# IMPACTS OF COMORBIDITIES ON VISUAL ACUITY POST CATARACT SURGERY IN MASHONALAND CENTRAL

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**Abstract**

BACKGROUND: Cataract surgery is a common and effective way to restore your vision, but other health problems that affect the whole body or the eyes can make it less successful.

GOAL: To find out how comorbidities affect the results of cataract surgery on vision.

METHODS: A thorough review of the literature was done to look into the link between comorbidities like diabetes mellitus, hypertension, age-related macular degeneration (AMD), glaucoma, and visual acuity after cataract surgery.

RESULTS: The study found that systemic comorbidities like diabetes and high blood pressure can make visual acuity worse because they affect retinal microcirculation and cause more inflammation. AMD and glaucoma are two ocular comorbidities that have a big effect on visual recovery. AMD affects the macula, and glaucoma can damage the optic nerve in a way that can't be fixed. Most of the patients with comorbidities had some kind of vision problem, and diabetic retinopathy, macular edema, and glaucoma were common problems.

CONCLUSION: Comorbidities have a big effect on how well people can see after cataract surgery. To improve patient care and make the best use of surgical techniques, it is important to understand how comorbidities affect visual outcomes. To lessen the negative effects of comorbidities on visual acuity outcomes, treatment plans should be tailored to each person and close monitoring should be done after surgery.

KEYWORDS: Diabetes, Hypertension, AMD, Glaucoma, Cataract surgery, Visual acuity outcomes, and Comorbidities.

## Student's declaration

I Ngonidzashe Muhwanda, hereby affirm that, except for my supervisor's guidance, this study is a piece of my work submitted in partial fulfilment of the requirements for the Bachelor of Science Honor's Degree in Optometry at the Bindura University of Science Education. American Psychological Association referencing style was employed to acknowledge other people's ideas.

CANDIDATE'S SIGNATURE ……  …….

DATE…….19 / 06 /25……

**Supervisor's declaration**

I **Dr P Munyari**, hereby affirm that this study was conducted under my supervision and have been approved for submission in partial fulfilment of the requirements for the Bachelor of Science Honor's Degree in Optometry at the Bindura University of Science Education.

SIGNATURE ……EM……

DATE……19/06/25……

## Dedication

I dedicate this project to my family, especially my mother and father, for their unwavering support and encouragement. I'm grateful to my brother for his guidance and motivation. Special thanks to my fellow students for their collaboration, feedback throughout this project. Your collective efforts and shared knowledge have enriched my learning experience. Thank you all for being an integral part of my journey.

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## List of Abbreviations

AI – Artificial Intelligence

AMD- Age- Related Macular Degeneration

BUSE- Bindura University of Science Education

CME-Cystoid Macular Edema

DR- Diabetic Retinopathy

DM- Diabetes Mellitus

OCT- Optical Coherence Tomography

IOP- Intra Ocular Pressure

UV- Ultraviolet

VA- Visual Acuity

VEGF- Vascular Endothelial Growth Factors

WHO-World Health Organization

# CHAPTER 1: INTRODUCTION

## 1.1 Background of Study

Cataract removal is one of the most commonly performed surgeries and, in many cases, frontlines an ophthalmologist in sight restoration and enhancement in quality of life for millions of people. The lately developed procedure of placing an artificial intraocular lens (IOL) in place of a cloudy natural lens has attained high success rates. Nevertheless, systemic and ocular comorbidities play a very important role in determining the postoperative visual acuity and patient satisfaction (Zhang et al., 2020). These problems usually delay the rehabilitation and thus require a combined approach to improve the outcomes.

Systematic comorbidities, such as diabetes mellitus, hypertension, and cardiovascular disorders, are commonly encountered among persons going in for cataract surgery, especially in the elderly populations. For instance, diabetic retinopathy (DR) and macular edema (Zhang et al., 2020). From the other side, evidence suggested that hypertension impairs retinal microcirculation, resulting in longer recovery of visual acuity (Lee et al., 2021). Cardiovascular diseases, while not directly increasing ocular morbidity, could pose systemic resistance problems, which further delays the postoperative recovery (Patel et al., 2019).

Whereas ocular comorbidities like glaucoma, age-related macular degeneration (AMD), and uveitis also are directly responsible for affecting the visual outcomes. For instance, limited visual improvements can be seen in patients with glaucoma due to irreversible optic nerve damage (Garcia-Martin et al., 2022). Moreover, AMD could hinder the recovery of vision after cataract surgery because of pre-existing macular damage (Wu et al., 2022). Uveitis adds to the complexity as these patients face increased risk of postoperative inflammation and sequelae, demanding special surgical and postoperative measures (Sharma et al., 2023).

Understanding the effects of these conditions on cataract surgery will be beneficial in improving patient care. A system perspective might consider the postoperative recovery period and visual recovery concerning systemic and ocular conditions so that the ophthalmologists would have the ability to engage in better preoperative counseling, control of expectations, and

customized surgical interventions (Kumar & Singh, 2020). With this, the research is intending to review the relationship between comorbidities and visual recovery capabilities after cataract surgery, applying recent literature to treatment practices that best address the unique needs of this set of patients.

## 1.2 Problem Statement

Cataract surgery constitutes an age-old technique for restoring eyesight; however, final visual results might sometimes end up affected by systemic and ocular comorbidities. Systemic comorbidities such as diabetes mellitus, hypertension, and cardiovascular disorders stand as well alongside ocular conditions such as glaucoma, AMD, and uveitis among patients undergoing cataract surgery. They adversely affect their visual outcome, with some studies showing that the existence of these comorbidities' delays recovery periods, lessens the degree of visual improvement, and adds to the complexity of postoperative care (Zhang et al., 2020; Lee et al., 2021; Garcia Martin et al., 2018).

Despite lagging in surgical procedure and types of intraocular lenses, those who have comorbidities yet get a worse visual outcome, subsequent disappointed expectations, and less enjoyment of life. Therefore, the surgeon has a very tough task in managing these patients both perioperatively in terms of the associated risk and intraoperatively in terms of modifying surgical techniques; however, almost no research has been carried out to attempt to quantify how much these comorbidities affect the outcomes of visual acuity and what must be done in order to improve post-operative care.

This void would require an in-depth appraisal of how systemic and ocular comorbidities affect visual outcomes; the hurdles posed on intraoperative and postoperative management of these patients as well as the possible avenues to whom the care of this patient population could be assigned. As a result, the outcome in the management of cataract would improve along with patient satisfaction.

## 1.2 Research Objectives

1. To assess the impact of systemic comorbidities on visual acuity outcomes post-cataract surgery.

2. To examine the influence of ocular comorbidities on postoperative visual acuity following cataract surgery.
3. To discover issues associated with managing patients with comorbidities following cataract surgery.
4. To research ways for optimizing visual acuity outcomes in patients with comorbidities following cataract surgery

1.3 Research Questions

1. What is the impact of systemic comorbidities, such as diabetes mellitus, hypertension, cardiovascular disorders, on visual acuity outcomes following cataract surgery?
2. How do ocular comorbidities, including glaucoma, age-related macular degeneration (AMD), and uveitis affect postoperative visual acuity after cataract surgery?
3. What obstacles are related to the management of patients with systematic and ocular comorbidities during cataract surgery?
4. What techniques can be implemented to maximize the visual acuity outcomes in individuals with comorbidities having surgery?

