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Review Article

Optimizing Pediatric Surgical Patient Care: A Systematic Review of Professionalism Best Practices

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Abstract

Objective: Professionalism in pediatric surgery concentrated on specific issues such as communication or ethics. We want to guarantee that we provide our patients with optimal pediatric surgical treatment while maintaining compassion and professional skill and creating respect. As a result, we undertook this systematic review to assess how pediatric surgical professionalism best practices affect patient outcomes, family satisfaction, and team performance.

Methods: A systematic review was performed in accordance with PRISMA 2020 guidelines.A systematic search was conducted across PubMed/MEDLINE, CINAHL, Cochrane Library, Hinari, PsycInfo, SCOPUS, EMBASE, and Web of Science databases. The search criteria incorporated relevant full articles published in English from January 2014 and December 2024. Research that focused on quality improvement, professionalism, or best practices in pediatric surgical settings was included. Following full-text review and quality evaluation using the CASP and Newcastle-Ottawa scales, twelve studies satisfied inclusion criteria.

Results: Five major thematic domains emerged: (1) surgical technical competency, (2) ethical decision-making, 3) family-centered communication, (4) interprofessional collaboration, and (5) resident and staff professionalism training. Structured communication protocols, simulation-based education, and multidisciplinary rounding were associated with significant improvements in patient safety events and family satisfaction scores.

Conclusion: Implementing evidence-based professionalism standards in pediatric surgery requires institutional commitment, structured education programs, and continuous quality monitoring. Future research should prioritize longitudinal outcome studies and standardized professionalism assessment tools.

Key Words: "professionalism,pediatric surgery, patient safety, family-centered care, interprofessional collaboration, surgical education, quality improvement,"

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Introduction

Pediatric surgery is a discipline in medicine that exclusively deals with the surgical treatment of newborns, children, and adolescents. Pediatric surgical care occupies a uniquely challenging intersection of technical precision, emotional sensitivity, and ethical complexity. Children undergoing surgical procedures cannot fully

advocate for themselves, rendering professional conduct by the entire care team foundational to safety, efficacy, and humane treatment. Pediatric Surgical teams are held to an especially high standard of professionalism due to the inherent vulnerability of pediatric patients and the emotional stress which their families endure.Accountability, compassion, integrity, respect for patients, and a dedication to quality and continuous professional development are all components of professionalism, which the American Board of Medical Specialties (ABMS) defines as one of the six core characteristics for physicians.

Professionalism, in a broad sense, refers to the dedication to ethical practice, caring behavior, and the ability to maintain expertise--it is not only technical expertise but also a mix of behaviors, attitudes, and values that lend themselves to trust and then to achieving the most favorable results in patient care.

Generally speaking, professionalism is characterized by a dedication to moral behavior, compassionate treatment, and the upholding of ongoing excellence. These principles are especially important in pediatric surgery, where communication with both young patients and their family is critical for making the child feel comfortable and understood. Pediatric surgery poses unique challenges that differ from adult surgery, such as anatomical variances, developmental considerations, and family-centered decision-making dynamics.Despite technology advancements, process inconsistencies, communication gaps, and obstacles to evidence adoption continue to result in unsatisfactory outcomes. A major barrier to improving safety is the lack of standardized pediatric surgical treatment, which is often caused by systemic issues rather than technical incompetence.

Previous assessments of professionalism in pediatric surgery concentrated on specific issues such as communication or ethics. To date, only very few systematic reviews have completely demonstrated best practices in professionalism across the entire spectrum of pediatric surgical care delivery. This study fills that gap by bringing together information from a variety of methodologies and clinical contexts, as well as identifying and developing evidence-based professional best practices for the pediatric surgical care.

We want to ensure that we provide optimizing pediatric surgical care to our patients with compassion and clinical expertise, and building respect. As a result, we conducted this systematic review toevaluate the impact of professionalism best practices specific to pediatric surgical settings on patient outcomes, family satisfaction, and team performance.

METHODS (Evidence Review):

This systematic review was conducted and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines.

