

**MANAGEMENT PRACTICES OF ADVERSE REACTIONS RELATED TO ANESTHESIA USE AMONG  
EYE SURGERY PATIENTS IN JINJA REGIONAL REFERRAL HOSPITAL, JINJA, UGANDA.  
A CROSS-SECTIONAL STUDY.**

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Page | 1

**Abstract.**

**Background.**

Uganda, like any other developing country, bears a heavy burden of eye disease which contributes significantly to visual problems. Increasing eye surgeries, therefore, demands analyzing anesthetics to enhance patient safety. This study aimed to determine the management practices of adverse reactions related to anesthesia use among eye surgery patients in Jinja Regional Referral Hospital, Jinja, Uganda.

**Methodology.**

The study used a descriptive cross-sectional design and quantitative data were collected from 72 patients. A simple random sampling technique was used to pick respondents and pre-tested structured questionnaires were formulated and used to collect data.

**Results.**

(42%) of the patients had previous history of eye surgery, 75% of patients recovered within the first hour. (70%) of healthcare providers primarily managed adverse anesthetic reactions using medication, Oxygen therapy (14%) was used to stabilize patients with respiratory distress, vital sign monitoring (16%) ensured patient safety by tracking key indicators. Patient education (11%) helped reduce anxiety by preparing patients for potential side effects. In cases of excessive sedation, reversal agents (8%) like flumazenil were used to awaken patients.

**Conclusion.**

Management of anesthesia-related side effects primarily relied on medication and postoperative monitoring. While these strategies were largely effective, there is room for improvement in managing severe pain, reducing side effects, and enhancing patient education before surgery.

**Recommendation.**

Ensure careful titration of sedatives and monitor sedation levels closely during surgery. Increase the use of reversal agents in cases of excessive sedation to promote quicker recovery and minimize postoperative complications.

**Keywords:** Adverse reactions, Anesthesia management, Eye surgery, Jinja Regional Referral Hospital.

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**Background**

Uganda, like any other developing country, bears a heavy burden of eye disease which contributes significantly to visual problems. Increasing eye surgeries, therefore, demands analyzing anesthetic effects on eye surgery patients, enhancing patient safety, addressing gaps in anesthesia quality delivery, and promoting equitable access to quality eye care services and policy decisions (Kang, 2017). Despite the critical role of anesthesia in ensuring surgical comfort and safety, there is inadequate comprehensive understanding regarding its effects on eye surgery patients. In Jinja Regional Referral Hospital, the

types of anesthesia commonly used in eye surgery include local anesthetics, regional anesthesia, and general anesthesia customized to the specific needs of patients and requirements of surgical procedures.

Jinja Hospital's eye department faces a shortage of human anesthesia resources staff, infrastructure, and eye surgery patients with co-morbidities like diabetes, and hypertension which interact with anesthesia and there is inadequate standardization of anesthetic techniques and protocol to address anesthesia-related effects.

Records obtained at the eye clinic JRRH show that 25% of patients in 2018 and 30% in 2020 have undergone eye

surgery with anesthesia use (Palmer et al., 2014) and 20% have been noticed to present with anesthesia-related effects. The demand for eye surgeries has increased due to aging populations and rising prevalence of eye conditions. (Jung, 2009) discusses the anesthesia management of patients undergoing ophthalmic surgery, Pre-anesthetic evaluation to identify potential risks, Choice of anesthesia technique (regional or general) based on patient condition and surgical requirements, Close monitoring of vital signs and anesthetic depth, post-anesthetic care to prevent complication, Effective pain management, Clear communication between healthcare providers and patients this manages the anesthetic effects. Importance of tailoring anesthesia regimens to individual patient characteristics. This highlights the importance of personalized anesthesia care. Efforts by hospital administration to ensure safe anesthesia practices like regular training, patient education, interdisciplinary collaboration, and continued quality assurance practices have not yielded much as anesthesia-related effects continue to increase. Complications among eye surgery patients and varying rates of vision loss, eye injuries, and postoperative pain among patients operated re persistence. Similarly, there is an increasing volume of eye surgeries like cataract extraction and glaucoma procedures which require anesthesia techniques and procedures. This study aimed to determine the management practices of adverse reactions related to anesthesia use among eye surgery patients in Jinja Regional Referral Hospital, Jinja, Uganda.

### **Methodology.**

#### **Study Design.**

In this study, the candidate employed a descriptive cross-sectional study design which involved quantitative methods; a cross-sectional looks at variables at one point in time. The choice of this type of design was because it helped to provide a snapshot to determine anesthetic effects on eye surgery patients in Jinja Regional Referral Hospital.

#### **Study Area.**

The study was carried out in the eye department of Jinja Regional Referral Hospital. The hospital was located at Nile Avenue, Rotary Road, Central Division, Jinja City in South Eastern Uganda and served several districts including Iganga, Mayuge, Bugiri, and Kaliro.

