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The perception of final year medical students in Ogun state tertiary institutions concerning post mortem eye and cornea donation

Jagun Omodele[1*], Adejumo Olubusayo[2], Ezenwa Adaeze[3], Betiku Anthony[1]

[1] Consultant Ophthalmologist, Babcock University Teaching Hospital, Ilishan-Remo, Ogun State, Nigeria

[2] Consultant Ophthalmologist, Department of Ophthalmology, Osun State University Teaching Hospital, Osogbo, Osun State, Nigeria

[3] Consultant Ophthalmologist, Department of Ophthalmology, Nnamdi Azikiwe University Awka. Anambra State, Nigeria

Abstract

Eye donation for the purpose of cornea transplantation has been identified as the best and most cost-effective treatment for cornea blindness. This study aims to understand the perception of soon to be medical doctors on eye donation and their willingness to donate their eyes post mortem. There were 66 participants with an average age of 22.7±1.5 years and 43.9% were males. All the participants had heard about Eye donation and cornea transplant before this survey and the main sources of their information were School lectures (54.5%), Social-media (21.2%), Movies (15.2%). Concerning post mortem eye donation, only 18 (27.3%) participants knew that eye harvesting is best done within 6 hours of death. Fifty-five (83.3%) participants were willing to give consent for their eyes to be donated after dead but only 47 (85.5%) participants were willing to donate both eyes and 56% felt consent should be made mandatory and given by donor before death. The participants in this study had a fairly good perception on eye donation, were willing to give consent for eye donation and would be good advocates in the nearest future.

Keywords: perception, final year, medical students, eye donation, South Western, Nigeria

Introduction

The cornea is the transparent avascular outer covering of the eyeball which functions mainly to refract and focus the light entering the eye [1]. It accounts for about 75% of the refractive power of the eye, accounting for about 45 dioptres [2]. The cornea has 5 layers consisting of the Epithelium, Bowman's layers, Stroma, Descemets membrane and the Endothelium [1]. Minor abrasions on the cornea tends to heal itself quickly but deeper injuries causes scars which leads to visual impairment and cornea blindness (CB) [1].

Common causes of corneal blindness includes microbial keratitis, trauma, traditional eye medication use, Xerophthalmia, Ophthalmia neonatorum, Trachoma, Leprosy, Cornea dystrophy and degeneration [2, 3].

According to the WHO, cornea opacity accounts for about 4.2 million global blindness out of the 2.2 billion people blind globally [4]. The socio-economic impact of CB is great when compared to the total blind-person years because children and younger adults are more affects than older adults who are mainly affected by cataract [2, 5]. Males have also been shown to be more prone to corneal blindness [2, 6].

Organ or tissue donation for the purpose of transplantation has been identified as the best and most cost-effective treatment for end-stage organ/tissue failure but several barriers have stalled the uptake of this noble course [7]. These procedures require a good governmental legislature as well as a huge investment in terms of hospital set up, staff training and education of the populace [7].

Cornea transplantation is a very successful treatment for cornea blindness which dates back to the early twentieth century and the first successful procedure was carried out by Eduard Konrad Zim in Austria [8]. Donor eyes or corneas are stored in Eye banks, which are also responsible for the processing and supply of these corneas, while the other parts of the eye like the sclera can also be processed for other surgical procedures [9]. The first Eye bank was established in 1944 by Townley R Paton in the USA [8] and numerous success stories have been recorded since then. In Nigeria, the Eye bank was established in 1973 and as at early 2021 only two locally donated corneas had been received [10]. The main barriers documented to post mortem eye donations in Nigerians have been lack of awareness, religious/cultural beliefs, family objection and the fear of the unknown [11, 12].

Eze *et al* in 2012 documented that 47.7% of a cohort of medical students in Nigeria had no knowledge that eye donation and cornea transplantation was possible even though 95% of them were willing to give consent for post mortem eye donation [12]. In another study by Waziri-Erameh *et al* only 34% of a cohort of Nigerian Ophthalmologists were willing to consent to post mortem donation of either one or both eyes even though all of them were willing to receive corneal transplant for the correction of blindness if required [13]. This study aims to understand the perception of soon to be medical doctors on eye donation so as to possibly encourage them to be advocates for increase uptake of eye donation along with eye care professionals.

