JRMC Open Access Original Article DOI: 10.37939/jrmc.v29i1.2794

Complications Of Cataract Surgery In Rural Eye Camps And Their Burden On Tertiary Health Care Facility

Piya Muhammad Musammat Rafi[1], Muhammad Rizwan Khan[2], Maria Zubair[3], Majid Hussain[4], Muhammad Muneeb[5], Wajeeha Rasool[6]

1. Assistant Professor, Institute of Ophthalmology and Allied Vision Sciences Multan. 2. Associate. Professor, Faisalabad Medical University and Allied Hospitals. 3.6 Senior Registrar, BBH. 4. Assistant Professor, Nishtar Medical University Hospital Multan. 5. Senior Registrar, Allied Hospital Faisalabad.

Corresponding author: Dr Piya Muhammad Musammat Rafi, drmusammat@gmail.com

Abstract

Objectives: To Document and Elaborate Complications of cataract surgery in rural eye camps and their burden on tertiary health care facility.

Methods: For this noncomparative, descriptive cross-sectional study, data was collected Retrospectively. All patients who presented in the ophthalmology outpatient department(opd), Bahawal Victoria Hospital Bahawalpur and fulfilled the inclusion criteria were included in the study. The strategy of non-probability purposive sampling was adopted.

Results: Data from a total of 200 patients were included in the study who presented in eye opd with severe ocular morbidity after camp eye surgery. Of the total, 91(45.5%) were male and 109 (54.5%) were female patients. Of all the complications; significant refractive errors, (refractive errors that compel the patients to attend eye opd) were in greatest numbers, 56 (28%). Next were the patients with Corneal oedema 50 (25%). 42 (21%) patients present with posterior segment diseases and Endophthalmitis occurred in 39(19.5%). Posterior Capsule rupture was present in 33(16.5%) and IOL dislocation /Lens fragments, each, were present in 27(13.5%). 25(12.5%) patients were Aphakic while 15(7.5%) patients present with Retinal detachment.

Conclusions: There is a need for an improvement in the quality of surgery with a more balanced distribution of services and highly skilled surgeons should operate in eye camps. The standard surgical protocol should be followed for camp surgery. Unethical practices should be strictly discouraged at all levels.

Keywords: Cataract surgery, Healthcare facility, Endophthalmitis, Corneal oedema, Refractive errors, Postoperative Complications.

Review began 14/12/2024
Review ended 29/03/2025
Published 31/03/2025

How to cite this article: Rafi PMM, Khan MR, Zubair M, Hussain M, Muneeb M, Rasool W. Complications Of Cataract Surgery In Rural Eye Camps And Their Burden On Tertiary Health Care Facility. JRMC. 2025 Mar. 29;29(1). https://doi.org/10.37939/jrmc.v29i1.2794

Introduction

For this noncomparative, descriptive cross-sectional study, data was collected Retrospectively. All patients who presented in the ophthalmology outpatient department(opd), Bahawal Victoria Hospital Bahawalpur and fulfilled the inclusion criteria were included in the study. The strategy of non-probability purposive sampling was adopted. Data of 200 patients was collected retrospectively from January 2023 to January 2024. Only Cases were operated on temporarily Cataracts and uncorrected refractive errors are the most common causes of bilateral impaired vision and blindness in Pakistan.[1] Cataracts remained a major cause of blindness (visual acuity worse than 20/400 in the better eye with the best correction) worldwide with an estimated 18 million people being affected.[2] Management of this preventable blinding condition remains a challenge, especially in developing countries. In most countries, Facilities are available at multiple levels to deal with this most important and prevailing cause of worldwide blindness.

