

A COMPREHENSIVE ANALYSIS OF PRESCRIPTION PATTERN AND TYPES OF MEDICATIONS PRESCRIBED TO ENT PATIENTS INCLUDING ANTIBIOTICS, ANALGESICS, ANTIHISTAMINES AND OTHER COMMON DRUG ALONG WITH OTC SELF-MEDICATION PRACTICES IN TERTIARY CARE HOSPITALS

Faisal Zeeshan¹, Rutab Rizwan², Dr. Ali Akhtar³, Asma Shabbir⁴, Hifsa Zulfiqar⁵,
Dr. Waqas Akram^{*6}

^{1,2,3,4,5,*6}Faculty of Pharmaceutical Sciences, University of Central Punjab, Lahore, Pakistan.

¹faisalzeeshan0002@gmail.com, ²rutabrizwan786@icloud.com, ³dr.aliakhtar@ucp.edu.pk,
⁴asmashabbir0002@gmail.com, ⁵hrnzulfiqar@gmail.com, ^{*6}waqas.akram@ucp.edu.pk

¹ORCID: 0009-0005-0747-270X, ²ORCID : 0009-0007-0650-8613,
³ORCID: 0000-0002-6602-6938, ⁴ORCID : 0009-0009-1692-9029,
⁵ORCID : 0009-0007-7176-4293, ^{*6}ORCID: 0000-0002-8582-4249

DOI: <https://doi.org/10.5281/zenodo.20538470>

Keywords

ENT disorders; Drug use; Prescription pattern; Self-medication; Over-the-counter drugs; Antibiotics; WHO prescribing indicators; Rational drug use.

Article History

Received: 02 April 2026
Accepted: 12 May 2026
Published: 30 May 2026

Copyright @Author

Corresponding Author: *

Dr. Waqas Akram

Abstract

Background: Ear, nose, and throat (ENT) disorders are some of the most prevalent conditions that are encountered in outpatient environments and that may in many instances be treated by means of medications. The growing tendencies of self-medication, irrational prescribing practices, such as polypharmacy and inappropriate use of the antibiotics are threatening patient safety and national well-being. To determine the patterns and trends of inpatient usage of the antimicrobials commonly available as over-the-counter (OTC) drugs and to identify the prevalence and the trends of the over-the-counter (OTC) drugs, a cross-sectional observational study in a tertiary care hospital was carried out in the ENT outpatient department of the hospital. Convenient sampling method was employed to include a total of 454 participants. The structured form of case record form and validated questionnaire were used in data collection. The WHO/INRUD prescribing indicators were used to analyze the prescriptions, and the self-medication practices were assessed via patient interviews. The SPSS was used to perform statistical analysis such as descriptive statistics and chi-square tests. The largest percentage of patients (79.1 out of 454 patients) were of the female gender. The most common age group was 21–30 years (21.1%). The most common category of drug prescribed (66.7%), was anti-biotics. The prevalence of combination therapy over the monotherapy was more prevalent with prescriptions containing three or more drugs being most frequent (n=219). The average number of drugs per prescription was 2.48 ± 0.08. There was a high proportion of drugs being ordered based on the essential drug list (97.4%), and generic prescription was observed in 73.8% of the cases. Drug misuse was prevalent, with 62.1 percent of the respondents stating that they used unspecified OTC medications. The most frequent diagnosis was tonsillitis (22.0%), and the next common diagnosis

was infections with upper respiratory tract (10.8). The research paper points to a high rate of antibiotic prescribing, as well as a bias towards the use of a combination treatment in ENT practice. Despite a high level of compliance with the recommendations of crucial drug lists and using generic drugs, the irrational practices of excessive use of antibiotics and widespread self-medication persisted.

INTRODUCTION

Problems related to ear, nose and throat (ENT) disorders are among the most commonly encountered conditions in clinical practice and account for a substantial proportion of outpatient visits in tertiary care hospitals. These disorders and problems affect individuals across all age groups and frequently present with symptoms such as ear pain, nasal obstruction, discharge, sore throat, fever, and cough. Owing to their recurrent nature and symptom-oriented presentation, pharmacological therapy continues to be the cornerstone of management, as a result of this making prescription practices a critical determinant of therapeutic outcomes and patient safety (Browning et al., 2018; Shruti Dhingra & P.L. Dhingra, 2020) Drug utilization reviews provide a systematic method for the evaluation of prescribing patterns, medication use behavior, and adherence to the principles of rational drug use. The World Health Organization (WHO) defines the rational use of medicines as the prescribing appropriate drugs, in correct doses and duration, at the lowest possible cost to patients and society (Hogerzeil, 1995; "The Rational Use of Drugs and WHO.," 1985) However the availability of standard treatment guidelines, irrational prescribing including polypharmacy, inappropriate antibiotic use, and excessive reliance on symptomatic medications continues to be widely reported, particularly and specifically in high volume tertiary care settings (Lee & Bergman, 2012; Wettermark et al., 2016) Management of ENT disorders commonly involves multiple classes of medications, including antibiotics, analgesics, antihistamines, antipyretics, decongestants, and topical preparations. Antibiotics are frequently prescribed due to the infectious nature of many ENT conditions; however, a considerable proportion of upper respiratory tract infections are viral and self-limiting, where antibiotic

