

A Quasi-Experimental Study To Evaluate The Effectiveness Of QR Code On Knowledge Regarding Eye Donation Among The Adults In Selected Areas Of Pune City

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ABSTRACT

Introduction: Eye Donation is the greatest charity of all and the donation is done entirely voluntarily. It is an act of donating one's eyes after the death. **Aim of the study:** To evaluate the effectiveness of QR Code on knowledge regarding eye donation among the adults in selected areas of Pune city **Material and method:** In the study researcher adopted quantitative research approach and the research design was quasi-experimental research design with single group pre-test and post-test design. It was carried out on 200 adults. The Non-probability purposive sampling technique was used to select 200 adults. Demographic variable and knowledge level was assessed and analyzed. **Result:** The finding of the study, majority of the adults (58%) were from 26 - 45 years of age group, maximum (66.6%) were female and 50.5% were graduated and having (43.5%) knowledge from the books /newspaper as a source of information regarding eye donation. Among the adult's majority (54.5%) were having poor knowledge and (42%) were having average knowledge regarding eye donation before the QR code scanning. After the QR code scanning majority of the adults (51.5 % were having average knowledge, 48.5% were having good knowledge regarding eye donation. The effectiveness of QR code scanning on knowledge regarding eye donation among the adults is analyzed by paired t-test. The value of t-test is 28.07. The p-value at < 0.0001. So, a result is significant at < 0.05 level. Thus, the QR code is effective in increasing the knowledge regarding eye donation among the adults. There was association found in between knowledge level and the demographic variable (source of information regarding eye donation). **Conclusion:** From the findings of the study, the

researcher concluded that QR Code is effective in the terms of increasing the knowledge level regarding eye donation among the adults.

Keywords: Eye donation, effectiveness, QR code, knowledge regarding eye donation

INTRODUCTION

Once a sage man stated that “give the gift of vision”. Donating is a gesture of goodwill but giving eyes is a specific which can fill an individual’s life with chroma and will also give them a way to the wider world. Eyes are the windows to the outer world and are highly specialized and sensitive organ, if any dysfunction occurs in this organ often it leads to problems ranging from impairment of vision to the blindness. Corneal damage is the fourth most leading cause of blindness in the world and its number is increasing every year.¹

A corneal disease constitutes a major contributor to blindness and visual impairment in underdeveloped nations. Corneal transplant is carried out in lesser number as compared to its actual requirements in India. These all things are happening because of the insufficient assemblage of the corneas. The primary factors of corneal blindness comprises deficiency of vitamin A, Ophthalmia Neonatorum and harmful administration of conventional medicines for the treatment of corneal ulcers, onchocerciasis, and ocular harm.²

India possesses the world’s most notable proportion of corneal blindness and thus for tackling the same is a global concern. India is now an epicenter for this movement. The numbers of corneal blinds in India are waiting for the transplantation, which is increasing in numbers each year and there is a need to increase the acquisition of donation. Therefore, there is a mammoth need for increasing awareness regarding eye donation among the people of India.³

NEED OF THE STUDY:

Eye Donation entails when a deceased person’s eyes are donated for transplantation the family must give their approval to do so. One donor gives sight to two blind persons. The degree of visual loss decreases drastically, if one’s cornea gets clouded through illness, trauma, injury, infection or inadequate nourishment. Children and young adults are mainly affected. One method of treating corneal blindness is to use healthy donor’s eye to substitute the damaged cornea.⁴

According to an article, Eye Donations across India from April 2019 to March 2020 was 50,953 and in April 2020 to March 2021 was 18,359. Here, this data shows that there is a drop of 63%. The number of corneal transplant across India from April 2019 to March 2021 was 27,075 and in April 2020 to March 2021 it was 12,998, it shows that there is a drop of 52%. The blindness rate is increasing day by day due to avoidance and lack of motivation and myths among the population in India.⁵

Approximately 1.5% of blindness globally is attributed to advanced age macular degeneration, cataract and glaucoma, making it the fourth leading cause of blindness. The total number of eye donation per year in Maharashtra is 5000 which is far less than that is required. As a result, the number of patients waiting to get a corneal transplantation and

it is getting huge with each passing days. It was evident that barely people knew about donating their eyes.⁶