Most tertiary care hospitals had a good outcome according to WHO set criteria of outcome after cataract surgery; Good outcome = 6/6-6/18; Borderline= <6/18 - 6/60 and Poor= <6/60.[3,4] However many population-based surveys have found that the majority of eyes have unsatisfactory presenting vision postoperatively, with as many as 50% worse than 6/60 vision.[1]

In Pakistan, Eye-care services are available in urban as well as rural areas and are provided by the government, local and international non-governmental organizations and charitable organizations. We are focusing our attention on a variety of eye camps that operate in the periphery under poor supervision of expert ophthalmologists. Poor socioeconomic status, lack of awareness, lack of accessibility and lack of quality cataract surgery are major hurdles in the visual rehabilitation of age-related cataracts in rural areas.[5] Clinicians usually use clinical indicators and patient reports to measure the outcome of cataract surgery. Poor visual outcomes can be due to patient-related factors and/ or service-related factors.[2] For good visual outcomes a qualified ophthalmologist, a proper sterile environment and standard surgical protocol are extremely necessary.[6]

The objective of this study is to establish and shed light on cataract surgery practices their complications in Pakistan and their burden on tertiary health care facilities. Patients usually present in tertiary health care facilities for further management of these complications putting excessive burden on resources that are already overburdened. This is a need for time to document this high rate of mismanagement occurring in eye camps that are set up in various places in public. This study will elaborate, guide, educate and give awareness to common people and also to the authorities responsible for setting standards for ocular surgery.

Materials And Methods

Set free eye camps were included in the study. All cases with morbid ocular postoperative presentations were examined and documented by a consultant eye surgeon retrospectively. Data was collected after obtaining permission from the ethical committee of Quaid e Azam Medical College, Bahawalpur.

Ocular complications were documented include; Refractive Errors (significant, if they resulted in suboptimal vision), Endophthalmitis, corneal oedema, aphakia, dislocated intraocular lens, posterior capsule ruptures, Retained lens fragments, Retinal detachment, and failure to address Posterior Segment Disease like Diabetic retinopathy (DR), Hypertensive retinopathy (HTR) and Age-related macular degeneration (AMD) preoperatively. Statistical analyses were done by SPSS version 20, and a chi-square test was used and a p-value of 0.05 or less was considered statistically significant. Data was analyzed for Age, gender, frequency and percentage of comorbid. Only data of those patients collected who, on presentation, underwent proper slit lamp examination (both Anterior as well as posterior segment examination) and wherever needed B-Scan Ultrasonography was available for the posterior segment of the eye. Patients aged 35 years to 86 years and above and any gender were included in the study. Patients were divided into six age groups. A strategy to address the core issue and present complaint was adopted. Weightage was given to those complaints that the patient wants to be cured.

Data collected was then analyzed using Statistical Packages for Social Sciences (SPSS) version 26.0. Qualitative variables such as sex, ASA class, and different types of post-operative complaints were calculated in terms of frequency and percentage. Quantitative variables such as age, intra-operative hemodynamics, postoperative VAS score, number of episodes of PONV, and time till mobilization were assessed for normality using the Shapiro-Wilk test. Parametric data were described in terms of mean scores, standard deviation and independent t-test. Non-parametric data was described in terms of median, Interquartile range and Mann-Whitney U test. A p-value less than 0.05 was considered to be significant. Confidence interval (CI) was kept at 95%

Results

Data from a total of 200 patients was included in the study who presented in eye opd with severe ocular morbidity after camp eye surgery. Of the total, 91(45.5%) were male and 109 (54.5%) were female patients. 18 (9%) patients were between 35 to 45 years of age. 17 (8.5%) were between 46 to 55 years of age. 30 (15 %) were between 56 to 65 years of age. 62 (31%) were between 66 to 75 years of age, and 15 (7.5 %) were 86 years and above. Table 1 & 2.