# CHAPTER 2: LITERATURE REVIEW

## 2.1 Introduction

Chapter two is devoted to a thorough examination of the studies relating to Knowledge and knowledge of the influence of comorbidities on visual acuity following cataract surgery. The review's emphasis will be on the comorbidities such as Diabetes, Hypertension, Age Related Macular Degeneration, Glaucoma, and other comorbidities. To access the literature, articles from organizations like the World Health Organization (WHO), PubMed, and Google Scholar, among others, were also used. Cataracts remain a primary cause of vision impairment and blindness globally, particularly among the elderly population. Surgical intervention through cataract extraction has shown great success in improving visual acuity (VA) and improved the quality of life for patients. However, the surgical outcomes might be altered by several circumstances, especially comorbidities such as diabetes mellitus, hypertension, and other systemic disorders. Understanding the relationship between these comorbidities and visual results post-surgery is crucial, as it affects both surgical success and overall patient health.

Traditionally, the idea of visual acuity following cataract surgery has been explored exclusively through clinical approaches, focusing on surgical techniques and intraoperative factors. Recent research highlights the relevance of systemic health problems in visual rehabilitation, harmonizing with theories such as the biopsychosocial model of health. This model highlights how biological, psychological, and social factors interact to influence health outcomes, including post-surgical visual acuity. This literature review intends to study the association between comorbidities and visual acuity after cataract surgery, summarizing pertinent publications, providing critical analysis, and proposing a theoretical framework for future research.

## 2.2 Review of Related Studies

Numerous studies have studied the impact of comorbidities on visual outcomes following cataract surgery. Mandal et al. (2022) assessed outcomes in pediatric patients with systemic comorbidities, finding that individuals with illnesses such as congenital heart disease or renal failure displayed inferior visual recovery compared to healthy peers. This underscores the significance of addressing pediatric groups when measuring surgical outcomes.

Natalie Christine focused on the link between intraocular pressure, diabetes mellitus, and hypertension and visual acuity after phacoemulsification surgery. (Natali Christine et al., n.d.) Their findings indicated that patients with diabetes and hypertension had significantly lower

postoperative VA, emphasizing the need for careful preoperative management of these conditions to optimize surgical outcomes.

A study by (Saat et al) identified numerous factors impacting visual improvement after phacoemulsification surgery among Malaysian cataract patients, revealing that individuals with multiple comorbidities were less likely to reach optimal visual acuity post-surgery. (Sa'at et al., 2022) Similarly, (Wu et al. 2024) examined the impact of corneal higher-order aberrations on dynamic visual acuity post-cataract surgery, concluding that such aberrations considerably impede visual results, particularly in individuals with concomitant diseases. (Wang et al., 2023) Kwedar investigated visual recovery timeframes in patients following immediate sequential bilateral cataract surgery, observing that those with pre-existing health issues showed variable recovery patterns. (Kwedar et al., 2022). This study highlights how comorbidities may alter not just final visual outcomes but also the surgical recovery trajectory.

Moreover, Tan conducted a prospective study that indicated a strong association between preoperative health state and postoperative visual acuity, utilizing the National Eye Institute Visual Function Questionnaire. (Tan et al., 2022). This highlighted the subjective quality of life gains with objective visual acuity assessments, emphasizing the complex character of rehabilitation post-cataract surgery.

## 2.3 Critical Analysis

### 2.3.1.1 Diabetes

Diabetes mellitus is a chronic metabolic condition characterized by increased blood glucose levels. It is ubiquitous world, and it provides considerable hazards for ocular consequences which include Diabetic Retinopathy and cataract formation. Diabetes can have a major impact on visual acuity results post-cataract surgery (Kwon et al., 2015). Studies have repeatedly indicated that people with diabetes tend to have lower visual acuity outcomes compared to those without diabetes. (Lee et al., 2022) This literature review analyzes the impact of diabetes on visual acuity results following cataract surgery, highlighting the prevalence of diabetes, the consequences on visual recovery, and therapeutic implications for management. It evolves through numerous stages:

- Mild Non proliferative DR-Microaneurysms and retinal hemorrhages may be present, although vision is normally unaffected.

- Moderate Non proliferative DR-More widespread retinal alterations occur, with increased risk of vision impairment.
- Severe Non proliferative DR-Significant retinal ischemia leads to the creation of new, weak blood vessels.
- Proliferative DR (PDR): The most advanced stage, where new vessels form on the retina and can cause serious vision loss owing to bleeding and scarring.
- The existence of DR greatly affects visual outcomes after cataract surgery, as individuals with advanced stages may experience lower postoperative visual acuity (Klein et al., 2010)

### 2.3.2 Prevalence

According to the International Diabetes Federation, approximately 537 million adults were living with diabetes in 2021, with numbers expected to increase (IDF diabetes Atlas, 2021). Standards of high diabetes prevalence exist among cataract surgery patients. Studies indicate that 20-30% of cataract surgery candidates have diabetes, with the prevalence increasing with age (Rossi et al., 2020). Additionally, diabetes is associated with a greater rate of development of cataracts, especially in those who suffer from prolonged periods of hyperglycemia, thereby increasing the rate of cataract surgery in this group (Kiziltoprak et al., 2019a).

### 2.3.3 Mechanisms underlying the impact of diabetes

Diabetic retinopathy-Diabetes causes diabetic retinopathy, a disease that affects blood vessels in the retina and leads to loss of vision and poor visual acuity outcomes after cataract surgery (Wong et al., 2020).Macular Edema-Diabetes also causes macular edema, diagnosed by fluid accumulation in the macula while perturbing vision and visual acuity outcomes after cataract surgery (Kim et al., 2019). Cataract Formation-Diabetes promotes early-onset cataract formation and can influence visual acuity outcomes after cataract surgery (Liao et al., 2019).Increased Inflammation and Oxidative Stress-If diabetes is uncontrolled, there will be increased inflammation and oxidative stress inside the eyes, along with damage to the retina and option nerve, hence affecting visual acuity outcomes after cataract surgery (Rhee et al., 2018).

### 2.3.4 Factors influencing the impact of Diabetes

Blood sugar control-Poor blood sugar control is said to worsen diabetes effects on visual acuity outcomes after cataract surgery (Kwon et al., 2015).Duration of Diabetes-The duration of diabetes can also compound visual acuity outcomes, with longer duration of diabetes associating with poorer outcomes (Lee et al., 2018).Type of Diabetes-Also, the type of diabetes, such as type 1 or type 2, may impact visual acuity outcomes (Wong et al.,

2020).Presence of other Comorbidities-Other comorbidities such as hypertension or kidney disease may pose an influence on visual acuity outcomes (Kim et al., 2019).

According to the biopsychosocial model, social determinants, such as the availability and access to health care and socioeconomic position, take precedence in the development as well as the treatment of diabetes and its associated ocular outcomes. For instance, a person in a low-income country may have limited access to regular eye care, which, in turn, worsens the probability of developing DR and, eventually, visual outcomes after cataract surgery (Gonzalez et al., 2016).

### 2.3.5 Clinical implications

Preoperative Assessment-Comprehensive preoperative assessment, including retinal evaluation and blood sugar control, must be done to diagnose patients with diabetes (Liao et al., 2019). The primary tests before surgery are comprehensive retinal examinations to establish the presence and severity of DR. In addition, blood sugar levels need control, so do hypertension, to reduce surgical risk and improve visual results (Burgess et al., 2018). Blood Sugar Control- Maintaining blood sugar levels will help keep the negative effects of diabetes on postoperative visual acuity outcomes through cataract surgery at a minimum (Rhee et al., 2018).Postoperative Monitoring-Close monitoring should be done postoperatively to detect any diabetic complications (Kwon et al., 2015).Personalized Treatment Planning-Tailored treatment plans based on an individual's diabetes status and other comorbidities can aid in improving visual acuity outcomes (Lee et al., 2018).

