

Practice Of Ophthalmic Self-Medication Among Patients In Central India: Questionnaire Based Study

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Purpose: To identify and analyze the practice of ocular self-medication in adult patients attending an ophthalmology clinic in central India.

Methods: A cross sectional, descriptive, questionnaire-based observational study was carried out at Durg, Chhattisgarh, India over a period of eight months from July 2017 to February 2018. The study included 1490 consecutive and consenting adult patients reporting for the first time in a private ophthalmology clinic. Self-medication was defined as the use of ophthalmic medicines used in the past one year without consultation of health care professionals. Responses to a semi-structured questionnaire covering socio-demographic details and various aspects of eye medication usage like duration, source, reason etc. were obtained with a face-to-face interview. The relationship between self-medication and demographic factors was analyzed using chi-square test of association, univariate analysis and multivariable logistic regression.

Abstract

Results: 432 subjects (29%) reported using ophthalmic medications without consulting an ophthalmologist. Patients used medications commonly for itching of eyes (41%), burning sensation (39%) and watering (38%). The most common used eye drops were ayurvedic and herbal (21%), antibiotics (17%) and antibiotic-steroid combination (10%). Of the patients who self-medicated, majority used medications recommended by pharmacist or relatives and friends. Males (OR: 1.51, $p=0.0007$), married subjects (OR: 2.05, $p=0.0001$) and rural patients (OR: 1.29, $p=0.046$) were more likely to self-medicate. No significant difference was found in self-medication practices according to age ($p=0.291$) and level of education ($p=0.983$).

Conclusion: Arbitrary practice of ophthalmic self-medication is prevailing. This warrants educational efforts, public awareness and regulatory legislations to lessen the consequences.

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Introduction

Self-medication is defined as the use of drugs to treat self-diagnosed disorders or symptoms, or the intermittent or continued use of a prescribed drug for chronic or recurrent diseases or symptoms.¹ Apart from being a common phenomenon all over the world it has been reported to be very common in the developing countries.² Worldwide from all drugs purchased without any prescription, 80% was accounted by the developing countries.³ Self-medication behavior includes purchasing drugs without a prescription, using leftover doses from previous prescriptions, sharing drugs with other family members or social groups, or misusing the medical prescription either by prolonging, interrupting or modifying the dosage and the administration period.⁴ To quickly relieve their discomfort, or because they lack other options, patients often use medicines without appropriate medical supervision. This inappropriate practice may result in irrational medicine use, delayed seeking medical advice, increased side effects and drug interactions.⁵ Globally, the reported prevalence of ophthalmic self-medication ranges from 18.2% to 73.6%.⁶⁻¹⁴ Self-medication is influenced by many factors such as education, gender, socioeconomic status and availability of medicines.^{6,15}

Regarding self-medication in ophthalmic practice, the evidence is scarce in Indian population.¹⁶ The aim of this study was to identify the prevalence of ophthalmologic self-medication with commercial topical ophthalmic preparations and to analyze the practice including the type of medications

involved, the profile of individuals who self-medicate and the features of such behavior in patients who were seen in a private ophthalmology centre in Central India. Relying on self-medication practice not only hinders and delays the management of a serious disease, but also can cause adverse effects. Correct identification of these practices and the population profile can guide a healthcare worker in creating adequate awareness in the intended population.

Materials & Methods

This cross sectional, descriptive, questionnaire-based study was done over a period of eight months from 1 July 2017 to 28 February 2018. New patients attending ophthalmology clinic were invited to participate in the study, with adequate time given to the patient and attender(s) to consider whether they wished to participate. Informed consent was obtained from willing patients. The study included 1490 consecutive and consenting adult patients (≥ 18 years) of either sex attending ophthalmology clinic for the first time. Since the questionnaire was in Hindi language; adults able to speak and comprehend the language were included. Non-willing subjects, patients requiring rapid emergency care, patients with communication difficulties and patients not living in the state were excluded. All participants were informed about the scope and purpose of the study and told that it was voluntary to participate, without any compensation, and that their medical assistance would not be compromised if they refused or decided to participate in the survey. The study adhered to the tenets of the Declaration of Helsinki.

