

Original Article

Complications of General Anesthesia in Older Patients 

DOI: dx.doi.org

Md Iqbal Hossain^{1*}, Md Anwarul Haque², Shymun Shahriar³, Tapas Kumar Das⁴
Manowarul Islam⁵**Received:** 21 November 2023
Accepted: 25 November 2023
Published: 28 November 2023**Published by:**
Sheikh Sayera Khatun Medical
College (SSKMC), Gopalganj,
Bangladesh

*Corresponding Author

This article is licensed under a
[Creative Commons Attribution 4.0
International License](https://creativecommons.org/licenses/by/4.0/).**ABSTRACT**

Introduction: General anesthesia is a crucial and widely employed anesthetic procedure utilized in various surgical interventions. Without general anesthesia, many of these surgeries, which are often lifesaving or life-altering, would be impracticable. Nonetheless, it's essential to recognize that all medical procedures carry inherent risks, even when administered by skilled professionals. **Aim of the study:** This study aimed to assess the complications of general anesthesia in older patients. **Methods and materials:** This prospective observational study was conducted at the Department of Anaesthesiology, Dhaka National Medical Institute Hospital, Dhaka, Bangladesh from December 2022 to September 2023. The study included 43 elderly surgical patients under general anesthesia. Sampling was purposive, and data were collected using a pre-designed questionnaire and analyzed with MS Office tools. **Results:** Postoperative complications were quite common, with pain at the operative site (81%), dry mouth or increased thirst (78%), and somnolence (69%) being the most prevalent. Additionally, hoarseness (43%), headache (39%), transfusion requirements (35%), and nausea-vomiting (33%) were notable. Some patients experienced muscle weakness and pain, altered consciousness, urination problems, sensations of cold/chills, and pneumonia. **Conclusion:** The most prevalent postoperative complications for older surgical patients who have undergone general anesthesia are pain at the surgical site, dry mouth, increased thirst, and somnolence. Physicians should also be prepared to address potential complications such as hoarseness, headache, increased transfusion needs, and nausea and vomiting in these patients.

(The Insight 2023; 6(1): 133-137)

1. Junior Consultant, Department of Anaesthesiology, Dhaka National Medical Institute Hospital, Dhaka, Bangladesh
2. Junior Consultant, Department of Anaesthesiology, Dhaka National Medical Institute Hospital, Dhaka, Bangladesh
3. Junior consultant, Department of Anaesthesiology, 250 Beded General Hospital, Jamalpur, Bangladesh
4. Associate Professor & Head, Department of Anesthesiology, Dhaka National Medical College, Dhaka, Bangladesh
5. Professor & Ex Head, Department of Anesthesiology, Dhaka National Medical College, Dhaka, Bangladesh

Keywords: *Older patients, Complications, General anesthesia, Dry mouth, Increased thirst, Somnolence*

INTRODUCTION

Each medical procedure carries specific potential complications and anesthesia-related risk factors. General anesthesia, while typically safe, can lead to certain complications. The administration of general anesthesia necessitates the placement of a breathing tube to facilitate mechanical ventilation throughout the surgical procedure. This is essential because general anesthesia drugs not only induce unconsciousness and render the patient insensitive to surgical pain but also cause temporary paralysis of the body's muscles, including those responsible for respiratory function. These complications encompass a spectrum of issues, ranging from immediate perioperative concerns like anesthetic anaphylaxis to various post-operative complications, both minor and major. The minor complications that are common include throat soreness, hoarseness, feeling cold, somnolence, chills, headache, breathing problems, muscle pain, post-operative nausea and vomiting, and dental damage. Nausea and vomiting that improve within 24 hours post-operation is known as postoperative nausea and vomiting (PONV) [1]. In the postoperative period, it is the most common complaint except for pain. While the occurrence is about 30% in all patients, it increases to 70% in high-risk patients [2]. Postoperative nausea and vomiting (PONV) in patients can cause morbidity due to aspiration pneumonia, obstruction, airway dehydration, and suture tightening or rupture [3]. It increases costs and prevents early discharge of patients [4]. A study reported that major complications of general anesthesia, while unusual, include pulmonary issues, brain damage, delirium, nerve injury, cardiovascular collapse, circulatory problems, and neurological complications [5]. The various medications and procedures used during general anesthesia, combined with the patient's

