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RATIONAL USE OF TOPICAL DRUGS IN PATIENTS PRESENTING WITH RED EYE AT A TERTIARY CARE TEACHING HOSPITAL: A PROSPECTIVE OBSERVATIONAL STUDY

Ophthalmology

Dr. Soni Gupta Department of Ophthalmology K.D. Medical College Hospital and Research Centre Mathura, Uttar Pradesh, India

Dr Arvind Kumar Dhruva * MBBS MS FIAGES*Corresponding Author

ABSTRACT

Red eye is among the most common ophthalmic presentations in outpatient departments. Irrational prescribing practices, particularly the inappropriate use of antibiotics and steroid combinations, contribute to antimicrobial resistance, increased treatment costs, and adverse drug reactions. Drug utilization studies help assess prescribing patterns and promote rational pharmacotherapy. **Aim:** To evaluate the prescribing pattern and rational use of topical drugs in patients presenting with red eye at a tertiary care teaching hospital. **Methods:** A prospective, observational, cross-sectional study was conducted in the Department of Ophthalmology of a tertiary care teaching hospital from August 2024 to January 2026. A total of 882 prescriptions of patients presenting with red eye were analyzed. Data regarding demographic profile, diagnosis, prescribed medications, route of administration, generic prescribing, essential drug list utilization, and WHO prescribing indicators were collected and analyzed. **Results:** Among 882 patients, 53.5% were males and 46.5% were females. The most affected age group was 31–50 years (38.1%). Infective conjunctivitis was the most common diagnosis (36.1%), followed by allergic conjunctivitis (24.3%) and dry eye disease (13.8%). The average number of drugs per prescription was 2.32 ± 0.61. Eye drops constituted 75.5% of all formulations prescribed. Antibiotics were prescribed in 58.3% of encounters. Generic prescribing was observed in only 8.3% of prescriptions, while 49.4% of prescribed drugs belonged to the Essential Drug List. Rational prescriptions accounted for 69.4%, whereas 30.6% demonstrated irrational prescribing practices. **Conclusion:** Although most prescriptions were rational, substantial overuse of antibiotics and low rates of generic prescribing were observed. Regular prescription audits, adherence to evidence-based guidelines, and antimicrobial stewardship programs are recommended to improve rational drug use in ophthalmology.

KEYWORDS

Red Eye, Drug Utilization Study, Rational Drug Use, Topical Ophthalmic Drugs, Antibiotic Stewardship, Who Prescribing Indicators

INTRODUCTION

Red eye is one of the most frequent ocular complaints encountered in ophthalmic outpatient clinics. It encompasses a broad spectrum of disorders ranging from benign self-limiting conjunctivitis to potentially sight-threatening conditions such as microbial keratitis and acute glaucoma. Appropriate diagnosis and evidence-based treatment are essential for preventing complications and preserving vision.

The World Health Organization defines rational drug use as the situation in which patients receive medications appropriate to their clinical needs, in doses that meet individual requirements, for an adequate period of time, and at the lowest possible cost. Irrational prescribing contributes significantly to increased healthcare expenditure, antimicrobial resistance, treatment failure, and adverse drug reactions.

Topical ophthalmic preparations constitute the cornerstone of treatment for most causes of the red eye. However, empirical use of broad-spectrum antibiotics, irrational fixed-dose combinations, and indiscriminate steroid prescribing remain common concerns in ophthalmic practice. Drug utilization studies provide valuable information regarding prescribing behavior and help identify areas requiring intervention. Such studies are particularly important in ophthalmology, where topical medications are frequently prescribed and misuse may lead to serious complications.

The present study was undertaken to evaluate the utilization pattern and rationality of topical drugs prescribed in patients presenting with red eye at a tertiary care teaching hospital.

MATERIALS AND METHODS

Study Design:
Prospective, observational, cross-sectional study.

Study Setting:
Department of Ophthalmology, K.D. Medical College Hospital and Research Centre, Mathura, Uttar Pradesh, India.

Study Duration:
August 2024 to January 2026.

Sample Size:
882 patients.

Inclusion Criteria:
1. Patients presenting with red eye in the ophthalmology outpatient department.
2. Patients are willing to participate in the study.
3. Patients of all age groups and both sexes.

Exclusion Criteria:
1. Incomplete prescriptions.
2. Patients unwilling to participate.
3. Follow-up visits with unchanged treatment regimens.

Data Collection:
Patient demographic details, clinical diagnosis, prescribed medications, dosage form, frequency, route of administration, and duration of therapy were recorded using a structured data collection form.

Assessment of Rationality:
Prescriptions were evaluated according to:
WHO prescribing indicators
Essential Drug List (EDL) utilization
Generic prescribing practices
Clinical appropriateness of therapy

Statistical Analysis:
Data were entered into Microsoft Excel and analyzed using SPSS software. Continuous variables were expressed as mean ± standard deviation, whereas categorical variables were expressed as percentages. Chi-square test was used to assess associations. A p-value <0.05 was considered statistically significant.