Permission and ethical clearance was obtained from the Institutional Ethical Committee of the medical college with which the principal investigator is associated and affiliated to.

A pilot study including 20 adults was conducted to identify potential problem areas and deficiencies in the questionnaire and protocol. The questionnaire used was designed by the investigator and was in local language (Hindi). Previously used questionnaires used for self-medication were referred while designing.^{8,17,18} The semi-structured questionnaire consisted of five questions on demography and fifteen questions on self-medication details. The pilot tested whether the questionnaire was comprehensible and appropriate, and that the questions were well defined, clearly understood and presented in a consistent manner. Patient information statements and consent forms were also tested for comprehension.

This pre-tested questionnaire was used to collect data from participants. The questionnaire was self-administered. The attender was allowed to assist the patient in difficulty. The patient and attender were instructed to check item completion at submission which was double checked by the investigator. Any unanswered or incomplete response was requested to be completed.

The questionnaire collected demographic data such as patient's age, sex, residential area, level of education and marital status. The questionnaire related to the topical eye medication(s) used in the past twelve months including the number, the duration, the frequency, the source, the reason and the general concept and opinion on the usage. A few examples of the questions include:

1. What is the highest level of education that you have completed?
2. Are you currently using or have you used ophthalmic medications not prescribed by a health care specialist in the past 12 months?
3. Who encouraged you to use the medication?
4. What eye complaints made you to self-medicate?
5. What were your reasons for not consulting with a licensed health care specialist?
6. Are you aware of the details of the used eye drop? Have you read the patient information leaflet?

Self-medication was defined as the use of topical ophthalmic medicine(s) used in the past one year without consultation of health care professional(s). The urban and rural area definition of Census of India, 2011 was taken. According to this; constituents of urban area are statutory towns, census towns and outgrowths. All other areas other than urban are rural.

Four age groups were arbitrarily assigned: 18- 40 years old, 41 - 60 and > 60 years. Regarding educational level, four divisions were established:

1. Illiterate or incomplete primary school.
2. completed primary school (till fifth standard or class of formal school education).
3. completed secondary school (till twelfth class).
4. completion of University or tertiary studies.

For ease of interpretation, age group was divided into: \leq 60 years and older than 60 years. Similarly education was limited to two groups: till primary school (fifth standard) and more than primary school.

The complaint for which medication was used went in the semi structured questionnaire as: eye itching or gritty sensation, burning sensation, watering of eyes, eye pain or strain, redness of eyes, discharge from eyes, defective vision, photophobia or glare, other symptoms (to be filled by participant) and no symptoms. The types of medication used were classified into eight groups: ayurveda or herbal, artificial tears, antibiotics, anti-allergic drugs and vasoconstrictors, corticosteroids and steroid combinations, non-steroidal anti-inflammatory agents and other substances. Pharmacological associations were taken into consideration.

All data was coded, entered and analyzed using Microsoft excel 2010 and Epi info 7 (7.2.2.6, Center for Disease Control and Prevention). Descriptive data analysis was conducted and reported as mean, standard deviation, frequencies and percentage. The relationship between self-medication and demographic factors was analyzed using Pearson's chi-square test of association. Univariate analysis and multivariable logistic regression analysis was conducted to find the strength of association. The results for the same were reported as odds ratio (OR). For 95% confidence level, a probability value (p) \leq 0.05 was considered statistically significant.

Results

Out of 1532 new patients attending the clinic, 1490 consented for the study giving a response rate of 97.26%. Among these 1490 subjects, 432 subjects (29%) reported using ophthalmic medications without consulting an ophthalmologist or medical doctor. On average, the respondents took about 10-15 minutes to complete the questionnaire. Demographic features of respondents have been tabulated (Table 1). The age of the patients ranged from 18 years to 82 years and the mean age of patients was 54.4 ± 8.2 years. Amongst participants, 59% were males.

Males (OR: 1.51, $p= 0.0007$), married subjects (OR: 2.05, $p= 0.0002$) and rural patients (OR: 1.29, $p= 0.046$) were more likely to self-medicate (Table 2). No significant difference was found in self-medication practices according to age ($p=0.291$) and level of education ($p=0.983$).

