ml	3	0.43

Vitamins were prescribed for therapeutic purpose in patients. Most of the patient was prescribed with the Polyvitamin Tablet (97.06%) of which received vitamins followed by Vitamin B Complex in (2.94%) patients.

Amoxicillin with clavulanic acid was the most prescribed Fixed Drug Combination among the Antibiotics prescribed ; while Polyvitamin tablet was also observed in many patient's prescription followed by FDC of Levocetirizine with Monteleukast.

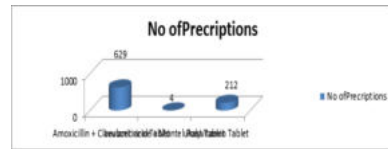


Figure 3: Fixed Drug Combinations prescribed.

Among Total 847 patients, Total 3481 drugs were prescribed & the prescription index was found to be 4.11. Drugs were prescribed in the range of 1-6 drugs per prescription with a minimum of 1 drugs per prescription in 7.67% of the study population & Maximum 6 drugs per prescription in 5.90% of total cases. Most of the patients in the study received 5 drugs per prescription (46.28%).

Table 5: Incidence of Polypharmacy.

Sr. No	Disease	Drugs per prescription					
		1 Drug	2 Drugs	3 Drugs	4 Drugs	5 Drugs	6Drugs
1	ASOM	6	14	0	43	253	41
2	Otitis externa	15	7	14	18	35	4
3	CSOM	0	2	2	18	63	0
4	Pharyngitis	4	9	15	33	9	0
5	Tonsillitis	0	4	11	42	11	0
6	Oral ulcers	17	12	4	4	2	0
7	Otitis media	6	3	1	14	10	4
8	Rhinitis	4	10	4	7	0	0
9	Otomycosis	0	1	2	1	7	1
10	Mucur mycosis	1	1	1	5	0	0
11	Sinusitis	12	5	14	19	2	0
	Total	65	68	68	204	392	50
	%	7.67	8.02	8.02	24.08	46.28	5.90

In our study we observed that 84.54% prescription had drugs prescribed by Generic names while 15.46% prescriptions comprised of Brand names.

Among all the drugs prescribed, 81.48% drugs were from National list of essential medicines while 18.52% comprising of Benzocaine, Levocetirine, Vitamins were out of NLEM.

DISCUSSION

The present study reflects the general trend of drug prescription among patients attending outpatient department of Otorhinolaryngology. A total of 847 prescriptions were analysed.

There was no major difference between percentages of female patients (50.17%) to that of males (49.83%). This result is similar to Sumalatha R, Nagabushan H, Prasad HM(10)

Our Study showed overall maximum number of patients between age group of 31-50 years (39.91%) followed by 18-30 years (28.09%). Similar findings were reported in other studies like Daniel M, Bharathi DR, Nataraj GR et.al.(10) Swopna Phukan, Saheli Das.(9). While a study published by Suman RK, Kumar R, Mohanty IR et al..(11) they found maximum number of patients between the age group of 16-30 year old.

Among Total 847 patients, Total 3481 drugs were prescribed & the prescription index was found to be 4.11. Drugs were prescribed in the range of 1-6 drugs per prescription with a minimum of 1 drugs per

prescription in 7.67% of the study population & Maximum 6 drugs per prescription in 5.90% of total cases. Most of the patients in the study received 5 drugs per prescription (46.28%). This suggests high polypharmacy index. Other similar studies done by Padwal SL, Kulkarni MD, Deshmukh VS, Patil JR, Jadhav SS, Jadhav AD.(5) & Daniel M, Bharathi DR, Nataraj GR et.al.(10) also showed high prescription index of 3.9 & 3.46 respectively.

In this study total of 3481 drugs were prescribed. 1132 drugs were Antibiotics out of which 684 were of oral & 448 were of topical formulations. 779 drugs were analgesics given in either topical or oral formulations followed by 697 drugs prescribed from antihistaminic group. Antacids comprised of 655 drugs followed by 218 drugs were vitamin formulations prescribed as therapeutic agents. In this study, Antibiotics were the most prescribed class of drugs 32.53% (Oral+Topical) followed by Analgesics 22.50% then Antihistaminics 20.02% followed by Antacids 18.80% and Vitamins 6.26%. Similar findings observed in previous studies by where antibiotics were the most commonly prescribed drugs followed by other symptomatic treatment done by Anandhasayanam A, Kannan S, Md. Sajir and Zachariah N (6) Dr.Satish Chandra1 , Dr.Shreya Lal1 , Dr.Archana D S Kujur1 , Dr Manisha Varshney1 (12)

