



THE UNIVERSITY OF NAIROBI
AUDIT OF VISUAL OUTCOME OF CATARACT SURGERY IN
GARISSA GENERAL HOSPITAL


BY
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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT FOR THE
AWARD OF DEGREE OF MASTER OF MEDICINE IN OPHTHALMOLOGY
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2022

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I hereby declare that this dissertation proposal is my original work and has not been presented as a dissertation at any other University.

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DEDICATION

I dedicate this study to my parents who have been there each step in this long journey.

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First of all I would like to express thanks to almighty God for the accomplishment of this dissertation.

I am sincerely grateful to my supervisors Dr Mukiri Mukuria, Prof.Jefitha Karimurio, Dr Amal Ahmed for supporting me with their valuable insights.

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LIST OF ABBREVIATIONS

ECCE	-	Extracapsular cataract extraction
ICCE	-	Intracapsular cataract extraction
FLACS	-	Femto second laser assisted cataract surgery
SICS	-	Small-incision cataract surgery
PE	-	Phacoemulsification
VA	-	Visual acuity
WHO	-	World health organization
RAAB	-	Rapid Assessment of Avoidable Blindness

ABSTRACT

STUDY BACKGROUND: Cataract is the opacification of the natural lens that focusses light on to the retina. It is the leading cause of blindness world-wide. Cataract blindness is reversible by surgery that involves extraction of the opacified lens. Although high volumes of surgeries are being performed in developing areas, there are concerns about the quality of outcome. (1) WHO recommend that 80% or more of operated eyes must have good outcome ($\geq 6/18$ vision) (1). However according to Lancet global health commission on global eye health WHO recommends an update to the benchmark threshold of effectiveness for a good outcome, which should be a presenting visual acuity of 6/12 or better (2). Regular surgical audit will help to achieve the WHO recommendation.

STUDY OBJECTIVE: To assess the visual outcome of age related cataract surgery in Garissa county general hospital for the year 2021

STUDY DESIGN: A hospital based retrospective study.

STUDY SITE: Garissa general Hospital in Garissa Township, which is located 370km from Nairobi and is the regional headquarters for North Eastern Kenya.

STUDY POPULATION: Patients who underwent age related cataract surgery at Garissa general hospital in the year 2021

METHODOLOGY: The data was collected using a questionnaire to document patient characteristics, pre- and post-surgery examination findings, surgery details and complications. Descriptive and analytical statistics was applied to analyse the data

RESULTS

All of 144 eyes underwent cataract surgery were blind (VA of $< 3/60$) before surgery. At week one, 3.5% of the patients had good outcome, 59.1% borderline and 37.3% poor outcome. At week four good outcome was 10.6% and 33.6% with poor outcome. Biometry was done on 60.4% of the eyes while 39.6% had no biometry done.

Posterior capsule tear was the main intra-operative complication accounted for 2% of the patients, but among the patients had PC tear, only 0.7 % had vitreous loss. The main cause of poor outcome was found to be refractive error (39%) followed by comorbidity (34.1%) and glaucoma was most significant comorbidity (20.8%).

CONCLUSION

Good visual acuity outcome at week four was below WHO recommendation due to refractive error and comorbidity.

CHAPTER ONE

1.0 Introduction

Cataract is the opacification of the natural lens of the eye that focusses light onto the retina. In view of the causes, cataracts can be classified as age related cataracts, paediatric cataracts, and cataracts secondary to other causes. Age-related cataract is the most common type in adults, with the onset between age 45 years and 50 years (3). The main cause of visually significant cataracts is age-related (senile) cataract. The natural lens is formed from ectodermal tissue and contains epithelial cells that give rise to lens fibres throughout life, so with aging the lens becomes more compact and thicker hence loses its optical clarity (4).

Cataract is the leading causes of blindness world-wide. It is currently approximated that 17.01 million human beings are blind from cataract in the world (5). Majority of these cataract blind people reside in poor areas in the developing world (6). Cataract blindness is reversible by surgery that involves extraction of the opacified lens.

Cataract surgery leads to restoration of sight, and subsequently improvement in quality of life. It has been one of the most commonly applied surgical procedures world-wide.

There are several surgical techniques for cataract extraction. These include small incision cataract surgery (SICS), phacoemulsification (PE), extracapsular cataract extraction (ECCE), intracapsular cataract extraction (ICCE) and femto-second laser assisted cataract surgery (FLACS).

ICCE and ECCE surgical techniques produce large incisions so patients need a longer rehabilitation period for healing and visual outcomes are also not comparable to SICS and PE. FLACS requires expertise skills and is costly as compared to other techniques.

SICS with intraocular lens insertion has become the favoured technique of cataract extraction in developing regions and most surgeons have been trained in this technique. SICS has been shown to be faster, less expensive, more appropriate in eyes with mature cataract and less technology dependent hence ideal in low resource areas (7).

Phacoemulsification is the main technique practised in developed areas. PE has been attributed to less post-operative astigmatism due to lack of sutures and smaller size of incision, however it's

difficult to implement in high volume areas in developing countries as it demands costly machinery and consumables. It has been shown to cause more critical adverse effect when used to extract very dense cataracts which are more common in developing countries. SICS is common in the developing regions due to its low cost and comparable effectiveness to the high cost PE (8).

Although high volumes of surgeries are being performed, there are concerns about the quality of outcome (1). With best correction at week 4-6 post cataract surgery, WHO advises that more than 80% of operated eyes must have good visual outcome ($\geq 6/18$ vision) (1). However according to Lancet global health commission on global eye health WHO recommends an update to the benchmark threshold of effectiveness for a good outcome, which should be a presenting visual acuity of 6/12 or better (2). Regular surgical audit will help to achieve the WHO recommendations. Surgical audit is a comparison of a facility's surgical practice against recognized standards which supports improvement in the quality of care delivered to patients. Cataract surgery audits gives update to surgeons on the outcomes of their surgical practice and encourage improvement (9). Therefore it is critical to study and monitor the outcome of cataract surgery. In addition, auditing of the outcome will also determine the contribution of cataract surgery towards the reduction of blindness in Africa. A good way of monitoring clinical outcome is visual acuity auditing.

CHAPTER TWO

2.1 Literature Review

It is currently approximated that 17.01 million human beings are blind from cataract in the world (5). It still remains the leading cause of blindness in middle-income and low-income countries (3). The prevalence in sub-Saharan Africa however remains among the highest worldwide with higher prevalence recorded in women than in men, and mostly among the senile age group. Cost, lack of accessibility, insufficient number of practitioners, and limited resource allocation, remain significant barriers to intervention (10).

Despite the high prevalence of cataract, in many Sub Saharan African countries, the cataract surgical rate was reported by Wei et al in 2016 to be less than 500 surgeries per million population per year (11).

