

A cross-sectional study on anesthetic effects on eye surgery patients in Jinja Regional Referral Hospital, Jinja, Uganda.

Steven Masaba Masayi*, Jonathan Kitanda, Micheal Kabasa
Ophthalmic Clinical Officers Training School, Jinja.

Abstract

Background.

Despite anesthesia's critical role in ensuring surgical comfort and safety, there is an inadequate understanding of its effects on patients undergoing eye surgery. This study assesses the anesthetic effects on patients undergoing eye surgery at Jinja Regional Referral Hospital, Jinja, Uganda.

Methodology.

The study used a descriptive cross-sectional design. Quantitative data were collected through semi-structured questionnaires from simple random samples of participants. Data analysis was done manually, and results were presented in the form of tables, charts, and figures.

Results

Most 40(56%) of participants were male, modal age 45 to 54 had a high proportion of eye surgery patients, 29(40%) had history of eye surgery and 43 (60%) had no history of eye surgery, 50% indicated predominance of local anesthesia, 42% of patients experienced mild pain after surgery, 25(35%) presented with nausea, 18(25%) dizziness 10(14%) vomiting, 12(17%) headache, 7(9%) fatigue as anaesthetic effects, 50(70%) patients were managed with medication, 12(16%) managed with vital sign monitoring, 8(11%) managed with patient education 15(21%) with post-operative monitoring and 5(7%) with analgesia and sedatives then 30(42%) were somehow satisfied with eye surgery services.

Conclusions.

Anesthetic effects on eye surgery patients were generally manageable, with most patients reporting mild pain or no pain post-surgery. However, a small proportion experienced severe pain, indicating the need for tailored pain management strategies. Common side effects such as nausea, dizziness, and headaches were frequently reported, particularly among patients receiving general or regional anesthesia.

Recommendations.

There is a need to provide comprehensive preoperative counseling to all patients about the type of anesthesia, potential side effects, and recovery expectations. This will help patients better understand and manage side effects, improving overall satisfaction.

Keywords: Anesthetic effects, Eye surgery, Ophthalmic anesthesia, Surgical outcomes, Patient safety, Postoperative recovery, Complications, Jinja Regional Referral Hospital, Uganda.

Submitted: September 18, 2024 **Accepted:** October 30, 2025 **Published:** January 01, 2026

Corresponding Author: Steven Masaba Masayi

Email: Masabasteven123@gmail.com

Ophthalmic Clinical Officers' Training School, Jinja

Background.

Anaesthesia, defined as the loss of sensation with or without loss of consciousness, is essential in ensuring patient comfort and safety during surgical procedures. In the area of eye surgery, anesthesia plays a crucial role in facilitating optimal surgical outcomes and patient well-being. The types of anaesthesia commonly employed in eye surgery include local anaesthesia, regional and general anaesthesia, customized to the specific needs of patients and the requirements of surgical procedures.

Globally, the types of anaesthesia used in eye surgery include local, regional, topical, retrobulbar, intracameral, subconjunctival, peribulbar, sub-Tenon's, and general

anesthesia. These have evolved over the years with improvements in anesthetic techniques and pharmacological agents aimed at improving eye surgery outcomes and reducing complications.

Anaesthesia effects in eye surgery are, IOP increase, dryness or irritation of the ocular surface, inadequate anesthesia or excessive manipulation during surgery can result in corneal edema, leading to blurred vision and delayed visual recovery Anaesthesia-related factors, such as intraoperative hypotension or prolonged positioning, may increase the risk of retinal detachment following eye surgery (Patel & Nguyen, at al 2020) anaesthesia medications trigger postoperative nausea and vomiting, causing Diplopia

Temporary double vision ptosis, as a result of anaesthesia infiltration affecting the function of the levator palpebral superioris muscle Blepharoptosis Conjunctiva Hemorrhage occurs during anaesthesia Injection in the tissue, resulting in redness and discomfort, Some patients may experience allergic reactions to anaesthesia medications, manifesting as itching and rash. Anaesthesia drugs may affect cardiovascular function, leading to changes in heart rate, blood pressure, or cardiac output during eye surgery (Brown & Smith et al, 2019).

Also Anaesthesia-related effects on eye surgery patients is managed to ensure optimal surgical outcomes and patient satisfaction through; conducting preoperative assessment, having individualized anesthesia plan, Intra operative monitoring of vital signs i.e. intraocular pressure and oxygen throughout surgery, along with careful medication selection and dosage of anesthesia drugs, patient education and counseling play a crucial role in preparing patients for the anesthesia experience, alleviating anxiety, and fostering cooperation. This study determined the effects of anesthesia on patients receiving eye surgery in Jinja regional referral hospital.

Methodology.