overall health, can lead to a range of these issues. Therefore, it is crucial for nurses to be well-prepared to respond and monitor patients for any changes to prevent major complications, further health issues, extended hospital care, or even potential mortality [5]. Additionally, it's reasonable to theorize that a perioperative period focused on reducing stress may help mitigate or prevent harmful physiological responses, ultimately reducing morbidity [6]. The diagnosis of this condition is rather complex and relies on neuropsychological tests, but a universally accepted methodology is still lacking [7]. Cognitive decline associated with this condition may show signs of improvement either early or late in the postoperative course, or it may persist as a precursor to dementia. In susceptible individuals, dementia can develop months to years after the initial cognitive decline with no recovery [8]. The objective of this current study was to assess the complications of general anesthesia in older patients.

METHODS & MATERIALS

This was a prospective observational study conducted at the Department of Anaesthesiology, Dhaka National Medical Institute Hospital, Dhaka, Bangladesh from December 2022 to September 2023. The study included 43 older patients who underwent various surgeries with the use of general anesthesia. Sample selection was carried out using a purposive sampling technique, and informed written consent was obtained from all participants before data collection. The inclusion criteria for this study encompassed patients aged 60 years and older, surgical procedures lasting more than one hour, and a hospital stay of at least four days. On the other hand, the exclusion criteria for this study involved patients with a history of major psychiatric disease, dementia, or any diseases affecting the central nervous

system (such as meningitis, encephalitis, brain tumors, neurodegenerative, inflammatory, or cerebrovascular diseases) based on medical records. All demographic and clinical information of the participants was documented. Data processing, analysis, and reporting were carried out using Microsoft Office tools.

RESULT

In this study, regarding the age and gender distribution of the study subjects, it was observed that approximately two-thirds of the patients (65.1%) were male, and the remaining cases were female. The mean age of the participants was 71.7 ± 6.3 years. In terms of comorbidities, approximately one-fourth of the patients (25.6%) had hypertension, while ischemic heart disease, diabetes mellitus, and COPD were present in 23.3%, 16.3%, and 18.6% of the cases, respectively. In the preoperative clinical assessment, most of the patients had ASA scores of II, which accounted for 56% of the cases, while those with ASA scores of III-IV made up the remaining 44%. The average operation time was approximately 139.5 minutes with a standard deviation of ± 71.7 minutes. The patients reported a mean visual analog scale (VAS) score of 4.9 with a standard deviation of ± 2.8 , indicating the level of pain or discomfort they experienced. The surgical risk grade was determined to be intermediate in most cases (84%). In 11% of cases, the grade was major, and in 5% of cases, the grade was minor. Among the participants, various surgical specialties were represented. Among the participants, 33% of the surgeries were in orthopedics, 23% in gynecology, 21% in general surgery, 19% in ear, nose and throat, and 5% in oncology. As the postoperative complication, in most of the cases, pain in the operative place (81%), dry mouth or increased thirst (78%), and somnolence (69%) were found. Besides, in 43%, 39%, 35% and 33% of the cases, hoarseness, headache, transfusion requirement and nausea-vomiting were observed which was

also noticeable. In some cases, weakness and pain of muscles, a disorder of consciousness, urination problems, feeling cold/ chills and pneumonia were present.

Table I: Age and gender of participants (N=43)

Characteristics	n	%
Male	28	65.1%
Female	15	34.9%
Mean age (Year)	71.7 ± 6.3	

Table II: Comorbidities among patient

Complications	n	%
Ischemic heart disease	10	23.3%
Diabetes mellitus	7	16.3%
COPD	8	18.6%
Hypertension	11	25.6%

Table III: Preoperative clinical status

Clinical data	n (%) / mean	
ASA score II	24	56%
ASA score III-IV	19	44%
Visual analog scale	4.9 ± 2.8	

