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Knowledge of and Willingness towards Cornea Donation among Senior Secondary School Teachers in a Rural Nigerian Community

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Authors' contributions

This work was carried out in collaboration among all authors. Author OCO was responsible for designing, writing the methodology, recruiting, interviewing the study participants, analysing and interpreting data. Author OE contributed to designing, writing the methodology, analysing and interpreting data. Author ME contributed to the review of protocol, methods, access to the Ministry of Health, data analysis and interpretation of data. All authors read and approved the final manuscript.

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Original Research Article

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ABSTRACT

Aims: To determine the knowledge of and willingness toward cornea donation and the effect of eye health education on cornea donation among senior secondary school teachers in a Nigerian rural community.
Study design: Cross-sectional interventional study design.
Place and Duration of Study: Esan Southeast Local Government Area of Edo State, Nigeria, between October 2015 and January 2016.
Methodology: The study was a cross-sectional interventional study amongst senior secondary school teachers. All permanently employed Senior Secondary School teachers teaching at least one senior secondary school subject in Esan Southeast Local Government Area of Edo State were recruited for the study. They answered questions from a semi-structured questionnaire, and their responses were collated and scored. After that, they listened to a 45minutes to 1hour structured educational talk on eye health and the importance of cornea donation. They also had several reminders in the form of twice-weekly text messages on corneal donation. Sixty (60) days later, they answered the same questions, and we compared their responses.

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Statistical analysis was done using SPSS v20, and statistical significance was tested using chi-square. A p<0.05 was considered significant.
Results: One hundred and thirty-four (134) teachers in 24 schools out of 28 participated in the study. There were more male than female respondents at a ratio of 2.7:1, and a large percentage of the teachers were less than 30 years old. 86.6% and 93% of teachers had poor or inaccurate knowledge of cornea donation and were unwilling to donate their corneas before our intervention. Following eye health education, the number of teachers willing to donate their corneas improved by 30% *P* < .001, while the teachers' knowledge improved by 43.1% *P* < .001.
Conclusion: Targeted eye health information and education on the importance of cornea donation improved teachers' willingness toward corneal donation and their willingness to encourage corneal donation. Utilising this information in formulating an education policy can be essential in driving the increased willingness and improved cornea donation in Nigerian schools.

Keywords: Cornea donation; educational intervention; cornea blindness; health policy.

1. INTRODUCTION

Cornea blindness is the fourth leading cause of preventable moderate to severe visual impairment behind Cataracts, Unaddressed refractive error and Glaucoma [1, 2]. In 2000, 1.5million children were reported to be blind, with over 30% of these children living in Sub-Saharan Africa [3], with a large percentage of these children blind from corneal scarring principally from Measles and Vitamin A deffieciency [3]. Giant strides have been made in nutritional efforts to supplement Vitamin A in diets and provide immunisation for measles. However, the use of harmful traditional eye medications, infections, and poor access to good primary eye care services continue to ensure that corneal scarring remains a public health concern in children [4,5]. The effect of corneal blindness in children is not borne by children alone, as the family and community also share this burden [6]. This burden is translated into direct and indirect economic losses from the loss of productive person-hours.

The causes of corneal scarring are preventable in most cases. However, when scarring occurs, the only treatment option is a cornea transplant. In Nigeria (the Nigerian National Blindness and visual impairment survey), Corneal scarring accounted for 7.9% of blindness [7], indicating an urgent need to start a viable cornea donation programme alongside the prevention and prompt treatment of corneal pathologies.

Evidence shows a relationship between poor knowledge of organ donation and poor cornea donation [8,9]. This evidence has led to calls for inclusion in educational topics on organ donation [10,11]. Successful campaigns to improve organ donation by including organ donation in the school curriculum have been documented in the Netherlands [12,13], the United States of America [14], and Turkey [15].

Since children and adolescents spend an average of 8 hours daily with Teachers, educating the teachers regarding this need may help set up viable donation awareness programmes in secondary schools. To ensure the accuracy and adequacy of information provided by the teachers, a study to assess the teachers' knowledge regarding cornea donation is essential. It is also crucial to determine the willingness of teachers to donate their corneas with the hope that teachers can serve as great motivators leading by example.

