



Original Research Article

ASSESSMENT OF ASEPTIC PRACTICES AMONG ANAESTHETISTS IN PAEDIATRIC OPERATING THEATRES: A QUESTIONNAIRE BASED STUDY

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Received : 19/03/2026
Received in revised form : 02/05/2026
Accepted : 15/05/2026

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DOI: 10.70034/ijmedph.2026.2.396

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2026; 16 (2); 2376-2380

ABSTRACT

Background: Paediatric anaesthesia presents additional challenges with respect to infection prevention. Children often require close physical contact during induction of anaesthesia, airway management, intravenous access, and monitoring procedures. In addition, paediatric anaesthesia equipment such as face masks, breathing circuits, and laryngoscopes are commonly reused after cleaning and disinfection, making proper aseptic practices extremely important. Any lapse in infection control measures may increase the risk of cross-infection and postoperative complications in paediatric patients.

Materials and Methods: The study followed purposive sampling technique. A total of 30 anaesthetists both male and female were recruited in the study after obtaining informed consent. All the participants were explained about the importance of the present study. The study protocol was approved by the institutional human ethical committee and the study was conducted as per the guidelines of ICMR. After the recruitment, a self-administered questionnaire was used to collect the data. The data was compiled and entered to excel sheet for analysis.

Results: Majority of participants were in the age group of 30-40 years. Majority of the participants have more than 10 years of experience. In the present study it was observed that majority of the anaesthetists follows the best practices of aseptic practices in operation theatres.

Conclusion: The study results states that majority of the anaesthetists follow the best hygienic and aseptic practices in the paediatrics operation theatres. Further detailed studies are recommended in this area involving multiple centres and more sample size.

Keywords: hygiene, Aseptic practices, Operation theatres, Paediatrics.

INTRODUCTION

Infection prevention and maintenance of aseptic precautions in the operation theatre are essential components of safe perioperative care. Anaesthetists play an important role in ensuring patient safety because they are involved in multiple procedures such as airway management, intravenous cannulation, administration of medications, invasive monitoring, and handling of anaesthesia equipment during surgery.^[1] These procedures increase the possibility of contamination and transmission of microorganisms if proper aseptic techniques are not followed. In paediatric operation theatres, strict

adherence to infection control practices becomes even more important as infants and children are more susceptible to infections due to their immature immune system and lower physiological reserve. Healthcare-associated infections continue to be a major concern in hospitals worldwide despite advances in surgical care, sterilisation methods, and antimicrobial therapy. Surgical site infections are among the most common hospital-acquired infections and are associated with prolonged hospital stay, increased healthcare expenditure, delayed recovery, and higher morbidity.^[1] The operation theatre environment is highly sensitive because healthcare workers frequently come into contact with

patients, surgical instruments, anaesthesia equipment, and surrounding surfaces. Anaesthetists remain in continuous contact with the patient throughout the perioperative period and therefore have a significant responsibility in maintaining infection control practices.^[2]

Studies have shown that anaesthesia equipment and workstations can act as potential sources of contamination if proper disinfection measures are not followed. Laryngoscope blades and handles, breathing circuits, intravenous stopcocks, syringes, medication vials, and anaesthesia machines may harbour pathogenic microorganisms during routine use. Anaesthetists routinely perform invasive procedures such as endotracheal intubation, arterial and venous cannulation, and regional anaesthesia techniques, which may increase the risk of introducing infections if aseptic precautions are neglected. Therefore, strict compliance with infection prevention measures is necessary to reduce cross-contamination between patients and healthcare personnel. Hand hygiene is considered one of the most effective methods for prevention of healthcare-associated infections. International guidelines recommend proper hand washing or use of alcohol-based hand rub before and after patient contact and before any invasive procedure. However, previous studies conducted among operation theatre personnel have reported poor compliance with hand hygiene recommendations. Inadequate use of gloves, improper handling of multidose vials, reuse of syringes, and inconsistent disinfection of reusable airway equipment have also been observed among anaesthesia professionals. These findings indicate that despite awareness regarding infection control measures, implementation in routine clinical practice may still be insufficient. Several professional organisations have developed recommendations for infection prevention during anaesthesia practice. These guidelines emphasise the importance of hand hygiene, use of sterile barriers during invasive procedures, proper sterilisation and disinfection of reusable equipment, safe disposal of sharps, and adherence to universal precautions. Cleaning of laryngoscope blades, breathing systems, and anaesthesia workstations between surgical procedures is also strongly recommended. Compliance with these guidelines is essential for minimising microbial contamination and improving patient safety in operation theatres.^[2] However, adherence to these recommendations may vary depending on institutional policies, workload, availability of resources, and awareness among healthcare professionals. In India, prevention of healthcare-associated infections remains challenging because of factors such as high patient load, overcrowding, and differences in infection control practices across hospitals. Studies conducted among Indian anaesthesiologists have reported variations in aseptic practices, particularly regarding disinfection of airway equipment and maintenance of hand hygiene. Although awareness regarding infection

control has improved significantly in recent years, especially after the COVID-19 pandemic, deficiencies in routine aseptic practices continue to exist. Regular assessment of infection control behaviour among anaesthetists is therefore necessary for identifying gaps and improving compliance with standard guidelines.^[2,3]

