Original Article

Analyzing Drug Utilization in Ophthalmology Outpatients in a Private and Public Health Facility as well as Cost Variation of Selected Ophthalmological Medicines

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ABSTRACT

Background: The rationale behind this study conduction was; 1. To analyze 'drug use' and 2. To analyze 'cost variation'. First could facilitate improving drug utilization patterns and prescribing practice, and second, could justify and improve rational drug utilization. **Materials and Methods:** This study was a descriptive, cross-sectional study. Selected 'World Health Organization' drug use indicators and cost variation of ophthalmological medicines were analyzed from 'prospectively collected patient and, prescription data' and 'basic cost data of medicines from Current Index of Medical Specialties', respectively. A total of the '449' patients' data were considered in the study, out of which '231' and, '218' were from 'public' and, 'private' health facilities respectively. **Results:** Out of the total sample, '1.36' was the count of drugs per prescription. The 'drug percentage' prescribed by generic name and, from the Essential Medicines List was 31.59% and, 56.35%, respectively. 75.72% of prescriptions were prescribed antibiotics, while 82.41% of patients had correct knowledge of dosage. 'Eye strain', 'conjunctivitis' and, 'cataract' were the common eye problems. 'Antibiotics', 'corticosteroid' and, 'ocular lubricants' were commonly prescribed. From the total of '614' drugs prescribed, '171' was the combination formulations. The study showed high-cost variation among multiple available branded options of single ophthalmological medicine. **Conclusion:** A rational drug use pattern was found in both the study sites. However, there is a wide variation of the indicators values between them. It is recommended to improve and, periodically update healthcare drug policies along with frequent drug utilization and cost monitoring studies.

Key words: Drug Utilization (DU), Cost Analysis, Drug Use Indicator, Ophthalmological Medicines, Ophthalmology Outpatient, Essential Medicines, World Health Orgnization (WHO).

DOI: 10.5530/ijopp.15.2.20

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INTRODUCTION

Analyzing drug use in any health facility could be the primary step towards the rational use of medicines. The data collected by such methods can then be used to demonstrate specific interventions and analyze their effects on drug use.

According to WHO, "Patients receive medications appropriate to their clinical needs, endorses that meet their requirements, for an adequate time, and at the lowest cost to them and their community (1985)." gives rational use of medicines. Any use that doesn't comply with rational use defines irrational or non-rational use.[1]

Drug utilization research was defined by the World Health Organization (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".[2] Drug extent, variety, brand, category, types, nature,

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exposure varied timely and with population. So drug use study data can ultimately help in facilitating rational drug use in the population as well as in epidemiology studies. Collective observation of multiple parameters like 'commonly prescribed' drug category, topical eye preparation, dosage form and, most common or frequent eye disorders could provide better management and, improved ways of drug use. 'Commonly prescribed' are frequently provided drugs to treat certain diseases as they are commonly prescribed by doctors.[3] After analyzing the total prescription data, all prescribed topical eye preparations/ ophthalmological were arranged and enlisted in series from 'highest frequency of prescription (N)' to 'lowest frequency of prescription (N)'. As per that series, the drugs from 'highest frequency of prescription (N)' to 'N= 4' and, 'N= 1' for that health facility are called 'Most commonly prescribed/ used topical eye preparations/ ophthalmological'. (Where, N = frequency of prescription, i.e., how many times the drug is prescribed). In 1993, specific standardized drug use indicators were demonstrated by the World health organization (WHO), which was collaborated with 'International Network for Rational Use of Drugs'. Behavioral aspects of health providers could be analyzed repetitively by using the indicators. As per the documentation system in health facilities, nature and study design could be modified. This is an efficient tool provided by 'WHO' which facilitates analysis of prescribing behavior and drug use patterns.[1,4-5]

Many new ocular drugs are being introduced and under development nowadays. The appropriate management of ophthalmological can be done by increasing efficacy, rational use, improving side effect profile, performing periodic drug utilization (DU) patterns. 'Antibiotics' are frequently prescribed in ophthalmic conditions. In ocular therapeutics, resistance to different categories of antibiotics has been seen in research.[6] Indiscriminate exposure to topical antibiotics and non-steroidal anti-inflammatory drugs can lead to conjunctival problems.[7] Therefore, frequent drug use analysis studies are needed to be done to improve drug utilization patterns, avoid adverse events and, delay drug resistance, improve prescribing dispensing practices, and spread awareness in the healthcare sector to improve public policy. So was the rationale of our study.

'WHO' prepares and periodically amend the list of 'Essential medicine'.[8] It includes those medicines which concern the healthcare needs of the major population. The latest is the 22nd list published in 2021 i.e. 'Essential Medicine List' (WHO EML 22nd 2021).[9] There is a country-to-country variation in essential medicine according to their 'priority healthcare concern', 'affordability concern', 'disease prevalence', 'disease burden' also, 'price control', 'cost-effectiveness'. National List of Essential Medicines (NLEM) is our country-specific tool to improve the affordability and availability of medicines in the Indian population. In India, the core committee under the government of India 'Ministry of Health and, Family Welfare' GoI-MoHFW, Central Drug Standard Control Organization CDSCO, Indian Council of Medical Research ICMR, and other regulatory bodies work to prepare, revise and update NLEM. They primarily concern cost, safety and, efficacy and thereby ensure a quality healthcare system. '376' medicines were given in the updated version of NLEM in 2015. Out of which, '17' medicines are given under the 'ophthalmological medicine' therapeutic category. In NLEM 2015, '5' medicines are deleted while '6' new medicines are included under the ophthalmological medicine category than the previous version.[10] Following are the purposes given by NLEM, which justify NLEM importance in study areas where rational drug use is concerned. 1. Safe and effective treatment for a population, 2. Health resources optimization, 3. Rational drug use promotion, 4. It is a guiding document for state government, insurance companies, awareness and, training of healthcare professionals, medicine supply in the public sector, and, cost reimbursement.[10-12]

Drug formulary, Pharmacopoeia, Package Inserts, and so on., are reliable drug information sources like NLEM. Also, the Monthly Index of Medical Specialities, Current Index of Medical Specialities (CIMS) facilitated a feasible and, important tool for detailed, updated drug information along with their respective cost for multiple available brands. It is also a common source of information for many registered healthcare professionals. CIMS provides services in different countries, one of which is India, different for healthcare professionals, industries and, institutions, also available for varieties of specialties (e. g. like Opthalmology, oncology) along with its constant revision and updating. So, it was one of the essential tools of our study.[13]

India is an open competitive market for domestic and, multinational pharmaceutical manufacturers. Therefore various options for a single drug are available due to multiple brands. It demonstrates the need for maintaining the quality of healthcare in the public and, private sector also, price control and, regulation through cost-effective analyses. 'Drug Price Control Order' (DPCO) is an authoritative document of the government of India to satisfy it. It is published by The National Pharmaceutical Pricing Authority, i.e., NPPA of the Government of India, which is responsible for controlling drug prices. To ensure that vital drugs are available at affordable

prices, the government of India exercises control over the prices of certain drugs called 'essential' through an order called Drugs Prices Control Order, commonly referred to as the DPCO.[14-15] Price calculation such as ceiling and retail price of scheduled formulation, i.e., essential medicines published in NLEM and prices of the non-scheduled formulation is controlled by it. 'Cost analysis' is of pharmacoeconomic importance. The information generated by such studies and cost variation analyses can be helpful in policymaking also in the revision and update of available resources.[14] Getting the baseline information on cost variation in ophthalmology to justify their interlink with their rational use was also the study's rationale.