Of all the complications; significant refractive errors, (refractive errors that compel the patients to attend eye opd) were in greatest numbers, 56 (28%). Next were the patients with Corneal oedema 50 (25%). 42 (21%) patients present

with posterior segment diseases and Endophthalmitis occurred in 39(19.5%). Posterior Capsule rupture was present in 33(16.5%) and IOL dislocation /Lens fragments, each, were present in 27(13.5%). 25(12.5%) patients were Aphakic while 15(7.5%) patients present with Retinal detachment. Table 3

Table 1: Patients Gender

	Frequency	Percent	Valid Percent	Cumulative Present
Male	91	45.5	45.5	45.5
Female	109	54.5	54.5	100
Total	200	100	100	

Table 2: Age in Years

	Frequency	Percent	Valid Percent	Cumulative Percent
35 to 45	18	9.0	9.0	9.0
46 to 55	17	8.5	8.5	17.5
56 to 65	30	15.0	15.0	32.5
66 to 75	62	31.0	31.0	63.5
76 to 85	58	29.0	29.0	92.5
86 and above	15	7.5	7.5	100.0
Total	200	100.0	100.0	

Table 3. Complications

Present N=200	Frequency	Percentage	Valid Percent	Cumulative per cent
Refractive Errors	56	28.0	28.0	28.0
Endophthalmitis	39	19.5	19.5	19.5
Corneal edema	50	25.0	25.0	25.0
Posterior Capsule rupture	33	16.5	16.5	16.5
IOL Dislocation	27	13.5	13.5	13.5
Lens fragments	27	13.5	13.5	13.5
Aphakia	25	12.5	12.5	12.5
Retinal detachment	15	7.5	7.5	7.5
Posterior segment diseases	42	21.0	21.0	21.0

Age-related correlation for postop complications shows Refractive errors and Posterior segment diseases have some age-related significance (p-less than 0.05), while other complications have no strong age-related correlation. Occurrence of complications has a weak to moderate relationship with age while Retinal detachment has no relationship with patient age. As age increases, post-op complications in camp-operated eyes also increase. Further Chi-Square test shows there is No statistically significant relationship (p-value less than 0.05) between postop complications and the gender of the patients. Table 4.

Table 4. Age-related correlation for postop complications

Present Age-related correlation N=200	Chi-Square test. Value/pdf/Asymp.sig	Symmetric measure. Phi Cramer's V Value/Approx.sig	Present Gender-related correlation N=200	Chi-Square test. Value/pdf/Asymp.sig	Symmetric measure. Phi Cramer's V Value/Approx.sig
Endophthalmitis	6.58/5/.254	.181/.254		.968/1/.235	-.070/.235
Refractive errors	21.33/5/.001	.327/.001		.023/1/.879	-.011/.879
Corneal edema	5.23/5/.389	.162/.389		.544/1/.461	.052/.461
Posterior capsule rupture	7.86/5/.164	.198/.164		.594/1/.441	-.055/.441
Iol dislocation	2.45/5/.786	.110/.786		.285/1/.593	-.038/.593
Lens fragments	8.12/5/.150	.201/.150		.014/1/.906	-.008/.906
Aphakia	2.909/5/.714	.121/.714		.026/1/.872	-.011/.872
Retinal detachment	.987/5/.964	.070/.964		.198/1/.656	-.031/.656
Posterior segment diseases	12.040/5/.034	.245/.034		.150/1/.699	-.027