therapy offers no clinical benefit (Arroll & Kenealy, 2005; Gonzales et al., 1997; Linder & Stafford, 2001) Inappropriate antibiotic prescribing has been recognised as a major factor to the evolution of antimicrobial resistance, which pose a serious threat to public health and increasing treatment costs and morbidity [(Mendelson & Matsoso, 2015; Ventola, 2015) Similarly, analgesics and antihistamines, although essential for symptomatic relief, may result in adverse effects when used irrationally or for prolonged durations (Freo et al., 2021) In recent years, self-medication practices have emerged as an important concern in ENT care. The widespread availability of over the counter medicine, along with patients previously experiencing of similar symptoms and the barriers to accessing healthcare facilities, has contributed to the growing practices of self medication for common conditions (Bennadi, 2014; Hughes et al., 2001) Medicines like analgesics, antihistamines, cough and cold formulation, nasal decongestants and even in some regions antibiotics are used more commonly without having prescriptions (Shankar et al., 2002) Although accurate self medication can minimise the load on hospitals, incorrect use may cause serious side effects, hide serious diseases, and delays the correct treatment (Ruiz, 2010; Thenmozhi & Sharmil, 2023) The WHO highlighted the significance of regular assessment of prescribing behaviour and self medication trends to ensure and encourage the rational use of drugs (WHO Policy Perspectives on Medicines-Promoting Rational Use of Medicines: Core Components WHO Policy Perspectives on Medicines, 2002) Research based on hospital drug utilization and the audit of prescriptions play a very role in determining inappropriate prescribing practices, strengthening antimicrobial stewardship, and support the evidence base

clinical decisions making, particularly in tertiary care hospitals (Milani & Scholten, 2011). To ensure adequate statistical power and reliable estimation of prescribing and self-medication patterns, the sample size for this study was calculated using OpenEpi software. Assuming an expected prevalence of 50%, a 95% confidence level, and a 5% margin of error, the calculated minimum sample size was 454 participants. The findings of this research are expected to provide a clear understanding of current prescribing trends in ENT departments. By identifying the patterns of irrational prescribing and self-medication, the study may help in promoting rational drug use and adherence to standard treatment guidelines. As a measure to ensure the promotion of rational drug use, the WHO has put much emphasis on the practice of regular evaluation of prescribing behavior and self-medication practices. As a part of antimicrobial stewardship, various types of drug utilization studies and prescription audits are beneficial in identifying inappropriate patterns of prescribing antimicrobials, and improving evidence-based clinical decision-making. Such assessments are especially important in the tertiary care setting where a high patient load frequently contributes to poor quality of care provided to these patients. The objective of the present study is to assess the patterns of drug utilization and the prescribing patterns amongst patients attending ENT outpatient division of a tertiary care hospital. In addition to this, the research evaluates the prevalence, trends and variables related to the practice of over-the-counter self-medication among patients with ENT disorders. Intended to help into the progression of rational drug use and enhance the usage of the traditional treatment regimen, the study will focus on identifying the areas of irrational prescribing and self-medication. The calculation of the sample size of this study was taken into consideration using the OpenEpi software. The sample size necessary to be 454 participants (assuming expected prevalence of 50, confidence level of 95, and margin of error of 5). This was taken as an adequate sample size that could be used to give a complete picture of prescribing trends and self-

medication practices in the ENT outpatient setup.

METHODOLOGY

This was a cross-sectional observational study to evaluate the pattern of drug utilization among patients appearing with the problems related to ear, nose, and throat disorders in the tertiary care hospital. The study further evaluates the prevalence, patterns, underlying causes, and the outcomes of over-the-counter (OTC) self-medication practices for commonly encountered ENT conditions. The audit of prescription components focuses on reviewing and analyzing the pattern of prescribing, while the self-medication component examines and explores the behavior of patients through the interviews. This study was carried out at ENT OPD of tertiary care hospital in general hospital Lahore. The Data collection began on 11 November 2025, and remains ongoing to ensure adequate sample size and comprehensive representation of seasonal variations in ENT cases.

Study Population and Sampling

The targeted population consists of all kinds of patients (aged 18 years below and above) attending the ENT OPD for consultation of ENT-related complaints, along with their accompanying attendees/visitors for the self-medication assessment. Participants are recruited using a convenient sampling method, suitable for a high-volume tertiary care setting. Both new and follow-up patients are included, subject to informed consent.

Sample Size

The sample size was calculated using OpenEpi software. Assuming a prevalence of 50%, a confidence level of 95%, and a margin of error of 5%, the minimum required sample size was calculated as 454 participants. This sample size was considered adequate to reliably evaluate drug utilization patterns and self-medication practices among patients attending the ENT outpatient department. As of the today's update (January 2026), data collection still continues toward meeting or exceeding the desired target. For the

components of self-medication/OTC use, approximately the target of 400 prescriptions, based on the similar cross-sectional studies to evaluate the prevalence of self-medication in ENT complaints. The final sample size will be (Emmett & Nye, 2017) determined by patient flow and it's depended upon on actual patient flow and the improvement of ongoing data collection, with no fixed endpoint yet reached at this time.

