

# Awareness regarding topical ocular drug administration among patients attending a tertiary eye care hospital in south India

Simon George<sup>1\*</sup>, Gopisree G Nair<sup>2</sup>

<sup>1</sup>Assistant Professor, <sup>2</sup>Former Resident, Regional Institute of Ophthalmology, Government Medical College, Thiruvananthapuram, Kerala-695035, INDIA.

Email: [simongearge1986@yahoo.com](mailto:simongearge1986@yahoo.com)

## Abstract

**Objective:** To assess the awareness regarding topical ocular drug administration among the patients attending a tertiary eye care hospital in South India. **Materials and Methods:** Cross sectional study conducted among 266 patients attending a tertiary eye care hospital in Kerala state over a period of 3 months from January 2013 to March 2013. Using validated questionnaire a single interviewer interviewed outpatients prescribed topical medications in the hospital. Data was analyzed using appropriate computer statistical software tools. **Results:** 49.2 % belonged to middle socioeconomic class. 58.3% had studied up to 12th standard. 44% patients administered two or more drops of a drug at a time. 41% believed that two different drops could be applied at the same time. 44.7% felt that eye ointment should be applied over the lids only. 50% were using pin or needle to open the bottle. 75.3% were aware that they should close the eyes for one minute after applying drop. Only 29.4% knew they should use the opened bottle within one month. 22.3% were applying the eye ointment before eye drop when both were prescribed. **Conclusion:** The patients are not fully aware about the correct administration of topical ocular drugs. Lack of proper awareness will cause treatment failure and side effects. Ophthalmologists and pharmacists should spend more time to give proper instructions to patients regarding the prescribed topical drug administration.


**Keywords:** Awareness, topical ocular drug administration.

## \*Address for Correspondence:

Dr. Simon George, Assistant Professor, Regional Institute of Ophthalmology, Government Medical College, Thiruvananthapuram, Kerala-695035, INDIA.

Email: [simongearge1986@yahoo.com](mailto:simongearge1986@yahoo.com)

Received Date: 02/03/2015 Revised Date: 10/03/2015 Accepted Date: 16/03/2015

Access this article online	
Quick Response Code:	Website: <a href="http://www.statperson.com">www.statperson.com</a>
	DOI: 19 March 2015

## INTRODUCTION

Topical ocular drug administration is the most common route of drug administration prescribed to outpatients attending an eye hospital. Many ocular diseases like conjunctivitis, keratitis and anterior uveitis usually need only topical drugs for treatment. Diseases like glaucoma need lifelong follow up with topical drugs. Eye care

providers often neglect the importance of instructing the patient on how to handle, store, and administer eye drops<sup>1</sup>. Success or failure of the treatment depends on the correct dosage, duration and mode of administration<sup>1</sup>. Wrong excess administration can lead to side effects and toxicity due to the drugs<sup>2</sup>. With this background, a study was undertaken to assess the awareness regarding topical ocular drug administration among the patients attending a tertiary eye care hospital in South India.

## MATERIALS AND METHODS

This cross sectional study was conducted in Regional Institute of Ophthalmology, a tertiary eye care hospital in Kerala State from January 2013 to March 2013. Assuming 60% awareness among the patients and 10% permissible error of the above prevalence, the minimum required sample size using the formula  $n=4pq/L^2$  was 266. Subjects were selected by consecutive sampling technique from the patients prescribed topical

medications for the treatment of eye diseases in the tertiary care hospital. With their consent, a single interviewer interviewed them using a validated questionnaire. The data compiled on the basis of the validated questionnaire was processed and coded in a computed worksheet. Chi-square tests were used to measure the presence, strength, and independence of statistical association of different variables. Descriptive and comparative analysis was performed using computer software (SPSS Version 16, SPSS Inc, Chicago, IL). Two sided P value of less than 0.05 was Considered significant.

## RESULTS

65% were females. 49.2% belonged to the middle socioeconomic class and 58.3% had studied up to 12<sup>th</sup> standard. 44 % were putting 2 or more drops of a drug each time.

**Table 1:** Number of drops administered each time

Number of drops administered in each dosage	Percentage of patients
One drop	56
Two or more drops	44

41% believed that the drops of two different drugs could be applied together at the same time. 44.7% felt that eye ointment should be applied over the eye lids only and not inside the eye. 22 % were applying the eye ointment before the eye drop when both eye drop and eye ointment were prescribed by the eye doctor.

**Table 2:** Administration of eye ointment and eye drops when both were prescribed

Administration of eye drop and eye ointment when both preparations were prescribed	Percentage of patients
Eye drop applied first always	56
Eye ointment prescribed first always	22
Both drop and ointment applied together	3
Either drop or ointment applied first	19

50% were using a pin or needle to open the bottle.