Itching of eyes and/or gritty sensation was the most common complaint for which participants self-medicated (Table 3). Subjects also used eye drops for miscellaneous complaints like swelling of eyes, injury, cataract, refractive error, glaucoma, strabismus, removal of foreign body from eye etc. (grouped into the category 'Others'). About 6% participants

Table 1: Demographic variables of respondents and relationship to self-medication

Variable	Ophthalmic self-medication		Chi square, P value	Unadjusted OR (95% C.I.) P value
	Yes	No		
Age group (in years)				
18-40	112	258		1
41 -60	110	297	1.13,	0.85 (0.62, 1.17), 0.16
>60	210	503	0.568	0.96 (0.73, 1.27), 0.39
Gender				
Male	282	602	8.92,	1.42 (1.13, 1.80), 0.001
Female	150	456	0.003	1
Residence				
Rural	146	293	5.50,	1.33 (1.05, 1.70), 0.008
Urban	286	765	0.191	1
Education level				
Illiterate or incomplete primary school	84	184		1.18 (0.84, 1.67), 0.166
Completed primary school	110	291	1.66,	0.98 (0.72, 1.34), 0.451
Completed secondary school	132	308	0.645	1.11 (0.82, 1.51), 0.246
Completion of tertiary studies/ college	106	275		1
Marital status				
Currently Married	387	856	16.7,	2.03 (1.44, 2.86), 0.00003
Currently Single	45	202	0.000044	1

*OR- Odds Ratio,

*C.I.- Confidence Interval

Table 3: Complaint that led to self-medication

Symptoms	Frequency (n)*	Percentage (%)*
Eye Itching/ Gritty sensation	177	40.97
Burning sensation	167	38.66
Watering of eyes	166	38.43
Eye pain/strain	147	34.02
Redness of eyes	125	28.94
Discharge from eyes	95	21.99
Defective vision	78	18.06
Photophobia/glare	71	16.43
Others	34	7.87
No symptoms	26	6.01

* Many subjects had more than one symptom leading to self-medication

used eye drops not directed to any particular complaint, but for general ocular well-being.

The most common used eye drops were ayurvedic and herbal (20.6%), antibiotics (17.1%) and antibiotic-steroid

Table 2: Association of socio-demographic factors with self-medication in the study population

Variable	Ophthalmic self-medication		Unadjusted OR (95% C.I.) P value	Adjusted OR (95% C.I.) P value
	Yes	No		
Age group (in years)				
≤60	222	555	1	1
>60	210	503	1.04 (0.83, 1.31), 0.354	1.01 (0.78, 1.24), 0.291
Gender				
Male	282	602	1.42 (1.13, 1.80), 0.001	1.51 (1.19,1.91), 0.0007
Female	150	456	1	1
Residence				
Rural	146	293	1.33 (1.05, 1.70), 0.008	1.29 (1.00, 1.66), 0.046
Urban	286	765	1	1
Education level				
Up to primary school	194	475	1.00 (0.80, 1.25), 0.498	0.91(0.81, 1.19), 0.983
Above primary	238	583	1	
Marital status				
Currently Married	387	856	2.03 (1.44, 2.86), 0.00003	2.05 (1.45, 2.92), 0.0001
Currently Single	45	202	1	1

*OR- Odds Ratio,

*C.I.- Confidence Interval

Table 4: Pharmacological category of ocular medication

Category of topical medication	Frequency (n)	Percentage (%)
Ayurvedic or Herbal	89	20.60
Antibiotics	74	17.13
Antibiotic with steroid	42	9.72
Antiallergic with or without artificial tears	40	9.26
Steroid	18	4.17
Artificial tears	08	1.85
Nonsteroidal anti inflammatory agents	08	1.85
Others	05	1.16
Not remembering the medicine	162	37.50

combination (9.7%). Fourteen patients used more than one category of medication (Table 4). 38% patients did not carry or remember the medicine being used. 55% patients did not know the details of their medication. Only 10% of the patients had read the patient-information leaflet in the eye drop package. 260 patients (60.2%) did not check the expiry date of the drug before they used it.