## 2.4Hypertension

### 2.4.1 Mechanism underlying the Impact of Hypertension

Vascular alterations-Hypertension can give rise to vascular changes in the retina and narrowing of retinal arteries and veins, diminishing blood flow and oxygen supply to the retina. Retinal damage-Raises in hypertension levels cause retinal damage, such as hemorrhages, cotton wool spots, and retinal detachment, thus resulting in permanent vision loss. Altered Intraocular Pressure (IOP) Dynamics-High blood pressure may affect IOP dynamics, resulting in its increase with subsequent damage to the optic nerve and vision loss. Inflammation and Oxidative Stress-High blood pressure may increase the inflammation and oxidative stress in the eye, damaging both the retina and the optic nerve.

### 2.4.2 Factors influencing the impact of Hypertension

Blood Pressure Control-Poor blood pressure control magnifies the detrimental effect hypertension can produce on visual acuity outcomes. Duration of Hypertension-Another factor affecting visual acuity outcomes is the duration of hypertension, with the longer the duration of hypertension, the greater the diminishment in outcomes. Kind of Hypertension-Visual acuity outcomes can also be determined by the kind of hypertension, such as systemic hypertension or ocular hypertension.

Presence of Other Comorbidities-Other comorbidities such as diabetes can detrimentally affect visual acuity outcomes in individuals with hypertension.

### 2.4.3 Clinical Implications

Preoperative Assessment-Among the various types of preoperative evaluations, blood pressure measurement and retinopathy examination are critical for diagnosing hypertensive patients.

Blood Pressure Management-Optimal management of blood pressure is necessary for controlling the negative consequences of hypertension on visual acuity outcomes. Postoperative Monitoring-Near monitoring in the postoperative period is important for the early detection and control of any problems arising from hypertension. Personalized Treatment Plans-Personalized treatment plans focusing on specific hypertensive state and comorbidities of patients could help improve visual acuity outcomes.

## 2.5Age Related Macular Degenerated (AMD)

Age-related macular degeneration (AMD) is an eye ailment that blocks out your central vision. It develops when age-related damage happens to the macula, which is the part of the eye that controls sharp, straight-ahead vision. The macula is part of the retina (light-sensitive tissue at the back of the eye). AMD is a common condition-it's one of the leading causes of vision loss in the elderly. AMD does not render a person totally blind, but the loss of central vision may worsen seeing faces, reading, driving, or working on close-up things such as cooking or repairs around the house. In some people, AMD develops slowly, whereas in others, it happens quite fast. If you are in your early stages of AMD, you may never detect any visual loss. So, regular eye tests are essential for discovering AMD. Age-Related Macular Degeneration (AMD) is a famous contributor to vision loss in older people that can severely reduce visual acuity results after cataract surgery (Liao et al., 2019).

Geographic atrophy-AMD produces geographic atrophy and permanently damages the RPE and photoreceptors, which leads to visual loss. (Bakri et al., 2023) Choroidal

neovascularization-AMD also produces choroidal neovascularization that leads to leakage of fluids and blood into the retina, therefore also causing visual loss. (Yeo et al., 2019) Retinal pigment epithelium (RPE) Dysfunction-AMD produces dysfunction in the RPE, thereby causing a reduction in photoreceptor function with resulting visual loss. (Somasundaran et al., 2020)

### 2.5.1 Factors influencing impact of AMD

• Severity of AMD-The severity of AMD can effect visual acuity outcomes, with more severe disease associated with poorer outcomes. (Loughman & Sabour-Pickett, 2015)

• Type of AMD-The type of AMD, such as dry or wet AMD, can also effect visual acuity outcomes (Wong et al., 2020). AMD is classified into two kinds

1. Dry AMD-Characterized by the shrinking of the macula, resulting to gradual visual loss. It is more frequent and accounts for around 90% of AMD cases.
2. Wet AMD-Involves the formation of aberrant blood vessels under the retina, leading to fast vision loss. This kind is less common but more severe. Both kinds of AMD can considerably compromise visual acuity post-surgery, with wet AMD providing a greater immediate risk for vision impairment. (Marchesi et al., 2024)

• Existence of Other Comorbidities-The existence of other comorbidities, such as diabetes or hypertension, can adversely impair visual acuity outcomes. (Nowakowska et al., 2019)

### 2.5.2 Clinical implications

Preoperative Assessment-The preoperative assessment should be comprehensive enough, including retinal evaluation, to rightly identify any patient with AMD. (Zambouri A, 2007) Surgical Planning-The planning of surgery shall consider the prevalence and severity of AMD, along with the concomitant comorbid state. (Trusty et al., 2018) Postoperative Monitoring-Intensive postoperative monitoring is all the more paramount towards recognition and management of any complications arising out of AMD. (Javed et al., 2023)

### 2.5.3 Conclusion

In conclusion, it can be seen that AMD plays a considerable role in determining the result of visual acuity after cataract surgery. The understanding of the factors and mechanisms underlying the impact of AMD on the results and the factors that modify visual results, are important in achieving optimum care for patients. In order to mitigate any potential negative

effect of AMD on the visual acuity outcome, a comprehensive preoperative assessment, surgical planning, and postoperative monitoring should be ensured.

## 2.6 Glaucoma

Post-cataract surgery-related glaucoma can indeed affect visual acuity. Different studies put forth findings in support of the presence of glaucoma impacting visual acuity as an adverse prognostic factor in comparison with the case without glaucoma. (Dhawan et al., 2019)

### 2.6.1 Mechanism underlying the impact of glaucoma

Optic Nerve Damage-Glaucoma has an implication on the optic nerve, damages it, and finally causes visual hazards (Weber et al., 2008a). Visual Field Loss-Glaucoma causes loss of visual fields, thereby preventing accurate ophthalmological outcomes (Weber et al., 2008b). Altered IOP dynamics-Glaucoma induces an alteration in IOP dynamics, raising IOP that causes damage to the optic nerve culminating in loss of vision (Asrani et al., 2024). Cataract Surgery-Induced IOP Fluctuations-Neutral changes in IOP induced by cataract surgery advocate the complications of glaucomatous conditions and interfere with visual acuity outcomes (Kim et al., 2019).

### 2.6.2 Factors influencing the impact of glaucoma

Severity of Glaucoma-Poor visual acuity results are considered a greater severity of glaucoma, thereby implying the severity of glaucoma of being the cause of visual acuity outcomes (Lee et al., 2020).

Type of Glaucoma-According to the type of glaucoma, such as open-angle or angle closure glaucoma, the visual acuity outcome may vary (Rhee et al., 2018).

Preoperative IOP Management-Managing IOP preoperatively affects visual acuity outcomes; better-controlled IOP is correlated with better results (Lv et al., 2018).

### 2.6.3 Clinical implications

Preoperative Assessment-In the cases of glaucoma, an effective, comprehensive preoperative evaluation encompassing diagnosis of glaucoma and monitoring of IOP must be conducted to pinpoint affected individuals (Lee et al., 2020).

IOP Management-Ensuring effective IOP management will curb the detrimental effects of glaucoma on visual acuity outcomes (Rhee et al., 2018).