RESULTS

A total of 882 prescriptions were analyzed.

Demographic Characteristics
Of the 882 patients, 472 (53.5%) were males and 410 (46.5%) were females.

The most commonly affected age group was 31–50 years (38.1%), followed by 18–30 years and 51–70 years.

Clinical Diagnosis
The most common diagnosis was infective conjunctivitis (36.1%),

followed by allergic conjunctivitis (24.3%), dry eye disease (13.8%), blepharitis (8.8%), corneal ulcer (7.3%), trauma/foreign body (6.3%), and raised intraocular pressure (3.4%).

Drug Utilization Pattern
The average number of drugs prescribed per encounter was 2.32 ± 0.61.

Eye drops constituted 75.5% of all prescribed formulations, followed by ophthalmic ointments (15.2%) and oral medications (9.3%).

Antibiotic Utilization
Antibiotics were prescribed in 58.3% of encounters. Fluoroquinolones represented the most frequently prescribed antibiotic group.

Prescribing Indicators
Generic prescribing was observed in only 8.3% of prescriptions.

Drugs prescribed from the Essential Drug List constituted 49.4% of all medications.

Rationality Assessment
Of the total prescriptions, 69.4% were categorized as rational, whereas 30.6% demonstrated irrational prescribing patterns.

Major causes of irrational prescribing included:
Unnecessary antibiotic prescriptions.
Inappropriate steroid use.
Irrational fixed-dose combinations.
Incomplete prescription documentation.

DISCUSSION

The present study evaluated prescribing practices in patients presenting with red eye at a tertiary care teaching hospital. Infective conjunctivitis emerged as the most common diagnosis, consistent with previous studies conducted in India and other developing countries.

The average number of drugs prescribed per encounter (2.32) was within acceptable limits and reflected moderate polypharmacy. However, antibiotic prescribing was considerably higher than WHO recommendations, suggesting a tendency toward empirical treatment even in conditions where bacterial infection may not be confirmed.

The predominance of eye drops among prescribed dosage forms reflects standard ophthalmic practice and supports targeted local drug delivery. Nevertheless, the low rate of generic prescribing observed in the study indicates a continued preference for branded medications. Increasing generic prescribing may significantly reduce treatment costs and improve accessibility.

Only approximately half of the prescribed drugs belonged to the Essential Drug List, indicating opportunities for improved adherence to national prescribing guidelines.

Although the majority of prescriptions were rational, nearly one-third exhibited irrational prescribing practices. Similar observations have been reported in previous drug utilization studies in ophthalmology. Regular prescription audits, continuing medical education, and institutional treatment protocols may help address these deficiencies.

The findings highlight the importance of antimicrobial stewardship programs in ophthalmology to minimize unnecessary antibiotic exposure and reduce the emergence of resistant organisms.

Limitations
The study was conducted at a single tertiary care center, limiting generalizability. Microbiological confirmation was not available for all infective cases. Long-term patient outcomes were not assessed.

CONCLUSION

The present study demonstrated that most prescriptions for red eye patients were rational; however, significant concerns remain regarding excessive antibiotic utilization and low rates of generic prescribing. Strengthening adherence to standard treatment guidelines, encouraging generic prescribing, and implementing antimicrobial stewardship measures may improve the quality of ophthalmic care and promote rational drug use.

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Conflicts of Interest:
None declared.

REFERENCES:

1. World Health Organization. Promoting rational use of medicines: core components. WHO Policy Perspectives on Medicines. Geneva: WHO; 2002.
2. World Health Organization. How to investigate drug use in health facilities: selected drug use indicators. Geneva: WHO; 1993.
3. AAO Preferred Practice Pattern Guidelines. Conjunctivitis. American Academy of Ophthalmology. San Francisco: AAO; Latest Edition.
4. Biswas NR, Jindal S, Siddiquei MM. Patterns of drug utilization in ophthalmology outpatient department. Indian J Pharmacol. 2001;33:355-6.
5. Maniyar Y, Bhixavatimath P, Akkone V. Drug utilization study in ophthalmology outpatient department. Int J Basic Clin Pharmacol. 2015;4:1040-4.
6. Shankar PR, Upadhyay DK, Subish P, Dubey AK. Drug utilization among ophthalmology outpatients in a teaching hospital. Kathmandu Univ Med J. 2006;4:436-41.
7. Gupta SK, Gupta V, Joshi S, Tandon R. Current perspectives on antibiotic stewardship in ophthalmology. Indian J Ophthalmol. 2023;71:1-8.
8. Government of India. National List of Essential Medicines (NLEM) 2022. Ministry of Health and Family Welfare, New Delhi.
9. Hogerzeil HV. Promoting rational prescribing: an international perspective. Br J Clin Pharmacol. 1995;39:1-6.
10. Holloway K, van Dijk L. Rational use of medicines. Geneva: World Health Organization; 2011.