Although high volumes of surgeries are being performed in developing areas in attempt to increase the surgical rate, there are concerns about the quality of outcome (1). Instead of focusing only on access and coverage of cataract surgery WHO advised the importance of monitoring quality by routine assessment of effective cataract surgical coverage which is reflecting about the coverage of the cataract surgery and post-operative visual outcome. Therefore visual acuity assessment has been cited as a biomarker to indicate quality in the context of universal health coverage, and assessment of post-operative VA can provide an indication of the effectiveness of cataract surgery at restoring vision (12). WHO advises that more than 80% of operated eyes must have good outcome ($\geq 6/18$ vision) (1). However according to Lancet global health commission on global eye health WHO recommends an update to the benchmark threshold of effectiveness for a good outcome, which should be a presenting visual acuity of 6/12 or better (2). Regular surgical audit will help to achieve the WHO recommendations.

Surgical audit is a comparison of a facility's surgical practice against recognized standards which supports improvement in the quality of care delivered to patients. Cataract surgery audits gives update to surgeons on the outcomes of their surgical practice and encourage improvement (9).

Cataract surgical services of a facility are described as the total number of cataract removals done per year. Although useful, these statistics have a limited value as it is not only the number of surgeries done that is of significance, but also how the surgery has been beneficial and to what

extent. Cataract surgery must be of high quality to guarantee optimal patient satisfaction. The WHO suggested that poor outcomes (visual acuity (VA) of 6/ 60 or worse) post cataract extraction should affect less than 10% of patients for corrected VA or 20% for uncorrected VA (13).

Various audits have been done in Kenya looking into the outcomes post cataract surgery. A RAAB survey done in Nakuru district-Kenya in 2007 by Mathenge et al showed that surgery quality was of concern because 22% of eyes that had undergone cataract surgery had VA<6/60 with best correction (14). A study done in Kenya, Bangladesh and the Philippines in 2005 to 2007 by Lindfield et al assessing visual outcome after cataract surgery and causes of poor outcome, found 27% of participants had poor outcome with refractive error being the major cause followed by perioperative comorbidities (13). Also this study noted that there is no associations between age, sex, level of education, and poverty or baseline visual acuity with poor outcome (13).

A retrospective survey done in Kenya in 1999 by Yorston et al evaluating the outcome of ECCE and posterior chamber IOL implantation recorded that only 1.5% had poor outcome because of likely better surgical techniques and concluded that, a greater visual outcome should lead to higher demand for cataract surgery, which will finally lower the number of cataract blind people in Africa (15).

D Yorston et al conducted a study in Kenya in 1999 was prospective observational study over 1 year period to determine if prospective monitoring improves outcome of cataract surgery, found that improvement in visual outcome and Monitoring of outcomes appears to be related with a change in surgeons' attitudes, leading to huge emphasis on appropriate case selection, better handling of surgical complications. Also Poor outcome was related with age above 80 years, diabetes, any ocular comorbidity, preoperative bilateral blindness, and intraoperative vitreous loss (6).

A study conducted in 2006 to 2012 in Nigeria by Chibuikwe et al to find out the quality of cataract surgeries, found 66.3% of cases gained good visual outcome and 9.8% with poor outcome, which is below the acceptable WHO standards (9).

Sumathi et al evaluated retrospectively post cataract extraction visual outcome and associated risk factors in rural eye care centers in India in 2015 found 91.7% had a good outcome, then 1.6% had poor visual outcomes. The study demonstrated that standard cataract surgeries can be achieved at rural, therefore allowing rural patients to achieve better vision through cataract extraction (16).

Management of cataract is a main focus in blindness prevention programs in Africa, the visual outcome obtained by the cataract surgery is the main factor used to assess cataract surgery outcome, therefore routine checking of outcome can be a tool to achieve high quality cataract surgical services and to reach the recommended standards set by WHO (17) (18).

CHAPTER THREE

3.1 Study Justification

There is no recent clinical auditing of cataract surgery done over the last 10 years in Garissa General Hospital. Cataract surgery services need to be monitored to determine quality of the services. This necessitates the need for a continuous audit. This study aims at looking at the visual outcome of age-related cataract surgery done in this hospital. Information obtained in this study will also help to advice in policy making towards allocation of resources to enhance access to cataract surgery for low resource communities.

3.2 Research Questions

What are the visual outcomes of age related cataract surgery in Garissa general hospital?
What are the causes of poor outcomes?

3.3 Objectives

3.3.1 Broad Objective

To audit visual outcomes of age related cataract surgery and causes of poor outcomes in Garissa general hospital for the year 2021

3.3.2 Specific Objectives

- A. To determine number of age related cataract surgeries done at Garissa general hospital in the year 2021.
- B. To assess the visual acuity before and (3-6) weeks after age related cataract surgery.
- C. To determine the spectrum and rate of complications related to the age related cataract surgery.
- D. To determine major causes of poor visual outcomes after cataract surgery.

CHAPTER FOUR RESEARCH METHODOLOGY

4.1 Study Design

A retrospective, hospital-based study.