MATERIALS AND METHODS

Research Question

- Is there rational utilization of drugs used in the ophthalmic OPD?
- What is the cost variation among brands of the selected most commonly used drugs?

Study Objectives

- To study drug use patterns in the private ophthalmic department (General OPD of an Ophthalmologist) and public ophthalmic department (Eye OPD of Civil Hospital, Nashik).
- To measure the selected standardized drug use indicators given by World Health Organization (WHO) in the mentioned study sites.[4]
- To study the cost variation of the most commonly used drugs in the mentioned eye OPD.

Study Design

This is a descriptive, Cross-sectional (prospective, one-time point study) study. Patients' prescription data and cost data of selected ophthalmological were used in the study.

Study Site

1. OPD of an Ophthalmologist in Nashik; Private Health Facility (PrHF) and
2. Eye OPD of Civil Hospital, Nashik; Public Health Facility (PbHF)

Study Population

Outpatients in the mentioned ophthalmic OPD were willed to participate in the study along with their prescriptions.

Study Duration

The study duration was about 12 weeks.

Study Variables

Consideration of the following;

- Patients' demographics parameters (gender, age)
- disease conditions/ eye problems
- Route of administration/ Dosage form
- Category/ various groups of ophthalmic drugs, e.g., antimicrobials, non-steroidal anti-inflammatory drugs, mydriatic adrenergic
- The total 'drugs count' prescribed
- 'Drugs count' in a prescription
- Total number of combinations
- Prescriptions with an antibiotic prescribed
- 'Drugs count' prescribed from Essential Medicines' List (EML).[8]
- Patients with knowledge of correct dosage
- 'Cost Ratio' by considering the cost of the costliest and, cheapest brand and number of manufacturing brands of the most commonly used drugs.
- 'Percentage cost variation' by considering the cost of the costliest and, cheapest brand and number of manufacturing brands of the most commonly used drugs.
- Current Index of Medical Specialities (CIMS).[13]

Selection Criteria

Inclusion Criteria

1. General outpatients only; visiting the ophthalmic OPD
2. Patients of either sex of all age groups.

Exclusion Criteria

1. Patients refuse to give consent and are not willing to participate in the study.

2. Cases referred to another department/ facility from the ophthalmic OPD.

Sample size calculation

$$n = [DEFF * Np(1-p)]/[(d^2/Z^2_{1-\alpha/2} * (N-1) + *(1-p)]$$

Hypothesized % frequency of outcome factor in the population (p): 50%+/-7

Confidence limits as % of 100(absolute +/- %)(d): 7%

Design effect (DEFF): 1 The pilot study was done previously for one week in the private and public ophthalmic OPD to calculate the number of prescriptions to be surveyed as per objective.

1. It showed an average of 30 patients per day in the private OPD. Therefore average '750' patients per month (25 working days × 30 = 750)

   So, '2250' patients per '3 months' (750 × 3 = 2250); as the study period was '3 months'

   Population size (for finite population correction factor or fpc) (N): 2250

   Therefore, n = 181 For Confidence level (95%);

   Non-response correction = 20%. So, n = 181 + 20% of 181

   Therefore, the sample size = 217.2 ~ 218 (for the private ophthalmic OPD)

2. It showed that there was an average of 100 patients per day in the public OPD (Civil Hospital). Therefore average '2500' patients per month (25 working days × 100 = 2500)

   So, '7500' patients per '3 months' (2500 × 3 = 7500); as the study period was '3 months'

   Population size (for finite population correction factor or fpc) (N): 7500

   Therefore, n = 192 For Confidence level (95%); for public ophthalmic OPD

   Non-response correction = 20%. So, n = 192 + 20% of 192

   Therefore, the sample size = 230.4 ~ 231 (for ophthalmic OPD of Civil hospital, Nashik)

   By adding the above sample sizes (n) of sr.no. '1' and, '2';

   The total sample size = 218 +231 = 449

   Note: Results from OpenEpi, Version 3, open-source calculator—SSPropor; Print from the browser with ctrl-P

   Non-response correction (20%) is considered for the unresponsiveness of patients due to withdrawal of patients because of exclusion criteria (i.e., unwillingness to participate and give consent, referral cases to another department/ facility)

   The patients were selected using a convenient sampling technique.

Study procedure and, data collection

Patients in the ophthalmology OPD, who were prescribed drugs, were invited to participate as per the selection criteria of the study. After providing complete information of the study, the patients participated in the study entirely voluntarily. They can withdraw at any time point with or without giving a reason. The prescription data of them were snapshotted or was collected in pre-validated data collection forms directly as per the convenience of the moment. Patients' details have been kept confidential by assigning subject codes to enrolled patients. The following selected WHO's core drug use indicators were studied for the drug use study.[4]

1. The average, i.e., 'count of drugs per prescription' - the 'count of total drugs prescribed' was divided by the 'total number of prescriptions surveyed'.

2. 'Drug percentage' prescribed by generic name - the 'count of drugs prescribed by the generic name was divided by 'count of total drugs prescribed' multiplied by '100'.

3. 'Prescription percentage' with antibiotics - the 'number of prescriptions with antibiotics prescribed' was divided by 'total number of prescriptions surveyed' multiplied by '100'.

4. 'Drug percentage' prescribed from EML or formulary

- The percentage was calculated by dividing 'count of drugs prescribed which are listed in NLEM' was divided by 'count of total drugs prescribed' multiplied by '100'.

5. Patients' knowledge percentage of correct dosage – It was the only patient-care indicator recorded by oral questioning followed by denoting each patient's response based on 'all or none principle' ('1' for correct patient's knowledge of dosage, while '0' for absence or incorrect patient's knowledge of correct dosage.) with the use of the patient's prescription as reference. It was calculated by dividing the count of '1' by 'total number of patients interviewed' multiplied by '100'.