Postoperative Monitoring-Any problem linked to glaucoma shall be diagnosed and treated through vigilant postoperative monitoring (Lv et al., 2018).

### 2.6.4 Conclusion

Glaucoma can lead to severe and pronounced impairment in the result of visual acuity in cataracts. A study of the mechanisms passed through by this interference and the determination of those factors that may influence visual results would best benefit patient care. Good control of IOP and postoperative follow-up will go a long way in protecting this group from visual impairment secondary to glaucoma and improving their prognosis.

## **2.7**Other Comorbidities (e.g., Cardiovascular Diseases, Chronic Kidney Disease**)**

Visual recovery after cataract surgery can be disrupted or delayed by further medical disorders such as CVD and CKD. There may be a decrease in retinal perfusion in subjects with cardiovascular diseases because of secondary systemic atherosclerosis; therefore, delayed recovery of vision is experienced (Pavlovic et al., 2020). On the other side, with CKD, the presence of uremic retinopathy and systemic inflammation is increased, working against healing and leading to adverse powers of sight (Rathi et al., 2018). Such intervention implications for these comorbidities in eye health glorify a more integrated consideration for the cataract surgery patient in the perioperative period.

## 2.8Theoretical Framework

The bio-psychosocial model will provide the theoretical framework for this study, which holds that health outcomes are affected by some interaction of biological, psychological, and social factors. Applying this model facilitates the exploration of comorbidities in relation to cataract surgery outcomes, promoting the assessment of patient health from a holistic view.

### 2.8.1 Biological Factors

From a biological viewpoint, comorbidities such as diabetes and hypertension can in some ways affect eye health. To be more specific, diabetic retinopathy, which can affect cataract surgery outcomes, can develop from diabetes. Meanwhile, alterations in ocular perfusion occur as a result of hypertension, ultimately increasing the likelihood of postoperative complications. (Kiziltoprak et al., 2019b)

### 2.8.2 Psychological Factors

It is a reality that patients bearing many comorbidities tend to experience anxiety with respect to their health status and the results of the surgery. This fear can influence the compliance to preoperative and postoperative care guidelines, possibly leading to inferior visual outcomes.

(Andersson et al., 2020) Moreover, the existence of visual impairment might be depressing; it can also diminish the quality of life, setting up a feedback axis in which the psychological distress aggravates physiological problems.

### 2.8.3 Social Factors

Social variables that include access to healthcare, status in society, and education affect the prevalence and management of comorbidities severely. For example, persons within the lower socioeconomic strata would have limited access to regular eye checkups or ways of managing diabetes, ultimately leading to poor outcomes. (Chelak & Chakole, 2023) Cultural beliefs about health and surgery can also interfere with patients' ability or willingness to seek medical treatment or adhere to treatment plans. Existing ideas about health disparities and chronic illness have equally underscored the standpoint of this study. The social determinants of health viewpoint determine how factors such as socioeconomic status, education, and access to healthcare may influence the incidence of comorbidities and the quality of outcomes from surgery. Through the fusion of these theoretical perspectives, this research sets out to shed light on the complex relationships between comorbidities and visual acuity post-cataract surgery.

## 2.9 Management Strategies for comorbidities in Surgery Preoperative

Retinal Examinations-The complete examination must be done for diabetic individuals before cataract surgery to detect diabetic retinopathy. This will allow for the early management and appropriate surgical planning. Blood Sugar Control-Blood sugar control is important before having the operation. It is often advisable to keep HbA1c below 7% in order to minimize surgical risk factors (American Diabetes Association, 2023). For example, putting blood sugar in check reduces the chances of healing complications and macular edema in diabetics after surgery (Bin Rakhis et al., 2022).

Blood Pressure Control-There has to be control of blood pressure to decrease intraoperative hazards. Continuous monitoring and change in medication would be advisable just weeks prior to surgery. Likewise, treating hypertension greatly reduces intraoperative hazards, e.g., choroidal hemorrhage that can negatively affect visual recovery (Singh et al., 2021). Advanced imaging modalities such as optical coherence tomography (OCT) are increasingly used in the preoperative period to reveal subtle macular or retinal diseases for individualized surgical planning (Mokhtari et al., 2025).

## 2.10 Intraoperative Considerations

Surgical methods have got to be customized according to comorbidities. For instance, phacoemulsification with limited fluidics is suggested for glaucoma patients in order to avoid intraocular pressure changes during surgery (Chen et al., 2015) This approach is especially favorable for those at risk of later ocular damage. (Arevalo-Buitrago et al., 2024) Comorbidities stand as a great influence when it comes to making decisions and modalities with respect to cataract surgery. For example, individuals who have glaucoma might have to undergo modified forms of surgery so that intraocular pressure changes are minimized with phacoemulsification using limited fluidics as an instance. (Richter & Coleman, 2016) In diabetic patients, increased surgical time or too intense manipulation could worsen the preexisting retinal insult, making it important to have speedy and less invasive procedures. (Galway et al., 2021) The use of advanced generation intraocular lenses (IOLs), such as toric or multifocal lenses, has also been proved to improve visual acuity outcomes in patients with refractive or corneal comorbidities, on condition that preoperative examinations are complete (Hashemi et al., 2020). Customized Anesthesia Procedures-Tailoring anesthesia procedures based on the patient's comorbidities might boost safety and comfort throughout the surgery.

## 2.11 Postoperative Management

The thorough postoperative procedures are among those to ensure best results in visual acuity in a patient suffering from comorbidities. Preoperative measures such as Low Vision aids and therapy could tremendously improve functional vision after cataract surgery. Psychological adjustment support after surgery is as important in improving quality of life (Gonzalez et al., 2016). Anti-inflammatory drugs given in a targeted way that basically concerns corticosteroids or nonsteroidal anti-inflammatory drugs (NSAIDs) are generally indicated to be given for inflammation cases, e.g., in diabetics or hypertensives (Akpek et al., 2021). Close monitoring of their consequences such as cystoid macular edema or retinal detachment is very much mandatory, especially in patients with systemic disorders that predispose them to these complications (Li et al., 2020). Another huge parameter for the patient's education is to make sure he or she will go exactly as prescribed with medical regimes or follow-up schedules. With advancements in telemedicine, remote monitoring has brought positive surgical outcomes well to the far ends of the country, especially for patients with limited access to in-person care (Brodie et al., 2021).

## 2.12 Socioeconomic Factors Influencing Management of Comorbidities and Access to Cataract Surgery

Economically and socially disadvantaged through the eyes of the patient tend to be additionally affected in managing comorbidities and receiving excellent cataract surgery; therefore, his or her health outcomes suffer in a disproportionate manner. Socioeconomic factors act as constraints on the patients for seeking medical help on time, for sticking to prescribed therapies, or for using surgical methods or technologies.

### 2.12.1 Healthcare Access in Low-Resource Settings

Ophthalmologists and specialist eye care facilities are in short supply in some parts of Zimbabwe and the African continent. The rural and underserved zones are hit the hardest since patients often have to go great distances to obtain surgical services. When the services are there, financial constraints stop the client from getting the surgery for their cataracts or controlling systemic conditions like diabetes and hypertension, which further impact the surgical outcomes. The availability of specialist eye care centers is limited alongside a shortage of skilled ophthalmologists, through which access to quality care becomes hampered. Patients living at rural or underserved locations become even more vulnerable due to logistical challenges like travel expenses and local healthcare infrastructure. In many places of Zimbabwe and Africa, there is a shortage of eye care facilities and trained surgeons. Rural and underserved areas are those affected by the scarcity since the patients are forced to travel long distances to get surgical care, if at all available.