A QR Code is a simple but powerful tool that stores vast amount of data. It enables the users to obtain the information instantaneously when scanned, making it crucial for healthcare personnel to tract patients during administration. Ultimately results in patient satisfaction and increases knowledge by again and again looking into the scanned information.⁷

AIM OF THE STUDY:

To evaluate the effectiveness of QR Code on knowledge regarding eye donation among the adults in selected areas of Pune city

RESEARCH OBJECTIVES:

- ☐ To assess the knowledge level of adults on eye donation before the intervention.
- ☐ To assess the knowledge level of adults on eye donation after the intervention.
- ☐ To assess the effectiveness of QR Code on knowledge regarding eye donation among the adults.
- ☐ To associate the findings of pre interventional knowledge score with selected demographic variables.

HYPOTHESIS:

- ☐ **H₀:** There is no significant increase between post–test knowledge score of QR code scanning in comparison to pre-test knowledge score.

The hypotheses will be tested at a 0.05 level of significance.

MATERIAL AND METHOD:

Research Approach:	Quantitative Research Approach
Research Design:	Quasi- Experimental Research Design
Population (target population)	Adults
Sample size:	200
Sampling technique	Non- probability-purposive sampling

SAMPLE SELECTION CRITERIA:

INCLUSION CRITERIA:

- ☐ Adults in selected areas of Pune city
- ☐ Adults above 18 years
- ☐ Samples who have smart phones

EXCLUSION CRITERIA:

- ☐ Those who are Illiterate are excluded from the study
- ☐ Those who don't know to operate the Smartphone

DESCRIPTION OF THE TOOL:

This tool contains 3 sections:

- ☐ Section-I (demographical data)
- ☐ Section-II (self –Structured Questionnaire on Knowledge regarding Eye Donation)
- ☐ Section-III (Questionnaire related to QR code)

Scoring:

	GOOD (15-11)
LEVEL OF KNOWLEDGE :	AVERAGE (10-6)
	POOR (5-0)

Tool validity was done by the experts from Medical Surgical Nursing, Community Health Nursing and Optometry Department of different colleges. In this study the reliability was determined by administering self-structured Questionnaire to 20 people and the reliability done by using Karl's Pearson's Formula. For the pilot study, total 20 participants were participated and the study was found feasible and acceptable.

RESULT

Result of the study is divided into four sections

Section- I: Analysis of data related to demographic variables among the adults.

Table No: 1

Frequency and percentage distribution of demographic variable among the adults

n= 200

DEMOGRAPHIC VARIABLE	FREQUENCY (n)	PERCENTAGE (%)
1.AGE IN YEARS		
i. 18 -25 YEARS	71	35.5
ii. 26 - 45 YEARS	116	58
iii. 46 - 60 YEARS	13	6.5
2. GENDER		
i. MALE	67	33.5
ii. FEMALE	133	66.5
iii. TRANSGENDER	0	0
3. EDUCATIONAL STATUS		
i. NO FORMAL EDUCATION	0	0

ii. HIGHER SECONDARY	63	31.5
iii. GRADUATION	101	50.5
iv. POST GRADUATION	35	17.5
v. ANY OTHER	1	0.5
4.SOURCE OF YOUR INFORMATION REGARDING EYE DONATION		
i.BOOKS/NEWSPAPER	87	43.5
ii. MASS MEDIA	73	36.5
iii. FRIENDS	27	13.5
iv. OTHERS	13	6.5

The data presented in **table no: 1** describes the findings related to demographic characteristics of adults.

In the findings, according to the age, majority (58%) were from 26 - 45 years of age group, (35.5%) were from 18-25 years of age group and (6.5%) were from 46-60 years of age group. According to the gender, majority (66.5%) were from female, (33.5%) were from male and (0%) were from transgender.

According to the educational status, majority (50.5%) were graduated, (31.5%) were higher secondary education, (17.5%) are post graduated, (0.5%) were having any other and (0%) were having no formal education.