Discussion

Cataract is still the leading cause of blindness worldwide, accounting for nearly half of all blindness cases. Among them, 85% of the world's cataract-blind people live in developing countries. For this population, high-quality, affordable and standard surgical facilities are essential.[7] when standard surgical protocol followed and experienced surgeon operate, complications due to cataract surgery are very low. Published data shows that when set guidelines are followed then the risk of postoperative Endophthalmitis varies between 0.07% and 0.1% [(8,9)]. Similarly rate of other complications like corneal oedema (0.03%–5.18%)
retained lens fragments (0.45%–1.70%), IOL dislocation (0.19%–1.10%), posterior capsule opacification, Posterior capsule rupture (0.3%–3.5%), cystoid macular oedema (1.2%–3.5%), retinal detachment (approximately 0.7%) are all low.[8,9]
Mirza et all,[10] documented that the most common postoperative complication was striate keratopathy which was seen in 14.0% of individuals after camp eye surgery. In our study significant patients presented with corneal edema 50(25%). Hassan et all,[11] examined high-volume cataract surgery in Pakistan and found that Uncorrected refractive error, present in 75.5% (68), was the commonest cause of poor functional vision. We also found that a large number of patients present only due to significant refractive errors 56(28%). The scenario is quite elegant when proper surgical practices are adopted even in rural eye camps.[12,13] Postoperative complications are within normal range when the standard protocol is followed in these camps. Good visual outcomes are still possible in these affordable, and easy-to-reach setups.
In our study patients' age range was from 35 years to 86 years and above. This shows that a wider age group attend these eye camps. Females were slightly outnumbered than males, (f=54.5%). Certain factors may lead to poor outcomes of cataract surgery in these settings; patient selection for surgery, and not properly evaluating ocular comorbidity preoperative. Per operative mishandling of complications due to lack of expertise of operating surgeon and not having proper follow-up.[14] When these factors are rectified through proper planning and following recommended guidelines, the complication rate is acceptable. Aaronson et all,[15] in their study of rural eye camps surgery observe that with an experienced ophthalmologist and an adequate theatre environment, the results of surgery are indeed very promising. Sengillo JD et all,[16] further emphasized prophylaxis, as this is essential for risk reduction. Strategies like this always prove to be very effective in reducing the risk of complications.
World Health Organization recommend people-centred eye care. Including universal health coverage, high-quality eye care, monitoring and evaluate their implementation, awareness and people engagement in integrated services. The vision loss burden can be lessened by implementing the strategies mentioned above.[17,18] It is already established that if standard surgical protocols are followed, good surgical outcomes can be achieved in camps. The ageing population also has posterior segment disease that can be addressed preoperatively.[19,20] In my retrospective study, 21% of patients had posterior segment diseases (diabetic retinopathy, hypertensive retinopathy, age-related macular degeneration). Poorly planned eye camps result in complications that result in a poor visual outcome that is a burden on the person, society and tertiary care hospital.
The findings in our study need to be interpreted very carefully because this is retrospective data from patients who were operated on in peripheral eye camps and presented in Bahawal Victoria Hospital Bahawalpur (a tertiary health care facility) for the management of their ocular conditions. For a more authentic/logical conclusion and direct comparison, a large comparative study is required. No doubt this study is an eye-opener and sheds light on practices of eye camp surgery in our region. This shows the burden they put on tertiary care facilities. There must be some laws and regulations to establish eye camp.

Conclusions

Cataract is still a major cause of blindness in Pakistan. Poor visual outcomes may be caused by surgical complications, Poor socioeconomic status, lack of awareness, absence of technological support, and lack of follow-up. There is a need for surgeons and supporting staff to audit their performance regularly to meet the expectations of patients. The standard surgical protocol should be followed that would build a good basis for future improvement in the visual outcome of cataract surgery. There is a need for an improvement in the quality of surgery with a more balanced distribution of services and highly skilled surgeons should operate in eye camps. All institutions and departments that oversee health services should take responsibility and these Unethical practices should be strictly discouraged at all levels.

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Institutional Review Board Approval
2478/DME/QAMC Bahawalpur
19-07-24
Quaid-E-Azam Medical College, Bahawalpur

Conflicts of Interest: None
Financial Support: None to report
Potential Competing Interests: None to report

Contributions:
P.M.M.R, M.R.K, M.Z, W.R, - Conception of study
- Experimentation/Study Conduction
P.M.M.R, M.H, M.M, -Analysis/Interpretation/Discussion
M.R.K, M.M, W.R,- Manuscript Writing
P.M.M.R, M.Z, M.H, - Critical Review

All authors approved the final version to be published & agreed to be accountable for all aspects of the work.