4.2 Study Site

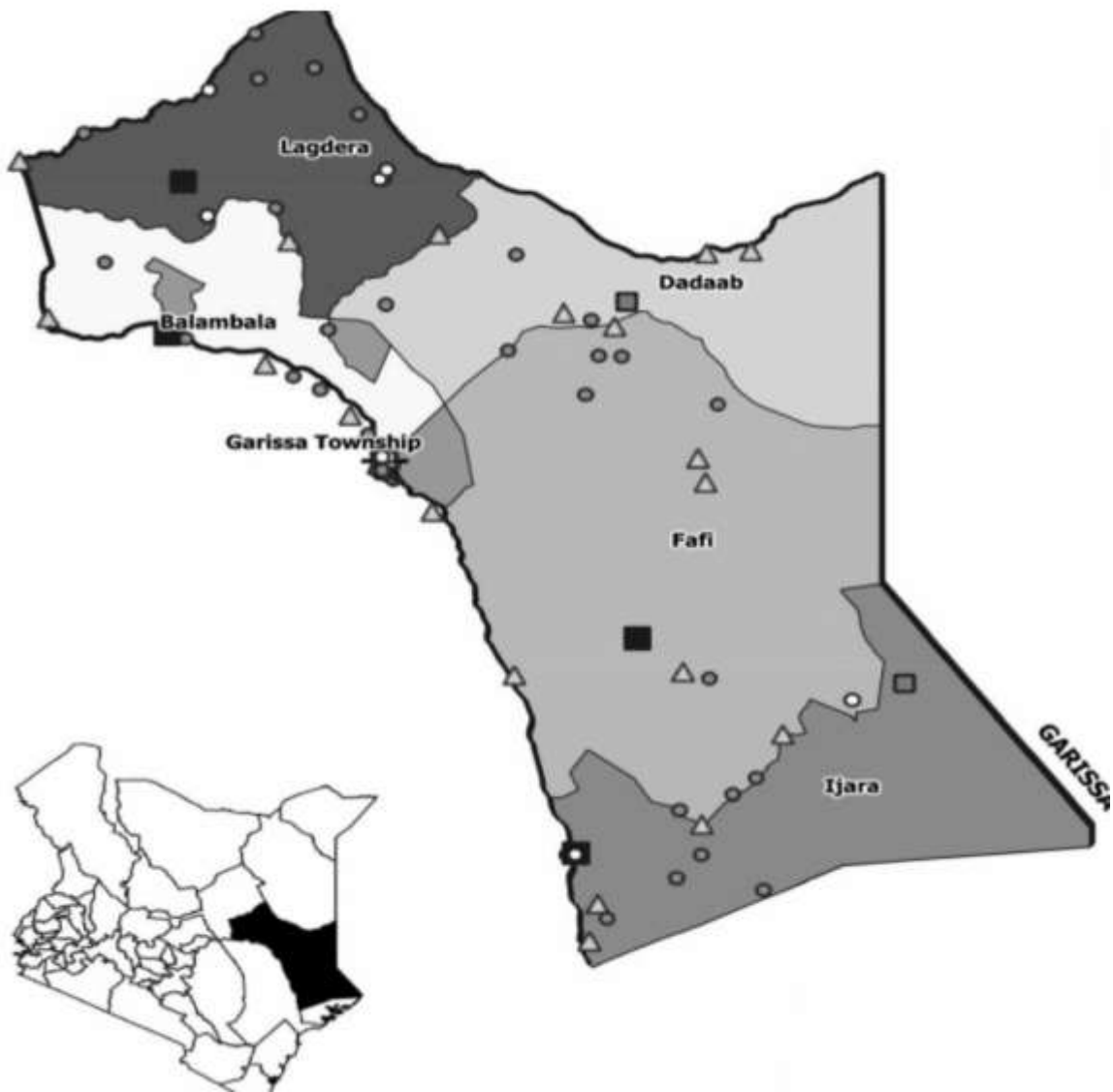


Figure 1: Map showing Garissa county

(Courtesy of Njuguna et al on Incentives among Health Workers in a Remote Kenyan District: Implications for Proposed County Health System 2014.)

Garissa general hospital is in Garissa Township which is located 370km from Nairobi and is the regional headquarters for North Eastern Kenya. Having the only Ophthalmologist in the whole of North Eastern Kenya, it serves patients from the whole region comprising of Garissa, Wajir, and Mandera Counties. Garissa County has a total population of 841,353 people, most of whom live nomadic lives. The eye unit serves approximately 30 patients per day with about 10 patients per week diagnosed with visual impairing cataract. Developing countries allocate little importance to ophthalmic services thus low cataract surgical rate and failure to achieve vision 2020 goal. GCTRH is served by one ophthalmologist and the population is a representation of the North Eastern part of Kenya, besides the patients face various barriers in accessing cataract surgery including lack of availability, equipment, as well as lack of access due to logistical other than financial factors. GCTRH receives outreach programmes as a means of offering services for the community in Garissa,

4.3 Study Population

Records (or files) of Patients who underwent age related cataract surgery at Garissa general hospital in the year 2021.

4.3.1 Inclusion Criteria

- Files of patients who underwent age related cataract surgery in the year 2021.
- Patients aged 50 years and above.

4.3.2 Exclusion Criteria

- Missing data for age and visual acuity.
- Follow up < 3weeks.

4.4 Calculation of Sample Size

Fisher's formula was used to determine the minimum size of the sample for this study.

$$n = \frac{NZ^2P(1-p)}{d^2(N-1) + Z^2p(1-p)}$$

n = required minimum sample size

N= Estimated total cataract surgery done in Garissa county general hospital in year 2021 (600)

Z = confidence level at 95% (standard value of 1.96)

P = estimated proportion. (0.5%)

d = margin of error at 20% of p (0.5) = 0.1

$$n = \frac{600 \times 1.96^2 \times 0.5(1-0.5)}{0.1^2(600-1) + 1.96^2 \times 0.5(1-0.5)}$$

n= 82 eyes

4.5 Sampling Procedure

Records of the cases who met the inclusion criteria was recruited until the required sample size is achieved using systematic sampling (every 5th file). Also if the patient had both eye done cataract surgery in 2021, both eye data was included using 2 questionnaires and the better eye included the audit.

4.6 Data Variables

The variables have been grouped into: independent, and dependent.

The independent variables are defined as follows;

- Age- number of years completed
- Gender-male or female
- Co morbidities- presence of a chronic systemic disease such as diabetes and hypertension

The dependent variable is visual acuity, defined as distant vision (at 6metres) in each eye, and may be influenced by the independent variables.