After completing data collection as above, the study was preceded as follows according to objectives. The most commonly used drugs in the OPDs were enlisted in descending order. The cost of the most commonly used ophthalmologic drugs of multiple available brands with the same dose and dosage forms were observed using 'CIMS'.[13] If any drug with a particular 'dose' and, 'dosage form' is manufactured by only 'one pharmaceutical company', it will be excluded. Finally, the cost data provided in the CIMS, i.e., 'maximum' and 'minimum' costs of multiple available brands and, 'number of manufacturers (brands)', was recorded.

Ethical Statement

University Research Department MUHS approved, allowed and, facilitated us to conduct this research study. The study was conducted in compliance with ICH-GCP, ICMR, including the declaration of Helsinki, Schedule 'Y' guidelines, and other applied regulatory guidelines. Before enrolment of the patients, signed, dated written informed consent (assent and LAR consent wherever required) was taken from all the study participants.

Data: Discrete quantitative data was obtained.

Data analysis

- The obtained data was added to the excel sheet for further analysis. The Statistical Package for Social Sciences (IBM SPSS Statistics for Windows, NY: IBM Corp.) and Microsoft Excel 2010 were used for the analysis of data.

- The data were analyzed using descriptive statistics to achieve the aims and, objectives of the study. Descriptive statistics like frequency, percentages, average/ mean, standard deviation were measured.

- The selected WHO's core drug use indicators are analyzed as per the mentioned format by WHO.[4]

- The following cost variation parameters were analyzed.[16]

  1. Cost ratio= Cost of the costliest brand, i.e., Maximum price (INR) **(B)** / cost of the cheapest brand, i.e., minimum price (INR) **(A)**

  2. Percentage cost variation= (B-A/A)×100

- After that, all the above findings were expressed in absolute numbers and percentages. Finally, the data was presented by using tabulation and charts.

RESULTS

In this study, four hundred and forty-nine (n = 449) prescriptions were analyzed. Out of them, '218' was from the PrHF, while '231' was from the PbHF. The total number of drug products prescribed was '614', while '325' and, '289' were from PrHF and, PbHF, respectively. Thereby the 'count of drugs per prescription' (for n = 449) is '1.37'; while that of '1.49' and, '1.25' for PrHF and, PbHF respectively. (Table 1)

The total number of antibiotics prescribed was '340' (for n = 449), while that of '110' and, '230' from PrHF and, PbHF respectively. 75.72% prescriptions was with antibiotics prescribed (for n = 449). Whereas 50.46% and, 99.57% of the prescriptions from PrHF and, PbHF respectively had the antibiotics prescribed. Out of the total prescribed drugs (614), 31.59% (194) drugs were prescribed by generic names, while 48.37% (297) drugs were prescribed from NLEM. Patients' knowledge of correct dosage for prescribed drugs (for n = 449 cases) was 82.41%. The outcomes for these prescribing indicators separately for PrHF and, PbHF are depicted in Table 1.

Total 'five' dosage forms were prescribed. 'Eye drops' were the most commonly prescribed (488 times) dosage form. In PbHF, 'eye drops' followed by 'eye ointment' then the next 'tablet' and 'capsule' were the most prescribed dosage forms. However, in PrHF, 'eye drops' followed by tablet then next 'eye ointment', 'capsule' and, 'syrup' were the most prescribed dosage forms. (Table 1)

The doctor's initials, hospital's name, patient's particulars with age and sex, complaints, drug, dosage and, frequency were mentioned in all (100%) prescriptions. (PrHF as well as PbHF) while the duration of treatment, diagnosis, next follow-up advice has not been seen to be mentioned in all (100%) prescriptions.

Table 1: Distribution of drug use parameters.

Sr.no.		Parameters	Frequency		
			(PrHF)	(PbHF)	Total
1		Total number of drugs prescribed	325	289	614
2		Total number of antibiotics	110	230	340
3		Total number of combinations prescribed	123	48	171
4		**'WHO' core drug use indicators[4]**			
	a	The count of drugs per prescription	1.49	1.25	1.36
	b	'drug percentage' prescribed by generic name(s)	11.69%	53.98%	31.59%
	c	'prescription percentage' with antibiotic(s)	50.46%	99.57%	75.72%
	d	'prescription percentage' with injection(s)	0%	0%	0%
	e	'drug percentage' prescribed from NLEM[10]	43.69%	70.59%	56.35%
	f	Percentage of patients' knowledge of correct dosage	94.95%	70.56%	82.41%
5		**Distribution of Total prescribed drugs according to the dosage form**			
	a	Eye drop	264	224	488
	b	Eye ointment	17	34	51
	c	Tablet	39	27	66
	d	Capsule	4	4	8
	e	Syrup	1	0	1
		Total	**325**	**289**	**614**

Legend: PrHF- Private Health Facility, PbHF- Public Health Facility, WHO- World Health Organization, NLEM- National List of Essential Medicine

In PrHF maximum cases belong to 41 years to 50 years of age group while 61 years to 70 years of the age group in PbHF. The male to female ratio was '0.77', i.e., inclined toward females for the total number of cases (n = 449). Also, PrHF and, PbHF independently showed more females than male counterparts with '0.91' and, '0.66' respectively. (Table 2)

The 'count of drugs per prescription' varied from 'one' to 'six' (Figure 1) While the number of generically prescribed drugs per prescription varied from 'zero' to 'four' (Figure 2) However, the 'drugs count' from NLEM per prescription varied from 'zero' to 'five' (Figure 3). Our study showed that the greatest number of prescriptions were contained 'one' drug. '149' out of '218' prescriptions were with a single drug prescribed in PrHF (68.35%) while '198' out of '231' prescriptions were with a single drug prescribed in PbHF (85.71%). This is following the other studies, which also showed that the number of prescriptions with either one or two drugs per prescription was highest.[17-18] Similarly, the highest number of prescriptions was with 'zero' or 'one' drug prescribed generically. '180' out '218' prescriptions in PrHF were without either a single drug prescribed generically (82.57%) while that '109' out of '231' prescriptions in PbHF were with a single drug prescribed generically (47.19%). And, the highest numbers of prescriptions were with either 'zero' or 'one' drug from NLEM. In PrHF, '100' out of '218' prescriptions were without a single drug prescribed from NLEM (45.87%),

Table 2: Gender wise and Age-wise distribution of patients.

