

## KAPs of Pharmacists Attending to Ophthalmic Patients in Nigerian Public Hospitals

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**Abstract:** Pharmacists' instructions at the time of dispensing ophthalmic medications are crucial in terms of patient compliance and efficacy of therapy. The aim of this study was to appraise knowledge, attitude and practices (KAPs) of pharmacists attending specifically to ophthalmic patients with regards to ophthalmic dispensing. It was a prospective, non-randomized study based on fully consented consecutive respondents. There were 30 respondents, 16 (53.3%) were males and 14 (46.7%) were females. The average age of the study group was 32 years +/- 8.36. Majority, 23(76.7%) were either unaware or disagreed with the potential benefit of punctal occlusion following eye drop application. Less than 50% of the respondents got the order of applying various forms of topical preparations and know eye ointment should mostly be applied at bed time to avoid blurring patients' vision. The waiting interval between topical medications were found to vary significantly with as much as 8(26.7%) giving no specific interval. No respondent knew other forms of local routes of ophthalmic drug administration aside topicals. It is concluded that pharmacists in these institutions will benefit from education related to ophthalmic dispensing and drug administration.

**Keywords:** Ophthalmologists, pharmacists, ophthalmic patients, ocular pharmacology, ophthalmic dispensing.

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### I. Introduction

The eye can be easily accessed to deliver pharmaco-biological agents non-invasively. However, drug delivery to the eye is hampered by anatomical variables, including the corneal epithelium, the blood-aqueous barrier and the blood-retinal barrier<sup>[1,2]</sup>. This unique pharmacokinetics ought to be the target of ophthalmic drug formulations and delivery to attain desired ocular tissue concentration.

The training of pharmacists in most Nigerian institutions often does not involve clinical exposure in ophthalmic dispensing. Again most training centers do not have dispensing units dedicated to ophthalmic patients. At the best a central hospital pharmacy replete with mere OTC (over the counter) eye drops attends to the entire gamut of ophthalmic patients with a broad spectrum of pathology. A vacuum therefore exists between the prescribing ophthalmologists and the dispensing pharmacists. In Nigeria, the doctor-patient ratio, still falls short of the recommendation of the World Health Organization giving no time for the attending ophthalmologist to sufficiently explain prescribed drugs to the patients.<sup>[3]</sup> The attending pharmacists, with limited or no conventional exposure in ophthalmic dispensing, might not be in position to give appropriate counseling or answer some of patients' questions.

There is paucity of literature addressing knowledge, attitude and practices of pharmacists attending specifically to ophthalmic patients. This study set out to appraise this often over looked subject as a means of a quality assurance and with a view to enhancing overall ophthalmic care.

### II. Methodology

It was a prospective non-randomized study involving four hospitals in two states of Nigeria. The hospitals were: General Hospital, Bida and Federal Medical Centre, Bida, Niger State and General Hospital, Calabar and University of Calabar Teaching hospital, Calabar, Cross-River State. The choice of the hospitals was based on the accessibility of the authors to the respondents. Verbal and written consents were obtained from the respondents. Every procedure followed was as outlined in Helsinki declaration.

Semi-structured closed and opened ended questionnaire consisting of 10 questions was designed to meet the study objectives. Questions that could be leading were deliberately made opened ended so as to get the true opinions of the respondents.

Inclusion criterion was a respondent must be a qualified pharmacist employed in the targeted hospitals. Pharmacy assistants/technicians were excluded for standardization and uniformity. Statistical software SPSS (Version 15, Chicago) was used to carry out all analyses. Data was expressed in terms of mean  $\pm$  standard deviation for continuous variables; number (%) for categorical variables.

### **III. Result**

A total of 30 pharmacists filled the questionnaires, of which 16 (53.3%) were males and 14 (46.7%) were females. The average age of the study group was 32 years  $\pm$  S.D: 8.36 (range, 24-67 years; mode, 35 years). Years of qualification ranged from 6 months to 40 years (mean, 6.25  $\pm$  7.41). Eight (26.7%) have worked in eye clinic dispensaries while majority, 22 (73.3%) have not worked in an eye clinic or ophthalmic section of the hospital. All the respondents advise their eye patients not to allow eye drop bottle tip touch their eyes and such bottles should be covered soon after dropping the medication in the eye. One advises eye patients to dispose of the drop after 3 weeks of use. When asked if an ophthalmologist's prescription in terms of frequency, dosages and drug combination contradicts what they already know, all responded they would seek clarification from the prescriber. One respondent will in addition seek the opinion of a senior pharmacist.

The table and figure below summarize responses from questionnaire. Order than 7(23.3%) who pegged frequency of topical drops at 2-4 times per day, there appears to be divergent views on frequency of topical medications with the respondents having individualized preset criterion. Majority, 23(76.7%) were either unaware or disagreed with the potential benefit of punctal occlusion following eye drop application. Less than 50% of the respondents got the order of applying various forms of topical preparations. Only 4(13.3%) knew eye ointment should mostly be applied at bed time to avoid blurring patients' vision. The waiting interval between topical medications were found to vary significantly with as much as 8(26.7%) giving no specific interval, while a respondent would ask a patient to wait one hour before the next drop. No respondent was aware that order than topical and parenteral, there are local routes of ophthalmic drug administration.