Patients suffering from various acute and chronic ENT infections were treated with different antibiotic agents. A total of 684 oral antibiotic were prescribed: 91.51% Amoxicillin plus Clavulanic Acid combination, 1.61 % was Cefixime, 1.32% Ciprofloxacin, 2.25% Azithromycin, and 1% Metronidazole. Among 448 topical antibiotic prescribed combination of Neomycin with Clotrimazole was the most prescribed drug 79.46% followed by combination of Neomycin with Polymyxin B 12.94% then Clotrimazole 4.91% & Fluconazole 2.69%. Similar results seen in previous studies done by Swopna Phukan, Saheli Das (9) Padwal SL, Kulkarni MD, Deshmukh VS, Patil JR, Jadhav SS, Jadhav AD (5) Suman RK, Kumar R, Mohanty IR et al. (11) 779 out of 3481 drugs were analgesic agents out of which most commonly observed oral NSAID analgesic was Paracetamol prescribed in 85.87% followed by Diclofenac in 4.11%. Benzocaine was the topical anesthetic agent prescribed as analgesics in 10.01%. Study published by SWOPNA PHUKAN, SAHELI DAS observed use of Diclofenac/ Aceclofenac as oral NSAID analgesic in their study, Swopna Phukan, Saheli Das (9)

Nasal decongestants and anti-histamines symptomatically relieved the nasal congestion in case of rhinitis. Tab Cetirizine Hydrochloride was the most prescribed drug 94% followed by Tab Levocetirizine 3.16% while few patient prescribed a FDC containing Levocetirizine with Montelukast seen in 0.58%. Similar results observed in previous studies. Sridevi SA, Janagan T, Rathnasamy P, Rajarajeswari R (13), Dr.Satish Chandra1 , Dr.Shreya Lal1 , Dr.Archana D S Kujur1 , Dr Manisha Varshney1(12).

Gastro protective drugs like proton pump inhibitor and antacids were also prescribed to prevent gastric reflux and acidity which may happen due to analgesics and antipyretics prescribed concomitantly. Pantoprazole was the most prescribed proton pump inhibitor (76.79%) followed by Omeprazole(22.74%). Pediatric patients was prescribed Oral Antacid Suspension(Simethicone+Alum hydrox+ Mg Hydrox)observed in 0.46% patients. Previous similar studies done also observed same results in their studies done by Sridevi SA, Janagan T, Rathnasamy P, Rajarajeswari R (13), Padwal SL, Kulkarni MD, Deshmukh VS, Patil JR, Jadhav SS, Jadhav AD (5), Dr.Satish Chandra1 , Dr.Shreya Lal1 , Dr.Archana D S Kujur1 , Dr Manisha Varshney1(12).

In our study we observed that Vitamins were prescribed for therapeutic purpose in patients. Most of the patient was prescribed with the Polyvitamin Tablet (97.06%) out of which received vitamins followed by Vitamin B Complex in (2.94%) patients for the treatment of various ENT infection along with aphthous ulcer. Similar result observed in study done by Sridevi SA, Janagan T, Rathnasamy P, Rajarajeswari R.(13) & Sumalatha R, Nagabushan H, Prasad HM.(10) Few studies observed use of vitamins as supplement given to most of the patients to improve general health of the patient, gastric complication caused by antibiotic use and prevention of oral ulcers.(Dr.Satish Chandra1 , Dr.Shreya Lal1 , Dr.Archana D S Kujur1 , Dr Manisha Varshney1(12), Suman RK, Kumar R, Mohanty IR et al.(11).

Amoxicillin with clavulanic acid 629 was the most prescribed Fixed

Drug Combination among the Antibiotics prescribed observed in 629 prescriptions. Similar results observed in previous studies. Sridevi SA, Janagan T, Rathnasamy P, Rajarajeswari R (5), Kishore Kumar Y, Cheekavolu C, Obulesu G.(6), Sumalatha R, Nagabushan H, Prasad HM.(10)– Anandhasayanam A, Kannan S, Md. Sajir and Zachariah N (6), Swopna Phukan, Saheli Das (9), Suman RK, Kumar R, Mohanty IR et al.(11) Polyvitamin tablet was most prescribed FDC among the vitamins observed in 212 patient's prescription ; previous study observed Vitamin B complex as most used vitamin supplement. Sridevi SA, Janagan T, Rathnasamy P, Rajarajeswari R (13), Sumalatha R, Nagabushan H, Prasad HM.8,14, Suman RK, Kumar R, Mohanty IR et al.(11) Among the Antihistaminic most observed FDC was of Levocetirizine with Montelukast; similar finding observed in previous study. Dr.Satish Chandra1 , Dr.Shreya Lal1 , Dr.Archana D S Kujur1 , Dr Manisha Varshney1(12).

In this study out of 3481 drugs that are prescribed maximum number of drugs, 2955 drugs i.e. 84.89% prescribed by their Generic names while 526 i.e. 15.11% drugs prescribed by Brand names. In contrast study by Sridevi SR et al(13) showed all drugs prescribed by brand names. In study by Kishore Kumar Y, Cheekavolu C, Obulesu G.(6) & Padwal SL, Kulkarni MD, Deshmukh VS, Patil JR, Jadhav SS, Jadhav AD (5), maximum drugs were prescribed by brand names.