Sr.no.	Age interval (years)	Frequency (Percentage %)		
		PrHF	PbHF	Total
1	1-10	5 (2.29)	7 (3.03)	12 (2.67)
2	11-20	29 (13.30)	12 (5.19)	41 (9.13)
3	21-30	20 (9.17)	22 (9.52)	42 (9.35)
4	31-40	35 (16.06)	38 (16.45)	73 (16.26)
5	41-50	40 (18.35)	29 (12.55)	69 (15.37)
6	51-60	31 (14.22)	46 (19.91)	77 (17.15)
7	61-70	39 (17.89)	55 (23.81)	94 (20.94)
8	71-80	16 (7.34)	21 (9.09)	37 (8.24)
9	81-90	2 (0.92)	1 (0.43)	3 (0.67)
10	91-100	1 (0.46)	0 (0)	1 (0.22)
Grand Total		**218 (100.00)**	**231 (100.00)**	**449 (100.00)**
Sr.no.	**Gender wise distribution**	**Frequency (Percentage %)**		
		PrHF	**PbHF**	**Total**
1	Male	104 (47.71)	92 (39.83)	196 (43.65)
2	Female	114 (52.29)	139 (60.17)	253 (56.35)

Legend: PrHF- Private Health Facility, PbHF- Public Health Facility.

while in PbHF, '152' out of '231' prescriptions were with a single drug prescribed from NLEM (65.80%). In PbHF, 'chloramphenicol' was the highly prescribed antimicrobial that is no longer on the list of 'essential medicine' according to NLEM 2015 (as it was deleted from NLEM 2011).[10,11]

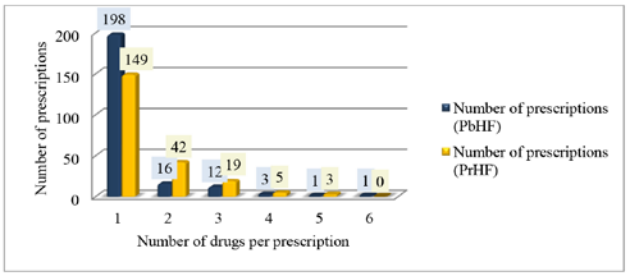

Figure 1: Distribution of the number of drugs in total prescriptions.

Legend: Coloured bar indicate the number of prescriptions in public and private ophthalmic outpatient department which describes the distribution of 'number of drugs in total prescriptions', PrHF- Private Health Facility, PbHF- Public Health Facility.

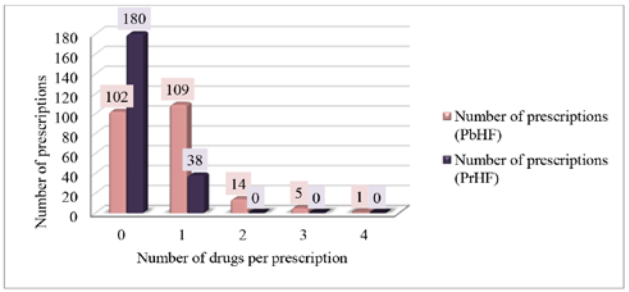

Figure 2: Distribution of the number of drugs prescribed generically in total prescriptions.

Legend: Coloured bar indicate the number of prescriptions in public and private eye outpatient department which describes the distribution of 'count of drugs prescribed generically' in total prescriptions, PrHF- Private Health Facility, PbHF- Public Health Facility.

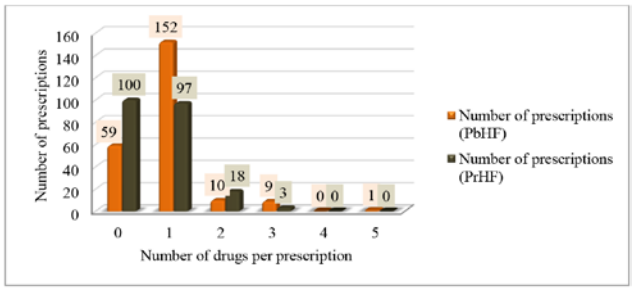

Figure 3: Distribution of the number of drugs prescribed from NLEM in total prescriptions.

Legend: Coloured bar indicate the number of prescriptions in public and private eye outpatient department which describes the distribution of 'count of drugs prescribed from NLEM' in total prescriptions, NLEM- National List of Essential Medicine, PrHF- Private Health Facility, PbHF- Public Health Facility.

The most common complaints and, or eye disorders reported were eye strain followed by eye-watering, pseudophakia, conjunctivitis, cataract, dry eye, refractive error, eye redness, trauma, and so on. The most common eye problems diagnosed in PrHF were eye strain followed by refractive error, conjunctivitis, dry eye, eye-watering, cataract, eye redness, trauma, foreign body sensation, retinal pathology, and so on. The most common eye problems diagnosed in PbHF were eye-watering, eye strain, pseudophakia, cataract, conjunctivitis, dry eye, red eye, refractive error, and so on. (Table 3)

Table 3: Disease conditions/ Eye problem wise percentage distribution of patients.

Sr. No.	Disease condition / Eye problems	Frequency		
		PrHF	PbHF	Total
1	Eyestrain	35	39	74
2	Refractive error	29	17	46
3	Conjunctivitis	26	26	52
4	Dry eye	25	23	48
5	Watering	21	41	62
6	Cataract	17	34	51
7	Pseudophakia	17	38	55
8	Redness	15	20	35
9	Trauma	13	7	20
10	Foreign body sensation	11	7	18
11	Retinal pathology	7	2	9
12	Glaucoma	6	1	7
13	Blepharitis	6	0	6
14	Uveitis	6	0	6
15	Fungal infection	5	0	5
16	Keratoconnus	3	0	3
17	Squint	3	2	5
18	Chalazion	3	0	3
19	Itching	3	3	6
20	Post capsular opacification	3	1	4
21	Pterigium	3	7	10
22	Floaters	2	1	3
23	Corneal ulcer	2	0	2
24	Allergy	2	0	2
25	Cellulitis	2	0	2
26	Dacryocystitis	2	3	5
27	Teargland block	1	1	2
28	Myokymia (eyelid twitching)	1	0	1
29	Post evisceration	1	0	1
30	Corneal perforation	1	0	1
31	Post-surgery	17	0	17
32	Stye	0	4	4
33	Coloboma	0	2	2
34	Exophthalmus	0	1	1
35	Nystagmus	0	1	1

Legend: PrHF- Private Health Facility, PbHF- Public Health Facility.

The most commonly prescribed drugs in private and, public ophthalmic OPD are depicted in Table 4. It also includes the findings of some of the drugs other than topical eye formulations and that is 'Zerodol p', 'Paracetamol', 'Diclofenac', 'Diclofena', 'Aceclofenac', 'Omeprazole', 'Vitamin supplements', and so on. (Table 4)

Table 4: Distribution of the most prescribed drugs in the private and public ophthalmic OPD.

