

Paediatric Pain Assessment and Perioperative Pain Management: A Survey of Practice in Teaching Hospitals in the Two Provinces of Pakistan

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ABSTRACT

Objective: To map the practice of paediatric perioperative pain assessment and management among consultant anaesthetists working in teaching institutions in the two provinces of Pakistan.

Study Design: A cross-sectional survey.

Place and Duration of the Study: Department of Anaesthesiology, Teaching institutions of Sindh and Khyber Pakhtunkhwa (KPK), Pakistan, from January to October 2022.

Methodology: A questionnaire was designed to determine the participants' practices about perioperative pain assessment and management. It consisted of 26 questions that included participants' demographic data and questions about their paediatric practice.

Results: A total of 152 responses were received (response rate 76%). Most participants (n = 84, 55.3%) had a two-year diploma in anaesthesiology, while 38.2% had a four-year diploma. Additionally, 66.4% worked at public sector hospitals and 28.3% at private hospitals. Only 66% of respondents used paediatric pain scales for pain assessment in the recovery rooms. Most participants, 72.2%, had no Paediatric Pain Management Guidelines available at their institution. Only 5% had access to 5 analgaesic medications, while 32% had access to only 2 medications for intraoperative pain management.

Conclusion: The practice of anaesthesiologists in these two provinces of Pakistan is highly varied since there is a lack of national guidelines.

Key Words: Paediatric anaesthesia, Acute pain, Pain management, Pain measurement, Paediatric pain assessment, Anaesthesia and analgaesia, Survey and questionnaires.

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INTRODUCTION

Paediatric surgical pain is still undertreated due to a lack of familiarity with pain assessment tools and the misunderstanding regarding the ability of children to perceive pain.¹ Untreated procedural pain in children is associated with significant adverse consequences.² Repeated pain exposure in neonates induces long-term changes in pain sensitivity and the developing brain. It has serious short and long-term consequences, with each painful event causing immediate physiologic and behavioural instability.² Appropriate management improves outcomes by reducing morbidity and mortality and improving patient and parental satisfaction.³

Little published data on surgical paediatric pain assessment and management are available from Pakistan. The primary objective of this survey was to map the practices of perioperative pain assessment and management among consultant anaesthetists working in the teaching institutions of two provinces of Pakistan, Sindh and Khyber Pakhtunkhwa (KPK). The secondary objective was to identify gaps that require improvement to ensure best practices.

METHODOLOGY

This cross-sectional survey was approved by the Departmental and Ethical Review Committee of the Aga Khan University (ERC Number: 2020-4905-11534). Although the protocol was developed in 2020, the survey was conducted from January to October 2022, delayed due to the COVID-19 pandemic. The 26-question survey aimed to assess perioperative pain assessment and management practices. It was divided into two sections: Personal demographic data and specific questions about paediatric practice. To ensure validity and reliability, the questionnaire was pre-tested on ten consultants at a teaching hospital in Pakistan. These responses were not included in the final results.

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The survey was distributed through email and postal mail to consultants in teaching hospitals performing paediatric surgery in Sindh and KPK provinces. A reminder email was sent after 15 days if no response was received, and non-respondents after 30 days were considered lost to follow-up. Anonymity was maintained by omitting the names of anaesthetists and hospitals. Completed forms were stored securely, accessible only to the principal investigator. Data were entered into SPSS version 19, covering qualifications, experience, training, paediatric pain management, and use of pain scales and guidelines. Descriptive measures were reported as frequencies (%) of all categorical variables.

RESULTS

A total of 200 questionnaires were sent to different anaesthesiologist working in teaching hospitals in two provinces of Pakistan. The total number of responses received was 152 (response rate 76%). The details of the qualification, experience, and practice patterns of the respondents are shown in Table I.

The responsibility of postoperative analgesia was reported to be with the anaesthesiologist in 28% (n = 43), with the nurses in 7% (n = 11), with the surgeons in 9% (n = 14), and with both surgeon and anaesthesiologist in 53% (n = 81), with both nurses and anaesthesiologist in 1% (n = 2), and with both nurses and surgeons in 0.65% (n = 1). Eighty-seven percent of anaesthesiologists reported having a designated recovery area attached to the operating rooms in their hospitals.

Analgesia in the recovery room was administered by 76% anaesthesiologists (n = 115) either trainee or consultant and by 28% nurses (n = 42). In the recovery room, the intravenous route was the most commonly used 75.7% (n = 115). The other routes used included rectal 23.7% (n = 36) and oral 21.7% (n = 33). The majority of respondents used local analgesia for perioperative pain relief 92.8% (n = 141), 141 respondents routinely used local analgesic methods including, local infiltration 68% (n = 96) and a combination of regional block and local infiltration 58% (n = 82). Around 58.4% (n = 84) of the respondents were trained in paediatric anaesthesia, in the form of formal lectures and workshops. No respondent had formal certification in paediatric anaesthesia. Figure 1 shows the availability of analgesics for intraoperative pain relief in their hospitals. Figure 2 shows the availability of analgesics for postoperative pain relief. The use and availability of pain assessment scales and paediatric pain guidelines have been shown in Table II.