Study Design

A descriptive cross-sectional study design, which involved quantitative methods to determine anaesthetic effects on eye surgery patients in Jinja regional referral hospital, was employed.

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.

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

The 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

Simple random sampling of all patients undergoing eye surgery who attended eye care services at JRRH was carried out, as well as eye health workers who were on duty at the time of the study. The principal investigator and assistants assigned each patient a unique number. The numbers 2 and 3 were written on small pieces of paper, then folded and 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 are undergoing eye surgery at JRRH.

Patients who received anaesthesia during their eye surgery.

Exclusion Criteria

This study excluded:

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

Data Collection Method

Data was collected through interviews, 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, the researcher 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 anaesthesia 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.

Ethical approval.

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 person 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 better social life for adults aged 18 years and above. To further ensure confidentiality, code numbers were used instead of the patients' names.

Results.

Demographic Characteristics of Respondents

A total of 72 patients participated in the study. Understanding the demographic characteristics of the respondents is essential for contextualizing the results. The following table summarizes the demographic data collected.

Table 1 shows 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
	TTotal	72	100

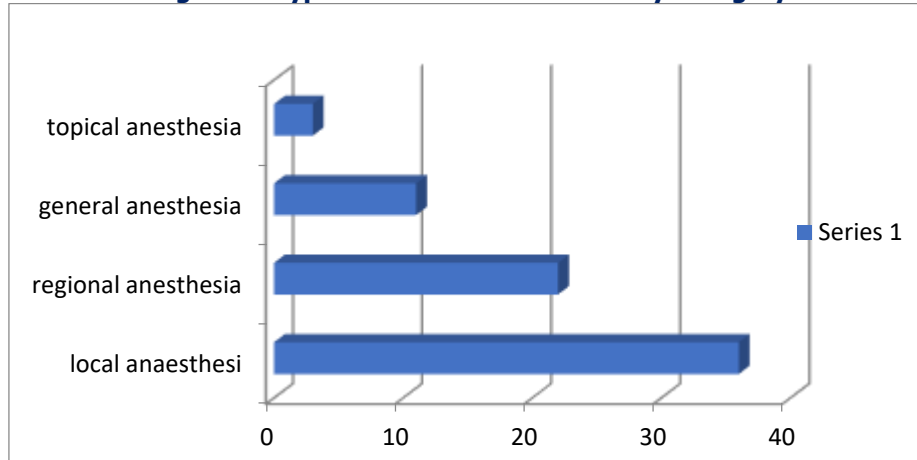
Table 1 shows that the majority of patients (33%) are between the ages of 45 and 54, indicating that middle-aged individuals make up the largest proportion of eye surgery patients at JRRH. The remaining patients are distributed relatively evenly across the younger and older age groups, with fewer patients 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.

Common Types of Anesthesia Used in Eye Surgery

This section identifies the various types of anaesthesia administered to patients during eye surgeries. Understanding the common types used is crucial for evaluating their effectiveness and patient comfort.

Figure 1: Types of Anesthesia Used in Eye Surgery



The predominance of local anesthesia (50%) aligns with current clinical practices, where it is preferred for its effectiveness in pain control during minor eye procedures. Regional anesthesia (30%) is also significant, particularly in more invasive surgeries, while general anesthesia (15%) is reserved for complex cases. The low usage of topical anesthesia (5%) suggests it may be more suited for specific situations or less invasive procedures.

Overall anaesthetic effects on Eye Surgery Patients

This section examines the effects of anesthesia on eye surgery patients, focusing on pain levels, side effects, and recovery.

Figure 2: showing Pain levels experienced by patients Post-Surgery

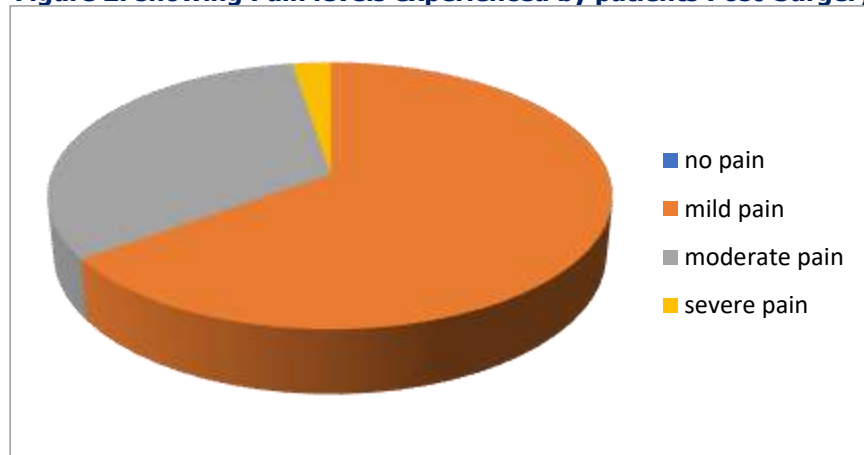


Figure 2 shows that 42% of patients experienced mild pain after surgery, while 28% reported no pain at all. A smaller portion (9%) experienced severe pain, indicating that the majority of patients had manageable or minimal discomfort

following anesthesia and surgery. This suggests that anesthesia administration was effective in controlling pain in most cases.