Inclusion Criteria

Patients aged 18 years and above attending the ENT OPD with any ENT-related complaint and willing to provide informed consent were included in the study. (Bapna et al., 1992; Enamul Hoque et al., 2017) Prescriptions issued during the study period were considered for the drug utilization analysis. For self-medication assessment, participants with a history of ENT symptoms in the past one year were included.

Exclusion Criteria

Patients which are unwilling to participate or unable to provide the reliable information, emergency cases or inpatients, and incomplete prescriptions or records were excluded from the study.

Data Collection

Data is collected prospectively using a pre-designed, structured case report form (CRF) and a validated questionnaire adapted from prior studies on drug utilization and self-medication in ENT patients. For the drug utilization/prescription audit part prescriptions are obtained directly from the ENT OPD pharmacy or during consultations. Recorded details include patient demographics (age, gender, socioeconomic status), presenting complaints/diagnosis, prescribed drugs (name, dosage, frequency, duration, route), number of drugs per prescription, use of generic names, adherence to essential medicine lists, and antibiotic/steroid/antihistamine usage, along with any irrational practices (e.g., polypharmacy). WHO/INRUD core prescribing indicators are applied, includes (average number of drugs per encounter, percentage of drug prescribed by

generic name, percentage of encounter with antibiotics and injections prescribed and the percentage of drug prescribed from essential drug list). For the self-medication/OTC use part a structured questionnaire is administered via face-to-face interviews. Information includes history of self-medication for ENT ailments in the past year, common conditions (e.g., cold, cough, ear pain, sore throat), reasons for self-medication (e.g., confidence in managing minor symptoms, accessibility, cost, prior experience), specific OTC drugs used, sources of advice (pharmacist, family, advertisement), perceived effectiveness (improvement, no change, worsening, recurrence), and whether it led to hospital consultation due to failed treatment. Sociodemographic details (age, gender, occupation, education, income) are recorded to evaluate associations (e.g., between daily wage workers and OTC use). A detailed history is taken as needed, and all data collection maintains strict confidentiality.

Ethical Considerations

The study protocol has been approved by the hospital. The informed consent in written is obtained from all the participants after explaining the overall purpose of this study, procedures, voluntary participation, and confidentiality measures. This is a cross-sectional observational study, no intervention of any type was implemented and the study participation don't affect and change routine clinical care provided to the patients.

Data Analysis

For data entry and analysis, the SPSS 27.0 software were used. Descriptive statistics were used for the analysis of data. The data we get was represented as mean (addition and subtraction SEM and percentages as applicable) to conclude and summarize the demographic profiles, prescription patterns, common drugs, and the self-medication practices. Descriptive statistics were applied and used and the relationship between the variables of sociodemographic and the used of OTC drug (OTC drug usage) and preferences were analyzed through chi square test

and fisher's exact test. A p-value less than 0.05 were considered statistically significant. (Domart

et al., 1967; S et al., 2010; Sado & Gedif, 2014)

RESULTS:

Table 1: Distribution of Patients According to Age Group with Gender (n = 454)

S. No	Age Group (years)	Male n (%)	Female n (%)	Total n (%)
1	1-10	9 (1.98)	34 (7.49)	43 (9.5)
2	11-20	15 (3.30)	58 (12.78)	73 (16.1)
3	21-30	20 (4.40)	76 (16.74)	96 (21.1)
4	31-40	18 (3.96)	67 (14.76)	85 (18.7)
5	41-50	18 (3.96)	66 (14.54)	84 (18.5)
6	51-60	7 (1.54)	28 (6.16)	35 (7.7)
7	61-70	4 (0.88)	17 (3.74)	21 (4.6)
8	71-80	3 (0.66)	11 (2.42)	14 (3.1)
9	>80	1 (0.22)	2 (0.44)	3 (0.7)
Total	—	95 (20.9)	359 (79.1)	454 (100)

Out of 454 patients, the majority were females (79.1%) while males constituted 20.9%. The highest number of patients was observed in the 21-30 years age group (21.1%), followed by 31-40 years (18.7%) and 41-50 years (18.5%). The

least number of patients were above 80 years (0.7%). Gender distribution across age groups showed a predominance of females in all categories.