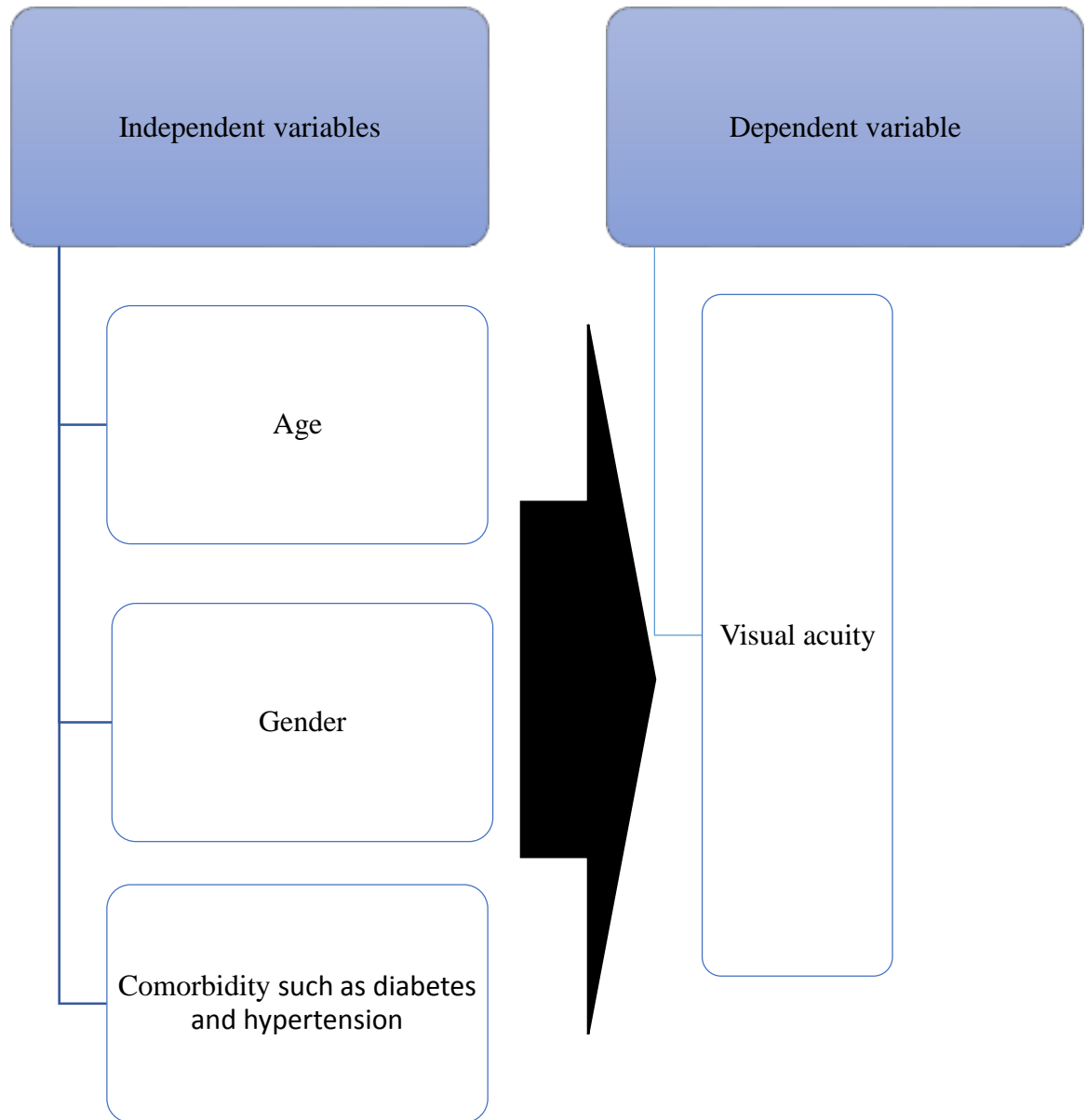


Figure 2: list of data variables

4.7 Study Procedures

4.7.1 Data Collection

Data was collected using a questionnaire to document patients' characteristics, pre- and post-surgery examination findings, surgery details and complications.

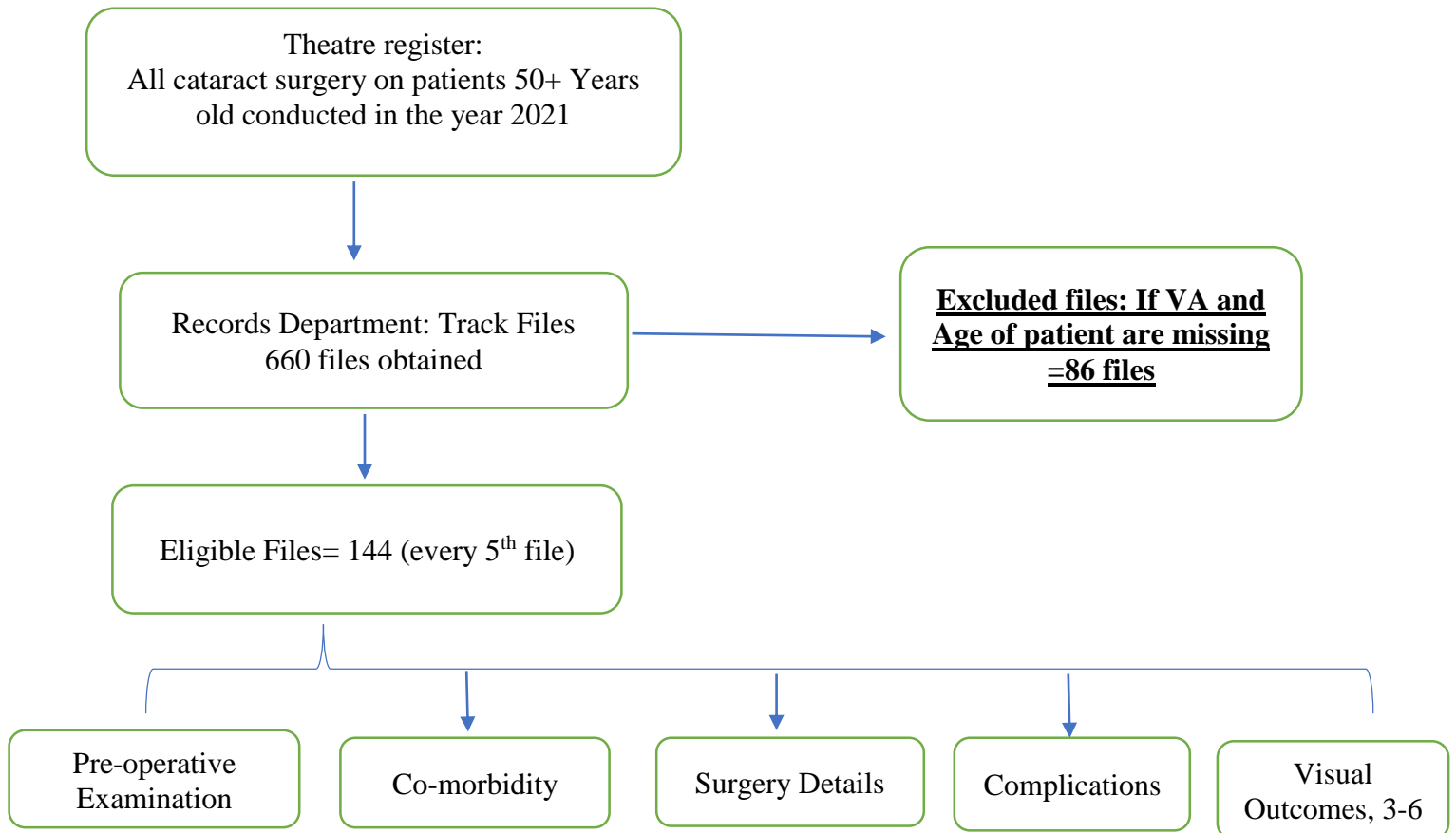


Figure 3: Data Collection

4.8 Data Management

All data was handled with confidentiality and the principal investigator stored the questionnaire paper in a locked cabinet and kept the key at all times. The questionnaires will be destroyed using paper shredder once retention period ends (3years).

4.9 Data Analysis

The data was cleaned and prepared for analysis. The field data was coded, checked for completeness, consistency and range checks. Final cleaned data was analysed via SPSS version 25.0. Descriptive and analytical statistics was applied to analyse the data.

4.10 Ethical Considerations

Permits: Ethical clearance to conduct the study was sought from the Kenyatta National Hospital-University of Nairobi Ethics and Research Committee, Garissa Referral Hospital and Garissa County Research Coordination Office.

Confidentiality

The data that was gathered from this study was kept confidential. Information that was collected during the study will be kept away and only the principal investigator had access to it. A number was used in place of the patient's name. All the information stored in soft copy will not be shared with or given to anyone except ethics and research board and the supervisors. All the information collected was used for this research only.

Possible harm and benefit

The study did no harm to the patient records. Indirect benefits include use of the information gathered by the scientific community and planners for the good of the local communities e.g. in eye care programmes.

4.11 Data Dissemination Plan

The results of this study was presented as a thesis, which shall be made available to University of Nairobi department of Ophthalmology, the university of Nairobi library and Garissa General Hospital library.

Furthermore, the results will be published in scientific journals and the findings shall also be presented in scientific conferences whenever the opportunity arises.

CHAPTER FIVE

5.1 Result

A total of 144 patient's files were selected from the eligible ones and had their details analyzed. 7 patients had bilateral cataract surgery done in the same year 2021, and the eye with better post-operative visual acuity was included in the audit.