Even though much literature exists on the barriers to the donation of cornea tissue in Nigeria, no literature exists on the importance of intervention in overcoming these barriers. This study reports the experience of our team in exploring the role education may play in overcoming these barriers.

2. MATERIALS AND METHODS

The study was carried out among secondary school teachers in 24 out of 28 secondary schools located in Ubiaja, of Esan Southeast Local Government Area of Edo State, between October 2015 and January 2016 after proper ethical approval for the study was got from the Ethics and Review Board of the Irrua Specialist Teaching Hospital, Irrua, Edo State. Permission to carry out the study in the respective secondary schools was granted by the Medical Officer of Health, Ministry of Education, and proprietors of private secondary schools in the locality. The inclusion criterion was all permanently employed

senior secondary school teachers teaching at least one Senior Secondary School subject in the secondary schools located in Ubiaja, of Esan Southeast Local Government Area of Edo State. We excluded all temporarily employed teachers from the study as there was no guarantee they would be available for the whole length of the study. We obtained written informed consent from the study participants after a verbal explanation of the nature and benefits of the study to them.

The study team made pre and post-intervention visits to the respondents in each school. We collected Initial data on the first visit to the respondents via a self-administered semi-structured questionnaire. This exercise was followed by a structured talk on eye health, cornea diseases, and cornea donation practice lasting 45minutes to 1 hour, delivered by the principal investigator. A summary of the messages was distributed in the form of fliers. The talk was structured to ensure the same message was passed across all schools, eliminating information bias. During the 60-day interval, text messages were sent to the teachers' mobile phones twice weekly, reiterating the previously passed message. At the post-intervention visit, a post-intervention self-administered semi-structured questionnaire collected data from the teachers. While the pre-intervention data aimed to explore the teachers prevailing knowledge and willingness toward cornea donation, the post-intervention data analysed the improvement or lack in the teacher's desire to donate or encourage others to donate their corneas. Respondents' responses were scored using a system developed by the principal investigator based on the LIKERT scale [16]. Data were analysed using Statistical Package for Social Scientists (SPSS) version 20.

3. RESULTS

One hundred and thirty-four (134) teachers in 24 schools out of 28 participated in the study. Four schools did not participate in the study because the Ministry of Education merged two public schools without teachers. One public school no longer existed, and no teachers met the inclusion criterion in one private school.

There were more male than female respondents at a ratio of 2.7:1, and a large percentage of the teachers were less than 30 years old (Tables 1 and 2). There was no relationship between age (P = .605) or sex (P = .800) with a willingness to donate their corneas. Only 23.9%, representing 32 teachers, had previously heard of cornea donation (Fig. 1); the internet, school and hospital were the primary sources of information (Fig. 2).

Before the intervention, over half of the teachers' had inaccurate or poor knowledge about cornea donation (86.6%), which improved by 43.1% after the intervention P < .001 (Fig. 3). The most significant improvement was among the teachers who had inaccurate knowledge before the intervention.

Table 1. Socio-demographic distribution of respondents

Socio-demographic variable		Frequency	%
AGE	20-30	43	32.1%
	31-40	35	26.1%
	41-50	23	17.2%
	51-60	33	24.6%
SEX	MALE	98	73.1%
	FEMALE	36	26.9%

Table 2. Distribution of teachers' age and willingness toward cornea donation

		Willing	Undecided + unwilling	Total
AGE	20-30	17 (39.5%)	26 (60.5%)	**43**
	31-40	11 (31.4%)	24 (68.6%)	**35**
	41-50	7 (30.4%)	16 (69.6%)	**23**
	51-60	11 (33.3%)	22 (66.7%)	**33**
Total		**46**	**51**	**134**

