Original Article

DOI: https://doi.org/10.47648/jswmc2026v16-1-141

Cross-Sectional Study on Different Types of Anesthesia and Different Types of Surgeries in Three Different Types of Hospitals of Bangladesh

*Rashel ATM [1], Ali E [2], Miah MA [3], Fahim MSR [4], Dey A[5], Munalisa TA[6].

Abstract:

Introduction: Surgical operations are one of the key components of modern treatment. Different departments perform different surgeries to cure the patients. There are different subtypes of anesthesia are available now a day. Types of anesthesia and types of surgeries may vary from different types of hospitals.

Methodology: This was a cross-sectional observational study. The aim of the study was to evaluate different types of anesthesia and different types of surgeries performed in three types of hospitals. Data were collected from a government medical college hospital, private medical college hospital and a private hospital. Study period was 1 year.

Result: Government medical college hospital, private medical college hospital and a private hospital operated 31508, 8076 and 6964 cases respectively in one year. Spinal anesthesia was highest (46.72%, 47.00% and 38.16% respectively). Highest number of surgery was performed by General surgery in government medical college (33.16%), Orthopedics (30.00%) and Obstetric & Gynecology in private medical hospital (42.16%).

Conclusion: Application of different types of anesthesia are nearly same in all types of hospitals but number of different types of surgical operations may vary in different types of hospitals.

Received date: 25-10-2025

Accepted date: 22-11-2025

Key words: Types of anesthesia, types of surgery, different types of hospitals.

How to cite this article: Rashel ATM, Ali E, Miah MA, Fahim MSR, Dey A, Munalisa TA. Cross-sectional study on different types of anesthesia and different types of surgeries in three different types of hospitals of Bangladesh. Journal of Sylhet Women's Medical College, 2026 January; 16(1):72-76. https://doi.org/10.47648/jswmc2026v16-1-141

JSWMC 2026 [16(01)] P: 72-76

Introduction:

Anesthesia is one of the key components of surgical procedure. This part of the procedure is used to reduce pain and stress. Anesthesia is usually categorized into three major subtypes, they are general anesthesia, regional anesthesia, and local anesthesia.

1. Dr. Abu Tareq Md Rashel, Assistant Professor, Department of Pharmacology and Therapeutics & Assistant Director of SWMCH..
2. Dr. Ehsan Ali, Assistant Professor, Anesthesiology Sylhet Women's Medical College
3. Dr. Md. Akkas Miah, Associate Professor, Anesthesiology, Sylhet Women's Medical College.
4. Dr. Md. Saidur Rahman Fahim, Student of DA, Sylhet MAG Osmani Medical College
5. Dr. Anik Dey, Assistant Registrar, Urology, Sylhet Women's Medical College Hospital.
6. Dr. Tasnuva Aziz Munalisa, Assistant Professor, Department of Forensic Medicine, SWMCH.

Corresponding author: Dr. Abu Tareq Md Rashel, Assistant Professor, Department of Pharmacology and Therapeutics & Assistant Director of Sylhet Women's Medical College Hospital, Sylhet.
Email: mishu.jmc@gmail.com

General anesthesia induces a reversible loss of consciousness and sensation throughout the entire body, achieved through intravenous agents like propofol or inhalational agents such as sevoflurane. It is often used for major and long time surgeries. General anesthesia is associated with systemic effects, including cardiovascular and respiratory depression, which necessitate close intraoperative monitoring and post-operative recovery care.[1,2]

On the other hand, regional anesthesia is related to anesthesia of a particular nerve distribution area. Spinal, epidural or peripheral nerve blocks are the classical examples of regional anesthesia. This technique is often employed in lower limb, obstetric, or urological surgeries. Compared to general anesthesia, regional techniques may reduce the risk of thromboembolic events and improve postoperative pain control, thus promoting earlier mobilization.[3] Notably, regional anesthesia has become increasingly favored in certain populations, such as the elderly and those with significant

cardiopulmonary comorbidities, due to its favorable safety profile.[4]

Local anesthesia, the most limited in scope, involves the infiltration of anesthetic agents like lidocaine or bupivacaine directly into the tissue at the surgical site. This type of anesthesia is commonly used for minor procedures, such as dental surgery or skin lesion removal. While the risk of systemic toxicity is lower than in general or regional techniques, careful dosing and proper administration are still essential to avoid complications such as local anesthetic systemic toxicity.[5] Emerging techniques, such as ultrasound-guided infiltration and novel slow-release formulations, are enhancing the precision and duration of local anesthesia.[6]