Sr. No.	Private ophthalmic OPD		Public ophthalmic OPD	
	Drugs	Frequency	Drugs	Frequency
1	Carboxymethylcellulose (CMC)	67	Ciprofloxacin	213
2	Moxifloxacin	51	Ciprofloxacin + dexamethasone	44
3	Naphazoline	32	Chloramphenicol 1% w/w	34
4	Chlorpheniramine malete	32	Diclofenac	6
5	Dexamethasone	29	Tropicamide	5
6	Gatifloxacin	23	Omeprazole	4
7	Ketorolac trimethamine	19	Vitamin B complex	4
8	Paracetamol	16	Paracetamol	3
9	Prednisolone	16	Timolol maleate	3
10	Aceclofenac	16	prednisolone	3
11	Tobramycin	14	HPMC	2
12	Zerodol P	14	Ibuprofen	2
13	Olopatadine	9	NaCl 5%	1
14	Benzalkonium	9	Gatifloxacin	1
15	Ocupol/ polymixin/ polynase	8	Flurbiprofen	1
16	Timolol	8	Tobramycin	1
17	Nepafenac	7	CMC Na	1
18	Loteprednol	6	Cotrimoxazole	1
19	Atropine	6	Vitamin C	1
20	Brimonidine	5	Amoxicillin + clavulanic acid	1
21	Acetazolamide	4		

Legend: Frequency means "Frequency of prescription (i.e. how many times it is prescribed)"; OPD- Out Patient Department.

Combination of 'Naphazoline and, Chlorpheniramine maleate' was the most prescribed topical eye preparation in PrHF followed by 'Carboxymethylcellulose (CMC)', the combination of 'Ketorolac and, Moxifloxacin', and so on. However, 'Ciprofloxacin' was the most prescribed topical eye preparation in PbHF followed by a combination of 'Ciprofloxacin and, dexamethasone', 'Chloramphenicol 1% w/w', 'Tropicamide', 'Timolol' and so on. (Table 5).

Also, 'Tropicamide', or a combination of 'Tropicamide and, Phenylephrine' (Tropicacyl) has been seen to be used commonly in both the study sites (PrHF and, PbHF) for dilatation of the pupil, which helps with an examination of the eye. Apart from these, other topical anticholinergics or proparacaine (anesthetic) also has been seen to be used sometimes in outpatient eye procedures.

The observed commonly prescribed 'categories of drugs' are mentioned in Table 6. 'Antimicrobials' have been seen to be the most prescribed either as a single antibiotic or fixed-dose combination in both the study sites. (Table 6).

The study showed high-cost variation among multiple available branded options of single ophthalmological medicine. The 'cost ratio' and, 'percentage price variation' of the selected single drug and combination drugs topical eye formulations (eye drop and, eye ointment) are mentioned in Table. Of the 'Sixty-seven' drug formulations studied, the cost ratio of 'Nine' drug formulations were more than '5.00', out of which 'Four' formulations had a cost ratio of more than '10.00'. The percentage price variation of 'Thirty-three' drug formulations was more than 100%. Out of which, 'Three' formulations had price variation of more than 1000%.

The combination topical eye preparation of 'Moxifloxacin 0.5% and, Dexamethasone, 5ml' had maximum percentage price variation of 2061.17% and, cost ratio of 21.61%, followed by 'Timolol 0.5% 5ml' eye drop (1713.64%, 18.14), 'Moxifloxacin 0.5% 5ml' eye drop (1538.89%, 16.39). The combination of 'Prednisolone 10mg and, moxifloxacin, 10ml' eye drop had a minimum percentage price variation of 5.26% and, a cost ratio of 1.05. (Table 7).

Table 5: Distribution of the most prescribed topical eye preparations in the private and public ophthalmic OPD.

Sr. No.	Private ophthalmic OPD		Public ophthalmic OPD	
	Prescribed brand drug (Ocular topical Dosage form)	Frequency	Prescribed Ocular (topical) drug	Frequency
1	V KUL (Naphazoline and, Chlorpheniramine maleate)	32	Ciprofloxacin	213
2	CMC (Ocular lubricant)	30	Ciprofloxacin + dexamethasone	44
3	AQUATOP (CMC)	20	Chloramphenicol 1% w/w	34
4	APDROPS KT (Ketorolac and, Moxifloxacin)	19	Tropicamide	5
5	TEARDROP (CMC)	17	Timolol maleate	3
6	LACRIMOS (CMC)	14	prednisolone	3
7	TOBA DM (Tobramycin + dexamethasone)	13	HPMC	2
8	APDROPS DM (Moxifloxacin + dexamethasone)	12	NaCl 5%	1
9	OLOPAT (Olopatadine HCl)	9	Gatifloxacin	1
10	OCUPOL/ POLYNASE (Polymixin B sulphate + chloramphenicol)	9	Flurbiprofen	1
11	PREDFORTE (Prednisolone acetate)	9	Tobramycin	1
12	MOSI (Moxifloxacin)	8	CMC Na	1
13	GATE P (Gatifloxacin + Prednisolone acetate)	5		
14	GATE HS (Gatifloxacin)	5		
15	NEPACURE (Nepafenac)	5		
16	CIPLOX (Ciprofloxacin)	4		
17	MOXICIP (Moxifloxacin)	4		
18	IOTIM (Timolol maleate)	4		

Legend: Frequency means "Frequency of prescription (i.e. how many times it is prescribed)"; OPD- Out Patient Department.

Table 6: Distribution of prescribed drugs in the private and public ophthalmic OPD according to various groups of ophthalmic drugs.

