

DESCRIPTIVE EVALUATION OF SURGERIES DONE WITH THE PATIENTS PRESENTED WITH CATARACT IN GENERAL HOSPITAL BADULLA IN A SELECTED DURATION.

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INTRODUCTION

Cataracts are the leading cause of visual impairment and blindness worldwide, affecting millions of people, particularly in low- and middle-income countries where access to eye care services is limited. The World Health Organization (WHO) estimates that cataracts are responsible for 51% of world blindness, affecting approximately 20 million people. Cataracts are prevalent across all regions, but their impact is more significant in regions with limited healthcare infrastructure. In regions like sub-Saharan Africa and parts of South Asia, untreated cataracts are a major public health issue due to a lack of surgical services. In contrast, high-income countries have reduced cataract-related blindness through timely surgeries and improved healthcare access.

Cataracts primarily affect older adults, especially those aged 60 and above. The risk increases significantly with age, making the elderly population the most vulnerable. However, younger individuals may also develop cataracts due to congenital factors, trauma, diabetes, prolonged steroid use, or excessive UV exposure. Cataracts place a substantial burden on global healthcare systems, particularly in regions with aging populations. The costs associated with cataract surgeries, including pre- and post-operative care, are significant. In resource-limited settings, the backlog of untreated cataracts exacerbates healthcare strain. In high-income countries, healthcare systems bear the cost of managing increasing demand for cataract surgeries, which are among the most frequently performed surgeries worldwide.

For individuals with cataracts, the progressive loss of vision can significantly impair daily activities, affecting the ability to work, drive, read, or recognize faces. This loss of independence often leads to reduced quality of life, social isolation, and an increased risk of falls and injuries. Cataracts can also contribute to mental health issues like depression and anxiety, especially in older adults. Analysing patient profiles and surgical details can identify factors that affect the outcomes of cataract surgeries. By reviewing which techniques (e.g., phacoemulsification vs. extracapsular surgery) yields better results in specific patient

subgroups, healthcare systems can standardize best practices. Understanding how different patient characteristics (age, medical history) correlate with post-surgical complications can help improve pre-surgical assessments and reduce risks.

A thorough review of patient characteristics helps healthcare systems allocate resources more efficiently. If a review shows an increasing number of aging patients, healthcare systems can invest in training more ophthalmologists, expanding cataract surgery services, and procuring necessary surgical equipment. By identifying which patients benefit most from surgery (e.g., those with bilateral cataracts or advanced vision loss), healthcare systems can prioritize cases that offer the greatest improvement in quality of life, thereby improving the cost-effectiveness of interventions. Certain patient groups, such as those from rural areas, low-income backgrounds, or underserved communities, may have limited access to cataract surgery. Reviewing patient demographics helps highlight these disparities, enabling healthcare systems to develop outreach programs, mobile surgical units, or subsidized care to ensure equitable access to cataract treatment.

By regularly reviewing surgical techniques, patient characteristics, and outcomes, healthcare systems can identify trends and adopt new technologies or methods that further improve care. For instance, reviewing data on the success of femtosecond laser-assisted cataract surgery versus traditional methods can inform decisions about investing in newer technology.