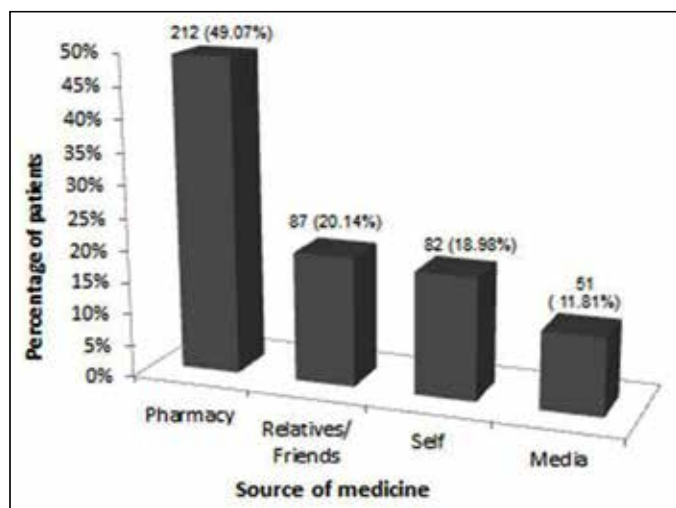
The major reason for ophthalmic self-medication was

the advice from family, friends, pharmacist, optician and compounder (61%), followed by no time to visit at the eye health care center (31%). Many subjects had a combined influence of more than one factor leading to self-medication (Table 5). The major source of medicine was pharmacy (49%), followed by relatives and friends (20%). 19% patients used eye drops available at home which had been used in

Table 5 : Factors influencing self-medication

Influencing factor	Frequency (n)*	Percentage (%)*
Advice from family and friends	140	32.40
Advice from pharmacist/optician/compounder	123	28.47
Being Busy	135	31.25
Long distance from eye care services/ Non availability of eye care	91	21.06
Believes that symptoms are not significant	86	19.90
Economic reason	78	18.05
Had a medication at home	74	17.13
Others/ No reason	48	11.11
Considers qualified for self-treatment	42	9.72

*Many subjects had a combined influence of more than one factor leading to self-medication



Figures :1 Source of medicine

past for their ocular problem. 12% patients bought the eye drop influenced by newspaper or radio or television (Figure 1). Most patients using ayurvedic eye drops belonged to this category.

Discussion

The present study used a questionnaire to examine the extent of ocular self-medication, with commercial eye medications in patients seen in a private Ophthalmology practice in Central India. Self-medication was reported in 28.99% of the survey sample, showing that about one in four patients self-medicates before seeking medical advice. Comparable rates were found in a community based Indian study by Gupta N et al (18.3% and 26.4%), in Gabriel et al study (25.6%), study by Adimassu et al (28.6%) and in Marquez et al study (25.6%

and 25.7% for Cordoba and Barranquilla, respectively).^{6,19-21} These rates are low when compared to frequencies published by Indian studies of Kadri et al (35.47%), Shallam et al (37.5%) and Gupta R et al (41.2%).^{7,22,16} This discrepancy may be explained on the basis of the study design wherein we have limited the participants to adult patients and patients who have self-medicated during the past one year. We have also excluded patients requiring emergency critical care. We have not considered the homemade traditional ocular medications as done in Shallam et al study.²² Including them could have increased the percentage of people who self-medicated in our population.

In the present study, no significant difference was found in self-medication practices according to age and level of education. In the Gupta et al study at Gurgaon, no significant differences were found in self-medication practices according to age ($p = 0.962$), gender ($p = 0.599$), level of education ($p = 0.41$) or religion ($p = 0.632$).⁶ In Shallam et al study of Mangalore, younger age group of 20- 40 years of age self-medicated more and the educated patients were more likely to self-medicate.²² There was a significant gender difference in self-medication practices, with 33% of males compared to 20% of females admitting to the practice of self-medication in the study in Argentina ($p=0.004$).¹⁹ Males were 1.84 times more likely to report self-treatment compared to females as per the research at Malawi in Africa.⁹ This finding is similar to our study, wherein the prevalence of self-medication has been found more in males (OR: 1.51, $p=0.0007$).

