MAK HILL Publications Research Journal of Medical Sciences

Research Article
doi: 10.59218/makrjms.2024.3.209.212

OPEN ACCESS

Key Words
Fundus, pseudophakic eye, ophthalmologis, refractive error

Corresponding Author
Mittal Kuchhadiya,
Department of Ophthalmology, GMERS Medical College, Gandhinagar, Gujarat, India
odedara.chirag@gmail.com

Author Designation
[1]Associate Professor
[2]Assistant Professor
[3]Ophthalmic Surgeon
[4]Resident

Received: 22 December 2023
Accepted: 22 January 2024
Published: 23 January 2024

Citation: Shilpa Bhatt, Mittal Kuchhadiya, Chirag Odedara and Surili Vyas, 2024. Comprehensive Analysis of Cataract Surgeries in an Urban Area of Gandhinagar, Gujarat. Res. J. Med. Sci., 18: 209-212, doi: 10.59218/makrjms.2024.3.209.212

Comprehensive Analysis of Cataract Surgeries in an Urban Area of Gandhinagar, Gujarat

[1]Shilpa Bhatt, [2]Mittal Kuchhadiya, [3]Chirag Odedara and [4]Surili Vyas

[1,2,4]Department of Ophthalmology, GMERS Medical College, Gandhinagar, Gujarat, India
[3]Civil Hospital, Mehsana, Gujarat, India

ABSTRACT

This scienti c paper presents an in-depth examination of the prevalence and distribution of pseudophakic eye surgeries in the urban area of Gandhinagar, Gujarat. The survey, encompassing 6226 individuals, was conducted through a comprehensive house-to-house survey by trained optometrists in a de ned area. The survey included visual acuity assessment, refractive error evaluation, basic eye examination, and fundus examination by an ophthalmologist if required. This paper emphasizes the critical contributions of GMERS Government Medical College and the government's policy of subsidising NGOs for free cataract surgeries in addressing preventable blindness. Additionally, it highlights that no signi cant differences were found in the outcomes of cataract surgeries among the various operating centers. Of the 349 pseudophakic eyes identi ed, 147 surgeries were conducted in private hospitals with full payment, highlighting a preference for private healthcare facilities. Six surgeries were performed by NGOs with partial payment, while the remaining surgeries were provided free of cost. Notably, 66% of free surgeries occurred at GMERS Government Medical College, Gandhinagar, underscoring its signi cant contribution to accessible and affordable eye care. The rest of the free surgeries were distributed among three neighboring NGOs. Our study, with its focus on Gandhinagar, contributes valuable data to the broader epidemiological understanding of pseudophakic eye surgeries. Further collaborative research, considering regional variations and demographic factors, is warranted to refine strategies and optimise the distribution of eye care services.

INTRODUCTION

Preventable blindness remains a signi cant public health concern, necessitating a comprehensive understanding of the landscape of eye surgeries. Cataract remains the leading cause of blindness in India[1-4].The main emphasis of the National Program for Control of Blindness (NPCB) in India was on cataract blindness control[5]. As a result the number of cataract surgeries performed increased from 1.2 million/year in 1992 to 3.86 million/year in the year 2003[6]. In the "Vision 2020: The Right to Sight" initiative the target was to perform 21.1 million cataract surgeries during 2002-07 with 80% intraocular lens implantation[7]. Even though the cataract surgical targets are met, poor outcomes of cataract surgery is a major problem in developing countries[8].

In India the "camp based surgeries" gave way to 'hospital based surgeries' which resulted in better outcomes after cataract surgery, over time[9]. In India over 6.3 million cataract surgeries were performed during 2013-2014[10]. Being the most commonly performed surgical procedure that impacts blindness prevention strategies, several researchers have highlighted the importance of monitoring cataract outcomes. India, owing to the large size of the country, with huge regional variations in terms of coverage and outcomes, regional surveys are required for local planning of eye care services[11-14].

This study aims to analyze the prevalence and distribution of pseudophakic eye surgeries in the urban area of Gandhinagar, shedding light on the role of key healthcare providers, particularly GMERS Government Medical College and the impact of government policies in subsidizing NGOs.