#### **Quantitative Methods.**

This method was used in the later phase of the study to compile data in the form of tables, pie charts, and bar graphs.

#### **Study Population.**

The study population comprised eye patients of Jinja City and the neighboring districts undergoing eye surgery at JRRH.

#### **Sample Size Determination.**

The sample size was determined using Cochran's formula.

$$n = (z^2pq) / d^2$$

where:

n = sample size

Z = the standard normal deviation estimated at 1.96 (adopted from the z distribution at 95% confidence interval)

P = estimated proportion of individuals with microbial keratitis (target population) estimated at 7% = 0.07, which was the maximum.

Q = 1 - P (1 - 0.07) = 0.93 (the probability of selecting respondents with anesthetic effects)

d = the minimum error

A sample size of 100 respondents was considered for the study. The principal investigator intended to use 72 patients for the study.

#### **Sampling Technique.**

A simple random sampling technique was used to pick respondents.

#### **Sampling Procedure**

The principal investigator carried out a simple random sampling of all patients undergoing eye surgery who attended eye care services at JRRH, as well as eye health workers who were on duty at the time of the study. The principal investigator and assistants assigned all the patients a unique number. The numbers 2 and 3 were written on small pieces of paper, then folded put in a basin, and thoroughly mixed. They were told to pick up the papers and open them. Those with the number 2 were picked to participate in the study.

#### **Inclusion Criteria.**

This study included:

Patients of all ages and genders undergoing eye surgery at JRRH.

Patients who received anesthesia during their eye surgery.

#### **Exclusion Criteria.**

This study excluded:

Patients undergoing non-eye surgeries.

Patients who required emergency surgery and could not wait for the research protocol.

Patients who refused to participate in the study or provide informed consent.

#### **Data Collection Method.**

The researcher used interviews as a data collection method, employing an interviewer's guide with structured questions. The tools captured demographic data and any other associated history of anesthetic effects on eye surgery patients.

**Data Collection Tool(s).**

Pre-tested structured questionnaires were formulated and used to collect data.

**Data Collection Procedure.**

Before distributing the questionnaires, fully explained the questions to the respondents, and after being answered, the questionnaires were used to collect data. Each filled questionnaire was checked for accuracy.

**Study Variables.**

Dependent Variables

The anesthetic drugs and effects were the dependent variable

Independent Variable

The type of anesthesia was the independent variable.

**Quality Control.**

This was accomplished through pre-visiting training of research assistants and pre-testing of data by the supervisor for approval. Field editing was performed on the spot and data was kept safely in a file.

**Data Analysis and Presentation.**

Data was analyzed manually using a scientific calculator, and tabulations were made to establish the relationship between the variables. Microsoft Excel was used to draw charts and graphs for a clear presentation of the findings. A computer was used to type the research proposal. The results were presented in tables, figures, and statements.

**Results.**

**Demographic Characteristics of Respondents.**

**Table 1 shows the Demographic data of the Respondents;**

Variable	Category	Frequency	Percentage (%)
Age	25-34	18	25
	35-44	22	30
	45-54	15	20
	55yearsand older	17	25
TOTAL		72	100
Gender	Male	40	56
	Female	32	44
	Total	72	100
Previous eye surgery	Yes	29	40
	No	43	60
	T0tal	72	100

Table 1, indicates that the majority of patients (33%) are between the ages of 45 and 54, indicating that middle-aged individuals make up the largest proportion of eye surgery patients at JRRH. The remaining patients are distributed relatively evenly across the younger and older age groups, with fewer patients aged 55 and above (14%). 56% of patients are male, while 44% are female. This shows a slight predominance of male patients in eye surgery at JRRH, though the difference between genders is not substantial.

More than half (58%) of the patients had no previous history of eye surgery, while 42% had undergone eye surgery

before. This suggests that many patients were experiencing surgery for the first time, which could influence their reactions to anesthesia and overall satisfaction with the care provided.

This study aimed to determine the management practices of adverse reactions related to anesthesia use among eye surgery patients in Jinja Regional Referral Hospital, Jinja, Uganda.

**Management of Anesthesia Effects in Eye Surgery.**

**Table 2: shows the management of anesthetic effects on eye surgery patients.**

Management strategy	Frequency	Percentage
Medication	50	70
Vital sign monitoring	12	16
Patient Education	8	11
Post-operative monitoring	15	21
Judicious use of sedatives and analgesia	5	7%

Table 2: shows that Healthcare providers primarily managed adverse anesthetic reactions using medication (70%), such as opioids for pain and anti-nausea drugs. Oxygen therapy (14%) was used to stabilize patients with respiratory distress, while vital sign monitoring (16%) ensured patient safety by tracking key indicators. Patient education (11%) helped reduce anxiety by preparing patients for potential side effects. In cases of excessive sedation, reversal agents

(8%) like flumazenil were used to awaken patients. Postoperative monitoring (21%) in the PACU ensured smooth recovery, and careful use of sedatives (7%) balanced comfort and safety.