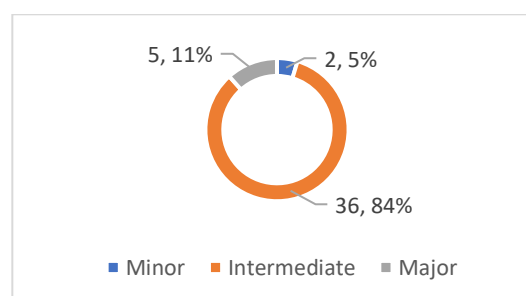


Figure 1: Surgical risk grade
Table IV: Surgical specialty among participants

Surgical specialty	n	%
Orthopedics	14	33%
Gynecology	10	23%
General surgery	9	21%
Ear, nose & throat	8	19%
Oncology	2	5%

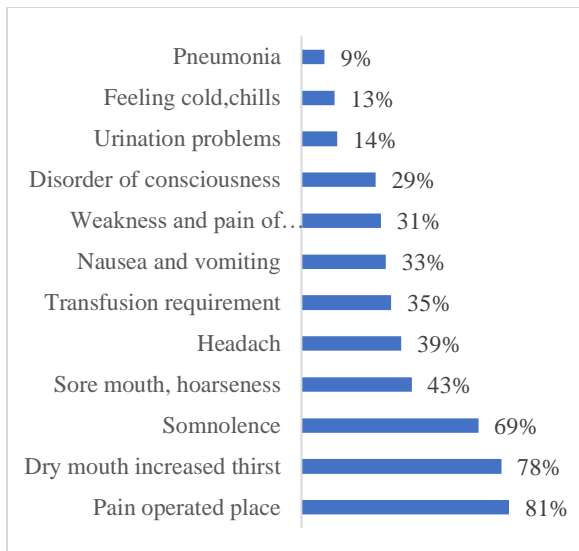


Figure 2: Postoperative complications among patients

DISCUSSION

This study aimed to assess the complications of general anesthesia in older patients. In this study, we observed that nearly two-thirds of the patients (65.1%) were male, and the remaining cases were female, with a mean age of 71.7 ± 6.3 years. A study in Japan reported that risk factors for a decreased survival rate in patients aged 80 years and older who underwent surgery with general anesthesia included male sex, dependency in daily living, and abdominal surgery [9]. In terms of preoperative comorbidities, a quarter of the patients (25.6%) had hypertension, while ischemic heart disease, COPD, and diabetes mellitus were found in 23.3%, 18.6%, and 16.3% of the cases among all participants. Another similar study reported a mean age of 70.9 ± 7.4 among their study participants, with 68% male and 32% female [10]. In terms of comorbidities, they found that 23% had hypertension, 21% had ischemic heart disease, 18% had COPD, and 18% had diabetes mellitus. In analyzing the preoperative clinical data of patient, in 56% and 44% cases, ASA score were found II and III-IV respectively. On the other hand, the mean operation time (min) was found 139.5 ± 71.7 and visual analogue

scale (max) was found 4.9 ± 2.8 . The surgical risk grade was found to be intermediate in the majority of cases (84%), while 11% of cases were classified as major risk, and 5% were considered minor risk among all the participants. Our study's findings were consistent with a study conducted by H. Misiólek [11]. In this study, among the participants, 33% of the surgeries were in orthopedics, 23% in gynecology, 21% in general surgery, 19% in ear, nose & throat, and 5% in oncology. Asma Afroz conducted a study that found similar results, with gynecology accounting for 42% of cases, orthopedics for 33%, ear, nose, and throat (ENT) for 21%, and oncology for 14% of surgical specialties among total participants [12]. In our study, the most common postoperative complications included pain at the operative site (81%), dry mouth or increased thirst (78%), and somnolence (69%). Additionally, hoarseness, headache, transfusion requirement, and nausea-vomiting were observed in 43%, 39%, 35%, and 33% of cases, respectively. Other less common complications included muscle weakness and pain, altered consciousness, urination problems, cold sensation/chills, and pneumonia. These findings were like another study [13]. Additionally, disorders of consciousness, urination problems, feelings of cold, chills, and pneumonia were found in 29%, 14%, 13%, and 9% of cases, respectively. Patients in this study reported experiencing a sensation of cold and/or chills in the post-operative room immediately after the procedure. Measures were also taken to control the occurrence of hypothermia in patients. These results were compared to those of another study conducted by B. Horosz and M. Malec-Milewska [14]. In another study, it was reported that females were more susceptible to post-operative nausea and vomiting [15].