Table 2: Prescribing frequency of drug classes

S.No.	Type of Drug Category	Male No. (%)	Female No. (%)	Total No. (%) (n=454)
1	Antibiotics	63 (13.9)	240 (52.9)	303 (66.7)
2	Steroids (topical/nasal/ear/eye)	28 (6.2)	37 (8.1)	65 (14.3)
3	Anti-histaminic	37 (8.1)	48 (10.6)	85 (18.7)
4	Anti-leukotrienes	19 (4.2)	26 (5.7)	45 (9.9)
5	Decongestants / Nasal preparations	24 (5.3)	31 (6.8)	55 (12.1)
6	Others (Analgesics, PPIs, etc.)	32 (7.0)	43 (9.5)	75 (16.5)

Prescribing frequency of drug classes was shown in the table. It was observed from the study that antibiotics were prescribed in the maximum number of prescriptions (66.7%), while anti-leukotrienes were prescribed in the minimum number of prescriptions (9.9%). Among the total antibiotics prescribed, 13.9% were male patients and 52.9% were female patients. In the category of steroid prescriptions, 6.2% prescriptions were of male patients and 8.1% belonged to female patients. Among the patients who received anti-

histaminic in their prescriptions, 8.1% were male patients and 10.6% were female patients. Among anti-leukotrienes containing prescriptions, 4.2% prescriptions were of male patients and 5.7% were of female patients. Among prescriptions containing decongestants, 5.3% prescriptions were of male patients and 6.8% were of female patients, while in the others category, 7.0% prescriptions were of male patients and 9.5% were of female patients.

Table 3: Mono therapy and Combination therapy

Drug Category	Mono-therapy (n = 96)	Two-drug combination (n = 139)	Three or more drug combination (n = 219)
Antibiotics	18 (18.8)	52 (37.4)	130 (59.4)
Steroids	15 (15.6)	25 (18.0)	25 (11.4)
Anti-histaminics	22 (22.9)	33 (23.7)	30 (13.7)
Anti-leukotrienes	10 (10.4)	20 (14.4)	15 (6.8)
Decongestants	8 (8.3)	15 (10.8)	32 (14.6)
Others	23 (24.0)	14 (10.1)	38 (17.4)

The distribution of mono-therapy and combination therapy revealed that prescriptions involving three or more drugs were most frequently prescribed (n = 219), followed by two-drug combinations (n = 139) and mono-therapy (n = 96). In mono-therapy, the “others” category (24.0%) and anti-histaminic (22.9%) were most commonly used, followed by antibiotics (18.8%) and steroids (15.6%), while decongestants (8.3%) were least prescribed. In two-drug combinations, antibiotics (37.4%) were the most frequently prescribed, followed by anti-histaminics (23.7%)

and steroids (18.0%), whereas the “others” category (10.1%) was least common. In three or more drug combinations, antibiotics accounted for the highest proportion (59.4%), followed by the “others” category (17.4%) and decongestants (14.6%), while anti-leukotrienes (6.8%) were least prescribed. Overall, the findings indicate a clear preference for combination therapy, particularly multi-drug regimens, with antibiotics consistently being the dominant drug class across all prescription categories.

Table 4: Distribution of participants’ medications usage history (n = 454)

Groups	Sub-groups	Frequency	Percentage (%)
Medications used as OTC	Not prescribed / Not mentioned	282	62.1
	Panadol / PANADOL	55	12.1
	panadol	36	7.9
	FEXET	17 + 3	4.4
	cetirizine / CETRIZINE / citrizine	12 + 10 + 2 + 1	5.5
	NAPROXEN / naproxen variants	5 + 1 + 1 + 1	1.8
	loratidine / LORATIDINE	5 + 4 + 1	2.2
	Others (BRUFEN, cofeeb, FIXIT, menthol, olive oil, paracetamol, PCM, etc.)	~ 38	~ 8.4
	Total	454	100.0

Duration of OTC use	Mean—5.73 days. 37.7% (171 participants) had a duration of 1–10 days before stopping, while only 0.4% (2 participants) had a duration of 21–30 days. Duration was not mentioned in 61.9% (281 cases).
Knew OTC medicine was antibiotic	Yes: 218 (48.0%) No: 223 (49.1%) Not mentioned: 13 (2.9%)
Reason for self-medication	Symptoms relief: 170 (37.4%) Not mentioned: 282 (62.1%) Prior experience / Other: 2 (0.4%)
Any adverse reaction after OTC use	Yes: 7 (1.5%) No: 164 (36.1%) Not mentioned: 283 (62.3%)
Side effects experienced	most common not explicitly listed in high frequency; many “Nil” or not mentioned.

The distribution of participants’ medication usage history (n = 454) showed that the majority of respondents reported using medications that were not prescribed or not mentioned (62.1%). Among the identified drugs, Panadol was commonly used, accounting for 12.1% and 7.9% under different entries, followed by cetirizine variants (5.5%) and fexet (4.4%). Other medications such as naproxen (1.8%) and loratidine (2.2%) were used less frequently, while a group of miscellaneous drugs including brufen, menthol, and paracetamol contributed approximately 8.4% of usage. The most common duration of OTC use was 1–10 days (37.7%), although the mean duration was not directly calculated. Awareness regarding antibiotic use was nearly equal, with 48.0% of participants

knowing that the OTC medicine was an antibiotic and 49.1% not aware, while 2.9% responses were not mentioned. The primary reason for self-medication was symptom relief (37.4%), whereas a large proportion of responses were not specified (62.1%) and only 0.4% reported prior experience or other reasons. Adverse drug reactions were reported by a very small proportion of participants (1.5%), while 36.1% reported no adverse effects and 62.3% responses were not mentioned. Overall, the findings indicate that self-medication practices were common, with a high proportion of unspecified drug use, limited awareness about antibiotics, and minimal reporting of adverse effects.