### 2.12.2 Cost of Treatment

Due to the high cost of imaging modalities of the present age such as OCT, including the newer pharmaceutical treatments such as anti-VEGF therapy, the patients find themselves unable to afford either one or both. This financial burden is more felt by lower-class people, resulting in delayed diagnosis and inadequate treatment of other morbidities that affect outcomes after the surgery.

### 2.12.3 Insurance Coverage and Out-of-Pocket Expenses

Insurance coverage acts as a crucial factor in cataract surgeries and comorbidities management. However, in many countries, the reimbursement for cataract surgery could be partial at best, more particularly in the case of advanced surgical procedures or expensive intraocular lenses (IOLs). Those who are inadequately insured or not insured at all must bear the cost upfront and could be discouraged from seeking the optimum treatment. A majority of Africans, especially

the Zimbabweans, pay health care out of their pockets since insurance cover is either poor or unattainable. If at all, these plans may not cover advanced procedure, or premium intraocular lenses, or even follow-ups for the comorbidities.

### 2.12.4 Health Literacy and Awareness

Low health literacy among marginalized population groups may also result in delayed recognition and treatment of concomitant conditions like diabetic retinopathy or macular degeneration, ultimately affecting the prognosis of the surgery. There is no information about the significance of frequency of eye checks and systematic stages of the diseases by the time of surgery.

### 2.12.5 Cultural and Social Norms.

Thus, different attitudes and social conventions influence treatment-seeking behavior. In certain societies, cataract surgery might be somewhat de-prioritized, and surgery due to fear, misinformation, or traditional medicine might be avoided. Gender barriers may thus work to limit women's access, along with additional challenges such as care responsibilities and financial dependency.

### 2.12.6 Equity in Emerging Technologies

Although there is a bright glint of hope cast by AI-predictive models and novel therapeutic agents for humanity, the wider dissemination of such interventions is hampered by lack of facilities and cost constraints in low-resource regions. Few interventions such as subsidies, technology transfer, and allocating resources for the local health system may ensure that such developments are available to the needy.

## 2.13Future directions and research gaps unmet needs

In the wake of long voices discussing cataract surgery and the coexisting disorders, a few researches study the co-effects of multiple disorders. For example, the systematic review by Kwon et al. (2021) states that most evidence deals with single comorbidities without investigating the interactional effects of multiple illnesses. There are no data regarding the long-term effect of these comorbidities on visual function and postoperative quality of life following cataract surgery. Research carried out by Ghosh et al. (2022) found an existing large gap in knowing how these disorders affect the well-being of a patient as time passes.

Though enormous developments in cataract surgical technique have occurred, the influence of comorbidities on postoperative visual acuity has received scant attention. Studies emphasize the need for a more complete understanding of how certain systemic and ocular diseases impact surgery outcomes (Shorstein et al., 2020). For instance, further research is warranted on the long-term implications on visual recovery of poorly controlled diabetes or concomitant retinal illnesses such as macular degeneration. Besides that, larger prospective studies may also be lacking that examine the cumulative effect of multiple comorbidities on visual outcomes, thus limiting the capacity for establishment of evidence-based care protocols (Singh et al., 2021). These issues faced by the comorbid patients are further exacerbated by inequalities in healthcare access, particularly in low-resource settings, thus demanding equity-focused treatment research. Hence, there is growing urgency to:

IMPROVING DELIVERY OF CARE IN LOW RESOURCES SETTING

Access to cataract surgery in low-resource settings is often limited by multiple challenges, including budgetary limits, lack of healthcare infrastructure, and inadequate transportation. Community health programs and mobile clinics have emerged as viable alternatives to increase access and delivery of care.

• Community Health Programs -These programs frequently entail training local health workers to provide information, screening, and referrals. A study by Kuper et al. (2016) found that community-based eye health programs dramatically enhanced cataract surgery uptake in rural parts of Nepal.

• Mobile Clinics-Mobile surgical units can reach underprivileged populations. A study by Bansal et al. (2018) demonstrated that mobile eye clinics effectively delivered cataract procedures in distant parts of India, resulting in high patient satisfaction and improved visual results.

2.ROLE OF TELEMEDICINE

Telemedicine has gained popularity as a tool for boosting patient engagement and follow-up care, especially for patients with commodities who may have trouble attending in-person visits. Telehealth can facilitate remote monitoring of patients' recovery and adherence to postoperative care standards. Systematic research by Greenhalgh et al. (2020) revealed that telemedicine interventions improved postoperative outcomes across many surgical specialties, including ophthalmology. Integrating telehealth into routine follow-up can be performed

through scheduled video consultations, remote symptom tracking apps, and digital education platforms. A study by Huang et al. (2021) demonstrated that telemedicine interventions led to better treatment of chronic diseases post-surgery.

## EMERGING TRENDS

The development of imaging technologies such as optical coherence and adaptive optics allows for more precise evaluations of retinal and macular health enabling early detection of consequences of comorbidities (Prajna et al., 2019). Similarly, the potential for employing AI in predictive modeling is promising for the detection of high-risk patients and modification of surgical plans appropriately. Novel therapy methods such as anti-inflammatory and anti-VEGF drugs are being studied to ameliorate the detrimental impact of comorbidities such as diabetic retinopathy and age-related macular degeneration on surgical outcomes (Schwartz et al., 2022). Hence, future study should seek to refine such technologies and medicines for widespread clinical application, while addressing the issues of cost and accessibility.