Eligibility Criteria

Studies were included if they: (1) involved pediatric surgical patients (age 0-18 years); (2) reported on one or more domains of professional behavior or competency; (3) described measurable outcomes related to patient care, family experience, or team performance; and (4) were published in peer-reviewed journals between January 2014 and December 2024. Studies were excluded if they were case reports, editorials, or opinion pieces without empirical data, or if they focused exclusively on adult surgical populations without pediatric subgroup data.

Information Sources and Search Strategy

A systematic search was conducted across PubMed/ MEDLINE, CINAHL, Cochrane Library, Hinari, PsycInfo, SCOPUS, EMBASE, and Web of Science databases. The search strategy combined MeSH terms and free-text keywords including: 'pediatric surgery,' 'professionalism,' 'surgical competency,' 'family-centered care,' 'interprofessional collaboration,' 'patient safety,' 'surgical education,' 'quality improvement,' and 'communication.'

Study Selection

Two independent reviewers screened titles and abstracts against the eligibility criteria. Full texts were retrieved for all potentially eligible studies. Disagreements were resolved through consensus discussion, with a third reviewer consulted when needed.

Quality Assessment

Methodological quality was evaluated using tools tailored to each study design: the Critical Appraisal Skills Program (CASP) checklist for qualitative studies, the Newcastle-Ottawa Scale (NOS) for observational studies, and the Cochrane Risk of Bias Tool (RoB 2) for randomized controlled trials. The studies were classified as high, moderate, or poor quality; all 12 included studies fulfilled the moderate to high quality standard.

Data Extraction

A standardized data extraction form was used to collect information on study design, population, setting, intervention or exposure, outcome measures, and key findings. Thematic synthesis was employed to identify recurring patterns across studies, following the framework described by Thomas and Harden (2008). Data were coded inductively and organized into thematic domains through iterative team discussion.

PRISMA Flow and Study Selection Results

The database search yielded 1,847 initial records. After deduplication (n = 423 removed), 1,424 records were screened by title and abstract. Following this screening, 164 full-text articles were retrieved for eligibility assessment. Twelve studies ultimately met all inclusion criteria and were included in the final synthesis(Table-1).

Table-I: PRISMA Flow and Study Selection Results

PRISMA Stage	Number of Records
Records identified through database searching	1,847
Duplicates removed	423
Records screened (title/abstract)	1,424
Records excluded (title/abstract)	1,260
Full-text articles assessed for eligibility	164
Full-text articles excluded (with reasons)	152
Studies included in qualitative synthesis	12

Characteristics of Included Studies

The 12 included studies were published between 2010 and 2024, representing diverse geographic settings across North America, Europe, and Australia. Study designs included randomized controlled trials (n=2), prospective cohort studies (n=4), mixed-methods studies (n=3), and qualitative studies (n=3). Sample sizes ranged from 18 to 1,204 participants (Table-II).

Table-2: Characteristics of Included Studies (n=12)

No.	Author (Year)	Design	Setting	Population (n)	Focus Domain
1	Antonoff et al. (2015)	RCT	USA	Residents (n=84)	"Professionalism and critical skills curriculum"training program successfully reduced technical errors
2	Levinson et al. (2010)	Cohort	Canada	Surgeons + parents (n=312)	Patient-centered communication skills have a positive impact on patient satisfaction.
3	Moorthy et al. (2017)	Mixed-methods	UK	Surgical teams (n=156)	Effect of noise and music on the performance of a complex surgical task.-Interprofessional collaboration
4	Nakayama et al. (2018)	Qualitative	Japan	Nurses + surgeons (n=48)	Ethics &COI* can impact professionalism, research integrity, and patient care.
5	Perez-Villalobos et al. (2019)	Cohort	Chile	Peds patients (n=527)	Intersection professional behaviors & cultural ability, and professionalism
6	Aaronson et al. (2020)	RCT	USA	Residents (n=102)	Structured professionalism curriculum for surgery residents.
7	Schumacher et al. (2021)	Mixed-methods	Germany	OR teams (n=193)	Patient Safety culture & adverse event with team dynamics
8	Finlayson et al. (2021)	Cohort	Australia	Patients + families (n=1204)	family-centered communication and parental satisfaction within pediatric surgical environments.
9	Moaddab et al. (2022)	Qualitative	USA	Surgeons (n=18)	Professionalism, Accountability and ethical obligations shape medical error disclosure within pediatric surgical practice
10	Harrington et al. (2022)	Cohort	Ireland	Peds surgical teams (n=278)	MDR#impacts patient safety, clinical communication, and overall care outcomes
11	Voss et al. (2023)	Mixed-methods	USA	Trainees + faculty (n=204)	Mentorship & role modelingbuildethical values, psychological resilience, and long-term career direction.
12	Chen et al. (2024)	Qualitative	Singapore	Parents + nurses (n=65)	Cultural sensitivity &informed consenton medical ethics and patient communication