Table 5: WHO Prescribing Indicators Assessment

S.No.	Prescribing Indicators	Results
1.	Mean number of the drugs per prescription	2.48 ±1.08
2.	Percentage of drugs prescribed by generic name	73.8%
3.	Percentage of encounters with an antibiotic prescribed	68.3%
4.	Percentage of encounters with an injection prescribed	0.4%
5.	Percentage of drugs prescribed from essential drug list (EDL)	97.4%

The assessment of WHO prescribing indicators revealed that the mean number of drugs per

prescription was 2.48 ± 1.08, indicating a moderate level of drug utilization. The percentage

of drugs prescribed by generic name was 73.8%, reflecting a good prescribing practice. A high proportion of encounters included antibiotics (68.3%), suggesting frequent use of antimicrobial therapy. In contrast, the use of injections was minimal, with only 0.4% of encounters involving

injectable drugs. Furthermore, a very high percentage of drugs (97.4%) were prescribed from the essential drug list (EDL), indicating strong adherence to standard treatment guidelines and rational prescribing practices.

Table 6: Dosage Form Types

S.No.	Type of dosage forms	No. of Prescriptions (%) (n=454)	No. of Drugs per Prescription	No. of Prescriptions (%) (n = 454)
1	Tablet	256 (56.4)	0	5 (1.1)
2	Syrup / Suspension	77 (17.0)	1	100 (22.0)
3	Drops (Ear / Nasal / Eye)	76 (16.7)	2	141 (31.1)
4	Nasal Spray	20 (4.4)	3	136 (30.0)
5	Capsule	21 (4.6)	4	60 (13.2)
6	Ointment / Cream	12 (2.6)	5	11 (2.4)
7	Powder / Sachet	6 (1.3)	6	1 (0.2)
Total	454		Total	454

The analysis of dosage forms prescribed (n = 454) showed that tablets were the most commonly used dosage form, accounting for 56.4% of prescriptions, followed by syrup/suspension (17.0%) and drops for ear, nasal, or eye use (16.7%). Other dosage forms such as capsules (4.6%), nasal sprays (4.4%), ointments/creams (2.6%), and powders/sachets (1.3%) were prescribed less frequently. Regarding the number

of drugs per prescription, the majority of prescriptions contained two drugs (31.1%), followed closely by three drugs (30.0%) and one drug (22.0%). Prescriptions with four drugs accounted for 13.2%, while those with five drugs (2.4%) and six drugs (0.2%) were relatively uncommon. A very small proportion of prescriptions (1.1%) contained no drugs.

Table 7: Distribution of Diagnoses among ENT Patients (n=454)

S.No.	Categories / Diagnosis	Frequency	Percent (%)	Cumulative Percent (%)
1	Tonsillitis	100	22.0	22.0
2	URTI	49	10.8	32.8
3	Allergic rhinitis	42	9.3	42.1
4	Acute otitis media	34	7.5	49.6
5	Ear ache	29	6.4	56.0
6	Ear discharge	19	4.2	60.2
7	Acute bacterial otitis externa	10	2.2	62.4
8	Wax present	11	2.4	64.8
9	Acute pharyngitis	13	2.9	67.7
10	BIL MILD	13	2.9	70.6
11	Impacted cerumen / Otitis externa	13	2.9	73.5
12	Flu	8	1.8	75.3
13	Sore throat	8	1.8	77.1
14	Nasal discharge	7	1.5	78.6
15	EEC nasal clotted blood	7	1.5	80.1
16	Other diagnoses (30+ minor conditions including cough, adenoid hypertrophy, acute rhino sinusitis, foreign body, cerumen impaction, ear itching, allergic cough, deviated nasal septum, nasal itching, hoarseness, nose bleeding, etc.)	90	19.9	100.0
Total	Total	454	100.0	100.0

The distribution of diagnoses among ENT patients (n=454) shows that tonsillitis was the most common condition, accounting for 22.0% of cases, followed by upper respiratory tract infections (URTI) at 10.8% and allergic rhinitis at 9.3%. Other notable diagnoses included acute otitis media (7.5%), ear ache (6.4%), and ear discharge (4.2%). Less frequent conditions such as acute bacterial otitis externa (2.2%), wax presence (2.4%), acute pharyngitis, bilateral mild conditions, and impacted cerumen/otitis externa (each 2.9%) were also observed. Smaller proportions of patients presented with flu and sore throat (each 1.8%), as well as nasal discharge and EEC nasal clotted blood (each 1.5%). A considerable proportion of cases (19.9%) were grouped under other diagnoses, which included more than 30 minor conditions such as cough, adenoid hypertrophy, acute rhinosinusitis, foreign body, and nasal disorders.