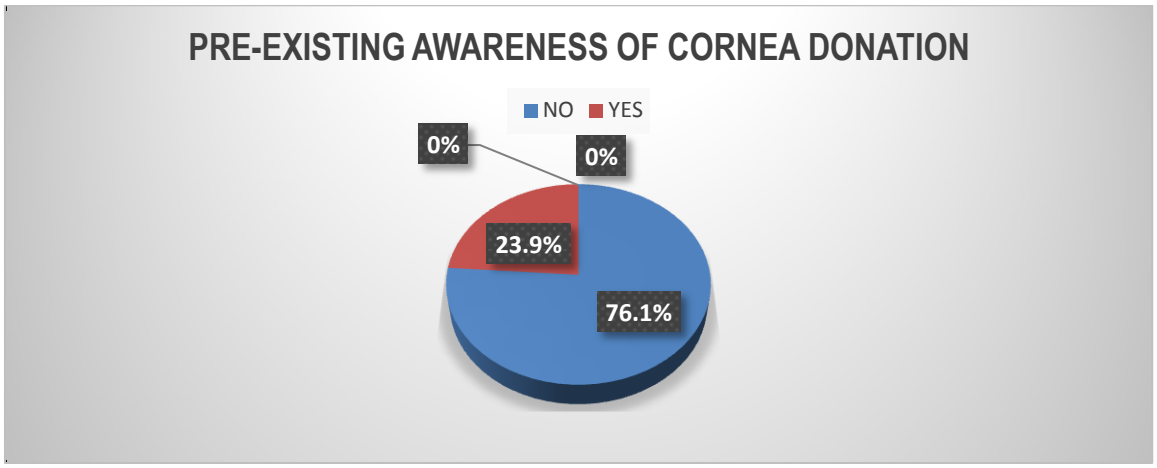

Fig. 1. Teachers' pre-existing awareness of cornea donation

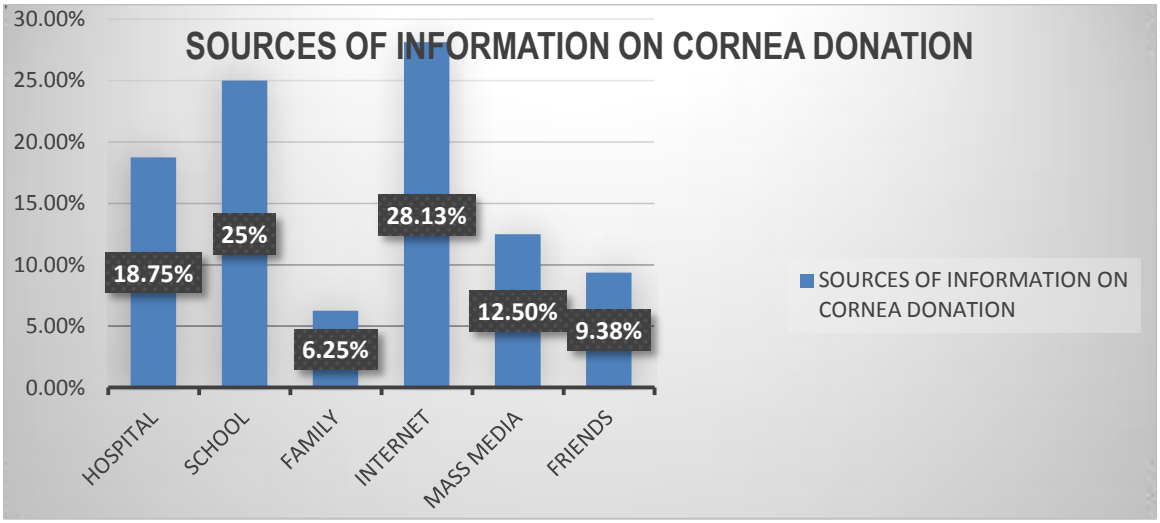

Fig. 2. Sources of information on cornea donation among teachers who had pre-existing awareness of cornea donation