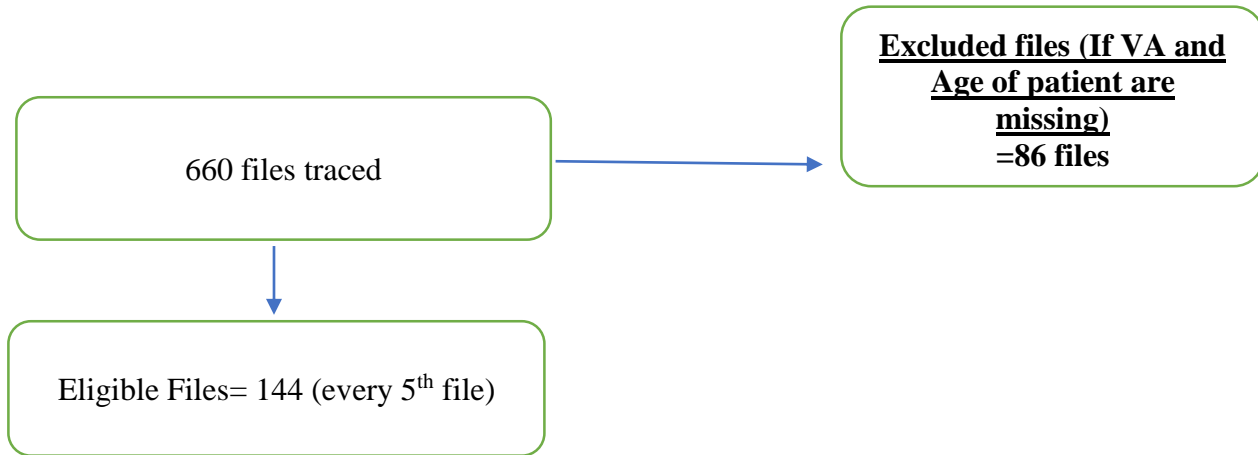


Figure 4: Result

5.2 Demographic data:

Out of the 144 patients, 66 (45.8%) were males and 78 (54.2%) were females. The mean age was 68.5 years (\pm standard deviation of 10.1), with youngest been 50 years and the oldest patient was 94 years

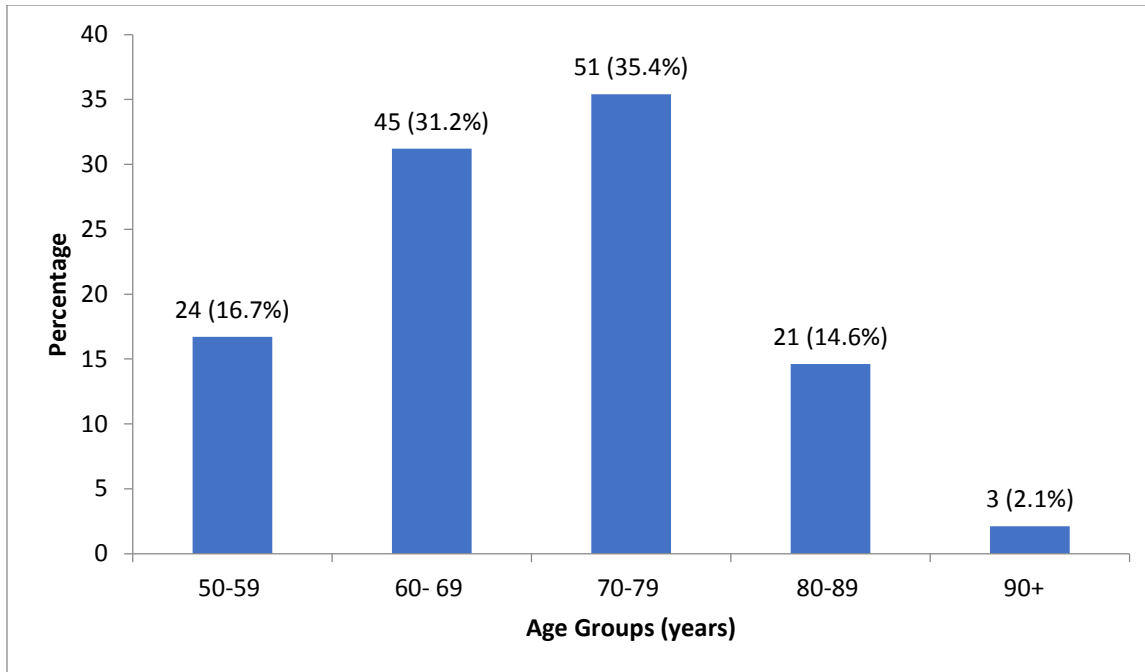


Figure 2 Distribution of the patients by age n=144

There was no statistically significant difference between the mean age of female and male which 68.10 years (standard deviation \pm 9.05, n=78) and 68.89 years (standard deviation \pm 11.08, n=66) respectively.

5.3 Preoperative Evaluation:

All eyes undergoing cataract surgery were blind (100%) pre-operatively (defined as VA $<$ 3/60) (Table1). A total of 83 (57.6%) of the patients had their right eye operated on. Biometry was done in 60.4% as shown in table 1

Presenting VA in all patients according to WHO category, 19% had good VA while majority had poor VA (43%) as shown in table 2

Table 1 preoperative evaluation

Characteristic	Number of eyes (n=144)	Percentage (%)
Eyes to be operated on		
Left Eye	61	42.4
Right Eye	83	57.6
Pre-op visual acuity		
Blind (<3/60)	144	100%
IOP		
Normal (5-20mmHg)	50	34.7
High (>21mmHg)	7	4.9
Not done	87	60.4
VA pinhole		
BCVA	1	0.7
No	140	99.3
Biometry		
Yes	87	60.4
No	57	39.6

Table 2 Presenting visual acuity

VA assessment	Number of patients (n=144 patient)	percentage
Good (6/6 – 6/18)	27	19.0%
Borderline (<6/18 – 6/60)	54	37.5%
Poor (<6/60)	63	<u>43.5%</u>
Total	144	100.0%

5.4 Comorbidities:

Out of the 144 patients, 30 (20.8%) patients presented with glaucoma, while 16 (11.1%) presented with pseudoexfoliation as shown in figure 5