Limitation of the study:

This study was limited by its single-center design and relatively small sample size.

Additionally, the study had a short duration. Consequently, the findings from this research may not accurately represent the broader scenario across the entire country. It's important to consider these limitations when interpreting and applying the study's results.

CONCLUSION & RECOMMENDATION

As per the findings of this current study, we can conclude that, postoperative complications in older surgical patients who have undergone general anesthesia often manifest as pain at the surgical site, dry mouth, increased thirst, and somnolence. Healthcare providers should also be ready to manage potential issues like hoarseness, headache, increased transfusion requirements, and nausea and vomiting in these patients. This understanding of common postoperative complications is vital for the comprehensive care and well-being of older individuals following surgery with general anesthesia.

Funding: No funding sources

Conflict of interest: None declared.

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. McCracken G, Houston P, Lefebvre G. Guideline for the management of postoperative nausea and vomiting. *Journal of obstetrics and gynaecology Canada*. 2008 Jul 1;30(7):600-7.
2. Gan TJ. Risk factors for postoperative nausea and vomiting. *Anesthesia & Analgesia*. 2006 Jun 1;102(6):1884-98.
3. Miller, R. D., Eriksson, L. I., Fleisher, L. A., Wiener-Kronish, J. P., & Young, W. L. (2010). *Miller's Anaesthesia*. (7th edn), Churchill Livingstone Elsevier, Philadelphia, 2, 2728-2755.
4. Gan, T. J., Meyer, T., Apfel, C. C., Chung, F., Davis, P. J., Eubanks, S., & Watcha, M. (2003). Consensus guidelines for managing postoperative nausea and vomiting. *Anesthesia & Analgesia*, 97(1), 62-71.
5. Harris M, Chung F. Complications of General Anesthesia. Accessed on 13 October 2016.
6. Kehlet, H. (1989). Surgical stress: the role of pain and analgesia. *Br J Anaesth*, 63, 189-195.
7. Funder KS, Steinmetz J, Rasmussen LS. Methodological issues of postoperative cognitive dysfunction research. *Semin Cardiothorac Vasc Anesth* 2010; 14:119-22.
8. Evered LA, Silbert BS. Postoperative Cognitive Dysfunction and Non-cardiac Surgery. *Anesth Analg* 2018; 127:496-505.
9. Chung JY, Chang WY, Lin TW, Lu JR, Yang MW, Lin CC, Chang CJ, Chou AH. An analysis of surgical outcomes in patients aged 80 years and older. *Acta Anaesthesiologica Taiwanica*. 2014 Dec 1;52(4):153-8.
10. Orhun, Günseli, et al. "Comparison of epidural analgesia combined with general anesthesia and general anesthesia for postoperative cognitive dysfunction in elderly patients." *Turkish Journal of Trauma & Emergency Surgery/Ulusal Travma ve Acil Cerrahi Dergisi* 26.1 (2020).
11. Misiolek H, Cettler M, Woron J, Wordliczek J, Dobrogowski J, Mayzner-Zawadzka E. Zalecenia postępowania w bólu pooperacyjnym: 2014. *Anestezjologia, Intensywna Terapia*. 2014;46(4).
12. Asma Afroz, Rehan Uddin Khan, Chandra Shekhor Kormokar (2023). *General Anesthesia Complications in Different Surgeries: A Single Center Study in Bangladesh*. *Saudi J Med*, 8(1): 18-23.
13. Szkutnik-Fiedler D, Szalek E, Grześkowiak E. Zasady leczenia bólu pooperacyjnego. Management of postoperative pain. *Farmacja Współczesna*. 2010;3:21-9.
14. Horosz B, Malec-Milewska M. Niezamierzona śródoperacyjna hipotermia. *Anestezjol Intens Ter*. 2013 Mar 19;45:41-7.
15. Dąbrowski, S., Mędrzycka- Dąbrowska, W., Węgielnik, J., & Basiński, A. (2009). Zapobieganie i leczenie pooperacyjnych nudności i wymiotów (PONV). *Anestezjologia i Ratownictwo*, 3, 360-363.