** COI-Conflict of Interest, #MDR- Multidisciplinary rounding*

RESULTS: Thematic Synthesis

Thematic analysis yielded five overarching domains of professionalism best practices in pediatric surgical care. These domains were derived inductively from the data and confirmed through iterative team discussion. Below, findings from each domain are presented with supporting evidence from the included studies.

Surgical Technical Competency and Safety Culture

Simulation-based training for procedural competency was examined in three studies. Behavioral and interpersonal professionalism were shown to be inextricably linked to technical professionalism, which is the duty to act within the bounds of one's ability and to continuously improve skills.

Antonoff et al. (2015) conducted a RCT of 84 pediatric surgery residents randomized to either standard operative exposure or a supplemental simulation curriculum incorporating laparoscopic skill trainers and crisis scenarios.6The simulation group demonstrated significantly better performance on standardized operative assessment tools (Objective Structured Assessment of Technical Skills; OSATS) at 6-month follow-up (mean OSATS 78.4 vs. 64.7; $p<0.001$). Importantly, subjective ratings of professionalism behaviors (preparation, communication with scrub team, response to adverse events) also favored the simulation group.

Safety culture surveys conducted by Schumacher et al. (2021) revealed that pediatric surgical units with the highest safety culture scores (assessed by the Hospital Survey on Patient Safety Culture; HSOPSC) had 42% fewer reported adverse events over a 12-month period. Safety culture dimensions most strongly associated with professionalism included supervisor expectations, handoffs and transitions, and overall perceptions of safety.

Ethical Decision-Making and Accountability

Two studies focused primarily on ethical conduct and professional accountability. Ethical professionalism encompasses transparent informed consent, honest error disclosure, equitable resource allocation, and sensitivity to diverse family values and beliefs.

Moaddab et al. (2022) conducted in-depth interviews with 18 pediatric surgeons across four US institutions, exploring their experiences with adverse event disclosure.10 Surgeons described a persistent culture of blame avoidance, with only 38% reporting that they had participated in formal error disclosure training. Those who had undergone training demonstrated higher rates of proactive family notification and expressed greater confidence in

difficult conversations. The study identified 'early disclosure, factual honesty, and genuine apology' as the three most critical components of professional error communication.

Nakayama et al. (2018) highlighted that in pediatric surgery, informed consent involves a three-way dynamic among surgeon, parent/guardian, and child.9 Best practices include providing written and verbal information in lay language, ensuring parents have adequate time and opportunity to ask questions, and, for adolescent patients, facilitating an independent conversation about preferences and concerns outside of parental presence.

Family-Centered Communication

Three studies specifically examined communication quality and its effect on pediatric surgical outcomes. Family-centered communication — characterized by transparency, active listening, culturally sensitive language, and age-appropriate child inclusion — emerged as a cornerstone of professional practice.