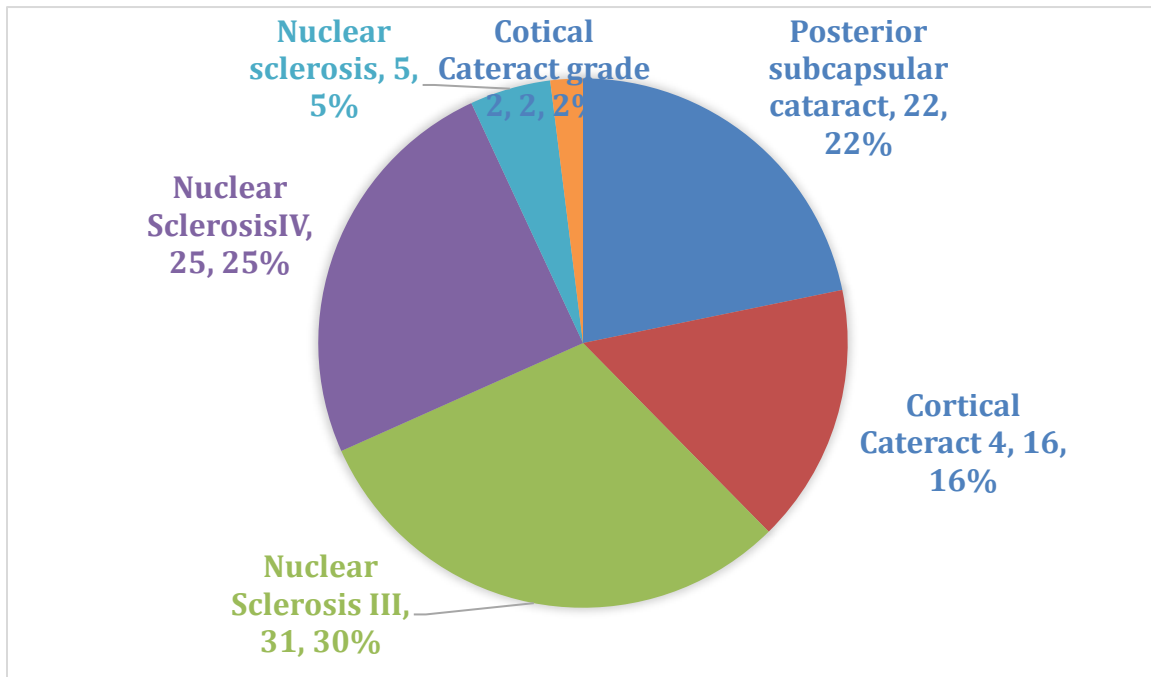
METHODS AND RESULTS

The data of 100 patients who were diagnosed as cataract and underwent surgery after reporting to the Eye Clinic of Badulla General Hospital were descriptively analyzed. Their symptomatic treatments and outcomes of surgeries were included in this analysis.

Table 1 : Distribution of age and gender of the study participants

	Frequency(n)	Percentages (%)
Age		
< 50 yrs	18	18.0
51-60 Yrs	21	21.0
61-75 yrs	41	41.0
> 75 Yrs	20	20.0
Gender		
Male	48	48.0
Female	52	52.0
Total	100	100.0

Figure 1 : Distribution of Cataract types among patients



Age of the study participants were ranged from 14 years to 91 years (mean=61.7: SD=15.72 yrs). Female predominance was observed among patients. Majority of patients presented with nuclear sclerosis (n=61:61.0%). Among those, highest representation from Type III Nuclear sclerosis. Subscapular cataract presented in 22 % of patients. Post surgical complications were reported among 4% of patients. All patients were received intravitreal Bevacizumab.

DISCUSSION

The finding that 61% of patients presented with nuclear sclerosis indicates that this type of cataract is the most common among the studied population. Nuclear sclerosis is characterized by the gradual hardening and yellowing of the central part of the lens (the nucleus), which often develops as part of the aging process. The high prevalence of nuclear sclerosis in this patient group suggests a significant representation of older individuals, since the condition is typically associated with aging and long-term exposure to risk factors like ultraviolet light and oxidative stress. Clinically, nuclear sclerosis can lead to a gradual decline in distance vision and cause myopic shifts (nearsightedness), which can initially be perceived by patients as a temporary improvement in near vision (known as "second sight").

Within the nuclear sclerosis group, Type III nuclear sclerosis was the most frequently observed. This classification suggests a more advanced stage of lens opacity, where the lens

not only hardens but also darkens significantly, impairing vision more severely than earlier stages (Type I or II). Patients with Type III nuclear sclerosis may experience pronounced difficulties with night vision and glare sensitivity, as well as reduced contrast sensitivity. The predominance of Type III cases among this cohort indicates that many patients may have delayed seeking treatment until the cataract became more severe, possibly due to limited access to eye care services or lack of awareness about the benefits of early intervention. From a healthcare planning perspective, these findings emphasize the need for regular eye screenings, especially for older adults, to identify cataracts at earlier stages and prevent the progression to more debilitating types.

The presence of subcapsular cataracts in 22% of the patient population highlights another significant category of lens opacity. Subcapsular cataracts form at the back of the lens, just in front of the posterior capsule, and tend to progress more rapidly than nuclear sclerosis. Patients with subcapsular cataracts often report problems with reading vision, glare, and halos around lights, which can be particularly troublesome in bright sunlight or when driving at night. Subcapsular cataracts are also more commonly associated with certain risk factors, such as prolonged steroid use, diabetes, or ocular trauma. The lower prevalence compared to nuclear sclerosis may reflect the different risk profiles and pathophysiology of subcapsular cataracts. However, their relatively rapid progression can lead to more acute vision impairment, necessitating timely surgical intervention to restore visual function.

The occurrence of post-surgical complications in 4% of patients indicates a relatively low rate of adverse events following cataract surgery. This figure is consistent with reported rates of complications in high-quality surgical practices, where modern techniques such as phacoemulsification minimize the risks. The most common post-surgical complications can include posterior capsular opacification (secondary cataract), increased intraocular pressure, corneal edema, posterior capsular rupture or endophthalmitis. The relatively low rate suggests that the surgical procedures were performed with a high degree of precision and that appropriate perioperative care was provided. However, even a small percentage of complications can significantly impact patients' quality of life, necessitating careful follow-up and management to address any issues promptly. This finding underscores the importance of comprehensive post-operative monitoring to ensure optimal visual recovery and minimize the risk of long-term complications.

The administration of intravitreal bevacizumab to all patients may indicate that there were additional concerns related to retinal or macular health, such as diabetic macular edema, age-related macular degeneration (AMD), or other conditions that benefit from anti-VEGF (vascular endothelial growth factor) therapy. Bevacizumab is an anti-VEGF medication used to reduce abnormal blood vessel growth and leakage in the retina, thereby improving or stabilizing vision in conditions associated with increased VEGF activity. The universal use of bevacizumab in this cohort suggests that many patients had coexisting retinal pathologies

that warranted concurrent management alongside cataract surgery. This approach reflects an integrated treatment strategy, addressing both lens opacity and underlying retinal conditions, which could otherwise impair the visual outcomes of cataract surgery if left untreated.