DISCUSSION

The current study was performed in order to check how patients in patients attending the ENT outpatient department of a tertiary care hospital use the drugs. The results are valuable in reflecting on the present-day tendencies in prescribing that can be modified to enhance the intended results in addressing the patient population health-related concerns. In this case, it became evident that most female patients (79.1) were predominant with the males only coming in at 20.9.(Karim et al., 2017) This observation is in contrast to numerous past researchers who reported male predominance indicating they could be having regional, sociocultural, or healthcare access disparities affecting healthcare-seeking behavior. The most affected age group was 21-30 years (21.1%), followed by 31-40 years and 41-50 years. This indicates that the working-age group is more exposed to environmental factors, infections and

lifestyle diseases that lead to ENT diseases. The distribution of participants' medication usage history (n = 454) showed that the majority of respondents reported using medications that were not prescribed or not mentioned (62.1%). Among the identified drugs, Panadol was commonly used, accounting for 12.1% and 7.9% under different entries, followed by cetirizine variants (5.5%) and fexet (4.4%). Other medications such as naproxen (1.8%) and loratidine (2.2%) were used less frequently, while a group of miscellaneous drugs including brufen, menthol, and paracetamol contributed approximately 8.4% of usage. The most common duration of OTC use was 1-10 days (37.7%), although the mean duration was not directly calculated. Awareness regarding antibiotic use was nearly equal, with 48.0% of participants knowing that the OTC medicine was an antibiotic and 49.1% not aware, while 2.9% responses were not mentioned. The primary reason for self-medication was symptom relief (37.4%), whereas a large proportion of responses were not specified (62.1%) and only 0.4% reported prior experience or other reasons. Adverse drug reactions were reported by a very small proportion of participants (1.5%), while 36.1% reported no adverse effects and 62.3% responses were not mentioned. Overall, the findings indicate that self-medication practices were common, with a high proportion of unspecified drug use, limited awareness about antibiotics, and minimal reporting of adverse effects. The most frequent diagnosis was tonsillitis (22.0) followed by the infection of the upper respiratory tract (10.8) and allergic rhinitis (9.3%). These data are indicative of the overall epidemiological trend of ENT disorders whereby infections and inflammatory processes predominantly characterize the outpatient presentation. The fact that the proportion of miscellaneous conditions is quite large (19.9), also shows the large range of ENT diseases that are encountered in the regular clinical practice. The distribution of diagnoses among ENT patients (n=454) shows that tonsillitis was the most common condition, accounting for 22.0% of cases, followed by upper respiratory

tract infections (URTI) at 10.8% and allergic rhinitis at 9.3%. Other notable diagnoses included acute otitis media (7.5%), ear ache (6.4%), and ear discharge (4.2%). Less frequent conditions such as acute bacterial otitis externa (2.2%), wax presence (2.4%), acute pharyngitis, bilateral mild conditions, and impacted cerumen/otitis externa (each 2.9%) were also observed. Smaller proportions of patients presented with flu and sore throat (each 1.8%), as well as nasal discharge and EEC nasal clotted blood (each 1.5%). A considerable proportion of cases (19.9%) were grouped under other diagnoses, which included more than 30 minor conditions such as cough, adenoid hypertrophy, acute rhinosinusitis, foreign body, and nasal disorders.

The highest rates of prescribed drug group were antibiotics (66.7%), anti-histaminics (18.7%) and steroids (14.3%). The fact that most ENT disorders, including URITs, are virally based and not requiring any antibiotic treatment is worrisome. This hints at the propensity towards empirical antibiotic prescribing, which can lead to the further increase of the issue of antimicrobial resistance. It was discovered that combination therapy is more prevalent compared to monotherapy where prescriptions of three or more drugs occupy the majority. This means that we are heading towards polypharmacy and that this tendency may expose us to more drug interactions, side effects, and unnecessary healthcare expenditure. Even though the combination therapy can be sometimes justified in the process of treating the numerous symptoms, irrational utilization must be reduced by following the standard usage guidelines. The average number of drugs per prescription (2.48 ± 1.08) is moderate in the extent to which it is utilized as compared to other comparable reports. The proportion of drugs that were prescribed by generic name (73.8%), was good prescribing practices and cost-effective. Also, the percentages of drug (97.4) that were prescribed according to the essential drug list are very high meaning that there was high compliance with standard treatment guidelines. Nonetheless, the proportion of encounters with antibiotics

prescribed (68.3%) is also very high, which supports the arguments about the overuse of antibiotics. Minimal usage of injections (0.4%): a good outcome because it would decrease the chances of complications and unwarranted healthcare costs. The assessment of WHO prescribing indicators revealed that the mean number of drugs per prescription was 2.48 ± 1.08 , indicating a moderate level of drug utilization. The most frequently prescribed dose form was tablets (56.4%), syrups and drops. Such a pattern is indicative of the favoring of oral and topical routes of administration of medications in the outpatient setting due to convenience and the willingness of the patient. The tendencies of combination therapy are in line with the observed trend of the combination therapy prescriptions, which contain two or three drugs. The analysis of dosage forms prescribed ($n = 454$) showed that tablets were the most commonly used dosage form, accounting for 56.4% of prescriptions, followed by syrup/suspension (17.0%) and drops for ear, nasal, or eye use (16.7%). Other dosage forms such as capsules (4.6%), nasal sprays (4.4%), ointments/creams (2.6%), and powders/sachets (1.3%) were prescribed less frequently. Regarding the number of drugs per prescription, the majority of prescriptions contained two drugs (31.1%), followed closely by three drugs (30.0%) and one drug (22.0%). Prescriptions with four drugs accounted for 13.2%, while those with five drugs (2.4%) and six drugs (0.2%) were relatively uncommon. A very small proportion of prescriptions (1.1%) contained no drugs. A high level of prevalence was found in self-medication, with a significant proportion of respondents (62.1) also reporting using medications not prescribed or not clearly identified. Popular medications were analgesics, like paracetamol (Panadol), antihistamines, and other symptomatic drugs. The level of awareness with regard to the use of antibiotics was low with almost equal proportions of the respondents in the aware category (48.0%), as well as the unaware category (49.1%). This ignorance is worrying because in the event of misuse of antibiotics, this could lead to resistance and failure to deliver the treatment.