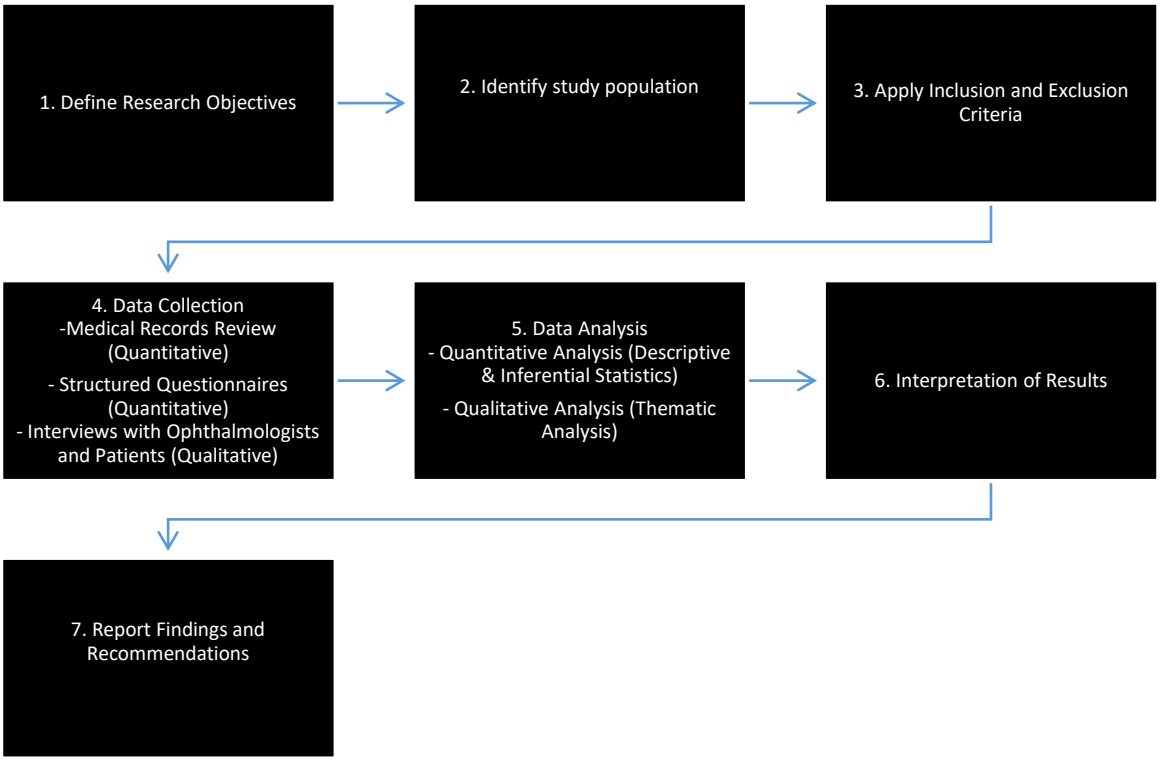
# CHAPTER 3: METHODOLOGY

## 3.1 Introduction

Chapter 3 details the approach utilized to ascertain the knowledge of effects of comorbidities on visual outcome on post cataract surgery patients at Bindura Provincial hospital. A combination of **prospective cohort study** and **cross-sectional study design** were used as the **Study type**, which involve collection of data from book records and following a group of individuals over time. The research's design, sample, sampling technique, inclusion and exclusion criteria, strategy for data collecting, and data analysis techniques are all described in this part. The chapter also includes the ethical approval needed for the study to be ethically undertaken.

## 3.2 Study Design

**Figure 1 Flow Chart of Study Design**




## 3.3 Study period

This study was carried out from December 2024 to June 2025.

## 3.4 Study population

This study targeted all patients' records with a history of Cataract Surgery and visual impairment at Bindura Provincial Hospital consisting of about 120 individuals.

3.5 Inclusion and Exclusion Criteria

*Table 1 Inclusion and Exclusion Criteria*

| Criterion | Inclusion | Exclusion |
|---|---|---|
| **Age** | 50 years and above | < 50 years |
| **Cataract Diagnosis** | Diagnosed with mature cataract. | Other ocular diseases (e.g., glaucoma, macular degeneration) |
| **Comorbidity Status** | Presence of comorbidities (e.g., diabetes, hypertension | No comorbidities |
| **Visual Acuity** | Visual acuity < 6/18 pre-surgery | Visual acuity ≥ 6/18 pre-surgery |
| **Surgical Status** | Underwent cataract surgery | Cataract surgery not performed or incomplete surgery |
| **Data Collection Method** | | Medical records are incomplete or inaccessible. |

3.6 Diagnostic criteria for visual outcome

Classification was according to distance presenting visual acuity in the better eye as shown in table below

*Table 2 Diagnostic criteria for visual outcome*

| VISUAL OUTCOME | DEFINATION |
|---|---|
| **GOOD** | VA of 6/6 or better |

| | |
|---|---|
| **MODERATE** | VA of 6/18 – 6/36 |
| **POOR** | VA of 6/60 or worse |

3.7 Statistical Analysis.

*Table 3 Statistical Analysis Methods*

| ANALYSIS TYPE | METHOD/TEST | PURPOSE |
|---|---|---|
| **DESCRIPTIVE STATISTICS** | Frequencies, Mean, Standard Deviation | Summarize patient demographics (age, gender, etc.), prevalence of comorbidities, and visual acuity outcomes |
| **INFERENTIAL STATISTICS** | Chi-square test | Determine the relationship between categorical variables such as systemic comorbidities and visual acuity outcomes. |
| **INFERENTIAL STATISTICS** | t-test (Independent or Paired) | Assess the difference in mean visual acuity between groups with and without specific comorbidities. |
| **QUALITATIVE ANALYSIS** | Thematic Analysis | Identify themes related to how patients and healthcare providers manage comorbidities and strategies to optimize visual outcomes |

3.8 Potential Confounding Factors

*Table 4 Potential confounders that might influence visual acuity outcomes and method of control.*

| **Confounder** | **Justification for Control** | **Method of Control** |
|---|---|---|
| **Age** | Older age is often associated with poorer visual acuity outcomes due to age-related degeneration | Age-matched groups or statistical adjustment |
| **Gender** | Gender differences in healing rates and visual acuity outcomes have been observed, necessitating control. | Statistical adjustment for gender |
| **Preoperative VA** | Baseline visual acuity significantly influences postoperative outcomes and may obscure the effect of comorbidities. | Matched analysis or covariate adjustment for preoperative VA. |
| **Surgical Experience** | Surgeon experience can impact surgical precision and recovery, potentially influencing visual outcomes. | Control for surgeon experience as a variable in analysis. |

3.9 Expected Outcomes

The study is expected to reveal a substantial association between the existence of systemic and ocular comorbidities and lower visual acuity outcomes post-cataract surgery. Specifically, it is anticipated that patients with diabetes, hypertension, glaucoma and age-related macular degeneration may undergo delayed visual recovery and have less favorable outcomes compared to patients without these comorbidities. Furthermore, the study intends to discover special obstacles in managing patients with various comorbidities after surgery, as well as efficient techniques to maximize visual recovery to optimize visual recovery. The data will provide

useful insights into how comorbid disorders affect postoperative treatment and suggest recommendations for enhancing patient management to attain better visual outcomes.

# CHAPTER 4: RESULTS

## 4.1 Introduction

This chapter outlined the findings of the research through the uses of tables, graphs and pie charts. Chapter 4 presented the distribution of measured parameters, age, sex, highest level of education and marital status among patients with comorbidities. The chapter also outlined the level of comorbidities and their impact on Visual acuity post cataract surgery.

## 4.2 Descriptive Statistics

### 4.2.1 Demographics of participants

Among the participants 68(56.7%) were males and 52(43.3%) were females. The age of the participants ranged from 50 to above, with an average age of 64.98 years and a standard deviation of 10.645 years. The modal age was 67 years. Most of the participants were the age group between 50-60years (40.8%), (38.4%) were between 61-75 years and 20.8% were between the ages of above 75 as shown by the table below:

*Table 5 Demographics of the participants*

| | | **Sex** | | |
|---|---|---|---|---|
| **Variables** | | **Male** | **Female** | **Total** |
| **Age group (years)** | 50-60 | 28(23.3%) | 21(17.5%) | 49(40.8%) |
| | 61-75 | 26(21.7%) | 20(16.7%) | 46(38.4%) |
| | Above 75 | 14(11.6%) | 11(9.2%) | 25(20.8%) |
| **Level of education** | None | 40(33.3%) | 33(27.5%) | 73(60.8%) |
| | Secondary | 25(20.8%) | 17(14.2%) | 42(35%) |
| | Tertiary | 3(2.5%) | 2(2%) | 5(4.5%) |

| | | | | |
|---|---|---|---|---|
| **Spectacles** | Yes | 50(41.6%) | 38(31.7%) | 88(73.3%) |
| | No | 18(15.1%) | 14(11.6%) | 32(26.7%) |
| **Occupation** | Self | 10(8.3%) | 20(16.7%) | 30(25%) |
| | Employed | 5(4.2%) | 3(2.5%) | 8(6.7%) |
| | Non | 53(44.2%) | 29(24.1%) | 82(68.3%) |
| **Gender** | | 68(56.7%) | 52(43.3%) | 120(100%) |

4.2.2 Data Analysis of the Demographics

Among the participants 68(56.7%) were males and 52(43.3%) were girls. The age of the participants ranged from 50 to above, with an average age of 64.98 years and a standard deviation of 10.645 years. The modal age was 67 years. Most of the participants were the age group between 50-60years (40.8%), (38.4%) were between 61-75 years and 20.8% were between the ages of over 75. The bulk of participants had no formal education 73(60.8%), 40(33.3%) 0f them were male while 33(27.5%) were female. A considerable number of participants 88(73.3%) wore spectacles, 50(41.6%) were male whereas 38(31.7%) were female. Most patients 82(68.3%) have no formal education. Most participants, 30(25%) were self-employed.