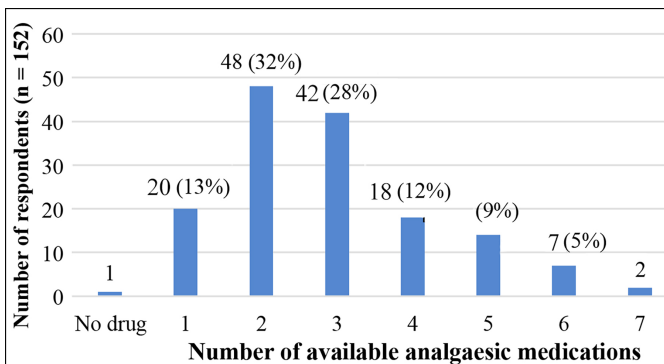


Figure 1: Availability of analgesic medications for intraoperative pain management in paediatric patients.

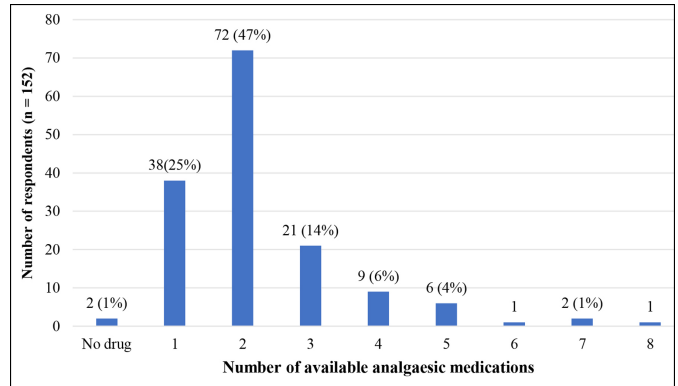


Figure 2: Availability of analgesic medications for postoperative pain management in paediatric patients.

Table I: Qualification, experience, and practice pattern of the respondents (n = 152).

Postgraduate qualification in anaesthesia	Frequency (%)
MCPS/DA	84 (55.3%)
FCPS/higher diploma from abroad	58 (38.2%)
No information	9 (5.9%)
Place of work	
Government teaching hospital	101 (66.4%)
Private teaching hospital	43 (28.3%)
Years of experience in anaesthesia as a consultant	
Less than 2 years	42 (27.6%)
2-5 years	30 (19.7%)
6-10 years	42 (27.6%)
11-20 years	28 (18.4%)
More than 20 years	8 (5.3%)
Work pattern	
Random	121 (79.6%)
Fixed work	31 (20.4%)
Years of experience in paediatric anaesthesia	
Less than 2 years	17 (11.2%)
2-5 years	53 (34.8%)
6-10 years	41 (27%)
More than 10 years	39 (25.7%)
Frequency of paediatric list	
Less than a week	67 (44.1%)
Once a week	41 (27%)
Twice a week	17 (11.2%)
Three times a week	12 (7.9%)
More than three times a week	14 (9.2%)

Table II: Use and availability of pain assessment scales and paediatric pain guidelines.

Questions	Options	Frequency (%)
Pain assessment scales		
Do you use a "pain assessment scale" postoperatively?	Yes	101 (66.4%)
	No	51 (33.6%)
Are the paediatric pain assessment scales displayed in your recovery room?	Yes	50 (33%)
	No	102 (67%)
Commonly used scales are (n = 101)	VAS	57(56.4%)
	WB	44 (43.5%)
	CS	25 (25%)
Paediatric pain guidelines		
Are pain guidelines available in your hospital / institution?	Yes	42 (27.8%)
	No	109 (72.2%)
If not, do you personally follow any guidelines for paediatric pain? (n = 109)	Yes	24 (22%)
	No	85 (78%)

WB: Wong baker, VAS: Visual analogue scale, CS: Categorical scale.

DISCUSSION

This survey highlights several key findings. Two-thirds of respondents did not have paediatric pain assessment scales in

their recovery rooms, and only 66% used these scales for pain assessment in these settings. All respondents had 2-3 months of formal exposure to paediatric anaesthesia during their training, but their education in paediatric pain assessment and management was limited to a few lectures and workshops. Additionally, there was no specific certification available in paediatric anaesthesia. These results indicate significant gaps between current practice and recommended standards in pain assessment and treatment. There were several reasons identified for suboptimal pain control in paediatric anaesthesia, some of them are discussed below.

The study revealed that anaesthesiologists in Pakistan rarely use pain assessment scales, unlike in high-income countries (HIC) where it is a standard practice per guidelines from societies such as the American Pain Society.⁴ Andersson *et al.* reported 10-48% incidence of moderate to severe pain among hospitalised paediatric patients post-surgery.⁵ Despite pain being the fifth vital sign, proper assessment and treatment of paediatric pain are often neglected globally,^{6,7} particularly in lower- and middle-income countries (LMICs), including Pakistan. Contributing factors include a lack of awareness, guidelines, protocols, adequate knowledge, and documentation charts. Greater emphasis on educating trainees about both pain assessment and management in children is needed.