MATERIAL AND METHODS

A comprehensive house-to-house survey was conducted by trained optometrists in a de ned area, covering 6226 individuals, including children, in the urban area of Gandhinagar. Ethical approval was taken from the institutional ethical committee and written informed consent was taken from all the participants. All subjects underwent a complete ophthalmic examination at the base hospital. The survey included visual acuity assessment, refractive error evaluation, basic eye examination and fundus examination by an ophthalmologist if required. Out of the entire population, 194 individuals were identi ed to have undergone cataract surgery, with 39 having surgery in a single eye and 155 having undergone bilateral cataract surgery.

Statistical Analysis: The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2007) and then exported to data editor page of SPSS version 15 (SPSS Inc., Chicago, Illinois, USA). Quantitative variables were described as means and standard deviations or median and interquartile range based on their distribution. Qualitative variables were presented as count and percentages. For all tests, confidence level and level of significance were set at 95-5% respectively. Notably, during examination, no signi cant differences were found in the outcomes of cataract surgeries among the various operating centers.

RESULTS

Of the 349 pseudophakic eyes identi ed, 147 surgeries were conducted in private hospitals with full payment, highlighting a preference for private healthcare facilities. Six surgeries were performed by NGOs with partial payment, while the remaining surgeries were provided free of cost. Notably, 66% of free surgeries occurred at GMERS Government Medical College, Gandhinagar, underscoring its signi cant contribution to accessible and affordable eye care. The rest of the free surgeries were distributed among three neighboring NGOs.

Of the entire population surveyed, 194 individuals were identi ed to have undergone cataract surgery (3.11% of the total population surveyed, 9.4% of the population aged 50 or above), with 39 individuals having surgery in a single eye and 155 individuals having undergone bilateral pseudophakia. In a related study conducted in the Tirunelveli district of south India, (1) cluster sampling was employed to randomly select a cross-sectional sample of people aged 50 or older. In this study, the prevalence of cataract surgery was reported to be 11.8%, emphasizing the regional variability in cataract surgery rates within the country. Similarly, a population-based eye survey conducted in a rural district of Rajasthan in 2001 reported a prevalence of cataract surgery at 12.8% among older adults (2). These variations underscore the complex interplay of demographic, socioeconomic and healthcare infrastructure factors in uencing cataract surgery rates in different regions.

In a study carried out in rural Karkala taluk in Udupi district of Karnataka, South India, during January to October 2002, a house-to-house survey was conducted in 15 villages selected by cluster sampling. (3) A total of 1505 people aged 50 years and above were tested, revealing that 51.2% of cataract surgeries were carried out in private hospitals and 33.3% in voluntary/charitable hospitals among the 109 operated eyes. In contrast, the Andhra Pradesh Eye Disease Study, conducted in Hyderabad, southern India, included 2522 individuals, with a speci c focus on those 30 years of age or older (4). After adjusting for age and sex distribution the study reported a cataract surgery rate of 14.6% in individuals aged 50 or older. This disparity in cataract surgery rates between the studies

could be attributed to various factors, including demographic differences, socioeconomic factors, and variations in healthcare infrastructure and accessibility. Notably, our study did not nd signi cant differences in the outcomes of cataract surgeries among the various operating centers, aligning with the broader goal of ensuring consistent and high-quality eye care across different healthcare providers.

The prevalence and distribution of pseudophakic eyes observed in our study underscore the importance of tailored healthcare strategies to address the speci c needs of the urban population in Gandhinagar. The dominance of private hospitals in fully paid surgeries suggests a potential reliance on the private sector for these services, while the substantial contribution of GMERS Government Medical College in providing free surgeries highlights the role of public institutions in ensuring accessibility and affordability.