Paediatric anaesthesia presents additional challenges with respect to infection prevention. Children often require close physical contact during induction of anaesthesia, airway management, intravenous access, and monitoring procedures. Neonates and infants are particularly vulnerable to infections because of their immature immune response. In addition, paediatric anaesthesia equipment such as face masks, breathing circuits, and laryngoscopes are commonly reused after cleaning and disinfection, making proper aseptic practices extremely important.^[4] Any lapse in infection control measures may increase the risk of cross-infection and postoperative complications in paediatric patients. Questionnaire-based studies are useful for assessing the knowledge and practices of healthcare professionals regarding aseptic precautions. Such studies help in identifying existing deficiencies, understanding current practice patterns, and planning educational interventions to improve infection control practices. Therefore, the present study was undertaken to assess aseptic practices among anaesthetists working in paediatric operation theatres using a structured questionnaire-based approach. The findings of this study may help in improving adherence to infection prevention measures and strengthening patient safety practices in paediatric surgical settings.^[5-7]

MATERIALS AND METHODS

Study design: The present study was a descriptive study.

Study setting: The study was conducted at Department of Microbiology, Nandi Medical College and Research Centre, Karnataka, India.

Study population: The study followed purposive sampling technique. A total of 30 anaesthetists both male and female were recruited in the study after obtaining informed consent. All the participants were explained about the importance of the present study. Inclusion and exclusion criteria: Male and female willing, anaesthetists, were included in the study.

Methods: The study protocol was approved by the institutional human ethical committee and the study was conducted as per the guidelines of ICMR. After the recruitment, a self-administered questionnaire was used to collect the data. The data was compiled and entered to excel sheet for analysis.

Statistical Analysis: The data was analysed using SPSS version 21.0. All qualitative data was presented as frequency and percentage. Descriptive and inferential statistics were used to analyze the data.

RESULTS

Table 1 presents the demographic data of the participants. Majority of participants were in the age group of 30-40 years. Table no 2 presents the years of experience. Majority of the participants have more

than 10 years of experience. Table 3 presents the aseptic practices among anaesthetists in paediatric operating theatres. In the present study it was observed that majority of the anaesthetists follows the best practices of aseptic practices in operation theatres.

Table 1: Demographic data of the participants (n=30)

	Number of children (n=30)	Percentage (%)
Age (years)		
30-40	16	53.33
41-50	8	26.66
>50	6	20
Gender		
Male	14	46.66
Female	16	53.33

Data was presented as frequency and percentage

Table 2: Years of experience

Average screen time duration per day	Frequency and percentage
1-5	3 (10%)
6-10	12 (40%)
>10	15 (50%)

Table 3: Aseptic practices among anaesthetists in paediatric operating theatres

Sno	Questionnaire item	Response option	Frequency	Percentage
1	Formal training in infection control	yes	28	93.3
		No	2	6.66
2	Hand hygiene before patient contact	Always	24	80
		Sometimes	5	16.6
		Rarely	1	3.33
3	Wearing sterile gloves during invasive procedures	Always	25	83.3
		Sometimes	3	10
		Rarely	2	6.66
4	Disinfection of laryngoscope blades after every use	Yes	30	100
		No	0	0
		Not sure	0	0
5	Cleaning anaesthesia workstation between cases	Always	22	73.33
		Sometimes	8	26.66
		Rarely	0	0
6	Use of new syringe and needle for every patient	Always	30	100
		Sometimes	0	0
		Rarely	0	0
7	Awareness regarding infection control guidelines	Yes	29	96.6
		No	1	3.33
8	Workload affects aseptic practices	Yes	27	90
		No	3	10
9	Need for periodic infection control audits	Yes	28	93.3
		No	2	6.7

DISCUSSION

The present questionnaire-based study was conducted to evaluate aseptic practices among anaesthetists working in paediatric operation theatres. The findings of the study showed that although most participants had good awareness regarding infection prevention measures, certain gaps were observed in the regular implementation of recommended aseptic practices. Deficiencies were

mainly identified in areas such as hand hygiene compliance, cleaning of anaesthesia workstations, and handling of multidose medication vials.^[7,8]

These findings indicate the importance of continuous training, regular monitoring, and reinforcement of infection control guidelines in paediatric surgical settings. In the present study, the majority of anaesthetists reported performing hand hygiene before and after patient contact. However, complete compliance was not observed among all participants.