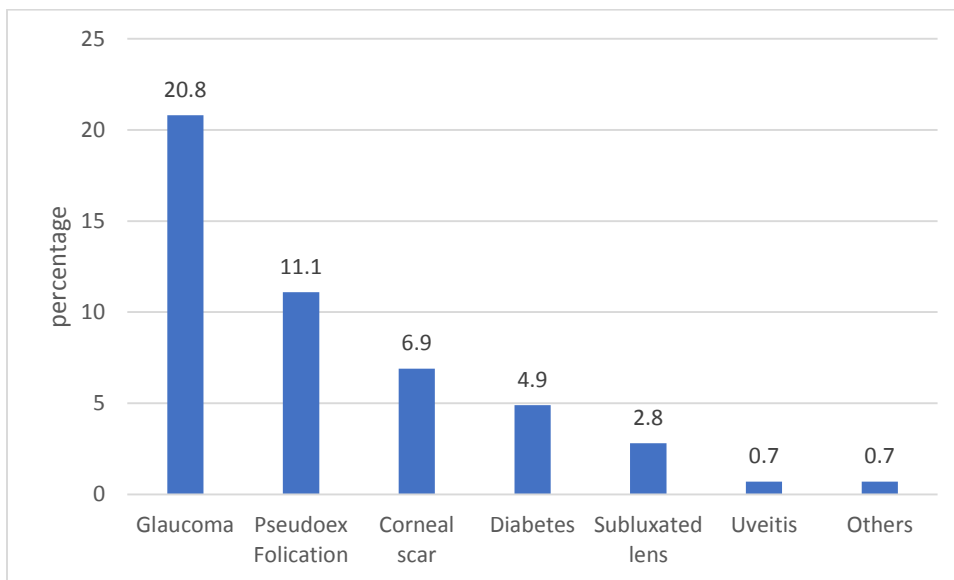


Figure 3: Ocular comorbidity

5.5 Surgical Techniques and settings:

Out of 144 eyes were that were examined, 66 (45.8%) were operated on by cataract surgeon, 42 (29.2%) by ophthalmologist, while 36 (25.0%) by surgeon-in-training as shown in figure 6.

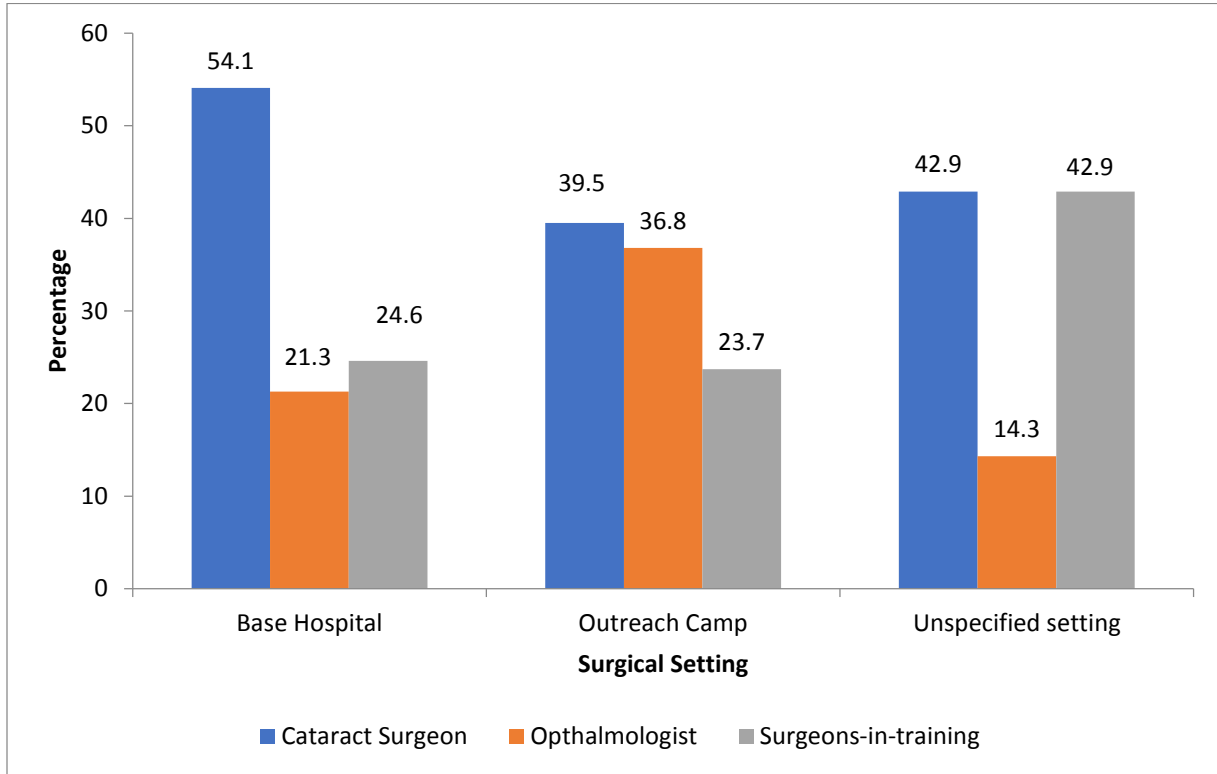


Figure 4: Surgery settings

The most common surgical technique used was SICS (99.3% of the patients). As indicated in table 3 out of 144 patients, 133 patients (92.4%) had posterior chamber intra-ocular lens (PC IOL) inserted and 7 patients (4.9%) not indicated.

Table 3 site of IOL placement

Site of IOL	Number of patients	Percentage (%)
PC IOL	133	92.4
No IOL	3	2.1
Sulcus	1	0.7
Not indicated	7	4.9
Suture		
No	140	97.2
Yes	3	2.1
Not indicated	1	0.7

5.6 Complications:

The significant intraoperative complications was indicated in the patient’s files were PC tear (2%), iris prolapsed (1.4%) and zonular dialysis (1.4%) as presented in figure 7

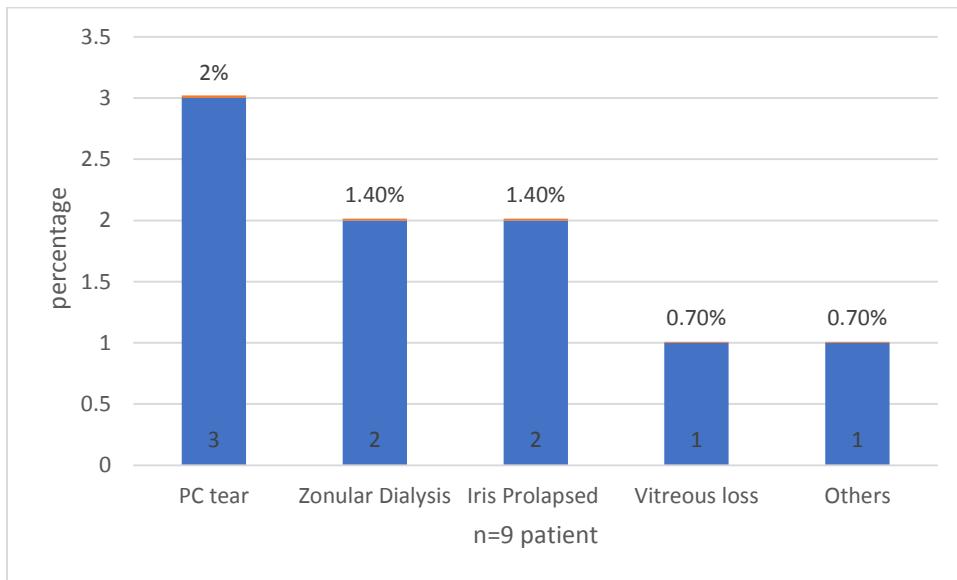


Figure 5: Intra-operative complications

5.7 Visual outcome:

Only 15 patients had documented visual acuity at day 1 post cataract surgery which no patient had good outcome, 5 borderline and 10 poor VA outcome (table3). Good outcome was seen in 3.5% (5) eyes at week 1, 10.6% (13) eyes at week 4-6 and 4.8% (1) eyes in week 10 (table 4).