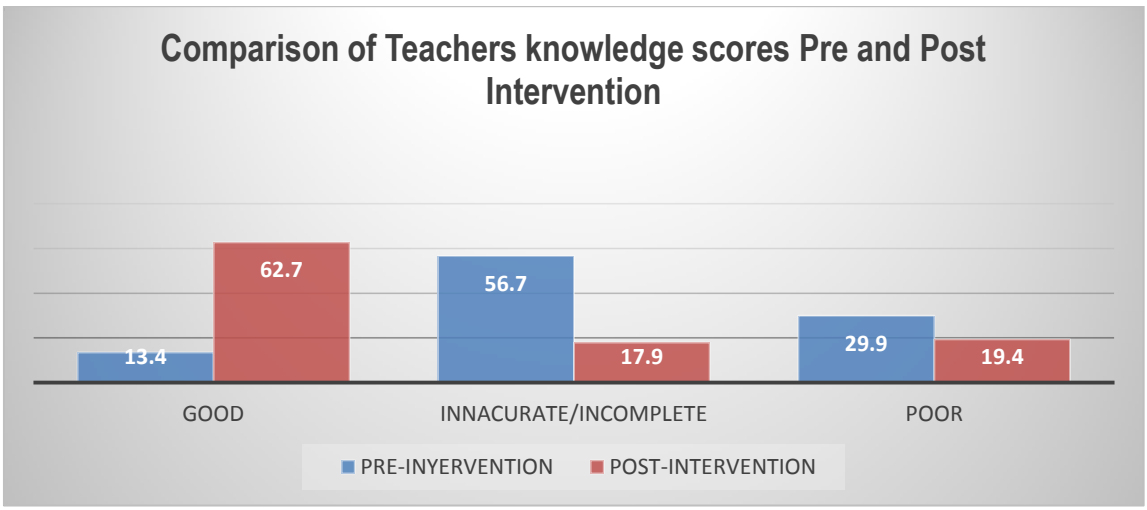

Fig. 3. Comparison of teachers' knowledge pre and post-intervention

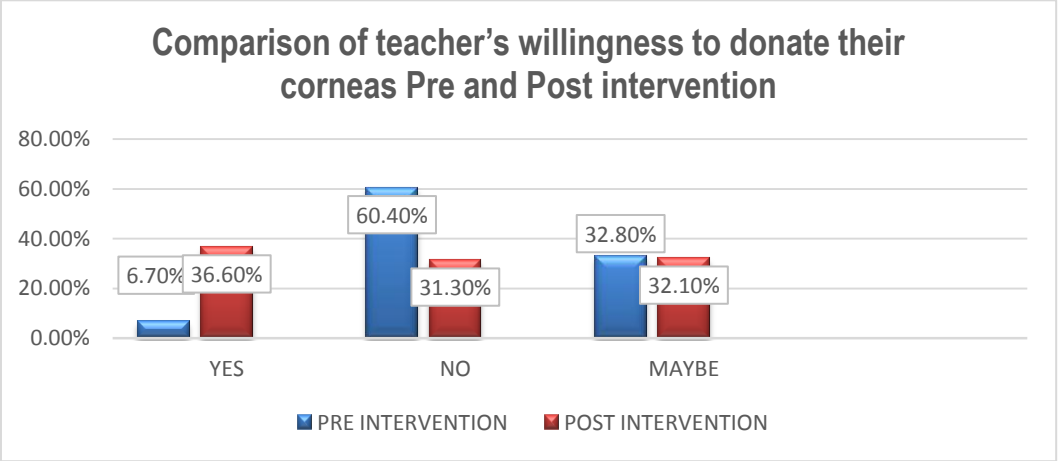

Fig. 4. Teachers' willingness to donate their corneas

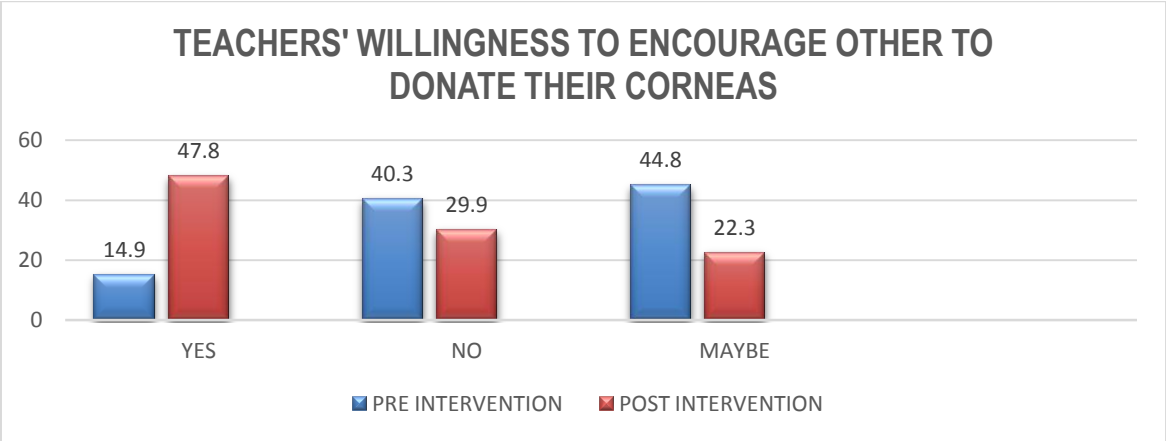

Fig. 5. Willingness of teachers to encourage cornea donation

When the teachers were asked if they would be willing to donate their corneas, only 6.7% of them responded positively before the intervention. Following the intervention, this number increased by 30% $P < .001$ (Fig. 4).

A similar improvement in the teachers' willingness to encourage donation was noticed after the intervention. The willingness of teachers to encourage donation improved by over 30% $P < .001$ (Fig. 5).

4. DISCUSSION

Cornea donation has been reported to be high among older people [17,18]. However, with Nigeria's prevailing poor organ donation rate, it may be more prudent to start the discussion on cornea donation in the younger group to help improve donation when older. In this study, being older did not affect prevailing attitudes toward cornea donation, and younger teachers were more willing to donate their corneas. This observation may be attributed to this study's relatively younger population of teachers and lends credence to the idea that discussing organ donation among younger people may help organ donation in the long term.

Some reports have demonstrated that males were more likely to donate their corneas [17,19], but despite the larger sample of male teachers in this study, sex did not affect the respondents' willingness to donate their corneas. This observation may be because this group of educated and younger adults may not subscribe to gendered roles in humanitarian actions [19]. The internet was the primary source of information, underscoring the importance of the internet as a tool in disseminating relevant health information. However, it should be emphasised that the content consumed via the internet cannot be vetted independently compared to information from sources like mass media which

was the primary source of information in 51.7% of teachers in the report from Abadom among medical doctors. While sharing information via the internet may be more accessible, the importance of mass media in health education cannot be relegated.