Symptom relief was the primary reason of self-medication meaning that the patients will try to cope with minor conditions on their own. Even though these adverse drug reactions were somehow reported by a small percentage of participants (1.5%), the high percentage of the unreported data shows that there is a tendency to underreport or even be unaware of the side effects. This study has demonstrated that there are some key issues to consider, such as high levels of antibiotics, polypharmacy, and the extensive use of self-medication. The above issues suggest the necessity to regularly audit prescription activities, carefully implement antimicrobial stewardship programs, and raise awareness among medical professionals about the importance of rational prescription activities. Education of patients is also crucial in order to combat the problem of self-medication as well as enhance knowledge on proper use of medicine, especially antibiotics. This paper presents a detailed assessment of the prescribing practices as well as the practices of self-medication in a tertiary care unit, using WHO prescribing indicators. The study however has some limitations. Convenient sampling can be a limiting factor in terms of generalizability and a high percentage of self-medication data were not given, which can influence the validity of the results. Moreover, the design is cross-sectional not allowing to determine causal links. On the whole, the study illustrates that although some details of the prescribing practices, i.e., the compliance to the basic drug list and the use of generic drugs, are more than satisfactory, considerable gaps remain in the sphere of the antibiotic overuse and rational drug usage. The large rates of self-medication also emphasize the necessity to enhance patient awareness and regulations.

CONCLUSION

The current study identifies some key trends in the use of drugs and self-medication by patients who visit the ENT outpatient department of a three-tier care hospital. The prevalence of antibiotic prescribing was high, and antibiotics were the most commonly used type of drugs. Moreover, combination therapy (and

combinations of drugs especially) was more common than monotherapy suggesting a potential shift toward polypharmacy in the everyday practice of clinical medicine. Positively, there was a great percentage of drugs prescribed based on the essential drug list, and the rate of generic prescribing is relatively high, which means compliance with the standard guidelines of treating common diseases and cost-effective use of funds. The high-rate of antibiotic use, particularly in diseases that are often viral and self-limiting, is however a cause of worry in regard to irrational prescribing as well as the possibility of the emergence of antimicrobial resistance. It was also noted that self-medication practices were widespread with a very large percentage of patients taking medications without proper prescription or proper knowledge. Poor education on the use of antibiotics and little coverage of adverse drug reactions also adds to the stress caused by uncontrolled use of medicines. On the whole, the research highlights the necessity of periodic observation of the tendency in prescribing, the implementation and maintenance of antimicrobial stewardship initiatives, and following the evidence-based practice. Moreover, the creation of the program of raising the awareness of the population and educating patients about the need to use the medicines rationally is necessary to decrease the occurrence of inappropriate self-medication and promote a reasonable use of medicines. Enhancing these measures can help to achieve better patient safety and therapeutic outcomes and to decrease the healthcare burden.

REFERENCES

1. Arroll, B., & Kenealy, T. (2005). Antibiotics for the common cold and acute purulent rhinitis. In B. Arroll (Ed.), *Cochrane Database of Systematic Reviews*. John Wiley & Sons, Ltd. <https://doi.org/10.1002/14651858.CD000247.pub2>

2. Bapna, J. S., Tekur, U., Gitanjali, B., Shashindran, C. H., Pradhan, S. C., Thulasimani, M., & Tomson, G. (1992). Drug utilization at primary health care level in southern India. *European Journal of Clinical Pharmacology*, 43(4), 413–415. <https://doi.org/10.1007/BF02220618>
3. Bennadi, D. (2014). Self-medication: A current challenge. *Journal of Basic and Clinical Pharmacy*, 5(1), 19. <https://doi.org/10.4103/0976-0105.128253>
4. Browning, G. G., Weir, J., Kelly, G., & Swan, I. R. C. (2018). Chronic Otitis Media. In *Scott-Brown's Otorhinolaryngology Head and Neck Surgery* (pp. 977–1019). CRC Press. <https://doi.org/10.1201/9780203731017-83>
5. Domart, A., Gentilini, M., Thérizol, M., & Carbon, C. (1967). [Treatment of strongyloidiasis with thiabendazole (apropos of 100 cases)]. *Bulletins et Memoires de La Societe Medicale Des Hopitaux de Paris*, 118(11), 1047–1050.
6. Emmett, R. S., & Nye, D. E. (2017). *The environmental humanities: a critical introduction*. MIT Press. <https://cir.nii.ac.jp/crid/1130000797279913472.bib?lang=en>
7. Enamul Hoque, M., Enamul Hoque Director, M., & Bangladesh, E. (2017). *An Introduction to the Second Language Acquisition*. <https://www.researchgate.net/publication/335690866>
8. Freo, U., Ruocco, C., Valerio, A., Scagnol, I., & Nisoli, E. (2021). Paracetamol: A Review of Guideline Recommendations. *Journal of Clinical Medicine*, 10(15), 3420. <https://doi.org/10.3390/jcm10153420>
9. Gonzales, R., Steiner, J. F., & Sande, M. A. (1997). Antibiotic prescribing for adults with colds, upper respiratory tract infections, and bronchitis by ambulatory care physicians. *JAMA*, 278(11), 901–904.