Table 4 post-operative visual acuity at follow-up

Follow-up	No. of eyes	Visual Acuity Outcome		
		Good (6/6 – 6/12)	Borderline (<6/12 – 6/60)	Poor (<6/60)
Day 1	15	0 (0%)	5 (33.3%)	10 (66.7%)
Week 1	142	5 (3.5%)	84 (59.1%)	53 (37.3%)
Week 4	122	13 (10.6%)	68 (55.7%)	41(33.6%)
Week 10	21	1 (4.8%)	9 (42.8%)	11(52.4%)

5.8 Follow-up Visits:

There was a decline in the number of patients followed-up, Out of 144 patients operated on, 98.6% had come for post-operative review by end of week 1, 84.7% were seen week 4-6 and 14.6% by week 10 (Figure 8).

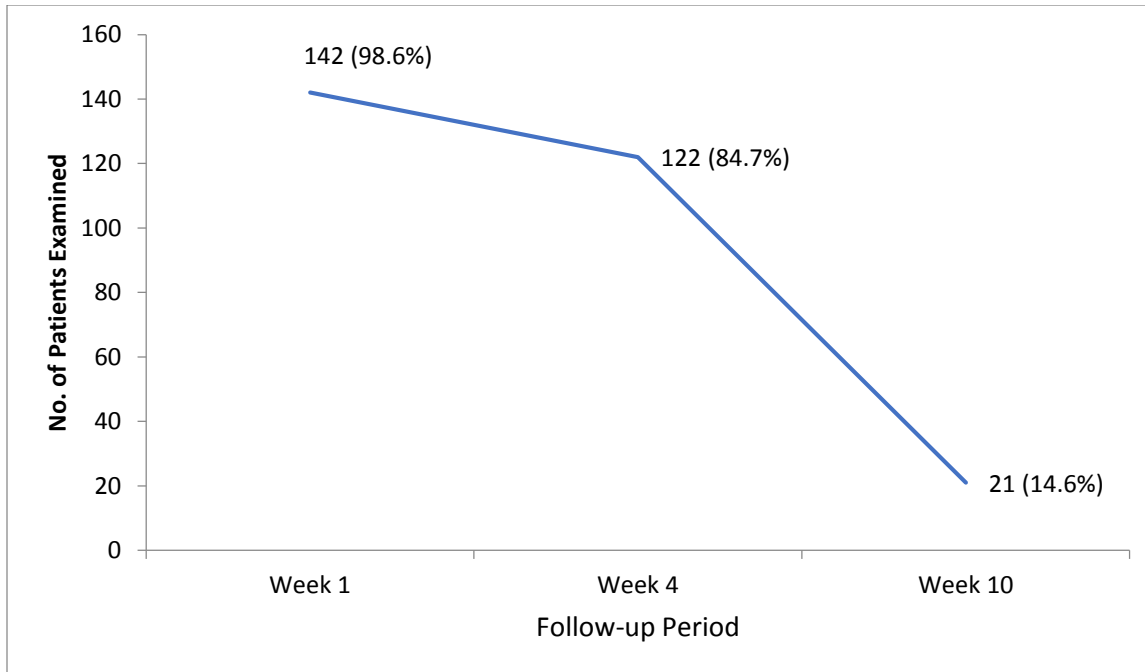


Figure 6 post-operative follow up

5.9 Likely Causes of Poor VA:

Refractive error was the common identified cause of borderline and poor VA reported in 51 (35.4%) of the eyes as was documented in the audit forms of the patients file and many patients were referred for refraction elsewhere but not documented the best corrected vision in the audit form. Comorbidities and surgical related causes were reported in 44 (30.6%) and 7 (4.9%) respectively (figure 9)

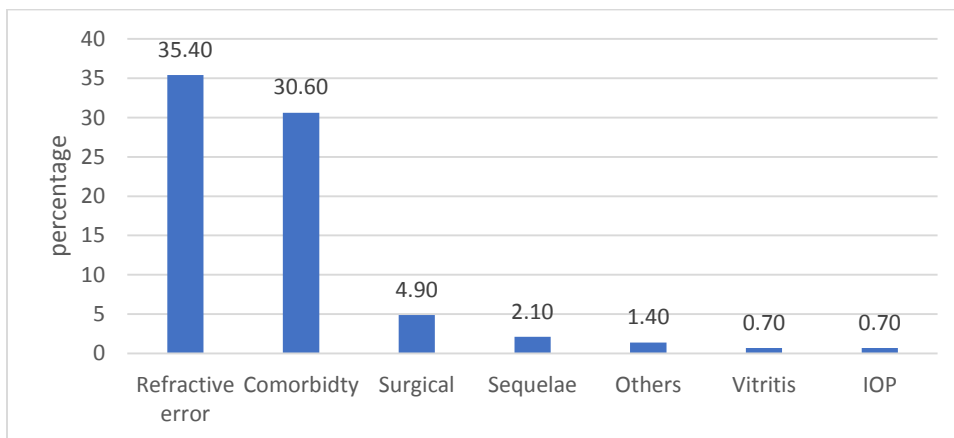


Figure 7 likely causes of poor VA

CHAPTER SIX

6.1 Discussion:

Continuous cataract surgery auditing is one of the requirements to keep good outcomes of cataract surgery services as per WHO recommendations (2). This retrospective study included all age-related cataract surgery done at Garissa General Hospital during January 2021 to December 2021. The study focused on visual outcome and likely cause of poor outcome of cataract surgery. A total of 144 patients' files were recruited for evaluation and questionnaires were filled.

Out of 144 patients, the mean age was 68.5 years with the youngest being 50 years and the oldest patient was 94 years in both males and females, this was comparable to a study done by Nyenze et al in 2008 about the outcome of surgeries for age-related cataracts at Garissa Provincial General Hospital where mean age was 67 years (19). This is common since the natural lens changes with advancing age and incidence of cataract increases (4).

According to gender distribution, 66 (45.8%) were males and 78 (54.2%) were females, this was also comparable to a study done by Nyenze et al in 2008 about the outcome of surgeries for age-related cataracts at Garissa Provincial General Hospital where 45% were male and 55.5% were females (19). Female predominance is opposite what was observed by cataract surgical coverage surveys where gender inequality was present and female had lower coverage (12). This female predominance could be explained by the fact increased awareness of cataract surgery and availability of free surgery.

All eyes had preoperative evaluation which is necessary in identifying any ocular comorbidity which is essential for surgical planning and counseling on visual prognosis.

Majority of the eyes 60.4% had biometry done and 39.6% there was no biometry records documented in the file.