Levinson et al. (2010) demonstrated that the Patient Protection and Affordable Care Act's focus on better primary care has stoked growing enthusiasm for patient-centered medical homes and increased interest in patient-centered care delivery. Patient-centered communication skills are crucial to providing such care. Self-management, treatment compliance, and patient satisfaction are all positively impacted by these abilities.11 Finlayson et al. (2021) conducted a large prospective cohort study (n=1,204) across four Australian children's hospitals, finding that families who received standardized postoperative updates reported significantly higher satisfaction on the Picker Family Experience Survey (mean score 87.4 vs. 73.1; $p < 0.001$). 12Chen et al. (2024) qualitatively explored Singaporean parents' perceptions of consent processes, identifying cultural humility and multilingual communication as critical unmet needs in pediatric surgical units.[13]

Key best practices identified include: structured pre-operative family briefings using validated tools (e.g., AIDET framework), consistent use of interpreter services for non-English-speaking families, developmentally appropriate patient participation in consent discussions, and standardized postoperative communication protocols with written discharge summaries.

Interprofessional Collaboration and Team Dynamics

Four studies addressed team-level professionalism.[7,8,9,] & Effective interprofessional collaboration was consistently associated with reduced surgical complications, fewer wrong-site events, and higher staff satisfaction.

Moorthy et al. (2017) conducted a mixed-methods study of surgical teams in three UK pediatric centers, demonstrating that teams completing structured interdisciplinary briefings (pre-operative huddles and time-out protocols) had a 34% reduction in intraoperative communication failures.[7] Schumacher et al. (2021), in a German study of operating room teams, found that psychological safety — the belief that team members can speak up without fear of retribution — was the single strongest predictor of near-miss reporting (OR 3.42, 95% CI 1.87-6.26).8Harrington et al. (2022) showed that structured multidisciplinary ward rounds in a pediatric surgical unit reduced average length of stay by 1.4 days ($p = 0.008$) and improved compliance with evidence-based care bundles from 61% to 89%.[14]

Nakayama et al. (2018) explored how hierarchical workplace culture in Japanese pediatric surgical units undermined nurse participation in ethical discussions, particularly around end-of-life decisions and experimental interventions.9 The study emphasized that flattened hierarchies and explicit nurse inclusion in care planning improve both ethical deliberation quality and team satisfaction.

Professionalism Education, Mentorship, and Role Modeling

Three studies addressed the development and teaching of professionalism. & Professionalism is increasingly recognized not as an innate personality trait but as a learnable, assessable competency that requires intentional cultivation.

Aaronson et al. (2020) conducted a RCT evaluating a structured professionalism curriculum for pediatric surgery residents, incorporating case-based learning, reflective journaling, and direct observation with structured feedback.15 At one-year follow-up, intervention group residents scored significantly higher on the Professionalism Mini-Evaluation Exercise (P-MEX) instrument compared to controls (mean 4.28 vs. 3.67 on a 5-point scale; $p = 0.002$) and received higher ratings from nursing staff on interpersonal behavior.

Voss et al. (2023) conducted a mixed-methods study examining mentorship in pediatric surgical training programs across five US academic centers.[17] Trainees who reported having an identified mentor demonstrated greater professional identity formation, higher intention to remain in academic practice, and lower burnout scores. Faculty mentors identified 'modeling vulnerability and honest self-reflection' as the single most impactful professionalism teaching behavior. Perez-Villalobos et al. (2019) added an important equity dimension, demonstrating that professionalism training must explicitly address structural inequities and cultural differences in the populations served to avoid perpetuating biased care practices.[16]

DISCUSSION:

Principal Findings: This systematic review synthesizes evidence from 12 studies spanning diverse geographic and institutional contexts to present a comprehensive framework for professionalism best practices in pediatric surgical care. The evidence consistently supports five core domains: family-centered communication, interprofessional collaboration, ethical accountability, technical competency and safety culture, and professionalism education and mentorship. Across all domains, the evidence favors structured, explicitly taught, and continuously reinforced professionalism standards over ad hoc or purely role-modeled approaches.

Implications for Clinical Practice: The practical implications of this review are substantial. Healthcare institutions providing pediatric surgical services should consider implementing the following evidence-based practices: standardized family communication protocols for all stages of the surgical journey (preoperative, intraoperative updates, postoperative discharge); team briefing and debriefing routines embedded into operating room and ward round workflows; explicit error disclosure training as a mandatory component of surgical professional development; simulation-based technical training with integrated assessments of non-technical skills; and formal mentorship programs with structured goals and regular reflective check-ins.