Common side effects reported by eye surgery patients.

Table 2 Reported Anesthetics Side Effects

Side Effect	Number of Respondents	Percentage (%)
Nausea	25	35
Dizziness	18	25
Vomiting	10	14
Headache	12	17
Fatigue	7	9
Total	72	100

Table 2 shows that nausea was the most frequently reported side effect, experienced by 35% of patients. Dizziness (25%) and headaches (17%) were also commonly reported. These results suggest that although side effects were common, they

were generally mild and manageable, with more severe effects like vomiting affecting a smaller portion of the patients.

Recovery Time from Anaesthesia

Table 3: Recovery Time

Recovery time	Frequency	Percentage
Less than 30mins	20	28%
30 minutes to 1 hour	25	25%
1-2hours	15	21%
2-3hours	7	10%
More than 3 hours	5	6%
Total	72	100%

The recovery time findings indicate that 75% of patients recovered within the first hour, which is a positive outcome reflecting effective anesthesia administration. However,

10% of patients took longer than 1 hour to recover, warranting further investigation into their medical history or surgical complications.

Management of Anesthesia Effects in Eye Surgery

Table 4 shows the management of anaesthetic 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%

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's satisfaction level

Table 5 shows the patients' satisfaction with anesthesia during 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

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

Common Types of Anesthesia Used in Eye Surgery

The objective of the study was to find out the common types of anesthesia used in eye surgery. The data analysis and interpretation revealed the following major findings under this objective.

The study revealed that local anesthesia was used in 50% of the cases at JRRH, regional anesthesia in 30%, general anesthesia in 15%, and topical anesthesia in 5%. These findings agree with Mahan et al. (2023), who reported that local and regional anesthesia are preferred in eye surgeries due to their effectiveness in pain control and reduced intraoperative complications. The study also agrees with Mahan et al. that local anesthesia is effective for minor eye surgeries such as cataracts, while regional anesthesia is preferred for more invasive surgeries, including glaucoma procedures.

However, these findings indicate a lower use of topical anesthesia (5%) compared to Lodhi et al. (2023) in India, who reported a higher uptake of topical anesthesia for cataract surgery. This discrepancy could be due to differences in surgical practices, patient demographics, or the availability of anesthetic agents in the two regions. The present study agrees with Scholle et al. (2020) on the effectiveness of local and regional anesthesia in ensuring good surgical outcomes, but notes that topical anesthesia is less commonly used at JRRH.

Anesthetic Effects on Eye Surgery Patients

The findings revealed that 42% of patients experienced mild pain after surgery, 28% reported no pain, and 9% experienced severe pain. This aligns with Lee et al. (2019), who observed that most patients experience mild discomfort following cataract surgeries, but a small proportion may suffer from more severe pain. The current study supports Lee's findings that anesthesia, particularly local and regional types, is effective in controlling pain in the majority of cases.

Side effects such as nausea (35%), dizziness (25%), and headaches (17%) were frequently reported, findings that are similar to the work of Kumar et al. (2015), who identified

nausea and vomiting as common side effects of anesthesia in eye surgery patients. The occurrence of these side effects in the present study supports the literature's assertion that anesthesia-related side effects are common, especially when using general and regional anesthesia.

However, the current study found a slightly higher incidence of severe pain compared to Kumar et al. (2015), who noted lower levels of postoperative pain in patients receiving local anesthesia. This could indicate a need for individualized pain management strategies at JRRH, especially for patients undergoing more invasive procedures.

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: 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 Pablo et al. (2015), 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.

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.

Conclusions.

Local and regional anesthesia are the most commonly used techniques in eye surgeries at Jinja Regional Referral Hospital (JRRH), aligning with global standards. These methods provide effective pain control with minimal complications, making them suitable for most eye surgeries. Anesthetic effects on eye surgery patients were generally manageable, with most patients reporting mild pain or no pain post-surgery. However, a small proportion experienced severe pain, indicating the need for tailored pain management strategies. Common side effects such as nausea, dizziness, and headaches were frequently reported, particularly among patients receiving general or regional anesthesia.

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.

Recommendations

Provide comprehensive preoperative counseling to all patients about the type of anesthesia, potential side effects, and recovery expectations. This will help patients better understand and manage side effects, improving overall satisfaction.