Sr. No.	Private ophthalmic OPD		Public ophthalmic OPD	
	Prescribed drug group (category)	Frequency	Prescribed drug group (category)	Frequency
1	Antimicrobials	116	Antimicrobials	250
	A Quinolone antibiotic (Moxifoxacin, ciprofloxacin, gatifloxacin, etc)	75	A Quinolone antibiotic (Ciprofloxacin)	213
	B Aminoglycoside antibiotics (Tobramycin)	14	B Beta-lactam antibiotic (penicillin-like antibiotic) Chloramphenicol	34
	C Tetracycline (Doxycyline)	2	C Aminoglycoside antibiotics (Tobramycin)	1
	D Miscellaneous	25	D Miscellaneous	2
2	Ocular lubricant (CMC, HPMC)	90	Corticosteroid (Prednisolone)	47
3	Corticosteroid (Prednisolone)	51	NSAID (Flurbiprofen)	9
4	NSAID (Bromfenac, Nepafenac, Ketorolac trimethamine)	47	Ocular lubricants (CMC, HPMC)	6
5	Blood vessel narrowing- decongestant (Naphazoline)	32	Mydriatics (Tropicamide)	5
6	Antiallergic drugs (Chlorpheniramine maleate)	32	Vitamin supplement	5
7	Antipyretic drugs (Paracetamol)	15	Proton pump inhibitors	4
8	Antihistaminic drugs (Olopatadine)	11	Beta-blocker (Timolol)	3
9	Vitamin	9	Antipyretic, non-opioid analgesics (Paracetamol)	3
10	Beta-blocker (antiadrenergic drugs) (Timolol maleate)	8	Sterile hypertonic solution (NaCl)	1
11	Mydriatic drugs (Tropicamide, Tropicacyl)	6		
12	alpha-2-agonist (adrenergic) (Brimonidine tartrate)	5		
13	Anticholinergic drugs (Atropine)	5		
14	Antiviral drugs (Acilcovir)	4		
15	Antifungal drugs (Natamycin, voriconazole, etc)	4		
16	Carbonic anhydrase inhibitors (Dorzolamide)	4		
17	Haemostatics (Glotab)	2		
18	Proton pump inhibitor (Pantoprazole)	2		
19	Prostaglandin analog (Latanoprost)	2		

Legend: Frequency means "Frequency of prescription (i.e. how many times it is prescribed)"; OPD- Out Patient Department.

Table 7: Cost variation assessment of various topical eye preparations.

Sr. No.		Topical Eye Preparations (Drug and Dose)	Dosage form	Cost Range (INR)	Cost Ratio[16]	Percentage Cost Variation[16]
1	1.1	Tropicamide 0.8% + Phenylephrine (5ml)	Eye drop	41.00 - 70.00	1.707	70.732
	1.2	Tropicamide 1% (5ml)	Eye drop	38.00 - 54.07	1.423	42.289
	1.3	Tropicamide 0.8% + Phenylephrine + Chlorbutol (5ml)	Eye drop	50.00 - 72.00	1.440	50.000
	1.4	Tropicamide 0.8% + Phenylephrine (3ml)	Eye drop	31.80 - 36.70	1.154	15.409
2	2.1	Gatifloxacin 0.3% (5ml)	Eye drop	20.50 - 77.41	3.776	277.609
	2.2	Gatifloxacin 0.3% (10ml)	Eye drop	17.00 - 45.00	2.647	164.706
	2.3	Gatifloxacin 0.3% (5gm)	Eye ointment	22.20 - 94.45	4.235	325.451
	2.4	Gatifloxacin 0.3% + Dexamethasone (5ml)	Eye drop	5.00 - 39.00	7.800	680.000
	2.5	Gatifloxacin 0.3% + Dexamethasone (10ml)	Eye drop	20.75 - 37.12	1.789	78.892
	2.6	Gatifloxacin 0.3% + Prednisolone (5ml)	Eye drop	51.25 - 103.00	2.009	100.976
3	3.1	Flurbiprofen 0.03% (5ml)	Eye drop	14.00 - 68.00	4.857	385.714
	3.2	Flurbiprofen 0.03% (10ml)	Eye drop	24.00 - 146.93	6.122	512.208
	3.3	Flurbiprofen 0.03% + HPMC (5ml)	Eye drop	35.00 - 48.00	1.371	37.143
4	4.1	Prednisolone 1% (5ml)	Eye drop	8.65 - 87.57	10.124	912.369
	4.2	Prednisolone 1% (10ml)	Eye drop	17.05 - 38.00	2.229	122.874
	4.3	Prednisolone 0.1% (5ml)	Eye drop	24.00 - 29.55	1.231	23.125
	4.4	Prednisolone 10mg + Moxifloxacin (5ml)	Eye drop	95.00 - 100.00	1.053	5.263
5	5.1	Timolol 0.5% (5ml)	Eye drop	22.00 - 399.00	18.136	1713.636
	5.2	Timolol 0.25% (5ml)	Eye drop	14.42 - 59.21	4.106	310.610
	5.3	Timolol 0.5% (3ml)	Eye drop	37.56 - 93.00	2.476	147.604
6	6.1	Tobramycin 0.3% (5ml)	Eye drop	21.00 - 102.00	4.857	385.714
	6.2	Tobramycin 0.3% (10ml)	Eye drop	26.00 - 55.00	2.115	111.538
	6.3	Tobramycin 0.3% (3gm)	Eye ointment	28.00 - 50.00	1.786	78.571
	6.4	Tobramycin0.3% + Dexamethasone0.1% (5ml)	Eye drop	10.00 - 50.00	5.000	400.000
	6.5	Tobramycin 0.3% + Dexamethasone 1% (10ml)	Eye drop	21.00 - 50.00	2.381	138.095
	6.6	Tobramycin 0.3% + Dexamethasone 0.01% (10ml)	Eye drop	17.50 - 33.00	1.886	88.571
	6.7	Tobramycin 0.3% + Dexamethasone 0.1% (3gm)	Eye ointment	23.50 - 26.00	1.106	10.638
7	7.1	Ciprofloxacin 0.3% (10ml)	Eye drop	7.28 - 30.00	4.121	312.088
	7.2	Ciprofloxacin 0.3% (5ml)	Eye drop	5.88 - 15.83	2.692	169.218
	7.3	Ciprofloxacin 0.3% (3gm)	Eye ointment	5.70 - 9.00	1.579	57.895
	7.4	Ciprofloxacin 0.3% (5gm)	Eye ointment	5.70 - 6.12	1.074	7.368
	7.5	Ciprofloxacin 0.3% + Dexamethasone (10ml)	Eye drop	9.40 - 39.50	4.202	320.213
	7.6	Ciprofloxacin 0.3% + Dexamethasone (5ml)	Eye drop	11.35 - 20.00	1.762	76.211
	7.7	Ciprofloxacin 0.3% + Dexamethasone (5gm)	Eye ointment	14.20 - 15.44	1.087	8.732
	7.8	Ciprofloxacin 0.3% + HPMC (10ml)	Eye drop	17.50 - 22.00	1.257	25.714
8	8.1	Chloramphenicol 1% (5gm)	Eye ointment	5.51-15.46	2.806	180.581
	8.2	Chloramphenicol 0.4% (5ml)	Eye drop	9.72-34.78	3.579	257.819
	8.3	Chloramphenicol 0.5% (10ml)	Eye drop	13.67-63.21	4.624	362.399
	8.4	Chloramphenicol 0.5% (5ml)	Eye drop	6.00-26.00	4.333	333.333

continued...

Table 7: Cont'd.

