

Research Article

Misuse of Tinted Plano Lenses in the Management of Ocular Photophobia: A Cross-Sectional Study among Eye Care Providers in Kenya

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- Astigmatism
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Abstract

Aim: To assess the implication of tinted Plano lenses in photophobia management.

Methods: This was a cross-sectional study among eye care providers in Kenya in which data was collected through online surveys. Three main themes were derived from the study; management of the underlying cause, impact of dispensing tinted Plano lenses and addressing astigmatism. Data was analyzed thematically.

Results: The response rate was (100%) with almost three quarter of the respondents (70%) working in private setups. Majority of the respondents (80%) agreed that uveitis, cyclitis, iritis, and blepharitis are strongly associated with photophobia ($p=0.001$). Although most respondents (78%) were dispensing tinted Plano lenses for patients with visual acuity of 6/6, the patients would still come back with similar complains. Only 24% of the respondents agreed that astigmatism was strongly associated with photophobia ($p=0.002$). Most respondents agreed that if a patient astigmatic status is corrected even with clear lenses then patients will rarely complain of photophobia. This is more cost effective as tinted Plano lenses remain expensive for majority who presents with photophobia.

Conclusion: Photophobia is mismanaged and there is a dire need for eye care providers to properly evaluate the cause of photophobia before deciding on a cost effective management plan. Notwithstanding, eye care professionals should correct any slight astigmatism as it is a major problem that is rarely factored in by most eye care professionals but majorly contributes to photophobia.

INTRODUCTION

Photophobia is attributed to neurologic or ophthalmic problems and arises from different underlying conditions such as uveitis, cyclitis, iritis, and blepharitis [1]. However, being a symptom that is majorly reported by most patients, optometrists and ophthalmologists tend to address this problem with tinted Plano lenses without considering the slight astigmatism that the patient may have.

Photophobia is the abnormal sensitivity to light and majorly affect patients with more cone cells [2]. The symptom of photophobia presents in two forms, that is the ocular and the central type which is majorly associated with blepharospasm and migraines [3]. However, for ocular presentation, the patients will always complain of intolerance to light both the artificial and the natural light. Notwithstanding, the population with congenital cortical visual impairment always experience photophobia from birth while those with acquired cortical visual impairment may experience photophobia immediately after emmetropization [4].

Although photophobia experience do really disturbs, its intensity tend to diminish with time and sometimes it may disappear.

The threshold for light sensitivity varies among patients and those with migraines do experience a lower threshold as opposed to those with dry eye and corneal neuropathy [3]. At the same time, the state of retinal adaptation will dictate an individual sensitivity to light. Hence this state of confusion on the cause of photophobia makes it hard for the eye care providers to decide on the best option to adopt in the management of the symptom. Therefore the only way to manage photophobia is by addressing the underlying disease as other anterior segment conditions such as uveitis, cyclitis, iritis, and blepharitis also presents with symptoms of photophobia [2]. Hence eye care providers in Kenya should keenly rule out the cause of photophobia before dispensing tinted Plano lenses.

The wavelength of light may contribute to the intensity of photophobia [5]. A study estimating the discomfort threshold from low, medium and high wavelength of light among patients

reported that on medium wavelength, the healthy individuals had significantly higher discomfort thresholds than the migraine ($P=.002$) and tension-type headache ($P=.031$) groups [5]. Hence, management of photophobia needs a lot of attention to rule out the cause of the problem and a more cost effective approach is desirable to enable the population across the economic pyramid to access such services.

MATERIALS AND METHODS

This was a cross-sectional study among eye care providers in Kenya. The descriptive cross-sectional provides accurate account of the distributions of characteristics of a particular individual. We adopted a purposive sampling strategy to identify the participants. The study targeted all eye care providers practicing in Kenya. The data was collected through online surveys. The questionnaire was piloted on a tenth of the sample size. Thematic analysis was carried out using Nvivo software. We had three main themes; management of the underlying causes, impact of dispensing Plano lenses and addressing astigmatism. The data was collected until data saturation was achieved. Data saturation was defined as the point when similar items were reported by the respondents. The Helsinki Declaration was adhered to. The data was analyzed using SPSS V21.

RESULTS

Out of the $n=240$ eye providers who participated in the study, 15% were ophthalmologists, 65% were optometrists and 20% were ophthalmic clinical officers. The response rate was 100%. Almost three quarter of the respondents were working in private setups with 70% of all the respondents being of male gender.

Majority of the respondents (98%) agreed that uveitis, cyclitis, iritis, and blepharitis are strongly associated with photophobia ($p=0.001$). However, only (20%) of the respondents agreed that they would examine patients for the conditions before they rule out the cause of the photophobia. Of the (20%) who examined for uveitis, cyclitis, iritis, and blepharitis before they rule out the cause of the photophobia, (10%) were ophthalmologists.

Most respondents (75%) who tested for visual acuity and find it between 6/12-6/6 would not examine for uveitis, cyclitis, iritis, and blepharitis but would dispense tinted Plano lenses immediately. Only (15%) of the respondents would think of the cause of the photophobia as neurologic with over (80%) considering it ophthalmic based.