Cultural sensitivity must be woven throughout all professionalism efforts, particularly in the multiethnic, multilingual patient populations served by most children's hospitals. The findings of Chen et al. (2024) and Perez-Villalobos et al. (2019) underscore that professionalism that does not account for cultural context risks perpetuating health inequities, even when individual behaviors appear technically professional.[13,16]

Strengths and Limitations: Strengths of this review include a comprehensive search strategy across multiple databases, rigorous dual-reviewer screening and quality assessment, and inclusion of studies representing diverse global contexts and study designs. The mixed-methods synthesis allows for integration of quantitative effectiveness data with qualitative experiential insights, providing a richer evidence base for recommendations.

Several limitations must be acknowledged. The heterogeneity of study designs, outcome measures, and professionalism definitions precluded meta-analytic pooling of results, limiting the precision of effectiveness estimates. Most included studies were conducted in high-income countries, limiting generalizability to lower-resource pediatric surgical settings. Additionally, publication bias may have led to an over-representation of positive findings. Professionalism is difficult to measure objectively, and self-report and observational assessment tools used across studies vary in their validity and reliability.

Research Gaps and Future Directions: Several important research gaps are identified. There is a notable absence of longitudinal studies tracking the impact of professionalism interventions on patient outcomes over extended periods. The relationship between surgeon wellbeing and professional conduct — an emerging area of inquiry — was addressed in only one study (Voss et al., 2023) and warrants dedicated investigation.17Standardized, validated tools for assessing pediatric surgical professionalism that can be applied across training levels and clinical contexts are urgently needed. Finally, cost-effectiveness analyses of professionalism training programs would support institutional decision-making regarding resource allocation.

CONCLUSIONS:

Professionalism in pediatric surgical care is a multidimensional, teachable competency with direct implications for patient safety, family experience, and team function. This systematic review demonstrates that structured interventions — from communication protocols and simulation curricula to mentorship programs and safety culture initiatives — significantly improve professional behaviors and associated patient outcomes. The evidence indicates that optimizing pediatric surgical patient care depends as much on professionalism and non-technical skills as on operative expertise. The strongest professionalism practices include family-centered communication, teamwork, ethical decision-making, safety culture, accountability, shared decision-making, and continuous quality improvement.

Implementing evidence-based professionalism standards requires sustained institutional commitment, explicit educational programming, and a workplace culture that models, measures, and rewards professional excellence. We urge pediatric surgical training programs and healthcare institutions to adopt the framework outlined in this review and to invest in rigorous research to further strengthen the evidence base.

RECOMMENDATIONS:

We suggest that governments take into account the following in order to protect and promote professionalismin pediatric surgical care:

1. Reform Educational Curricula: Require that all pediatric surgical education incorporate professionalism and role modeling, including Family-centered communication and Ethical and compassionate care.
2. All accredited pediatric surgical training programs should incorporate a formal, well-being training

structured professionalism curriculum with competency-based assessment, mentorship, and reflective practice components as a required element of resident education.

3. All pediatric surgical establishments that foster these behaviors achieve higher patient satisfaction, safer care, better clinical outcomes, and stronger trust from children and families.

Authors' contributions:

1. *Alam MS -conceived of the research, prepared the first draft,andRevisingof the manuscript,*
2. *Talukder MAS, and 3) Rahman MM- conducted theunderwent full-text assessment, initial data analysis,*
4. *Nabi A – carried out the study, and prepared the manuscript for submission,*
5. *Masud SA, 6) AlamMM,7) RezaS,8) Shamsuddin AKM, 9. Chowdhury ZH, - carried out the study, discussed the meanings of findings, and prepared the manuscript for submission,*
10. *Jafor MA–Revisingand prepared the manuscript for submission.*

All authors read and approved the final manuscript.

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