According to the source of information regarding eye donation, majority (43.5%) were having information from books/newspaper, (36.5%) were having information from mass media, (13.5%) were having information from friends, and (6.5%) were having information from other sources.

Section-II: Findings related to knowledge level of adults on eye donation before and after the QRcode Scanning

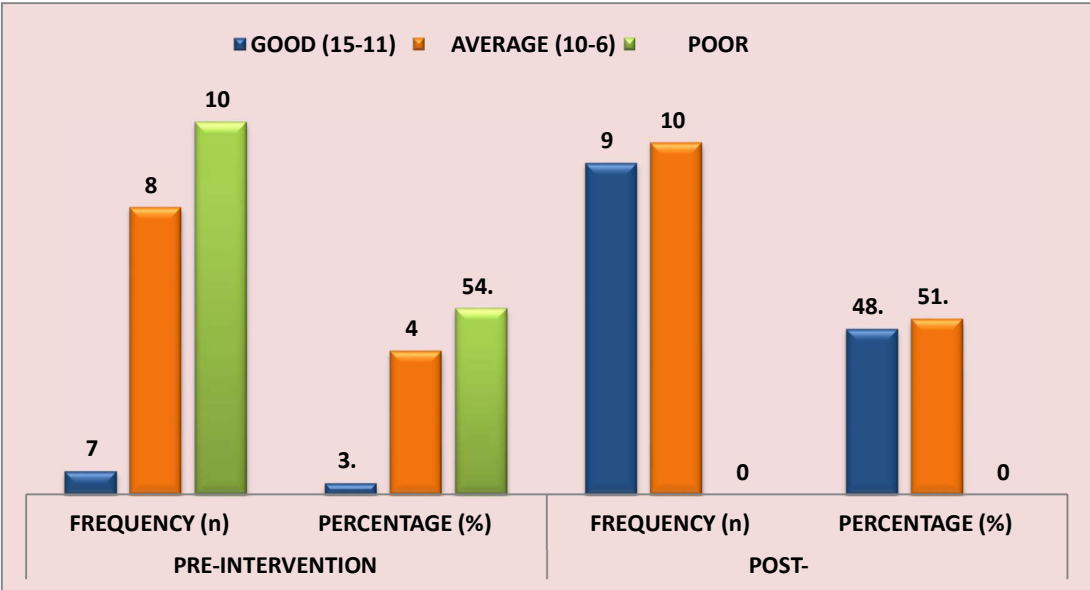


Figure 1: Knowledge level of adults on eye donation before and after the QR code scanning

According to the findings of knowledge level of adults on eye donation before the QR code Scanning is (3.5%) were having good knowledge (15- 11), (42%) were having average knowledge (10-6) and majority of the people (54.5%) were having poor knowledge (5-0). According to the findings of knowledge level of adults on eye donation after the QR code Scanning is (48%) were having good knowledge (15- 11), majority of the people (51.5%) were having average knowledge (10-6) and (0%) were having poor knowledge (5-0).

Section –III: Findings related to the effectiveness of QR code scanning on knowledge regarding eye donation.

Table No: 2 Effectiveness of QR code scanning on knowledge regarding eye donation.

n=200

	Mean	SD	t- value	t- table value	df	P-value	Remark
Pre- test	5.61	2.43	28.07	1.97	199	< 0.0001	significant
Post - test	10.52	1.63					

The data presented in **table no: 2** describes the findings related to the effectiveness of QR code scanning on knowledge regarding eye donation. Paired t-test applied between pre –test and post –test in one group as calculated “t” value is 28.09 which is more than T- table value is 1.97. It indicates that there is difference in knowledge level before and after Scanning QR

Code, p-value was 0.0001 which is less than 0.05 so reject null hypothesis that means there is difference between pre-test and post-test knowledge level after the QR Code scanning among the adults.

Section- IV: Findings related to the association of pre interventional knowledge score with selected demographic variables

According to the findings it shows that p-value are more than 0.05 level of significance, there is no longer association between the knowledge before Scanning the QR Code among age in years, gender, educational status and except the source of the information regarding eye donation, which is less than level of significance.