There was predominantly poor knowledge and awareness of cornea donation among the teachers before the intervention. However, this improved following the educational intervention in the form of a structured eye health talk mirroring the observations from the Netherlands, United States of America, Turkey and India [9,12-15]. The effect of the educational intervention was also reflected in the willingness of teachers to encourage others to donate their corneas and was closely tied to the teachers' desire to donate their corneas. This desire to donate is vital as the significant likelihood of donating their corneas can serve as a motivating prod for others in the right direction and hence be veritable tools in the education of their students on cornea donation.

Therefore, Ophthalmologists and other eye care team members should regularly educate teachers on cornea diseases and eye health, which can be achieved by collaborating with the Nigerian Union of Teachers during their Annual meetings or programmes. Cornea donation and eye health should be added to the curriculum of the senior secondary schools to help carry the message of cornea donation and eye health to the students. Furthermore, regular visits to secondary schools should be undertaken to ignite and keep the desire to donate alive among teachers and students.

Limitations of this study included the limited sample size of the teachers limited by geography. A more significant teacher sample size may have improved the robustness of the statistical analysis. Furthermore, due to logistical reasons, we could not host the teachers in a single hall for both pre and post-intervention encounters or use a pre-recorded audiovisual aid. A single hall or pre-recorded audiovisual aid would have ensured that the structured talk was ultimately the same in all aspects. However, we tried to compensate for this by having one person give the talk (OCO) using a detailed structured format.

5. CONCLUSION

Targeted eye health information and education on the importance of cornea donation improved teachers' willingness toward corneal donation and their willingness to encourage corneal donation. Utilising this information in formulating an education policy can be essential in driving the increased willingness and improved cornea donation in Nigerian schools.