***Figure 2 Gender Distribution of Patients***

**Figures 3 Age Group Distribution**

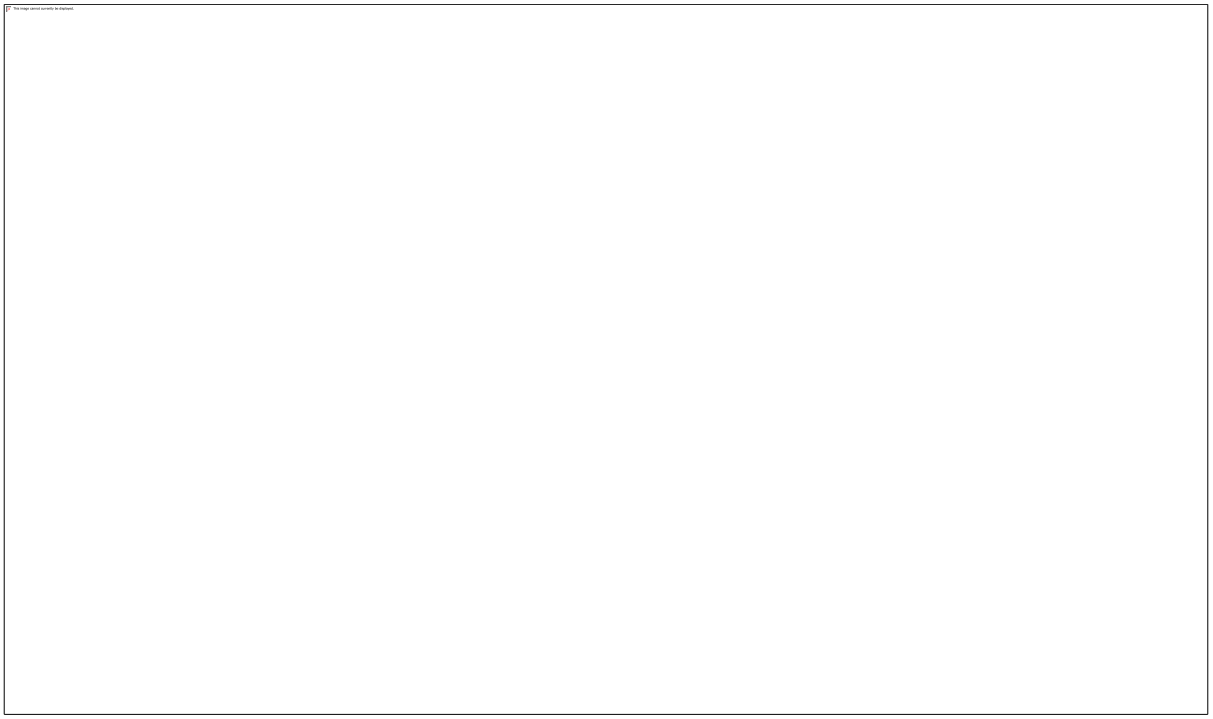
4.2.3 Distribution of Patients by Comorbidities

4.2.4 Distribution of Participants by Comorbidities

All the patients had ocular comorbidities in which most of the participants had Diabetes (35.8%), followed by Hypertension (25.8%), Glaucoma (20.0%), AMD (10.0%) and other comorbidities (8.3%). The mean of duration of comorbidities is 6.98 years and Standard Deviation is 6.109 years. The male contributed a higher proportion in each of the comorbidities than that of female as shown below by the table 4.4:

**Figure 4 Distribution by Comorbidity Group**

***Figure 5*** **Duration of Comorbidities**



4.3 The distribution of Visual Acuity Outcomes

Visual acuity was assessed preoperatively and 6 weeks post-surgery and categorized using WHO classification of visual impairment: 6/18 or better as the Good VA, 6/24 to 6/60 as the Moderate VA and 6/60 or less as the Poor VA. The Overall Postoperative Visual Acuity

Outcome had 23(19.2%) with Good VA, 30(25%) with moderate VA and 67(55.8%) with Poor VA among the total of 120 participants as shown below:

4.4 Postoperative Visual Acuity Outcomes
Visual acuity was assessed for 6 weeks post-surgery and categorized using WHO classification:

- **Good VA** (≥6/18)
- **Moderate VA** (>6/18- 6/36)
- **Poor VA** (<6/36 – CF)

4.5 VA Outcomes Based on Comorbidity Groups
*Table 6:Best Corrected Visual Acuity by Comorbidity Group*

| | | **Post–Op BCVA** | | |
|---|---|---|---|---|
| **Comorbidity** | **Good** | **Moderate** | **Poor** | **Total** |
| **Diabetes** | 10 (8.3%) | 11 (9.2%) | 22 (18.3%) | 43(35.8) |
| **Hypertension** | 9 (7.5%) | 8 (6.7%) | 14 (11.7%) | 31(25.8) |
| **Glaucoma** | 2 (1.7%) | 5 (4.2%) | 17 (14.2%) | 24(20%) |
| **(AMD)** | 0 (0%) | 3(2.5%) | 9 (7.5%) | 12(10%) |
| **Other Comorbidities** | 2 (1.7%) | 3 (2.5%) | 5 (4.2%) | 10(8.3) |
| **Total** | 23(19.2%) | 30 (25%) | 67(55.8%) | 120(100%) |

## 4.6 Interpretation

Diabetes (35.8%) is the most prevalent comorbidity with a high rate of bad outcomes (51.2% of diabetics). This shows necessity for stringent glycemic management and screening for diabetic retinopathy pre-operation. Hypertension (25.8%) has a high number with bad outcomes (45.2%). May reflect vascular alterations affecting the retina. Glaucoma (20%) has a very high rate of poor visual result (70.8%). May suggest late-stage illnesses or optic nerve damage not recoverable post-surgery. AMD (10%) had no patients that obtained good visual acuity. Suggests AMD is a substantial predictor of non-improvement post-operation. Others (8.3%)-less frequent but still contributed to lower outcomes.

## 4.7 Conclusion

This chapter has established that comorbidities greatly affect post-op visual outcomes, with glaucoma and AMD being the biggest predictors of poor BCVA. Diabetes and hypertension are the most prevalent and must be well-managed preoperatively. Pre-operation counseling, better systemic control and personalized surgical expectations are crucial in patients with certain comorbidities. The result underlines the necessity of early detection and therapy of comorbid diseases to improve surgical outcome.

# CHAPTER 5: DISCUSSION

## 5.1 Introduction

This chapter exhibits the findings from the study on the effect of comorbidities on visual acuity outcomes after cataract surgery. The study tries to assess the connection between comorbidities and visual outcomes of a patient following cataract surgery. Previous and similar studies have shown that comorbidities could seriously hamper visual results after cataract surgery (Kiziltoprak et al., 2019).