Hospitals perform a wide range of surgeries, each managed by specialized departments based on the organ system or patient group involved. Obstetric surgery primarily includes cesarean sections and surgical management of complications during childbirth, playing a vital role in reducing maternal and neonatal mortality.[7] General surgery encompasses procedures on the abdominal organs, such as appendectomies, cholecystectomies, and hernia repairs, and often serves as the foundation of surgical services, especially in low-resource settings.[8] Orthopedic surgery addresses conditions of the musculoskeletal system, including joint replacements, fracture fixations, and spinal surgeries, significantly enhancing mobility and quality of life.[9] Urologic surgery focuses on disorders of the urinary tract and male reproductive organs, including procedures like prostatectomy and ureteroscopy.[10]

Neurosurgery involves intricate operations on the brain, spine, and peripheral nerves, often for conditions like brain tumors, aneurysms, and spinal cord compression.[11] Meanwhile, ENT (ear, nose, and throat) surgery covers a range of procedures from tonsillectomies to complex sinus or laryngeal surgeries. Finally, ophthalmic (eye) surgery includes cataract extraction, glaucoma interventions, and retinal procedures, which are essential in preventing vision loss and blindness.[12] Together, these surgical specialties form an integrated system crucial for comprehensive hospital-based care.

The aim of the study was to evaluate different types of anesthesia and different types of surgeries in three different types of hospitals such as government medical college hospital, private medical college hospital and private hospital of Sylhet, Bangladesh. The alternate hypothesis was that there are significant differences in types of surgery and types of anesthesia among different types of hospitals.

Methodology:

This was a cross-sectional observational study. Data was collected from 1 private hospital (Ibn Sina Hospital, Sylhet), 1 private medical college hospital (Sylhet Women's Medical College Hospital) and 1 government medical college hospital (Sylhet MAG Osmani Medical College Hospital). Hospitals issued permission for the study were included in this study. Hospitals with inadequate surgery related documents were excluded from the study.IERB approval certificate was achieved from Sylhet Women's Medical College (SWMC). Written permissions were taken from Sylhet MAG Osmani Medical College Hospital (SOMCH) and Ibn Sina Hospital. Study period was 1 year. Pattern of Anesthesia (General Anesthesia, Sub Arachnoid Block, Epidural nerve block, Peripheral nerve block and local Anesthesia) of 2024 calendar year was collected from the operation theatre register book of SWMCH, Ibn Sina Hospital and SOMCH. Name of the different surgery performing departments were documented. After collection all data those were tabulated on Excel datasheet. Difference between the percentage of different types of Anesthesia and different types of surgeries of 3 different hospitals were calculated by chi-square test. P-value 0.05 or below will be considered as significant.

Results:

Types of surgeries and types of anesthesia of three different hospitals were collected.

Figure-1: Total number of anesthesia in three different hospitals

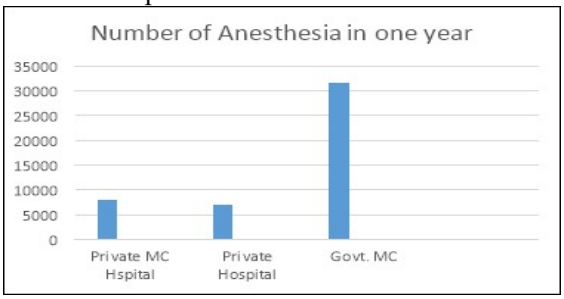

Figure-1 shows different numbers of anesthesia in three different hospitals where number of anesthesia in government medical college hospital (31,508) was higher than the other two hospitals.

Table-1: According to different types of anesthesia.

Types of Anaesthesia	SWMC (N=8076)	%	Ibn Sina (N=6964)	%	SOMC (N=31,508)	%	*p-value
G/A	1655	**20.49**	1978	**28.40**	7219	**22.91**	0.379
SAB	3773	**46.72**	3273	**47.00**	12023	**38.16**	0.371
L/A	2553	**31.61**	1506	**21.63**	11438	**36.30**	0.084
Saddle block	52	**0.64**	162	**2.33**	535	**1.70**	
PNB	33	**0.41**	43	**0.62**	214	**0.68**	
Epidural	7	**0.09**	2	**0.03**	23	**0.07**	
Caudal	3	**0.04**	0	**0.00**	56	**0.18**	

*chi-square test was done.

Table-1 illustrates that SAB type of anesthesia was highest in number for each three hospitals. Local anesthesia (L/A) was second commonest in Government and private medical college hospitals but general anesthesia (G/A) was second in the list in the private hospital. There was no significant differences in mean of the top three types of the anesthesia among the three hospitals.