DISCUSSIONS

The ndings of our study, conducted as part of the population-based cross-sectional epidemiologic Andhra Pradesh Eye Disease Study, contribute to the broader understanding of pseudophakic eye surgeries in the urban area of Gandhinagar. A direct comparison with the Andhra Pradesh Eye Disease Study provides valuable insights into the regional variations in cataract surgery rates and distribution[15]. In our study, encompassing 6226 individuals in the urban area of Gandhinagar, we observed 194 individuals having either unilateral or bilateral pseudophakia. A total of 349 cataract surgeries were performed. Of these, 147 surgeries were conducted in private hospitals with full payment, and six surgeries were performed by NGOs with partial payment. The remaining 196 surgeries were provided free of cost, with 66% of free surgeries conducted at GMERS Government Medical College, Gandhinagar.

Out of the entire population surveyed, 194 individuals were identi ed to have undergone cataract surgery, constituting 3.11% of the total population surveyed and 9.4% of the population aged 50 or above. In a related study conducted in the Tirunelveli district of south India, cluster sampling was employed to randomly select a cross-sectional sample of people aged 50 or older. In this study, the prevalence of cataract surgery was reported to be 11.8%, emphasising the regional variability in cataract surgery rates within the country. Our findings reemphasize those reported by the other studies, reiterating the need for appropriate refraction and spectacle prescription following cataract surgery[5,9]. Poor outcomes due to uncorrected refraction will remain a major cause for poor visual outcome after cataract surgery, unless this is addressed.

Small-incision cataract surgical techniques have lower induced astigmatism than conventional extra-capsular cataract extraction and are becoming increasingly popular[16]. With increased penetration of these surgical techniques, it is possible, that the number of those with visual impairment due to uncorrected refractive error will decline. The surgical technique and choice of IOL inserted should be tailored to individual patient parameters and refractive needs (as determined from a good history, a comprehensive eye examination and appropriate IOL power measurements) and should aim for near emmetropia postoperatively in the majority of cases. Similarly, a population-based eye survey conducted in a rural district of Rajasthan in 2001 reported a prevalence of cataract surgery at 12.8% among older adults. These variations underscore the complex interplay of demographic, socioeconomic, and healthcare infrastructure factors in uencing cataract surgery rates in different regions[9].

In a study carried out in rural Karkala taluk in Udupi district of Karnataka, South India, during January to October 2002, a house-to-house survey was conducted in 15 villages selected by cluster sampling[15]. Among the 109 operated eyes, 51.2% of operations were carried out in private hospitals and 33.3% in voluntary/charitable hospitals. In contrast, the Andhra Pradesh Eye Disease Study, conducted in Hyderabad, southern India, included 2522 individuals, with a speci c focus on those 30 years of age or older. After adjusting for age and sex distribution, the study reported a cataract surgery rate of 14.6% in individuals aged 50 or older[5]. This disparity in cataract surgery rates between the studies could be attributed to various factors, including demographic differences, socioeconomic factors and variations in healthcare infrastructure and accessibility.

Notably, our study did not nd signi cant differences in the outcomes of cataract surgeries among the various operating centers, aligning with the broader goal of ensuring consistent and high-quality eye care across different healthcare providers. The prevalence and distribution of pseudophakic eyes observed in our study underscore the importance of tailored healthcare strategies to address the speci c needs of the urban population in Gandhinagar. The dominance of private hospitals in fully paid surgeries suggests a potential reliance on the private sector for these services, while the substantial contribution of GMERS Government Medical College in providing free surgeries highlights the role of public institutions in ensuring accessibility and affordability.

In Conclusion, the comparison with the Andhra Pradesh Eye Disease Study the Tirunelveli district study, the Rajasthan eye survey and the rural Karkala

taluk study emphasizes the regional variations in cataract surgery rates and reinforces the need for targeted interventions based on the speci c healthcare landscape of each region. Our study, with its focus on Gandhinagar, contributes valuable data to the broader epidemiological understanding of pseudophakic eye surgeries.

Further collaborative research, considering regional variations and demographic factors, is warranted to re ne strategies and optimise the distribution of eye care services. Comparative studies across diverse populations will facilitate a more comprehensive understanding of the factors in uencing cataract surgery rates and outcomes.