As per this study, married patients self-medicated more. Unmarried subjects were more likely to self-medicate in Gupta et al study ($p = 0.044$), though on multivariate analysis, no difference was found.⁶ In the present study, rural patients were found to practice ophthalmic self-medication 1.3 times more than the urban counterpart. Use of traditional eye medicines and self-medication has been documented in people of rural residence.^{6,23} In general, self-medication in rural areas is common.^{24,25} Most published Indian studies on ophthalmic self-medication have not taken the variables of marital status and residence of patient in their analysis.

In our study, itching and grittiness in eyes was the most common complaint for which the patients chose self-medication (41%). In the study conducted in South India by Kadri et al,⁷ 33% had similar complaints. In a study performed by Tayanithi et al²⁶ the factor which influenced the use of eye drops most was 'dust in the eye' (55%). Ocular allergic symptoms such as itching, irritation, tearing were the second most common cause. In our study too, burning and watering constituted the second most common symptoms. Over the counter (OTC) products are often the first line of self-therapy for ocular allergy and dry eye.

In the present study, ayurvedic and herbal eye drops constituted majority of the OTC medications used (20.6%). Herbal and indigenous eye drops belonging to the alternative medicines were found to be used in 13.2% participants in Gupta et al study of 2017.⁶ This indicates

the growing interest in using ayurvedic eye drops and also hints on their wider availability with easy accessibility. In past studies, the category of ayurvedic-herbal drops has not been found, though use of traditional eye medicines have been assessed.^{6,22} Antibiotics (17%), antibiotic-steroid (10%) and anti-allergic vasoconstrictive agents (9%) were the other major drugs used in our study. Antibiotics have constituted to be the highest number of medications used in Indian studies. About 38% of the respondents were not aware of the names of the medicines used. Not knowing the names of the medicines used by the patients who practice self-medication was reported to be 40.2% in the Indian study by Gupta R et al.¹⁶ 35.3% of the patients were not aware of the names of the eye drops in Kadri et al study.⁷

Of the patients who self-medicated, majority used medications recommended by pharmacist or relatives and friends. Most did not seek specialist care because of advice from family-friends or due to busy schedule. Similar to our findings, in another Indian study, common reasons given by the patients for self-medicating was easy availability of drugs from pharmacist, advice from relatives who had similar complaints and not having time to visit a doctor.²² In the Argentinean residents, the pharmacist, the patient's personal decision and counseling from friends or family were the main reasons for drug misuse.¹⁹

In present study, 49% of patients got the drug from pharmacy. The most common source from where the patients obtained the drug was chemist shops in 56.5% of the patients in Gupta et al study of North India.¹⁶ In Adimassu et al²⁰ study in Ethiopia, the major sources of ophthalmic medicine for self-medication were pharmacy house (72.2%), followed by leftover medication. There is a need to address these issues by generating awareness through educational campaigns. Better control in drug selling may rationalize the utilization of ophthalmic medicines.

Being a private clinic-based and questionnaire-based study, the study has associated limitations. The study cohort may not be representative of general community. Participants may have been aware that self-medication practice is not encouraged, hence might have withheld some information while they may be practicing it. Adequate response rate and no missing data in the questionnaire have limited the questionnaire bias. A strong sample size of diverse demography contributes to the study. There are few publications on self-medication in ophthalmology worldwide and to date, no published data on this specific issue in central India, as per author's knowledge.

Ophthalmic self-medication is a common phenomenon all over the world, especially in developing countries where easy accessibility to a large range of drugs without prescription, the growing number of over-the-counter medicines, irresponsible publicity, and difficult access to health care services, contribute to its practice.^{19,26-30} In India, easy availability of a wide range of prescription drugs across the counter without a valid prescription, lack of stringent

controls over medical advertising, low medical literacy among the population and also the compulsion to reduce health-care costs seem to be the motivating factors for self-medication.

Conclusions

Self-medication in ophthalmology has been found to be a common phenomenon among people of all ages, diverse levels of education and different genders. The use of random eye drops could delay professional medical attention, resulting in serious ophthalmologic complications. This warrants educational efforts, public awareness and regulatory legislations to lessen the consequences.

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