### **IV. Discussion**

Patients must use ophthalmic medications correctly to achieve optimal outcomes.<sup>[4]</sup> One factor that ensures this is provision of patient counseling.<sup>[5]</sup> It is well documented that safe and effective drug therapy occurs most frequently when patients are well informed about medications and their use.<sup>[5, 6]</sup> It is the responsibility of pharmacists to counsel patients before dispensing medications with pharmacist-provided counseling being found effective in improving patients' knowledge.<sup>[1, 7, 8]</sup>

Drug treatment errors are common, with 20% of all medical negligence treatment claims arising from incorrect use of prescribed drugs. Such mistakes being not only costly to individuals but also having a financial impact on the budding Nigerian National Health Insurance Scheme.<sup>[9]</sup> These errors can occur at several stages, including prescribing, transcription, dispensing and administration, effects varying in severity from minimal, and thereby unrecognized, to fatal.<sup>[10, 11]</sup> This study focused on ophthalmic dispensing error arising from insufficient knowledge exhibited in one of ophthalmic dispensing systems.

In this study, all the respondents were aware of how to prevent infection by ensuring eye droppers are covered soon after use. This information is available in most patient information leaflets (PILs) and this might explain how the pharmacists came about this. PILs found useful to the pharmacists have been reported to be unreliable avenue of disseminating information to patients because patients often do not understand the medical language.<sup>[12]</sup>

Number of reported medical errors, dispensing errors, inclusive, is rising.<sup>[13]</sup> With increasing patients' awareness in Nigeria, cases of medical litigation are bound to rise. Dispensing errors occur due to deficiency in knowledge or deficit in performance (practices) or both. Dispensing error can also occur inadvertently.<sup>[11]</sup> These errors may result in therapeutic failure as well as wasting resources. Some of identified avenues for errors in ophthalmic dispensing system include wrong frequency, wrong route of administration, wrong timing, and incorrect administration technique.

In this study, nearly a quarter of the respondents gave a fixed frequency regimen of 2-4 times daily for topical medications. The frequency a topical medication would depend largely on the ocular condition being treated. For instance, infective keratitis would require more frequent topical antibiotics than if the same was used for prophylaxis. Nature of drug, e.g. steroids that cause ocular hypertension, corneal melting or even perforation will also determine how regular an eye medication will be administered. Ocular status, shelf-life of medication, envisaged adverse reactions, co-administered medications etcetra are other common factors. A dispenser should be aware of these factors to counsel patients adequately. More than half of the respondents did not know the order different preparations of topical preparations should be administered, thereby jeopardizing intraocular bioavailability. For maximal patient comfort and to enhance contact time, eye ointments are better given when a patient is going to bed. Giving an eye ointment at night as agreed by most respondents is not enough, but what time at night and why should be the backbone of counseling a patient during dispensing.

The technique of waiting for at least 5 minutes before applying another eye drop concurs with physiological principle of the limited and already tear-filled conjunctival cul-de-sac. This principle is augmented by post-drop eye lid closure and punctal occlusion with index finger. There was great arbitrariness in the waiting time of respondents, suggesting that there was no scientific basis for their decision. The huge benefit of punctal occlusion is not known to majority of the pharmacists. Intracameral, Intra-vitreous, sub-tenons, peri-bulbaletcetra, are some of the ocular routes available to ophthalmologists that the subjects in this study were not aware of.

### V. Conclusion

There is a challenge to create a new generation of ‘eye-conscious’ pharmacists who can bridge the gap between the expectations of emerging eye care treatments in a highly competitive cost-contained Nigerian market. Clinical program development in ophthalmic dispensing must begin with access to knowledge. In the United State, strides are being made in bringing the profession of pharmacy into the spotlight for ocular pharmacy. Since May 2002, the American Pharmaceutical Association has been sponsoring training for pharmacists and university educators on ocular pharmacy.<sup>[1]</sup> Therefore, in the emerging face of ophthalmic pharmacotherapy, there is an urgent need for more emphasis in ocular pharmacology and ocular pharmacy in the training of pharmacists in Nigeria. Finally, joint departmental continuing education seminars with ophthalmic department in their various hospitals could provide the much needed ophthalmic education.

### Limitations

The following limitations of this study have been identified. First, a convenience sample was used, and therefore, the generalizability of results is limited. Second, the few sample size limits extrapolation of the study report. However, in establishing the existence of prescriber-dispenser lacuna between the ophthalmologists and the pharmacists, the study has achieved its set out objective.

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**Table 1: Respondents answers in the questionnaire**

Questions	Answers	Frequency	%
<b>Frequency of topical medications</b>	2-4 times/day	7	23.3
	Drop-dependent	12	40
	Doctor-dependent	4	13.3
	Disease-dependent	6	20
	No response	1	3.3
<b>Total</b>		<b>30</b>	<b>100</b>
<b>Other ophthalmic routes order than topical</b>	Oral	14	46.7
	Oral + Parenteral	11	36.7
	Parenteral	2	6.7
	Surgery	1	3.3
	Not aware	2	6.7
<b>Total</b>		<b>30</b>	<b>100</b>
<b>Waiting interval between multiple topicals</b>	<10minutes	10	33.3
	10-20 minutes	10	33.3

	>20minutes	1	3.3
	Time not specified	8	26.7
	Not aware	1	3.3
<b>Total</b>		<b>30</b>	<b>100</b>
<b>Best time for eye ointment application</b>	Night	22	73.3
	Bedtime	4	13.3
	Anytime	3	10
	Not aware	1	3.3
<b>Total</b>		<b>30</b>	<b>100</b>
<b>Order of applying ophthalmic preparations</b>	Drops, gel, ointment	13	43.3
	Drops, ointment, gel	7	23.3
	No specific order	8	26.7
	Not aware	2	6.7
<b>Total</b>		<b>30</b>	<b>100</b>

Figure 1: opinions of respondents on eyelid closure and puctal occlusion after eye drop application