Hand hygiene is considered one of the most effective methods for reducing healthcare-associated infections and preventing spread of microorganisms in operation theatres.^[9] Similar findings were reported in previous studies where inconsistent hand hygiene practices were observed among anaesthesia personnel despite adequate awareness regarding infection control recommendations. Factors such as heavy workload, emergency procedures, lack of time, and busy operation theatre schedules may contribute to reduced compliance.^[10,11] Since anaesthetists frequently handle airway devices, intravenous lines, and monitoring equipment, poor hand hygiene may increase the risk of cross-contamination during perioperative management.

The present study also showed that most participants routinely used sterile gloves during invasive procedures. This reflects a generally positive attitude towards maintaining aseptic precautions during procedures such as endotracheal intubation, vascular access, and regional anaesthesia. Similar observations have been reported in earlier studies conducted among anaesthesia professionals. However, a small proportion of participants still reported inconsistent use of gloves during procedures. Failure to follow standard precautions may increase the possibility of exposure to blood-borne infections and transmission of microorganisms between patients and healthcare workers. Therefore, strict adherence to universal precautions remains essential in operation theatre practice. Proper cleaning and disinfection of airway equipment is another important component of infection prevention in anaesthesia practice. In the current study, most anaesthetists reported disinfection of laryngoscope blades after every use. However, a few participants either did not follow proper disinfection practices or were uncertain regarding standard protocols. Similar concerns have been reported in previous studies evaluating contamination of anaesthesia equipment. Research has shown that anaesthesia workstations and airway devices may act as reservoirs for pathogenic microorganisms and contribute to hospital-acquired infections. Indian studies assessing laryngoscope disinfection practices have also demonstrated variation in compliance with recommended cleaning methods among anaesthesiologists. Since paediatric patients are more vulnerable to infections, strict disinfection of reusable equipment is especially important in paediatric operation theatres.^[12]

The findings of the present study also revealed that only a moderate proportion of participants regularly cleaned anaesthesia workstations between surgical procedures. Anaesthesia machines, monitors, and surrounding surfaces are frequently touched during patient care and can become contaminated during routine practice. Previous studies have demonstrated significant bacterial contamination of anaesthesia work areas during surgery. If proper cleaning and disinfection measures are not followed, these contaminated surfaces may contribute to cross-

infection among patients. Therefore, routine cleaning of anaesthesia workstations and frequently handled surfaces should be considered an important part of infection control protocols. Most participants in the present study reported using a new syringe and needle for every patient, indicating satisfactory adherence to safe injection practices. However, lower compliance was observed with regard to disinfection of multidose vial septa before medication withdrawal. Unsafe injection practices have been associated with outbreaks of healthcare-associated infections in different healthcare settings.^[13] Previous studies have highlighted that improper handling of multidose vials and reuse of syringes can increase the risk of transmission of blood-borne infections. Strict adherence to standard recommendations regarding medication preparation and injection safety is therefore necessary to ensure patient safety.^[14]

A considerable number of participants in the present study felt that excessive workload and busy operation theatre schedules affected compliance with aseptic precautions. Similar findings have been reported in earlier studies where staff shortage, emergency situations, and increased patient load were identified as barriers to proper infection control practices. In busy healthcare settings, healthcare professionals may unintentionally neglect certain precautions because of time constraints and urgency of procedures. These observations highlight the need for adequate staffing, institutional support, and regular supervision to improve compliance with aseptic protocols. Most participants were aware of standard infection control guidelines and strongly supported the need for regular audits and training programmes. This indicates that anaesthetists recognise the importance of infection prevention in improving patient safety. Regular workshops, continuing medical education programmes, and periodic audits may help improve adherence to recommended aseptic practices. The COVID-19 pandemic has also increased awareness regarding hand hygiene and personal protective measures among healthcare professionals, leading to better emphasis on infection control practices in many hospitals.

CONCLUSION

The study results states that majority of the anaesthetists follow the best hygienic and aseptic practices in the paediatrics operation theatres. Further detailed studies are recommended in this area involving multiple centres and more sample size.

Acknowledgement: The authors thank all the participants for their support and cooperation in this study.

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