Essential medicines are those that satisfy the priority healthcare needs of majority of the population. The primary purpose of NLEM is to promote rational use of medicines considering the three important aspects i.e. cost, safety and efficacy. Furthermore it promotes prescription by generic names. Recent NLEM published in 2022 used for analysis. In our study, percentage of drugs prescribed from NLEM was 81.48%; Similarly it was 86.26 % in study conducted by Padwal SL, Kulkarni MD, Deshmukh VS, Patil JR, Jadhav SS, Jadhav AD (5) Antibiotic prescribed from essential drug list were 74% in study conducted by Suman RK, Kumar R, Mohanty IR et al.(11) while in our Study 100% antibiotics were from National Essential Drug list.

Conclusion

Prescriptions or drug utility studies acts as a tool to give feedback to clinicians and hospital administration regarding cost–benefit analysis, rational drug use and over or under prescription of drugs.

The present study showed that among antimicrobial agents, β lactams were the commonly prescribed drugs in the Department of Otorhinolaryngology. Maximum number of cases was diagnosed with ear infections and majority of the drugs were prescribed orally.

In our study 2955 i.e. 84.89% of the total drugs were prescribed by generic names. There was Polypharmacy index of 4.11 in our study which is of concern. The report is in line with results obtained from similar previous studies; however there is a need to use less number of drugs per patient to minimize the cost burden.

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DECLARATIONS

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REFERENCES

1. Organizzazioni mondiale della sanità et al., Introduction to Drug Utilization Research(1997).
2. Banerjee I, Bhadury T, Sengupta T, Roy D. 2014 Jul, Drug Utilization Study in Ophthalmology Out-patient Department of a Medical College in India. Ann Med Health Sci Res.;4(4):667–70.
3. Mittal N, Mittal R, Singh I, Shafiq N, Malhotra S. 2014, Drug Utilisation Study in a Tertiary Care Center: Recommendations for Improving Hospital Drug Dispensing Policies. Indian J Pharm Sci.;7(6(4):308–14.
4. Meena and Jayanthi, February 2019 —Drug Utilization Research. International Journal of Basic & Clinical Pharmacology | Vol 8 | Issue 2.
5. Padwal SL, Kulkarni MD, Deshmukh VS, Patil JR, Jadhav SS, Jadhav AD. 2015 Drug use pattern in the ear, nose, throat outpatient department of a rural tertiary-care teaching hospital. Natl J Physiol Pharm Pharmacol.;5:212-216.
6. Anandhasayanam A, Kannan S, Md. Sajir and Zachariah N: 2016 Drug Prescription Pattern Observation at a ENT OPD Department in a Tertiary Care Hospital at Malappuram District of Kerala. Int J Pharm Sci Res; 7(10): 4157-63.doi:

- 10.13040/IJPSR.0975-8232.7(10).4157-63.
7. Rasool S, Maqbool M, Joshi Y, 2019, Drug utilization studies among ENT patients in various clinical settings: A comprehensive review, *Journal of Drug Delivery and Therapeutics*.; 9(1-s):481-485 DOI: <http://dx.doi.org/10.22270/jddt.v9i1-s.2354>.
 8. Daniel M, Bharathi DR, Nataraj GR et.al. 2018 Drug utilization trends in ENT outpatients. *International Journal of Science & Healthcare Research*.; 3(4): 166- 171.
 9. Swopna Phukan, Saheli Das. 2020 A Study On The Prescribing Pattern Of Antimicrobial Drugs In Patients Attending The Ear, Nose, Throat Department Of A Tertiary Care Teaching Hospital, , *Asian J Pharm Clin Res*. Vol 13,(Issue 6):197-9.
 10. Sumalatha R, Nagabushan H, Prasad HM. 2017, Drug utilization study in otorhinolaryngology outpatient department in a tertiary care teaching hospital. *Int J Basic Clin Pharmacol*;6:572-6.
 11. Suman RK, Kumar R, Mohanty IR et al. 2015, Assessment of drug usage pattern of antibiotics used in ENT OPD of tertiary care teaching hospital. *Int J Health Sci Res*.; 5(9):290-297.
 12. Dr.Satish Chandra I , Dr.Shreya Lal I , Dr.Archana D S Kujur I , Dr Manisha Varshney I. 2019, Analytical Study of Prescribing Pattern of Drugs in ENT Outpatient Department of a Tertiary Care Hospital. *IOSR J Dent Med Sci IOSR-JDMS*. Sep;Volume 18(Issue 9):PP 51-56.
 13. Sridevi SA, Janagan T, Rathnasamy P, Rajarajeswari R. 2013, Drug utilization study in the otorhinolaryngology department in a tertiary care hospital. *Int J Basic Clin Pharmacol*;2:306-10. doi:10.5455/2319-2003.ijbcp20130614