'I always consider visual acuity as the baseline to rule out the cause of photophobia' (Patient ID ER09).

Although most respondents (78%) were dispensing Plano lenses for patients with visual acuity of 6/6, (12%) agreed that the patients would still come back with complain of photophobia.

'I have dispensed Plano lenses for many patients with chief complain of photophobia but they still come back complaining' (Patient ID ER 067, 025).

'I always don't think of anything more provided a patient complains of light sensitivity and topical drugs have been tested and failed' (Patient ID ER 043).

Only (24%) of the respondents had knowledge that astigmatism was strongly associated with photophobia. Of the (24%), majority (12%) were optometrists and they had practiced for over 5 years.

'I have practiced for 5 years and I have realized that astigmatism if corrected fully, then patients will not complain of photophobia especially if it is the underlying cause' (Patient ID ER120).

DISCUSSION

Majority of the eye care providers in Kenya are aware that uveitis, cyclitis, iritis, and blepharitis can result to photophobia [6]. However, many do not consider the underlying causes of photophobia after recording visual acuity 6/6. Although visual acuity of 6/6 can still be recorded even when a patient has uveitis, cyclitis, iritis, and blepharitis, it is necessary that the eye care providers rule out all these causes before they can decide on a management plan.

Photophobia could be as a result of neurologic or ophthalmic [7]. Many eye care professionals who responded to the survey were only aware of the ophthalmic aspect with very few being aware of neurologic conditions related to photophobia. This justifies why many patients who complain of light sensitivity end up with a similar complaint even after dispensing tinted Plano lenses. This is because the management provided may not be accurate as the cause may not be well known.

In Kenya, eye care services are provided by optometrists, ophthalmologists and ophthalmic clinical officers [8]. However, management of photophobia has been linked majorly with Plano tinted lenses. Although using specially tinted lenses can reduce the magnitude of sunlight intensity, dispensing tinted Plano lenses should be undertaken with caution [9]. Although dispensing tinted Plano lenses could sometime be useful in addressing photophobia, it is very difficult to tackle photophobia if the underlying cause is not properly addressed. Therefore, specially tinted Plano lenses should be considered only when the patient has no refractive error and any other underlying condition. Therefore, dispensing Plano should not be the norm when it comes to photophobia management.

Although many studies have not addressed the association between astigmatism and photophobia, this study tries to show the correlation. Majority do have astigmatism although the degree varies from one person to the other [10]. For astigmatic patients, the corneal surface is not uniform and as a result there is distortion when it comes to light reflection. As a result the light through the pupil reaches the retina at different times hence creating a reflection. Therefore eye care providers should be aware of the concept.

Due to inadequate human personnel to address refractive error in developing countries [6], many people who are not qualified in the eye care sector are at forefront in dispensing tinted Plano lenses. This results to mismanagement hence there is a dire need for eye care providers to properly evaluate the cause of the photophobia before they dispense Plano lenses. Again astigmatism should be corrected as it is a major cause of photophobia which majority of the eye care providers neglect. Instead of dispensing Plano lenses for patients who can read 6/6, it is advisable for the eye care providers to correct the slight astigmatism or any other error the patient may be having. The eye care providers should be able to rule out whether the photophobia is due to neurologic or ophthalmic before they can begin management.

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Availability of data and materials

The data is available upon reasonable request from the author

Authors' contributions

SM developed the concept, wrote the manuscript and did the analysis

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REFERENCES

1. Entekume G, Patel J, Sivasubramaniam S, Gilbert CE, Ezelum CC, Murthy VSG, et al. Prevalence, causes, and risk factors for functional low vision in Nigeria: results from the national survey of blindness and visual impairment. *Invest Ophthalmol Vis Sci.* 2011; 52: 6714-6719.
2. Lebensohn JE. Photophobia: Mechanism and Implications. *Am J Ophthalmol.* 2006; 34: 1294-1300.
3. Katz BJ, Digre KB. Diagnosis, pathophysiology, and treatment of photophobia. *Surv Ophthalmol.* 2016; 61: 466-477.
4. Jan JE, Groeneweld M, Anderson DP. Photophobia and cortical visual impairment. *Dev Med Child Neurol.* 2003; 35: 473-477.
5. Main A, Vlachonikolis I, Dowson A. The Wavelength of Light Causing Photophobia in Migraine and Tension-type Headache between Attacks. *Headache J Head Face Pain.* 2000; 40: 194-199.
6. Palmer J, Chinanayi F, Gilbert A, Pillay D, Fox S, Jaggernath J, et al. Mapping human resources for eye health in 21 countries of sub-Saharan Africa: current progress towards VISION 2020. *Hum Resour Health.* 2014; 12.
7. Ahn AH, Brennan K. Headache Currents Unanswered Questions in Headache. *Headache.* 2013; 53: 1673-1674.
8. Kenya Ministry of Health. National Eye Health Strategic Plan. 2020.
9. Digre KB, Brennan KC. Shedding light on photophobia. *J Neuro-Ophthalmology.* 2012; 32: 68-81.
10. Nyamai LA, Kanyata D. Pattern of Refractive Errors in Students Attending Public High Schools in Nairobi. *Glob J Res Anal.* 2019; 1-5.