DISCUSSION

The findings of the study were analyzed and it gives an evident that in the demographic variable majority (66.55%) of the female were from the age group of 26- 45 years, (50.5%) of them were graduated and (43.5%) were having source of the information regarding eye donation from the books/newspaper. The finding shows that majority of the adults (109, 54.5%) were having poor knowledge regarding eye donation, (84, 42%) were having average knowledge and (7, 3.5%) were having good knowledge and the mean score was 5.61 and SD 2.43 before the scanning of QR code. Then after the QR Code scanning the findings shows that majority of the adults (103, 51.5%) were having average knowledge, (97, 48.5%) were having good knowledge and (0, 0%) were having poor knowledge and the mean score is 10.52 and SD 1.63. Thus the study concludes that there is the difference seen in the knowledge level of adults before and after the QR Code Scanning and tells that the QR code is effective on increasing Knowledge regarding eye donation among the adults. And the association was found only with one demographic variable (source of information regarding the eye donation).

Findings related to QR code usage:

According to the finding, 87% says that they are familiar with the quick response and 13% are not familiar with QR Code. 98% used Google lens, 2% by QR Scanner, and any other is (0%). 61.5 % doesn't require any assistance to use the QR Code and 38.5 % required some assistance to use QR code. 69% felt easy to use QR code and (25%) felt neither easy nor difficult and 6% felt difficult.

An article shows that the QR Codes are more reliable and safe tool for increasing accessibility of online resources which includes various videos, graphic, URL, immediate feedback and specially in transferring, sharing and promoting information in workshops, discussion, and also in teacher less simulation.⁸

CONCLUSION

The aim of the study was to evaluate the effectiveness of QR code on knowledge regarding eye donation among the adults. The effectiveness of QR code on knowledge regarding eye donation was performed by using paired t- test and which shows the QR code was effective method to enhance the poor knowledge level to the average level of knowledge on among the

adults. And the association between the knowledge level and selected demographic variables, only the source of information regarding eye donation was found as associated and other selected demographic variables (age in years, gender, educational status) were found as not associated.

NURSING IMPLICATION

NURSING PRACTICE: Nurses are the backbone for the health delivery system. QR code can be used in Nursing Profession as a teaching assistant which can be used in community areas, schools, colleges, industrial areas, and in hospitals.

NURSING EDUCATION

The aim of nursing education is to develop the skills and knowledge among the nurses and also to make clearer professional status through tacit knowledge. The Nursing tutor, student nurses and even staff nurses can use the QR Code while educating and providing health teaching to the patients.

NURSING RESEARCH

This study can be utilized as a new health teaching methods.

RECOMMENDATIONS

- A study can be conducted on a large sample which may help to draw more definite conclusion.
- A study can be conducted by comparing other alternatives method with QR code
- A study can be conducted to assess the effectiveness of QR code on other health aspects

CONFLICT OF INTEREST

The authors certify that they have no involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this paper

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REFERENCES

1. Eye donation. Vikaspedia.in. Available from: <https://vikaspedia.in/health/organ-donation/eye-donation>
2. Vashist P, Gupta N, Tandon R, Gupta S, Sreenivas V. Burden of corneal blindness in India. Indian J Community Med. 2013; 38(4):198. Available from: <http://dx.doi.org/10.4103/0970-0218.120153>
3. Anitha, Venugopal, Tandon, Radhika, Shah, Sushmita G Radhakrishnan, Naveen, Singh, Sankalp, Murugesan, Vanathi, Patwardhan, Veena, Ravindran, Meenakshi. Corneal blindness and eye banking: Current strategies and best practices. Indian Journal of Ophthalmology 71(9):p 3142-3148, September 2023. | DOI: 10.4103/IJO.IJO_1942_23
4. Eye Bank Association of India