Another factor in proper management of perioperative pain is the availability of opioid analgaesics. The global distribution of opioid analgaesics is characterised by significant inequities.⁸ While HICs witness extensive prescription, use, and abuse of opioids,^{9,10} many LMICs encounter significant challenges in accessing and prescribing these essential medicines in their healthcare systems, as identified by the World Health Organization (WHO).¹¹ A recent survey done by Khan *et al.*, regarding the challenges of paediatric anaesthesia services in the province of Sindh, reported the inconsistent supply of morphine and fentanyl for postoperative pain relief after major surgery, hence alternative drugs such as nalbuphine and tramadol were used.¹² There is a need for a consistent and adequate supply of opioid analgaesics for patients undergoing major surgeries in Pakistan.

Also, there is no paediatric anaesthesia fellowship programme in the country. It is hereby suggested to initiate at least one to two years of specialised paediatric anaesthesia training, following 4 years of anaesthesiology training and certification. Also, there should be frequent continued medical education (CMEs) sessions and workshops on paediatric pain assessment and management frequently. One such endeavour was performed by Abbasi *et al.* they worked with paediatric surgical speciality and organised three courses on pediatric pain assessment and management over one year.¹³ More such courses need to be organised regularly. It is also recommended to form a paediatric anaesthesia society. There is an urgent need for the implementation of the guidelines at the national level to improve postoperative pain management in children and it should be treated as a priority and more efforts should be put in place to curtail the barriers that hinder its practice.

The shortage of anaesthesiologists and nurses is also one of the main reasons for poor postoperative pain management. In Pakistan, physician-to-population ratio is (9.8/10,000 population).¹⁴ A survey conducted by the World Federation of Anaesthesiologists (WFSA) in 2018 listed that Pakistan had only 1.6 anaesthetists per 100,000 population¹⁵ and the nurse-to-population ratio is 0.5 per 1,000 population.¹⁶ The knowledge of nurses and physicians managing paediatric pain needs to be enhanced by formal training and refresher courses. A study from Ethiopia, by Lulie *et al.*, suggested that nurses with more than six years of training are associated with favourable attitudes toward paediatric pain.¹⁷ Similarly, another recent study from Ethiopia by Tagele *et al.* concluded that nurses who have higher levels of education had favourable attitudes towards paediatric pain.¹⁸ Wuni *et al.* studied the knowledge and barriers to paediatric pain management among nurses in Ghana, they concluded that even though the knowledge among the nurses was higher, factors such as inadequate paediatric pain assessment tools (74%) and inadequate nurse staffing (72%) affect the effective pain management.¹⁹ No study from Pakistan was found on the knowledge and attitude of nurses regarding pain management in children. Subsequent research endeavours in Pakistan could concentrate on exploring the understanding and perspectives of nurses regarding postoperative pain management in children. Furthermore, efforts should be made to augment the role of nurses in the postoperative pain management system within Pakistan's healthcare framework.

The strength of this survey is that it is the first survey done on paediatric pain assessment and management practices from Pakistan. It highlights the need for national guidelines and improved knowledge among anaesthesiologists for better pain relief in paediatric patients.

This survey has several limitations. The protocol was developed in 2020, but the survey was conducted between January and October 2022, delayed due to the COVID-19 pandemic. The main limitation is that data were collected from only two provinces which may not be representative of nationwide practices. Pakistan's health system is devolved among provinces, and the survey's limited scope was due to logistical challenges.²⁰ Additionally, pain practices were self-reported, which could introduce selection bias or exaggeration. A larger, future survey focusing on resource utilisation barriers and paediatric pain assessment is needed.

CONCLUSION

There is significant variation in perioperative pain management practices among paediatric anaesthesiologists in Pakistan's two provinces, due to the lack of unified guidelines. To reduce this disparity, it is recommended to implement regular CME sessions and workshops on paediatric pain assessment and management. Establishing national guidelines, a fellowship programme, a paediatric anaesthesia society, and targeted CME opportunities for anaesthesiologists and nurses are also advised.

ETHICAL APPROVAL:

This study was approved by the Departmental Review Committee and the Ethical Review Committee of the Aga Khan University (ERC Number: 2020-4905-11534).

PARTICIPANTS' CONSENT:

The participants gave their verbal permission to publish the data.

COMPETING INTEREST:

All authors affirmed that there were no financial or commercial ties that may be viewed as a possible conflict of interest.

AUTHORS' CONTRIBUTION:

BS: Manuscript writing.

MAA: Manuscript preparation, analysis, and interpretation of data.

SA, SR, KMS: Data acquisition.

FAK: Concept, design, and critical review of the manuscript.

All authors approved the final version of the manuscript to be published.

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