## 5.2 Demographic Profile of the Respondents

The study tried to see what impact comorbidities had on the final postoperative visual acuity and what the common comorbidities of cataract patients are. The study unveiled that there is a statistically significant relationship between comorbidities, notably diabetes, hypertension, and glaucoma, and visual impairment after undergoing cataract surgery. The findings pretty much echoed the previous study that showed that diabetes and hypertension might damage the retina and the optic nerve, causing a visual impairment (Lee et al., 2022).

## 5.3 Research Objectives/Questions Discussion

The study tried to see what impact comorbidities had on the final postoperative visual acuity and what the common comorbidities of cataract patients are. The study unveiled that there is a statistically significant relationship between comorbidities, notably diabetes, hypertension, and glaucoma, and visual impairment after undergoing cataract surgery. The findings pretty much echoed the previous study that showed that diabetes and hypertension might damage the retina and the optic nerve, causing a visual impairment (Lee et al., 2022).

The study's research questions were:

1. What is the impact of comorbidities on visual acuity results post-cataract surgery?
2. What are the most prevalent comorbidities among individuals getting cataract surgery?

   The study's findings answer these research concerns by revealing that comorbidities significantly affect visual acuity outcomes post-cataract surgery, and that diabetes, hypertension, and glaucoma are the most frequent comorbidities among patients receiving cataract surgery.

These findings are consistent with earlier research that have indicated that comorbidities can impair visual outcomes post-cataract surgery (Tan et al., 2022).

## 5.4 Implications and Limitations

The results have implications for clinical practice for healthcare practitioners, making it necessary to be vigilant for comorbidities while managing persons after cataract surgery. These disorders suggest an early window of opportunity to detect and intervene to improve operative prognosis and reduce the chances of K and loss of vision (Burgess and Ramke, 2018). This is in accordance with international perspectives on early detection and treatment of comorbidities to improve the visual outcome after cataract surgery (Burgess et al., 2018).

These comorbid conditions that were assessed had different effects on visual acuity post-intervention. For instance:

Diabetes was found to be a strong predictor of poor visual outcome following cataract surgery, which corroborates reports from other studies on how diabetes can affect the retina and optic nerve (Kwon et al., 2015). Contrary to that, glaucoma had been implicated for poor visual outcome following cataract operation, probably because of the damage caused by glaucoma to the optic nerve (Dhawan et al., 2019).

AMD was implicated for poor visual results post-cataract surgery, especially with visual acuity. No satisfactory post-op visual acuity demonstrated the effect of AMD on Visual Acuity. This is in agreement with previous studies indicating that AMD could cause damage to the macula resulting in poor visual outcome (Liao et al., 2019). Some of the limitations concerned with this study include sample size and relatively short-term follow-up. Future studies should attempt to recruit larger samples and engage in longer follow-ups to give bigger insight into the impact of comorbidities post-cataract surgery on visual outcomes.

## 5.5 Conclusion

To conclude, the results of this study demonstrated that the presence of comorbidities was indicative of poorer visual outcomes after cataract surgery. This suggests that if comorbid illnesses are diagnosed and treated early, better surgical outcomes can be attained. Hence, it can be inferred from the results that care of the patient undergoing a cataract surgery must involve screening for comorbidities, with emphasis on early detection and treatment in order to gain optimal surgical outcomes. These are in agreement with previous studies that showed comorbidities can pose a threat to visual outcomes following cataract surgery (Tan et al., 2022).

# CHAPTER 6: CONCLUSION

## 6.1 Conclusion

A quantitative descriptive cross-sectional layout was employed to see how comorbidities influence visual acuity outcomes after cataract surgery. The findings of the study infer that comorbidities, particularly diabetes, hypertension, and glaucoma, each exerts a direct negative influence upon visual outcome peculiar to cataract surgery. Hence, the comorbidities would need to be identified and treated as soon as possible to better prognosis subsequent to surgery. The significance of this study lies in applying it to day-to-day clinical concern so that the presence of a relevant comorbidity must be respected by every healthcare practitioner when handling a case post cataract surgery.

## 6.2Recommendations

Eye screening should be conducted regularly for people suffering from comorbidities like diabetes, hypertension, and glaucoma in order to allow for timely detection of any possible eye problems. Eye care practitioners, together with the Bindura University Optometry Department, should place emphasis on screening the eyes of comorbid patients so as to avert visual loss; hence visual loss diminishes surgical outcomes. Through frequent eye examinations, educating patients, and timely referral for treatment, this goal can also be realized.

Awareness campaigns can be used to enlighten the masses on eye care and the influences of comorbidities on visual outcomes after cataract surgery. In the interest of educating patients and the general population about the need for regular eye examination, timely treatment, and the management of comorbidities to avert vision loss and enhance post-surgical outcomes for eye health, the Optometry Department should partner with other stakeholders in the health sector to conduct awareness programs.

## 6.3 Implementation of Recommendations

The suggestions will need a well-coordinated effort from healthcare providers, legislators, and other stakeholders. The Department of Optometry of Bindura University together with other interested parties should brainstorm and organize screening and awareness programs for the community. This has the power of improving eye health outcomes and alleviating the burden of vision loss in the community. Applying the above suggestions will improve outcomes in terms of eye health, reduce the risk of vision loss, and increase the overall general well-being of cataract cases with concomitant health issues.

6.4 APPENDICES

**QUESTIONNAIRE FOR CATARACT PATIENTS**

https://forms.gle/Ej2V9mcpLB3L3Vcx6 . Online link to access the Questionnaire

**Demographics**

1.Age

……
……..

2.Gender

- Male
- Female

3.Occupation

……

4.Level of Education

- no formal education
- secondary
- tertiary

5.Do you wear glasses?

- Yes
- No

## Medical History and comorbidities

6.Do you have any of the following conditions?

- Diabetes
- Hypertension
- Glaucoma
- Age-related macular degeneration (AMD)
- Other systematic or ocular
- No known comorbidities

7.Duration of the morbidity (years)

……..

8.Are you on medication for any of the above conditions?

……

## Cataract Surgery Details

9.Which eye was operated?

- Right
- Left
- Both

10.Type of intraocular lens (IOL) implanted (if known)

- Monofocal
- Multifocal
- Toric
- Not sure

11.Did you experience any complications during or after surgery?

Yes (specify……)

**Visual Acuity Assessment**

12.Preoperative VA (BCVA)

(OD……;……OS)

13.Postoperative VA

a. One week

(OD……;……OS)

b.3 months

(OD……;……..OS)

**Patient-Reported Outcomes & Satisfaction**

14.How would you rate your vision improvement after surgery?

- Significantly improved
- Slightly improved
- No change
- Worse than before

15.Do you experience any of the following?

- Blurred vision
- Glare or halos
- Dry eyes
- Eye discomfort
- No issues

16.Do you feel your comorbidities affected your recovery or vision improvement?

- No
- Yes (specify.....)

**APPROVAL FORM**

The undersigned certify that they have read and recommend to Bindura University of Science Education for acceptance, a dissertation entitled "**IMPACTS OF COMORBIDITIES ON VISUAL ACUITY POST CATARACT SURGERY IN MASHONALAND CENTRAL PROVINCE**." submitted by Ngonidzashe Muhwanda Registration Number B21330B in partial fulfilment of the requirements for the degree of Bachelor of Science Honours Degree in Optometry (HBScOpt)

Supervisor's Name:

Dr P Munyari

Supervisor's signature:

EM

Optometry Department Chairperson's signature

Date…28/07/2025

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