The findings reveal a predominance of nuclear sclerosis, particularly Type III, among cataract patients, highlighting the need for early detection and intervention. The presence of subcapsular cataracts, though less common, requires timely surgical treatment due to its rapid progression. Post-surgical complications were minimal, indicating the effectiveness of the surgical techniques employed. The use of intravitreal bevacizumab in all patients suggests that co-management of retinal conditions was a significant aspect of patient care, illustrating the importance of a multidisciplinary approach to optimizing visual outcomes. Nuclear sclerosis is one of the most common types of cataracts, characterized by a gradual hardening and yellowing of the central part of the lens, or nucleus. It is typically associated with aging and is the predominant form of cataract observed in older adults. The progressive clouding of the lens leads to decreased visual acuity, affecting both distance and near vision, making it challenging for patients to perform daily tasks. From a practical standpoint, this necessitates early identification and monitoring of nuclear sclerosis in routine eye examinations for aging populations, particularly those above the age of 60. The management of patients with this type of cataract often involves the use of updated spectacles in early stages, but surgery becomes necessary when the lens opacity significantly impairs vision. Recognizing the prevalence of nuclear sclerosis among cataract patients helps healthcare planners prioritize cataract surgical services and design interventions aimed at mitigating vision-related disability in aging populations.

Ophthalmologists encounter several challenges in the surgical management of cataracts, particularly in complex cases. The presence of co-morbidities such as diabetic retinopathy, glaucoma, or ocular surface disease can complicate both the surgical procedure and postoperative recovery. Intraoperative complications, such as posterior capsular rupture, can arise, particularly in cases with advanced cataracts or in patients with small pupils. Additionally, limited access to advanced surgical equipment, such as femtosecond laser technology or modern phacoemulsification machines, can hinder optimal surgical outcomes in resource-constrained settings. Ophthalmologists also face the challenge of managing patient expectations, as some individuals may have unrealistic hopes regarding the degree of vision improvement. Addressing these challenges requires continuous training in the latest surgical techniques, as well as increasing the availability of specialized equipment. Moreover, preoperative assessment and patient counseling play critical roles in setting realistic goals and preparing for potential surgical complications.

Implementing primary prevention strategies for cataracts is essential, especially considering that aging is a primary risk factor. Lifestyle modifications, including smoking cessation,

reduction of excessive alcohol consumption, and the promotion of a balanced diet rich in antioxidants, can potentially slow the progression of cataracts. Regular use of ultraviolet (UV) protective eyewear is also important, as UV exposure accelerates lens aging and the development of cataracts. Targeted education programs for older adults can raise awareness about these preventive measures, empowering individuals to take proactive steps to preserve their vision. In addition, addressing risk factors such as diabetes through effective glycemic control is crucial, as diabetic patients are more prone to early-onset cataracts. Healthcare systems should thus integrate cataract prevention strategies within broader public health initiatives aimed at promoting healthy aging.

Enhancing cataract treatment requires structural modifications to the healthcare system, focusing on increasing the accessibility and quality of surgical care. Establishing dedicated eye care units within hospitals, particularly in underserved areas, can help reduce the backlog of untreated cataracts. These units should be equipped with modern phacoemulsification machines, intraocular lenses (IOLs), and other essential surgical tools to ensure that high-quality care is provided. The integration of multidisciplinary teams, including ophthalmologists, optometrists, and anesthetists, can further enhance the safety and efficiency of surgical procedures. Additionally, expanding telemedicine services for preoperative and postoperative care can improve patient follow-up and reduce travel burdens, especially in remote areas. Health policy makers must also consider training and retaining skilled eye care professionals to address the growing demand for cataract surgery in aging populations.

Upgrading surgical theater facilities in rural healthcare settings is a critical step toward enhancing the outcomes of cataract surgeries. Many rural hospitals lack basic infrastructure, such as appropriate lighting, sterile environments, and advanced surgical instruments, which are essential for performing safe and effective cataract operations. Improvements should focus on providing sterile operating conditions, modern surgical microscopes, and proper patient monitoring equipment to prevent complications such as endophthalmitis and corneal edema. Additionally, establishing mobile eye surgical units can help reach remote populations that do not have immediate access to healthcare facilities. Investing in theater facilities also means ensuring the availability of a range of intraocular lenses (IOLs), allowing for customized treatment based on individual patient needs. The provision of training programs for local healthcare workers on the maintenance of equipment and infection control protocols will further contribute to better surgical outcomes and reduced postoperative complications.

In conclusion, addressing these aspects of cataract management through comprehensive healthcare planning can significantly improve patient outcomes and reduce the burden of visual impairment. By prioritizing preventive measures, overcoming surgical challenges, making structural modifications, and upgrading surgical facilities, healthcare systems can

enhance the quality of life for individuals affected by cataracts, particularly in underserved and aging populations.

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