Table-2: According to types of surgery.

Types of Surgery	SWMC (N=8076)	%	Ibn Sina (N=6964)	%	SOMC (N=31,508)	%	*p-value
Gynae &Obs	3405	**42.16**	1561	**22.42**	9528	**30.24**	**0.009**
Orthopedics	1953	**24.18**	2089	**30.00**	2846	**9.03**	**0.00008**
G. Surgery	1057	**13.09**	1624	**23.32**	10447	**33.16**	**0.003**
Plastic Surgery	450	**5.57**	221	**3.17**	670	**2.13**	0.484
Pedi Surgery	353	**4.37**	141	**2.02**	1498	**4.75**	0.516
Otolaryngology	307	**3.80**	154	**2.21**	2531	**8.03**	0.077
Urology	276	**3.42**	903	**12.97**	1141	**3.62**	**0.007**
Neurosurgery	205	**2.54**	271	**3.89**	702	**2.23**	0.901
Ophthalmology	70	**0.87**	0	**0.00**	1715	**5.44**	0.097

*chi-square test was done.

Table-2 demonstrates the types of the different types of surgeries in the three different hospitals. There was no significant differences in the means of Plastic Surgery, Pediatric Surgery, Otolaryngology, Neurosurgery and Ophthalmology surgeries among the hospitals. On the other hand Gynae &Obs surgeries were higher in medical colleges when Orthopedics surgeries were significantly lower in the government hospital. General surgery operations were significantly lower in the private medical college. Number of Urology surgeries was significantly higher in the private hospital.

Discussion:

This was a cross-sectional observational study on three different categories of hospitals of Sylhet, Bangladesh. Different types of anesthesia and different types of surgeries of one-year period were evaluated and were compared with those of national and international studies.

Ngwenya s et al published their study on number of surgeries in two tertiary hospitals of South Africa. Study period was one year, March 2019 to February 2020.[13] A total 12,252 surgeries were performed in two tertiary hospitals of Limpopo province of South Africa. Highest number of surgeries were Obstetrics & Gynaecology 24.48% followed by Ophthalmology 18.78%, General surgery 17.37%, Orthopaedics 16.75%, Neurosurgery 5.10%, ENT 4.06%, Urology 3.44%, Plastic surgery 2.81%, Paediatric surgery 2.53%, Cardiothoracic 2.38%, Maxillofacial 1.78% and Nephrology 1.06%. In this study number of general surgery (33.16%) cases were highest in the government medical college followed by Obstetric & Gynecology (30.24%). In the private medical college hospital number of Obstetric & Gynecology cases was highest (42.16%) though Orthopedics was highest (30.00%) in the private hospital.

Koka Rahul et conducted an observational study at Connaught Hospital and Princess Christian Maternity Hospital in Freetown, Sierra Leone. Study period was 9 months.[14] Among these two hospitals a-total 754 anesthesia cases were collected. Types of different anesthesia was evaluated. Nearly half of them had General

anesthesia 373 (49.5%). Other types of anesthesia were spinal anesthesia 301 (39.9%), monitored anesthesia care 24 (3.2%) and local anesthesia 56 (7.4%). In this study Spinal anesthesia was highest in number in all three types of hospitals.

Galukande M et al performed their study on different types of surgeries performed in 8 district hospitals of 3 African countries Uganda, Tanzania, and Mozambique.[15] Obstetric operations were most common and included cesarean sections and uterine evacuations in all three countries. The percentages of obstetric surgeries were 43.5% in Tanzania, 53% in Mozambique and 39% in Uganada. The common non-obstetric surgeries all together were Wound-related procedures 10–50% Herniorrhaphy 5–13% Uterine evacuation and D&Cs 0–13% Laparotomy 1–17% Open fracture reduction 0–15% Bilateral tubal ligation 0–5% Hysterectomy 0–7% Other major surgeries 0–17% Hydrocelectomy 0–11% and Circumcision 0–22%. In this study Obstetric & Gynecology cases was highest (42.16%) only in the private medical hospital not in other two hospitals.

Rahman ST et al performed their cross-sectional study at a private medical college of Cumilla, Bangladesh.[16] In the study the types of anesthesia and the types of surgeries were evaluated. Study period was 1 year. According to that study highest type of surgery was Obstetric & Gyne 37.98%. The other surgeries were Orthopedics 22.08%, General surgery 21.77%, Eye 6.97%, Pediatric surgery 5.48% and ENT 5.17%. In terms of anesthesia regional anesthesia (71%) outnumbered general anesthesia (29%). The findings of the private medical college hospital of this study shows a fair similarity with the study of Rahman et al in terms of percentage of anesthesia as well as percentage of surgeries.