Materials and Methods

A cross sectional survey carried out between May and June 2021. 80 students were randomly selected from amongst a total of 104 final year medical students in the two medical schools located in Ogun State, Southwestern, Nigeria namely Olabisi Onabanjo University, Ago-Iwoye and

Babcock University, Ilisan-Remo. The students had an average duration of 7 months to graduation. A pretested semi structured survey questionnaire was sent an completed online via WhatsApp/email to the selected students. The questionnaire (Appendix 1) was programmed to commence after giving a written consent and accepted only one response per participant.

Results

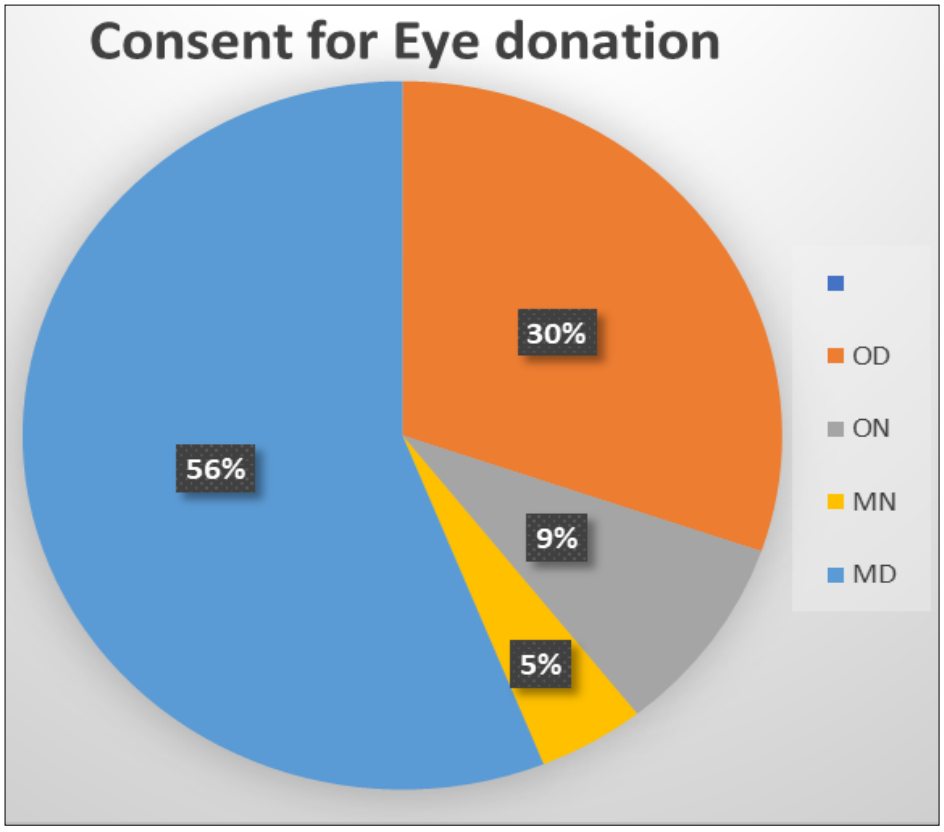
66 responses were received out of 80 questionnaires, giving a response rate of 75%. Average age of participants was 22.7±1.5 years, with a range of 21-29 years. Twenty-nine (43.9%) were males while 37 (56.1%) were females. Participants were predominantly Christians (89.4%), while 9.1% were Muslims and 1.5% atheist. Thirty-seven (56.1%) participants were from the Yoruba tribe, 14 (21.2%) Igbo and 15 (22.7%) were classified as others which included Hausa, Ijaw, Itsekiri and Ibibio. All the participants had heard about Eye donation and cornea transplant before this survey and the main sources of their information were School lectures (54.5%), Social-media (21.2%), Movies (15.2%), Television (6.1%) and friends (3.0%).