Develop individualized pain management strategies for patients, especially those undergoing more invasive procedures or those at higher risk for severe pain. Consider multimodal pain management approaches, combining various analgesics and non-pharmacological methods.

Implement preventive measures, such as administering anti-nausea medications preemptively for patients undergoing general or regional anesthesia. This can help reduce the incidence of common side effects like nausea and dizziness. Conduct additional research on long-term anesthesia effects in ophthalmic surgery patients, focusing on improving pain management, reducing side effects, and optimizing patient outcomes.

Acknowledgement

I would like to give my sincere appreciation to the almighty GOD for his mercy and grace granted to me in this period of three years to attain knowledge in the field of eye care health.

I thank my supervisor, Mr. Kitanda Jonathan, for his good work in the continuous guidance and corrections made in my work to reach this final work worthy of presentation.

Special thanks to my parents, sisters, and other lovely family members for their support throughout my educational career.

The principal, academic registrar, and all the school staff for guiding me throughout my program. I also sincerely appreciate the entire clergy of ophthalmic clinical officers' CATHOLIC community for the spiritual and moral support during my stay at the ophthalmic training school in Jinja.

I also sincerely appreciate Jinja regional referral hospital management for their effort to make me a competent ophthalmic clinical officer who gave me a helping hand in any way, and this is highly appreciated.

My extended appreciation also goes to the Uganda Allied Health Examination Board for the opportunity granted to me to carry out research during the course of my program.

List of abbreviations

JRRH: Jinja Regional Referral Hospital

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

The study was not funded.

Conflict of interest.

There is no conflict of interest.

Availability of data.

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

Author's contribution.

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

Authors biography

Steven Masaba Masayi is a student of Diploma in Clinical Ophthalmology at Ophthalmic Clinical Officers' Training School, Jinja.

Jonathan Kitanda is a research supervisor at Ophthalmic Clinical Officers' Training School, Jinja.

Michael Kabasa is a research supervisor at the Ophthalmic Clinical Officers' Training School in Jinja.

anaesthesia in cataract surgery: 1 year national survey of practice and complications in the UK. *British Journal of Ophthalmology*, 100(6), <https://doi.org/10.1136/bjophthalmol-2015-307060>.

6. Lodhi, O., & Tripathy, K. (2023). Anesthesia for eye surgery. In StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK572131/>
7. Mahan, M., Flor, R., & Purt, B. (2023, May 7). Local and Regional Anesthesia in Ophthalmology and Ocular Trauma. In StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK574554/>
8. Scholle, T. M. (2020). Anesthesia for ocular surgery. *International Ophthalmology Clinics*, 60(4), 41-60. <https://doi.org/10.1097/IIO.0000000000000337>
9. Sohn, H. M., & Ryu, J. H. (2016). Monitored anesthesia care in and outside the operating room. *Korean journal of anesthesiology*, 69(4), 319. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4967625/>
<https://doi.org/10.4097/kjae.2016.69.4.319>

References.

1. Aksoy, M., İnce, İ., Ahiskalioğlu, A., Keleş, S., & Doymuş, Ö. (2018). Effect of intravenous preoperative versus postoperative paracetamol on postoperative nausea and vomiting in patients undergoing strabismus surgery: A prospective randomized study. *Agri*, 30(1), 1-7. https://jag.journalagent.com/agri/pdfs/AGRI_30_1_17.
2. Gross, M. E., & Pablo, L. S. (2015). Ophthalmic patients. *Veterinary Anesthesia and Analgesia: The Fifth Edition of Lumb and Jones*, 961-982. <https://doi.org/10.1002/9781119421375.ch52>.
3. Kumar, C. M., Seet, E., Eke, T., Irwin, M. G., & Joshi, G. P. (2019). Peri-operative considerations for sedation-analgesia during cataract surgery: a narrative review. *Anaesthesia*, 74(12), 1601-1610. <https://doi.org/10.1111/anae.14845>.
4. Kumar, M., Chawla, R., & Goyal, M. (2015). Topical anesthesia. *Journal of Anesthesiology Clinical Pharmacology*, 31(4), 450-456. <https://doi.org/10.4103/0970-9185.169049>
5. Lee, R. M., Thompson, J. R., & Eke, T. (2016). Severe adverse events associated with local

PUBLISHER DETAILS:

SJC PUBLISHERS COMPANY LIMITED



Category: Non Government & Non profit Organisation
Contact: +256 775 434 261 (WhatsApp)
Email: info@sjpublisher.org or studentsjournal2020@gmail.com
Website: <https://sjpublisher.org>
Location: Scholar's Summit Nakigalala, P. O. Box 701432, Entebbe Uganda, East Africa