Sr. No.		Topical Eye Preparations (Drug and Dose)	Dosage form	Cost Range (INR)	Cost Ratio[16]	Percentage Cost Variation[16]
9	9.1	HPMC 2% (3ml)	Eye drop	48.00-118.27	2.464	146.396
	9.2	HPMC 0.3% (5ml)	Eye drop	51.23-88.70	1.731	73.141
	9.3	HPMC 0.3% (10ml)	Eye drop	36.00-195.00	5.417	441.667
	9.4	HPMC 2% (2ml)	Eye drop	89.26-152.00	1.703	70.289
	9.5	HPMC 2% (5ml)	Eye drop	57.70-72.36	1.254	25.407
	9.6	HPMC 0.7% (10ml)	Eye drop	16.25-18.00	1.108	10.769
	9.7	HPMC 0.3% (10gm)	Eye ointment	350.00-379.00	1.083	8.286
10	10.1	Moxifloxacin 0.5% (5ml)	Eye drop	36.00-590.00	16.389	1538.889
	10.2	Moxifloxacin 0.5% (10ml)	Eye drop	61.50-79.00	1.285	28.455
	10.3	Moxifloxacin 0.5% (5gm)	Eye ointment	47.00-86.50	1.840	84.043
	10.4	Moxifloxacin 0.5% + Loteprednol etabonate (5ml)	Eye drop	43.50-180.00	4.138	313.793
	10.5	Moxifloxacin 0.5% + Dexamethasone (5ml)	Eye drop	13.65-295.00	21.612	2061.172
	10.6	Moxifloxacin 0.5% + Dexamethasone (10ml)	Eye drop	23.32-80.00	3.431	243.053
	10.7	Moxifloxacin 0.5% + Prednisolone (5ml)	Eye drop	12.91-105.00	8.133	713.323
	10.8	Moxifloxacin 0.5% + Benzalkonium (5ml)	Eye drop	70.00-90.00	1.286	28.571
	10.9	Moxifloxacin 0.5% + Ketorolac (5ml)	Eye drop	73.00-140.00	1.918	91.781
	10.10	Moxifloxacin 0.5% + Bromfenac (5ml)	Eye drop	115.00-155.00	1.348	34.783
	10.11	Moxifloxacin 0.5% (3ml)	Eye drop	48.00-60.99	1.271	27.063
	10.12	Moxifloxacin 5% (5ml)	Eye drop	70.00-85.20	1.214	21.429
11	11.1	Naphazoline 0.056% + Chlorpheniramine 0.01% (10ml)	Eye drop	14.00-32.00	2.286	128.571
	11.2	Naphazoline 0.056% + Chlorpheniramine 0.01% + Zinc (10ml)	Eye drop	43.21-65.00	1.504	50.428
	11.3	Naphazoline 0.1% + Chlorpheniramine 0.01% (10ml)	Eye drop	45.00-48.00	1.067	6.667
12	12.1	Ketorolac 0.5% + Moxifloxacin 0.5% (5ml)	Eye drop	73.00-141.00	1.932	93.151
	12.2	Ketorolac 0.4% + Moxifloxacin 0.5% (5ml)	Eye drop	88.00-127.15	1.445	44.489
13	13.1	Olapatadine 0.1% (5ml)	Eye drop	70.00-369.52	5.279	427.886
	13.2	Olapatadine 0.2% (3ml)	Eye drop	138.45-169.50	1.224	22.427
	13.3	Olapatadine 0.2% (2.5ml)	Eye drop	165.00-370.00	2.242	124.242
	13.4	Olapatadine 0.1% + Benzalkonium (5ml)	Eye drop	75.00-88.00	1.173	17.333

Legend: Topical eye preparations include selected most prescribed ophthalmological medicines with drug name along with dose, INR- Indian Rupee.

DISCUSSION

This study was an attempt to analyze the current practices and drug utilization in the ophthalmology outpatient department with WHO's core prescribing indicators. The findings of these core drug use indicators for the total number of cases (i.e., n = 449) gave the idea of overall variations of practices in the ophthalmology outpatient department. However, the individual findings of the private and, public health facilities have been seen to be significantly varied for some of the indicators.

Out of the total 'count of drugs prescribed', the 'drug percentage' prescribed by generic name and, from NLEM in PbHF was 53.98% and, 82.01% respectively and, that of only 11.69% and, 18.46% respectively in PrHF. Similarly, 99.57% of the total prescriptions in PbHF were prescribed with antibiotics, while 50.46% of the total in PrHF was prescribed with antibiotics. This indicates that antibiotics prescription was higher in both the health facilities in our study but relatively higher in PbHF than in PrHF. High use of antibiotics (especially in PbHF) may reflect antimicrobial resistance, the severity of infections, and so on. Other than antibiotics prescription, PrHF has relatively low percentages of prescriptions with generic names and, from NLEM/ EML, which is similar to reports in the other studies.[18-19] This reflects the popularity of specific brand drugs amongst ophthalmologists

and, the influence of pharmaceutical companies also relatively less awareness about essential drugs concept amongst them. However, the more the prescribing by generic names and, from EML, the more it makes the treatment rational and, cost-effective. Patients' knowledge of correct dosage ensures patient's compliance and, promotes rational drug use. In PrHF (94.95%), there has been relatively higher patients' knowledge seen than in PbHF (70.56%). The findings of the 'count of drugs per prescription' have been seen to be optimal, which indicates that there were minimal polypharmacy and rational practices that could help there to avoid the risk of drug interactions.

For the following parameters, it didn't show significant variations amongst the PbHF and, PrHF following their findings;

- Count of drugs per prescription
- Age-wise distribution of patients
- Gender wise distribution of patients (Number of females were higher in both the health facilities)

The drug utilization study in the ophthalmology outpatient department by Pradeep R Jadhav *et al.*[19] Priyanki *et al.*[17] and, Bhatt JH *et al.*[20] showed similar values as that of our study for the 'drugs count' per prescription while similar studies by Prajapati VI *et al.*[21] and, Vaniya HV *et al.*[18] showed higher values for a 'drugs count' per prescription compared to our study. However, for all other indicators, the outcomes of most of the other studies are seen to be highly variable in comparison with our study and itself amongst them too. These differences may be due to the variations in the structure and management of different organizational health facilities.

In our study, 'Antimicrobials' is the most commonly prescribed category of drugs. In which 'fluoroquinolone' was the most prescribed class of drugs, which was similar to reports of most of the previous similar studies.[17-18,20,22] Single antibiotics and,/antibiotics in combinations were prescribed frequently. Also, fixed-dose combinations of other antibiotics with corticosteroids and NSAIDs were seen to be used frequently.