-
- <https://www.ebai.org/understandingdonation.php>
5. Didyala A. Pandemic hit eye donations in Telangana, rest of India. Times of India. 2021. Available from: <https://timesofindia.indiatimes.com/city/hyderabad/pandemic-hit-eye-donations-in-telangana-rest-of-india/articleshow/86153640.cms>
 6. Maharashtra today.co.in. Available from: <https://www.maharashtratoday.co.in/eye-donation-fortnight-gmch-nagpur6/>
 7. Introduction to QR codes . Digital.gov. 2023. Available from: <https://digital.gov/resources/introduction-to-qrcodes>
 8. Brodie K, Madden LL, Rosen CA. Applications of quick response (QR) codes in medical education. J Grad Med Educ . 2020; 12(2):138–40.
 9. Shibaji Gupta, Saikat Bhattacharya, Seshadri Kole, Debjani Guchhait, Sharmistha Sinha Gupta, (2021). Awareness Regarding Eye Donation and Effects of COVID-19 on Its Perception: A Community-Based Cross-Sectional Study from India. Experimental and Clinical Transplantation , 7, 717-722
 10. Hussen MS, Belete GT. Knowledge and Attitude toward Eye Donation among Adults, Northwest Ethiopia: A Community-based, Cross-sectional Study. Middle East Afr J Ophthalmol. 2018 Jul-Dec;25(3-4):126-130.
 11. Narendran V, Padmavathi S, Sangeetha S, Karthik N. Knowledge, awareness and attitude of eye donation among non-clinical staff of a tertiary eye hospital in South India. Indian J Ophthalmol. 2022 Oct;70(10):3490-3495
 12. Knowledge and attitude regarding Eye Donation among adults: An Urban and Rural comparison.” Advance Research Journal of Multi-Disciplinary Discoveries I Vol. 21.0 I Issue – I ISSN NO : 2456-1045
 13. Tanishka Bhasin, Veena D at all, “the Knowledge Regarding Occupational Hazards Among Industrial Workers “Tuijin Jishu/Journal of Propulsion Technology ISSN: 1001-4055 Vol.No.2(2024).https://www.researchgate.net/publication/380976693_The_Knowledge_Regarding_Occupational_Hazards_Among_Industrial_Workers.
 14. Shivani Enugomla, Vaishnavi Kumbhar Veena D. et all, “A Comparative study to assess the knowledge regarding Dental Status among the children in selected rural and urban areas International Journal of Early Childhood Special Education (INT-JECSE) DOI: 10.9756/INT- JECSE/V14I1.337 ISSN: 1308-5581 Vol 14, Issue 01 2022 PP:2833-2837.
 15. Knowledge and attitude regarding Eye Donation among adults: An Urban and Rural comparison.” Advance Research Journal of Multi-Disciplinary Discoveries I Vol. 21.0 I Issue–I ISSN NO : 2456-1045.

-
16. Ms. Manasi Ghadge¹, Dr. Veena D. Sakhardande , Effectiveness of information booklet on knowledge regarding shifting of critical patient among ambulance health care team members, *European Chemical Bulletin* . 2023,12(12), 1168-1176
 17. Ms. Priya Koli, Ms. Anand Shaily Bikai, A study to assess the effectiveness of ROM On balance and gait in neurological patients during rehabilitation, *Latin American journal of Pharmacy*, 42 (6): (2023).
 18. Anand Shaily Bikai, Akshita Juneja et all. An exploratory study to assess the Pros and Cons of Social networking in academic performance among students. *Anvesak* ISSN 0378- 4568.
 19. Pooja Takawale, Anand Shaily Bikai, , To assess the effectiveness of information booklet on Knowledge regarding selected gastrointestinal disorders among older adults. *Drug and cell Therapies in hematology* (ISSN: 2281-4876), volume 10 Issue 1 (2021)
 20. Ms. Anand Shaily Bikai, Aditya Uttam more et all. A study to assess the impact of video games on eating habits among adolescents. *ISSN Online: 2394-5869 IJAR* 2020;6(11):417-419
 21. Ms. Anand Shaily Bikai, Dr, Veena Sakhardande. An exploratory study to assess environment and job satisfaction among nurses in selected hospitals. *Vol27(3s)* (November 2024);5841-5847.