Concerning post mortem eye donation, only 18 (27.3%) participants knew that it is best done within 6 hours of death, 41 (62.1%) participants felt that the eye must be harvested within 1 hour of death, 5 (7.6%) felt harvesting could be done up to 12 hours after death and 2(3%) participants felt we could wait up to 24 hours after death before harvesting the eye. Only 2 (3%) participants knew someone who had undergone a cornea transplant.

Fifty-five (83.3%) participants were willing to give consent for their eyes to be donated after dead but only 47 (85.5%) participants were willing to donate both eyes. Reasons given by the 11 (16.7%) participants not willing to donate their eyes ranged from the fear of the unknown (45.5%), family objection (27.2%), need to keep the eye intact for burial (18.1%) and it feels like signing a death wish (9%).

Nearly all (97%) the participants said they would be willing to receive a donated eye for cornea transplant if needed to restore their sight but 3% were not willing because they felt it was dangerous and may damage the crystalline lens causing cataracts.

Figure 1 shows the perception of the participants on whom should give consent for the eye donation and whether it should be optional or mandatory.



OD: Consent should be optional and given by the donor before death.
ON: Consent should be optional and given by Next of kin after death.
MN: Consent should be Mandatory and given by Next of kin after death.
MD: Consent should be Mandatory and given by donor before death.

Fig 1: Response on whom should give the consent for post mortem eye donation

Discussion

All the participants had heard about eye donation and cornea transplant before this study but very few were aware of the ideal timing for harvesting the eye after death. Only 27.3% of our participants knew that harvesting had to be done within 6 hours of death. Though this was better than 11.2% awareness in a previous Nigerian survey [12], surveys carried out amongst medical students in India showed that 41.1% of the students were aware of the ideal timing despite being in their first year as compared to our participants who were in their final year [15]. This could be because cornea donation and awareness in India is more common than in Nigeria.

School lectures and social media accounted for 75% of the main sources of knowledge on cornea transplant in our

survey. This was also very pertinent sources as discovered by Eze *et al* in Eastern Nigeria [12] since the youths are trendy on social media. However, studies carried out in India showed television and newspapers to account for over 77% of the students' source of information on eye donation [15, 16]. This is very important since older adults who are expected to give consent for cornea donation also need to be reached via this media.

Though many of our participants showed willingness to become potential eye donors as also seen in previous studies [12, 15, 16], some were only willing to donate one eye due to the fear of the unknown. Reasons given by those not willing to donate their eyes ranged from the fear of the unknown, family objection, need to keep the eye intact for burial and a similarity to signing a death wish were also documented in previous studies. Hence the report by Gwa *et al* that the shortage of donor organs for transplantation due to perceived barriers is the most challenge faced by biomedicine [16]. This has led to a recent successful use of synthetic cornea made of non-degradable synthetic nano tissue [17]. Synthetic corneas are however not yet readily available and affordable. Promotion of intentional eye donation can be achieved by good advocacy by the government and also health care and eye care workers. The government needs to enact visible laws to promote cornea donation, protect the poor and vulnerable against organ trafficking and include organ transplantation in the National Health Insurance scheme [7]. The Eye care professionals also need to promote eye donation and be the first to carry donation cards unlike in the Nigerian survey of Ophthalmologist by Waziri-Erameh *et al*, where only 34% of the Ophthalmologist were willing to donate their eyes after death [13]. The participants in this survey were mainly Christians, but there was no objective indication that this was a barrier for eye donation. This is important as religious and cultural beliefs have been shown to be possible barriers to organ donation and education to reorientate the Nigerian populace can lead to an intentional organ donation culture [18]. Majority of the participant felt consent for post mortem eye donation should be obtained from the donor before death. This view was also shared by most participants in previous studies but Guadagnoli *et al* noted that despite the consent given by the donors, uptake of donation was low because 50% of those who gave consent never shared the information with their families who would inform the doctor of the need to carry out the eye harvesting upon death of the donor [19].

Conclusion

The final year medical students in this study had a fairly good perception on eye donation, were willing to give consent for eye donation and would be good advocates towards increasing the uptake of eye donation and cornea transplant in Nigeria. However, governmental laws would also be needed to make cornea and other tissue donation intentional in Nigeria.

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