Different brands of drugs were prescribed for the same eye preparation by seeing patients' socioeconomic status was seen to be practiced in PrHF while such facility was not available in PbHF and comparatively cheaper and, single option were available in PbHF itself for dispensing for each of the drugs. So the only a small variety of drug formulations was seen to be practiced in PbHF (maybe because they were not available in a variety of branded generics or branded formulations) and only government-funded facilitations. However, more variety of drug formulations of different and,/ same drugs prescribed by brand names was seen to be practiced in PrHF maybe because of the reasons like there was the involvement of expenditure from the pocket of consumers (i.e. patients) and self-sustainable facilitations by the health care providers. Reflections of such variations could be responsible for the deviation of the health facilities to achieve the optimal values of the core drug use indicator and highest rational practice. Such variations in outcomes also have been seen in reports of similar kinds of other studies.[17-20,22-23]

Quality of diagnosis and the appropriateness of the drug choices were beyond the scope of the prescribing indicators, so they weren't considered in this study. The study didn't include all core and, complementary WHO drug use indicators and, the study findings could not be generalized for the whole country are limitations of this study.

Both the health facilities (PbHF and, PrHF) have variations in their ground setup and, healthcare spending. This study was neither conducted to compare the two health facilities nor to align or to minimize the difference between their drug utilization. Despite it, the study was with the motive to point out the difference between drug utilization between them for their self-recognition for available resources and, to make maximum use of them so that each health facility (PbHF and, PrHF) may improve drug utilization on their grounds to achieve best possible qualitative delivery in healthcare facilitation.

A comparative description of drug use indicators concerning other similar studies is mentioned in Table 8. (Table 8).

The cost of many of the topical eye formulations has a percentage price variation above 100%, reaching a maximum of 2061.17%. This is following similar studies done for topical eye formulations.[16,24] Many of the antimicrobial formulations have shown high variations amongst all other topical eye formulations, which are consistent with findings of the other studies. High-cost variation has been seen for the formulations that had a high number of formulating brands and vice versa.

Cost plays an important role in prescribing practices, availability, and affordability of drugs which in turn are responsible for rational drug use. It can be explained by the following considerations; 1. If a specific manufacturer company is providing incentives for prescribing their particular branded formulation, which will negatively influence prescribing practices. 2. If a pharmacist is

Table 8: Comparative description of drug use indicators concerning other similar studies.

Sr. No.	Drug use indicators[4]	This study	Vaniya HV *et al.*[18]	Jadhav PR *et al*[19] *n*=600	Bhatt JH *et al.*[20] *n*=103	Prajapati VI *et al.*[21] *n*= 647
1	Average number of drugs per prescription	1.37	3.2	1.49	1.93	2.23
2	% of drugs prescribed by generic name	31.59%	42.6%	2.35%	0%	1.14%
3	% of prescriptions with antibiotics	75.73%	62.2%	44.83%	32.66%	59.50%
4	% of prescriptions with injections	0%	0.7%	0%	0%	0.1%
5	% of drugs from NLEM[10]	48.37%	24.00%	19.48%	53.26%	81.27%
6	% of patients' knowledge of correct dosage	82.41%	-	93.83%	-	-

Legend: %- percentage, NLEM- National List of Essential Medicine

dispensing substituted medicine despite the one which is prescribed by any registered medical practitioner, it can highlight the 'availability' criteria of drugs. 3. Most of the Indian population manages their healthcare expenses through out-of-pocket spending as a large part of it isn't covered by any insurance scheme. So, even drugs prescribed for acute conditions are not affordable to many of them. This 'affordability' can ultimately affect 'Drug utilization'.[25-26]

The study showed; most of the drugs prescribed in both the health facilities are 'non-scheduled formulations' (as they are not enlisted as 'essential drugs' or in scheduled formulation). It justifies the need for periodic amendments and updates in 'NLEM' and 'DPCO', along with its 'periodic price monitoring', 'consumer and, healthcare professionals' awareness in price-related ethical and, unethical practices in the pharmacy sector.[12,14]

Regulatory initiatives over 'drug price control', 'managing medicines availability according to healthcare need of the country', 'population-based affordability of medicines' will respond in promoting rational drug use.[27] Also, the following can be considered in concern with this;

- The government and, or national organizations may formulate, implement and, update/ amend a stringent pricing policy or order or regulation. Prescribing and, dispensing behavior may be improvised through efficient and ethical practice.

- Creating awareness of pharmacoeconomics in patients and, healthcare professionals from the level of their academic curriculum also, updating and, improving roles of 'pharmacy professionals' and, 'pharmacists' who are an important and, inestimable stakeholder of any healthcare system, is the need of time in India to reach the ultimate standards in relation with these.

- Gross domestic product growth and healthcare spending for public healthcare facilities should be improved to update their facilitation and to make them available with more 'variety' and, 'quantity' of 'generics' and, 'branded generics' pharmaceutical formulations.

- 'Price' and 'quality' of medicine aren't in correspondence. This can be one of the important facts, which is needed to be understood by the general public and consumers. As all the medicines require to follow 'Drug and, cosmetics act 1940, rule 1945' (D and, C act 1940, rule 1945),[28] qualify the 'Good Manufacturing Practices' GMP and other stringent regulatory criteria for approvals to manufacture and market.[29-30] So, the 'quality' of any medicine shouldn't be misunderstood based on their prices.[27]

CONCLUSION

A rational drug use pattern was found in both the study sites. However, there is a wide variation of the indicator's values between them. It is suggested to improve and, periodically update healthcare drug policies along with frequent drug utilization studies.

The specified concluding points of the study along with recommendations are as follows:

1. Antibiotics use should be improved and, properly managed, maybe by the implementation of antibiotics usage-specific circulars or guidelines.

2. Multiple brands of a single drug should be made available for patients to opt on their own, rather than promoting or prescribing specific brand drugs only. This could be achieved by improving awareness in patients and healthcare facilitators.

3. The study showed high-cost variation among multiple available branded options of single ophthalmological medicine. Improving and, periodically updating pricing policies and, regulations (like DPCO), as well as frequent price monitoring studies, are recommended.

ACKNOWLEDGEMENT

The authors are thankful to all the participants for being a part of this study and to both the study sites for facilitating their ophthalmic department to conduct this study.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

DU: Drug Utilization; **WHO:** World Health Organization; **NLEM:** National List of Essential Medicines; **DPCO:** Drug Price Control Order; **CIMS:** Current Index of Medical Specialties; **PbHF:** Public Health Facility; **PrHF:** Private Health Facility; **OPD:** Outpatient Department; **EML:** Essential Medicines' List.

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