CONSENT

All authors declare that 'written informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images'.

ETHICAL APPROVAL

All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Steinmetz JD, Bourne RRA, Briant PS, Flaxman SR, Taylor HRB, Jonas JB, et al. Causes of blindness and vision impairment in 2020 and trends over 30 years, and prevalence of avoidable blindness in relation to VISION 2020: the Right to Sight: an analysis for the Global Burden of Disease Study. The Lancet Global Health. 2021;9(2):e144-e60.
2. World Health Organisation. Blindness and visual impairment; 2022. Available: https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment
3. Gilbert C, Foster A. Childhood blindness in the context of VISION 2020--the right to sight. Bull World Health Organ. 2001;79(3):227-32.
4. Rahi JS, Gilbert CE. Epidemiology and world-wide impact of visual impairment in children. Pediatric Ophthalmology and Strabismus. 2022;1-8.
5. Solebo AL, Teoh L, Rahi J. Epidemiology of blindness in children. Archives of Disease in Childhood. 2017;102(9):853.
6. Burton MJ. Corneal blindness: prevention, treatment and rehabilitation. Community Eye Health. 2009;22(71):33.

7. Dineen BP, Gilbert CE, Rabiu MM, Kyari F, Mahdi AM, Abubakar T, et al. The Nigerian national blindness and visual impairment survey: Rationale, objectives and detailed methodology. BMC Ophthalmology. 2008;8:17.
8. Biswas J, Bandyopadhyay S, Das D, Mandol KK, Saha I, Ray B. A study in awareness about eye health care and eye donation among secondary level students of North Kolkata, India. Kathmandu Univ Med J (KUMJ). 2010;8(31):317-20.
9. Dhaliwal U. Enhancing eye donation rates. Training students to be motivators. Indian J Ophthalmol. 2002;50(3):209-12.
10. Gupta AK. Awareness about eye bank and willingness for eye donation among medical students in western India–Time to educate early; 2015.
11. Singh M, Bhardwaj A, Ahluwalia S, Saini S, Qadri S. Eye donation: perception and promoting factors among medical students. Indian Journal of Community Health. 2012;24(3):175-8.
12. Reubsaet A, Brug J, Nijkamp MD, Candel MJ, van Hooff JP, van den Borne HW. The impact of an organ donation registration information program for high school students in the Netherlands. Soc Sci Med. 2005;60(7):1479-86.
13. Reubsaet A, Reinaerts EB, Brug J, van Hooff JP, van den Borne HW. Process evaluation of a school-based education program about organ donation and registration, and the intention for continuance. Health Educ Res. 2004;19(6):720-9.
14. Cárdenas V, Thornton JD, Wong KA, Spigner C, Allen MD. Effects of classroom education on knowledge and attitudes regarding organ donation in ethnically diverse urban high schools. Clin Transplant. 2010;24(6):784-93.
15. Tokalak I, Kut A, Moray G, Emiroglu R, Erdal R, Karakayali H, et al. Knowledge and attitudes of high school students related to organ donation and transplantation: a cross-sectional survey in Turkey. Saudi J Kidney Dis Transpl. 2006;17(4):491-6.
16. Likert R. A technique for the measurement of attitudes. Archives of Psychology; 1932.
17. Patel HY, Brookes NH, Moffatt L, Sherwin T, Ormonde S, Clover GM, et al. The New Zealand National Eye Bank Study 1991-2003: A review of the source and management of corneal tissue. Cornea. 2005;24(5).
18. Arya SK, Raj A, Deswal J, Kohli P, Rai R. Donor demographics and factors affecting corneal utilisation in Eye Bank of North India. International Ophthalmology. 2021;41(5):1773-81.
19. Akinyemi RO, Akinyemi JO, Olorunsogbon OF, Uvere E, Jegede AS, Arulogun OS. Gender and educational attainment influence willingness to donate organs among older Nigerians: a questionnaire survey. Pan African Medical Journal. 2020;36(1).

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