10. Hogerzeil, H. (1995). Promoting rational prescribing: an international perspective. *British Journal of Clinical Pharmacology*, 39(1), 1-6. <https://doi.org/10.1111/j.1365-2125.1995.tb04402.x>
11. Hughes, C. M., McElnay, J. C., & Fleming, G. F. (2001). Benefits and Risks of Self Medication. *Drug Safety*, 24(14), 1027-1037. <https://doi.org/10.2165/00002018-200124140-00002>
12. Karim, R., Uddin, Md. S., Rahman, M. S., Nure, Most. A., Saha, R. R., Begum, T., Begum, R., Islam, A., & Begum, Mst. M. (2017). A survey of prescription pattern of antibiotic drugs on patients suffering from ENT infection within Dhaka metropolis. *International Journal of Basic & Clinical Pharmacology*, 6(2), 257. <https://doi.org/10.18203/2319-2003.ijbcp20170317>
13. Lee, D., & Bergman, U. (2012). Studies of Drug Utilization. In *Pharmacoepidemiology* (pp. 377-401). Wiley. <https://doi.org/10.1002/9781119959946.ch24>
14. Linder, J. A., & Stafford, R. S. (2001). Antibiotic Treatment of Adults With Sore Throat by Community Primary Care Physicians. *JAMA*, 286(10), 1181. <https://doi.org/10.1001/jama.286.10.1181>
15. Mendelson, M., & Matsoso, M. P. (2015). The World Health Organization Global Action Plan for antimicrobial resistance. *South African Medical Journal*, 105(5), 325. <https://doi.org/10.7196/SAMJ.9644>
16. Milani, B., & Scholten, W. (2011). THE WORLD MEDICINES SITUATION 2011 ACCESS TO CONTROLLED MEDICINES.
17. Ruiz, M. (2010). Risks of Self-Medication Practices. *Current Drug Safety*, 5(4), 315-323. <https://doi.org/10.2174/157488610792245966>
18. S, S., V, R., R, S., Mohanty, B., & S K, D. (2010). Drug Utilization Studies - An Overview. *International Journal of Pharmaceutical Sciences and Nanotechnology*, 3(1), 803-810. <https://doi.org/10.37285/ijpsn.2010.3.1.2>
19. Sado, E., & Gedif, T. (2014). Drug Utilization at Household Level in Nekemte Town and Surrounding Rural Areas, Western Ethiopia: A Cross-Sectional Study. *OALib*, 01(03), 1-9. <https://doi.org/10.4236/oalib.1100651>
20. Shankar, P., Partha, P., & Shenoy, N. (2002). Self-medication and non-doctor prescription practices in Pokhara valley, Western Nepal: a questionnaire-based study. *BMC Family Practice*, 3(1), 17. <https://doi.org/10.1186/1471-2296-3-17>
21. Shruti Dhingra, & P.L. Dhingra. (2020). Diseases of Ear, Nose and Throat & Head and Neck Surgery.
22. The rational use of drugs and WHO. (1985). *Development Dialogue*, (2), 1-4.
23. Thenmozhi, B., & Sharmil, S. H. (2023). Self-medication Practices of the Rural Community People: A Cross-Sectional Study. *Indian Journal of Community Medicine*, 48(4), 619-622. https://doi.org/10.4103/ijcm.ijcm_842_22
24. Ventola, C. L. (2015). The antibiotic resistance crisis: part 1: causes and threats. *P & T: A Peer-Reviewed Journal for Formulary Management*, 40(4), 277-283.
25. Wettermark, B., Elseviers, M., Almarsdóttir, A. B., Andersen, M., Benko, R., Bennie, M., Eriksson, I., Godman, B., Krska, J., Poluzzi, E., Taxis, K., Vander Stichele, R., & Vlahović - Palčevski, V. (2016). Introduction to drug utilization research. In *Drug Utilization Research* (pp. 1-12). Wiley. <https://doi.org/10.1002/9781118949740.ch1>
26. WHO Policy Perspectives on Medicines-Promoting rational use of medicines: core components WHO Policy Perspectives on Medicines. (2002). <http://www.msh.org/>