In this study all eyes were blind, had presenting visual acuity of $<3/60$ before the surgery, this is comparable to preoperative VA findings of a study done in Nigeria where $>70\%$ of the eyes were blind ($<3/60$) (9). Marry et al did a study in Nigeria about preoperative VA of cataract patients for 10 years at a tertiary hospital and concluded that preoperative VA remained hand motion over the ten

years due to late presentation of the patients and majority of the patients included in that study were from poor areas and had surgery done by outreach clinics which is similar in this study (20). This is different from study done by Mohamed et al in Malaysia about the change in the profile of the patients who had cataract surgery in 2002 to 2011 and found the preoperative VA of worse than 3/60 decreased from 62.6% to 47.7% due to improved cataract surgical services and increased cataract surgical rate (21)

Post-operative visual outcome was grouped based on WHO categories, first post-operative day majority of the eyes didn't have VA recorded only 15 eyes had VA recorded.

At week one 3.5% had good outcome and 37.3% had poor outcome (i.e. <6/60 vision) while at week 4-6 only 10.6% had good outcome and 33.6% with poor outcome. These values are below WHO standards for visual outcome of cataract surgery. WHO recommended initially that more than 80% of operated eyes should have good outcome ($\geq 6/18$ vision) and less than 5% should have poor outcome (<6/60 vision) at 6 weeks following cataract surgery (1). However, 6/18 is still mild vision impairment. Since the WHO benchmark was set, cataract surgery has developed substantially with widespread adoption of small incision procedures and intraocular lens implantation. For these reasons, an update to the benchmark threshold of effectiveness for a good outcome, which should be a presenting visual acuity of 6/12 or better at 6 week post cataract surgery as was stated in Lancet global health commission on Global Eye Health: vision beyond 2020 (2).

The most common surgical technique carried out was SICS accounting for 99.3% with 92.4% had PC IOL implantation. Intraoperative complications was assessed and PC tear being most significant intraoperative complication (2%), this is also found in a study done in Malawi about outcomes of manual small incision cataract surgery where it was stated PC tear as most common surgical complications (22).

Glaucoma was most common (20.8%) ocular comorbidity found in this study which may adversely affected the final visual outcome which is similar to the findings of a study done by Lindfield et al in Kenya, Philippines and Bangladesh about Outcome of cataract surgery at one year and

concluded that preoperative comorbidity like glaucoma contributed second most common Cause of adverse outcome (13).

Post-operative follow up declined, out of 144 patients 98.6% came for review at week one and 84.7% presented at week four. This is common in developing countries where majority of the patients are elderly and usually are coming from remote areas. Furthermore cataract surgical setup in developing areas commonly is outreach camps which in our study it was the main surgical setting (52.8%). It is also postulated that lost follow up is due to patients satisfied about the vision gained post-surgery and no need to travel back from remote areas, as was observed by Ifeoma et al in Nigeria (23)

Essential cause of poor outcome in this study was said to be refractive error (35.4%) followed by comorbidity (30.6%) which is similar to a study done by Lindfeild et al where it was noted that refractive error (35%) and comorbidity (32%) led the causes of poor outcome (13). Another study done by Justin et al in Malawi showed that refractive error and ocular comorbidity are most common causes of poor outcome (22)

6.2 Conclusions:

- All eyes undergoing surgery were blind VA<3/60 pre-operatively.
- Only 10.6% had good visual outcome and 33.6% had poor visual outcome at week four which is below the WHO guidelines for visual outcome of cataract surgery.
- Glaucoma was the most common ocular comorbidity 20.8%.
- Posterior capsular tear was main intra-operative complication 2% but with 0.7% vitreous loss.
- Likely cause of poor outcome is refractive error 35.4% followed by ocular comorbidity.

6.3 Recommendations:

- Good patient record keeping, improve documentation and filling cataract audit forms.
- Biometry for all patients
- Refraction for all patients should be made as a rule and provide affordable glasses.
- Review of cases with complications to identify cause of high rate of PC tear

- Sensitization and Screening for glaucoma

6.4 Limitations:

Since this was retrospective study missing data and patient lost follow up was main challenge.

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1. DATA COLLECTION TOOL

Demographic data

Date _____

File no. _____

Age (yrs.) _____

Sex Male Female

Preoperative examination

. Eye Operated: Right Eye Left Eye

Visual Acuity: Presenting _____

Pinhole/Best Corrected Visual Acuity ____ NO

Biometry: YES NO

If yes, Intra Ocular Lens POWER _____

Intra Ocular Pressure _____

Co-morbidity:

- Corneal Scar Pseudoexfoliation Subluxated Lens Glaucoma Uveitis Diabetes
 Retinal disease

Surgery :

. Date _____

Surgical setting: a) Base hospital

b) Outreach

Surgeon: Ophthalmologist Surgeon in training

Intra Ocular Lens-Power inserted _____

Intra Ocular Lens-Type: Anterior Chamber Intra Ocular Lens Posterior Chamber

Intra Ocular Lens Sulcus

No Intra Ocular Lens Not indicated

Surgical Technique:

Type: Small Incision Cataract Surgery Extra Capsular Cataract Extraction

Suture: Yes No

Intra-op Complications:

None iris prolapsed Hyphema Posterior Capsule tear Vitreous loss

Zonular Dialysis Others _____

Post-operative examination

	Presenting Visual Acuity	Best Corrected Visual Acuity/ Pin Hole	COMMENTS IF ANY
Day 1			
Week 1-3			
Week 4-6			

REFRACTION (AT 6 WEEKS): RE:

LE:

LIKELY CAUSE OF POOR VA

- Comorbidity/ patient selection

- Surgical complication

- Sequelae e.g. PCO, endophthalmitis, macula edema,

- Refractive error

- Others _retinal detachment, AMD, not indicated_____

2. ETHICAL APPROVAL



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Ref: KNH-ERC/A/117

Dr. Hafsa Mohamed Abdulkadir
Reg. No. H58/10890/2018
Dept. of Ophthalmology
Faculty of Health Sciences
University of Nairobi

Dear Dr. Abdulkadir

RESEARCH PROPOSAL: AUDIT OF VISUAL OUTCOME OF CATARACT SURGERY IN GARISSA GENERAL HOSPITAL (P10/01/2022)

This is to inform you that KNH-UoN ERC has reviewed and approved your above research proposal. Your application approval number is **P10/01/2022**. The approval period is 25th March 2022 – 24th March 2023.

This approval is subject to compliance with the following requirements;

- i. Only approved documents including (informed consents, study instruments, MTA) will be used.
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by KNH-UoN ERC.
- iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to KNH-UoN ERC 72 hours of notification.
- iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH-UoN ERC within 72 hours.
- v. Clearance for export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of an executive summary report within 90 days upon completion of the study to KNH-UoN ERC.

KNH-UoN ERC
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25th March, 2022

Protect to discover

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://research-portal.nacosti.go.ke> and also obtain other clearances needed.

Yours sincerely,



DR. BEATRICE K.M. AMUGUNE
SECRETARY, KNH-UoN ERC

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AUDIT OF VISUAL OUTCOME OF CATARACT SURGERY IN GARISSA GENERAL HOSPITAL

ORIGINALITY REPORT
Hafsa Abdulkadir Mohamed Reg No: H58/10890/2018

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