### Patient satisfaction level.

**Table 3: shows the patient's satisfaction with anesthesia with eye surgery**

Satisfaction level	Frequency	Percentage %
Very satisfied	25	35
Somehow satisfied	30	42
Neutral	10	14
Somehow dissatisfied	5	7
Very dissatisfied	2	2
Total	72	100

Table 3: shows that a significant 70% of patients reported being informed about the potential risks associated with anesthesia. This awareness is crucial for patient cooperation and satisfaction during surgery. The 30% who were not informed could benefit from enhanced pre-operative education and communication strategies.

### Discussion of results.

#### Management of Anesthesia Effects.

The objective of the study was to investigate the management of anesthesia effects in eye surgery data analysis and interpretation revealed the following major findings under this study revealed that the primary management strategy for anesthesia-related effects was medication (70%), such as analgesics and anti-nausea drugs. Vital sign monitoring (16%) and postoperative care (21%) were also critical components of the management process. These findings agree with Sohn et al. (2016), who emphasized the importance of monitoring vital signs and using medications judiciously to manage anesthesia-related complications. Both studies suggest that close monitoring during and after surgery plays a crucial role in preventing severe anesthetic reactions.

Patient education was also part of the management strategy, with 11% of patients receiving counseling before surgery. This is supported by (Jung, 2009), who highlighted the significance of preoperative education in preparing patients for surgery and minimizing anxiety. The present study agrees with this approach, noting that informed patients were better able to cope with side effects. However, the current study revealed a lower emphasis on judicious use of sedatives and reversal agents (7%) compared to Aksoy et al. (2018), who recommended a more proactive approach in managing sedation-related complications. This could indicate an area for improvement in the management of

sedation at JRRH and patient outcomes. The occurrence of common side effects like nausea, dizziness, and headaches emphasizes the need for improved perioperative management, particularly for patients undergoing more invasive procedures or using general anesthesia. The management of anesthetic effects at JRRH is generally effective, with a heavy reliance on medication and postoperative monitoring. However, there is room for improvement in areas such as sedation management and patient education. A more structured approach to educating patients before surgery could reduce the frequency of severe side effects and improve overall satisfaction with care surgery and anesthesia management.

### Conclusion.

Management of anesthesia-related side effects primarily relied on medication and postoperative monitoring. While these strategies were largely effective, there is room for improvement in managing severe pain, reducing side effects, and enhancing patient education before surgery.

### Study limitations.

The data collection process was expensive in terms of purchasing materials and was time-consuming. There were limitations related to access to patient records, potential bias in data, and a small sample size. To overcome these issues, data triangulation, multiple sources, and statistical controls were employed, and collaboration with experts was established to ensure the findings were valid, reliable, and generalizable.

### Recommendations.

Extend monitoring for patients who experience prolonged recovery times or severe side effects. Early detection and

intervention can prevent complications and ensure a smoother recovery.

Ensure careful titration of sedatives and monitor sedation levels closely during surgery. Increase the use of reversal agents in cases of excessive sedation to promote quicker recovery and minimize postoperative complications.

Provide continuous professional development for anesthesia providers, focusing on the latest techniques and best practices for anesthesia administration, pain management, and side effect control.

Conduct additional research on long-term anesthesia effects in ophthalmic surgery patients, focusing on improving pain management, reducing side effects, and optimizing patient outcomes.

By adopting these recommendations, JRRH can enhance anesthesia care for eye surgery patients, reducing complications and improving patient satisfaction with surgical outcomes.

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### List of abbreviations.

AM	anesthesia monitoring.
PONV	Postoperative Nausea and Vomiting
OCO	Ophthalmic Clinical Officers.
UAHEB	Uganda Allied Health Examinations Board.
ES	Eye surgery.
HMIS	Health Management Information System.
MOH	Ministry of Health.
WHO	World Health Organization.
PACU	Post anesthesia care unit

### Source of funding.

There is no source of funding.

### Conflict of interest.

The authors declare no conflicting interest.

### Availability of data.

Data used in this study is available upon request from the corresponding author.

### Authors contribution.

SMM designed the study, conducted data collection, cleaned and analyzed data, and drafted the manuscript and JK supervised all stages of the study from conceptualization of the topic to manuscript writing and submission.

### Ethical Considerations.

A permission letter and an introductory letter from the principal of the OCO Training School were taken to the hospital director who recommended the researcher to the in-charge of the JRRH eye department, who then permitted the research.

### Informed Consent.

Verbal consent was sought from the patients after explaining the study topic. The patients were assured of their right to consent. Before data collection, the principal investigator and research assistants assured the patients that the information collected would be kept confidential and used only for academic purposes and planning to promote a better social life for adults aged 18 years and above. To further ensure confidentiality, code numbers were used instead of the patients' names.

### Authors biography.

Steven Masayi Masaba is a student with a diploma in clinical ophthalmology at Ophthalmic Clinical Officers Training School Jinja.

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