After comparing with the different studies of national and overseas a similarity was found in number of different surgeries and anesthesia types.

Conclusion:

Types of surgeries vary from different types of hospital set ups. Types of anesthesia depends on the types of surgeries done by the surgeons. Obstetrics and Gynecology surgeries are the top number of surgeries in most of the hospitals and general and spinal anesthesia are popular most choice by the anesthetists.

References:

1. Butterworth JF, Mackey DC, Wasnick JD. Morgan & Mikhail's Clinical Anesthesiology. 6th ed. New York: McGraw Hill; 2018.
2. Eger EI 2nd. Characteristics of anesthetic agents used for induction and maintenance of general anesthesia. Anesth Analg. 2004;98(3):701-8.
3. Neal JM, Barrington MJ, Brull R, Hadzic A, Hebl JR, Horlocker TT, et al. The second ASRA practice advisory on neurologic complications associated with regional anesthesia and pain medicine: executive summary. Reg Anesth Pain Med. 2015;40(5):401-30.
4. Memtsoudis SG, Cozowicz C, Bekeris J, Bekere D, Liu J, Soffin EM, et al. Anaesthetic care of patients undergoing primary hip and knee arthroplasty: consensus recommendations from the PROSPECT Working Group. Br J Anaesth. 2019;123(3):269–87.
5. Weinberg GL. Treatment of local anesthetic systemic toxicity (LAST). Reg Anesth Pain Med. 2010;35(2):188–93.
6. Kuthiala G, Chaudhary G. Ropivacaine: A review of its pharmacology and clinical use. Indian J Anaesth. 2011;55(2):104–10.
7. Gibbons L, Belizán JM, Lauer JA, Betrán AP, Merialdi M, Althabe F. The global numbers and costs of additionally needed and unnecessary caesarean sections performed per year: overuse as a barrier to universal coverage. World Health Report. 2010;30(1):1-31.
8. Bickler SN, Weiser TG, Kassebaum N, et al. Global burden of surgical conditions. In: Debas HT et al., editors. Essential Surgery: Disease Control Priorities, 3rd ed. Washington (DC): World Bank; 2015. p. 19-40.
9. Kurtz S, Ong K, Lau E, Mowat F, Halpern M. Projections of primary and revision hip and knee arthroplasty in the United States from 2005 to 2030. J Bone Joint Surg Am. 2007;89(4):780-5.

10. Scales CD, Smith AC, Hanley JM, Saigal CS. Urologic diseases in America Project. Prevalence of kidney stones in the United States. Eur Urol. 2012;62(1):160–5.
11. Dewan MC, Rattani A, Fieggen G, et al. Global neurosurgery: the current capacity and deficit in the provision of essential neurosurgical care. J Neurosurg. 2018;130(4):1055-64.
12. Resnikoff S, Pascolini D, Etya'ale D, et al. Global data on visual impairment in the year 2002. Bull World Health Organ. 2004;82(11):844–51.
13. Ngwenya S, Mavhungu R, Mokwena MK, Robertson A, Van As AB. Audit of surgical procedures in regional and central hospitals in Limpopo Province, South Africa. S Afr Med J. 2021 Dec 1;111(11b):1126-1129. doi: 10.7196/SAMJ.2021.v111i11b.16123. PMID: 34949234.
14. Koka Rahul, Chima Adaora M, Sampson John B, Jackson Eric V, Ogbuagu Onyebuchi O, Rosen Michael A, et al.. Anesthesia Practice and Perioperative Outcomes at Two Tertiary Care Hospitals in Freetown, Sierra Leone. Anesthesia & Analgesia 123(1):p 213-227, July 2016. | DOI: 10.1213/ANE.0000000000001285.
15. Galukande M, von Schreeb J, Wladis A, Mbembati N, de Miranda H, et al. (2010) Essential Surgery at the District Hospital: A Retrospective Descriptive Analysis in Three African Countries. PLoS Med 7(3): e1000243. doi:10.1371/journal.pmed.1000243
16. Rahman, S. T., Shakil, M., Akter, M. S., Azam, M. F., Rahman, M. M., Parveen, R., & Alam, A. U. (2024). Distribution of the Types of Anaesthesia Given Around the Year in A Tertiary Care Hospital. Eastern Medical College Journal , 9(2), 77–81. https://doi.org/10.3329/emcj.v9i2.76938.