**Table 3:** How was the eye drop bottle opened ?

How was the eye drop bottle opened ?	Percentage of patients
Used needle / safety pin	50
Turned in the cap	46
Depended on another person to open bottle	4

32 % accidentally touched the tip of the eye drop bottle while instilling the topical eye drops. 41 % admitted to forgetting / omitting a prescribed dose during previous treatment. Only 29.4 % were aware that they should use

the opened eye drop bottle within one month of opening the bottle.

**Table 4:** Duration within which an opened eye drop bottle could be used

Use within	Percentage
1 week	44.7
1 month	29.4
3 month	16.5
1 year	9.4

75.3% were aware that they should close the eyes for one minute after applying the eye drop. 47.4 % depended on relative / friend to administer the prescribed topical ocular drug.

**Table 5:** Who administered the topical drops?

Administered by	Percentage %
Self	52.6
Relative/friend	47.4

## DISCUSSION

52.6 % of the patients administered their own eye drops. Self administration caused difficulties like accidental touch of the dropper tip while instilling the drop (32 %). Tony Tsai *et al*<sup>1</sup> found that 82.6 % administered their own eye drops with 25.4 % reporting occasional touching of the dropper tip while administering the drops. 28.8 % reported dropper tip contamination in the study done by Kholdebarin R *et al*<sup>3</sup>. In the study done by Stone *et al*<sup>4</sup>, only 20%–30% of subjects were capable of administering a single eye drop without touching their eye. Contamination of the bottle and injury to the cornea can occur when the dropper tip touches the eye on drug administration. 41 % admitted to forgetting / omitting a prescribed dose during previous treatment. Kass *et al*<sup>5</sup> found that 62% of patients surveyed omitted 10% of prescribed doses and 15% of patients omitted 50% of prescribed doses. In the study done by Kholdebarin R *et al*<sup>3</sup> 25.6% reported missing at least 1 drop of medication per week. Each time, one drop of a drug has to be administered. However in the study, it was noted that 44 % of the patients were applying 2 or more drops of a drug each time. Tony Tsai *et al*<sup>1</sup> found that 25 % had difficulty in getting only one drop out of the bottle each time. Administering more than one drop at a time can lead to drug toxicity to the eye and side effects following systemic absorption<sup>1,2</sup>. To minimize systemic drug absorption and side effects, patients have to press on the nasolacrimal duct region or forcefully close their eyes for 1-2 minutes after administering the eye drop. In the study 75.3% were aware of this aspect. A gap of roughly 10 minutes is usually taken between the administration of two drugs to facilitate the absorption of the first drug. In the study, 41 % were administering both drugs together at

the same time. This will lead to inadequate effect of the first drug as the second drug would wash away the first drug when both drugs are simultaneously applied. In the study done by William Stewart *et al*<sup>6</sup>, only 50 % of the patients were informed about the need to wait for at least 5 minutes between each drop administration. An eye drop is applied before an eye ointment when both preparations have to be applied. In the study, 22 % were applying the eye ointment before the eye drop leading to inadequate absorption and effect of the eye drops. Though an eye ointment can be applied inside the eye, 44.7 % were applying the eye ointment only to the outer aspect of eye lids. To minimise contamination of the drug, the present eye drop bottles are opened by turning in the bottle cap and the opened bottle is used within one month after opening. In the study, it was found that 50 % were unaware of this fact and were using pin or needle to open the bottle. Only 29.4 % were aware that they should use the opened eye bottle within one month. In the study done by Kholdebarin R *et al*<sup>3</sup>, over 50 % of the surveyed patients were either noncompliant or demonstrated improper drug administration technique. To improve patient compliance and therapeutic efficacy, patient education regarding the correct dosage and mode of administration of prescribed drugs is very important. In the study done by Yang Liu *et al*<sup>2</sup> it was found that subjects who received the educational session had higher proficiency levels and fewer reports as well as shorter durations of pain and irritation, than subjects who did not receive the educational tutorial. The study done by Kass MA *et al*<sup>7</sup> showed that there is a need to improve patient instruction concerning drug compliance and proper time scheduling of eye drops. The study by David S Friedman *et al*<sup>8</sup> also found that doctor-patient communications and health related beliefs of patients contribute to patient adherence. Educational efforts in the office can improve patient adherence to medical therapies. Biswas NR *et al*<sup>9</sup> noted the need for improvement in prescription writing following the detection of large number of prescriptions in New Delhi in which the frequency of ocular drug administration and duration of therapy was missing.

## CONCLUSION

Proper ocular drug administration is important for the success of treatment. However, patients are not fully aware about the correct dosage and mode of administration of topical, ocular drugs. To enhance patient compliance and minimize side effects, it is important that the doctor or pharmacist documents and educates the patient about the correct drug administration. Improving doctor-patient communication and providing educational materials to patients in hospital waiting rooms will help increase the awareness.

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Source of Support: None Declared  
Conflict of Interest: None Declared