ACKNOWLEDGEMENT

Signi cance of contribution of GMERS Government Medical College Gandhinagar and Government Policies subsidising NGOs for free cataract surgeries.

REFERENCES

1. Khairallah, M., R. Kahloun, R. Bourne, H. Limburg and S.R. Flaxman *et al*., 2015. Number of people blind or visually impaired by cataract worldwide and in world regions, 1990 to 2010. Invest. Opthalmol. Vis. Sci., 56: 6762-6769.
2. Stevens, G.A., R.A. White, S.R. Flaxman, H. Price and J.B. Jonas *et al*., 2013. Global prevalence of vision impairment and blindness. Ophthalmol., 120: 2377-2384.
3. Finger, R.P., D.G. Kupitz, E. Fenwick, B. Balasubramaniam, R.V. Ramani, F.G. Holz and C.E. Gilbert, 2012. The impact of successful cataract surgery on quality of life, household income and social status in south India. Plos one., Vol. 7 .10.1371/journal.pone.0044268
4. Lamoureux, E.L., E. Fenwick, K. Pesudovs and D. Tan, 2011. The impact of cataract surgery on quality of life. Curr. Opin. Ophthalmol., 22: 19-27.
5. Dandona, L., R. Dandona, T.J. Naduvilath, C.A. McCarty and P. Mandal *et al*., 1999. Population-based assessment of the outcome of cataract surgery in an urban population in southern India. Am. J. Ophthalmol., 127: 650-658.
6. Huang, W., G. Huang, D. Wang, Q. Yin, P.J. Foster and M. He, 2011. Outcomes of cataract surgery in urban southern China: The liwan eye study. Invest. Opthalmol. Vis. Sci., 52: 16-20.
7. Kandel, R.P., Y.D. Sapkota, A. Sherchan, M.K. Sharma, J. Aghajanian and K.L. Bassett, 2010. Cataract surgical outcome and predictors of outcome in lumbini zone and chitwan district of Nepal. Ophthalm. Epidemi., 17: 276-281.
8. Khanna, R.C., S.R. Pallerla, S.S. Eeda, B.K. Gudapati and S.D. Cassard *et al*., 2012. Population based outcomes of cataract surgery in three tribal areas of andhra pradesh, India: Risk factors for poor outcomes. Plos. One., Vol. 7. 10.1371/journal.pone.0035701
9. Murthy, G.V.S., L.B. Ellwein, S. Gupta, K. Tanikachalam, M. Ray and V.K. Dada, 2001. A population-based eye survey of older adults in a rural district of rajasthan. Ophthalmol., 108: 686-692.
10. NPCB., 2016. National Programme for Prevention of Blindness, Government of India.
11. Limburg, H.,A. Foster and K. Vaidyanathan, 1999. Monitoring visual outcome of cataract surgery in India. Bull. World. Health. Organ., 77: 455-460.
12. Limburg, H., R. Kumar and D. Bachani, 1996. Monitoring and evaluating cataract intervention in India.. Br. J. Ophthalmol., 80: 951-955.
13. Murthy, G.V.S., S.K. Gupta and D. Talwar, 1996. Assessment of cataract surgery in rural India. visual acuity outcome. Acta. Ophthalmol. Scand., 74: 60-63.
14. Nirmalan, P.K., 2002. A population based eye survey of older adults in tirunelveli district of south India: Blindness, cataract surgery, and visual outcomes. Br. J. Ophthalmol., 86: 505-512.
15. Chandrashekhar, T.S., H.V. Bhat, R.P. Pai and S.K. Nair, 2007. Coverage, utilization and barriers to cataract surgical services in rural south India: Results from a population-based study. Pub. Health., 121: 130-136.
16. George, R., P. Rupauliha, A.V. Sripriya, P.S. Rajesh, P.V. Vahan and S. Praveen, 2005. Comparison of endothelial cell loss and surgically induced astigmatism following conventional extracapsular cataract surgery, manual small-incision surgery and phacoemulsification. Ophtha. Epidem., 12: 293-297.