Review Article

The role of teamwork and mentorship in pediatric and congenital heart surgery

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Abstract: Pediatric and congenital cardiac surgery, characterized by its complexity and high-stakes nature, demands superior technical expertise and multidisciplinary teamwork. With limited surgeons worldwide, the role of continuous skill refinement and collaborative practice is crucial for patient safety and successful outcomes. A literature search was performed using the PubMed, Cochrane, SCOPUS and Web of Science databases for studies published until September 2024. Articles were analysed to summarize findings on the impact of mentorship and teamwork within pediatric and congenital cardiac surgery. This article explores the dual importance of teamwork and mentorship in shaping the next generation of pediatric and congenital cardiac surgeons. The study examines the impact of mentorship on reducing learning curves and improving surgical outcomes whilst highlight the unique challenges faced by surgeons in low-income countries (LICs). Effective mentorship can serve as a bridge between knowledge and practice, ensuring that surgeons in resource-constrained environments can confidently adapt to challenges and improve patient outcomes despite the limited resources. By emphasizing a culture of innovation and collaborative teamwork, pediatric and congenital cardiac surgery continues to achieve increasingly better patient outcomes on a global scale. This study highlights how continuous mentorship and teamwork not only enhance technical proficiency but also drive advancements in surgical techniques and overall care, contributing to the ongoing global progress in pediatric and congenital cardiac surgery.

Keywords: Congenital heart defects (CHDs); mentorship; pediatric and congenital heart surgery; teamwork; training

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Introduction

Pediatric and congenital cardiac surgery represents the epitome of technical mastership and intricate patient care. In tertiary referral institutions, approximately 25% of children born with congenital heart defects (CHDs) require surgery or other interventions within their first year of life, with many of these procedures performed on neonates (1). These interventions are crucial, particularly for those with severe forms of CHDs, to improve survival rates and quality of life outcomes. The high-stakes

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environment of such procedures demands precision and leaves no margin for error (2). Of all procedures undertaken in children with congenital heart disease, 14% were undertaken in the first month, and 32% in the first year of life (3). On average, high-income countries (HICs) have a significantly higher number of congenital cardiac surgeons per million children *vs.* low-income countries (LICs)—8.68 *vs.* 0.13 (4). In the UK, a country with almost 68 million population, only 40 pediatric and congenital cardiac surgeons are actively practising. This small group of specialist surgeons hone their technical skills with regularly repeated operations, making clinical practice safe and sustainable (5).

In pediatric and congenital cardiac surgery successful outcomes not only rely on the surgeon's operative expertise, but the seamless coordination of the entire multidisciplinary team, including cardiologists, anesthetists, perfusionists, intensivists, nurses, physiotherapists, technicians. In the perioperative management of small children with CHDs, the role of all team components is equally essential and important, as any mistake or omission in the treatment can result in mortality or morbidity.

In addition to the teamwork, another aspect often unnoticed is the importance of mentorship which shapes the next generation of surgeons, fostering a culture of continuous learning and improvement. Mentorship not only pivots around the transmission of superior technical skills, an essential component of the job, but it also encompasses the development of critical thinking, decision-making, and professional values. The ideal mentor-mentee relationship builds confidence and competence in young surgeons, ensuring they are prepared for the life-long demanding nature of the field. Moreover, mentorship encourages a spirit of inquiry and innovation, prompting mentees to question existing surgical practice and to contribute to advancements within CHDs care.

This study aims to evaluate the criticality of mentorship and teamwork in training the next generation of congenital cardiac surgeons around the world. We examined what contributes to the success of a team in congenital cardiac surgery: the various facets, including the integral role of multidisciplinary team involvement, collaboration dynamics, and effective communication. Additionally, we examined the critical role mentorship plays in the professional development and skill enhancement of congenital cardiac surgeons, shaping them into leaders of the field.

Methodology

A systematic search of peer-reviewed articles was conducted using the following databases: PubMed, Cochrane, Scopus, and Web of Science to identify relevant studies. The search focused on studies published between January 2000 and August 2023. Keywords included "teamwork", "mentorship", "paediatric cardiac surgery", "pediatric cardiac surgery", "congenital heart surgery", "congenital heart disease", "low-income countries", "global surgery".

The inclusion criteria focused on studies that involved pediatric and congenital heart surgery patients and surgical teams, and specifically examined aspects of mentorship and teamwork within the field. Relevant articles included original research, reviews, and case studies that provided evidence on the effectiveness or challenges of mentorship and teamwork in pediatric and congenital heart surgery. Only studies published in English and within the specified timeframe were considered for inclusion.

Studies were excluded if they did not pertain to pediatric or congenital heart surgery, focusing instead on adult cardiac surgery or other non-congenital cardiac fields. Research that did not specifically address mentorship or teamwork, or did not evaluate their impact on surgical training, outcomes, or patient care, was also excluded. Studies published in languages other than English, even if with the abstract translated in English, or outside the specified publication date range were excluded to maintain the focus and relevance of the review.

The cut, the stitch, and beyond

The transmission of technical skills plays a critical role in shaping the professional and personal development of aspiring surgeons. Mentorship involves hands-on training, where mentors provide direct surgical instruction, allowing mentees to develop and refine their technical skills under supervision. The stakes are incredibly high because these surgeries often deal with life-threatening CHDs that, if not corrected promptly and accurately, can lead to severe disability or death. The complexity of congenital cardiac surgery is amplified by the variability and uniqueness of each case. Surgeons must be adept at customizing their approaches to fit the specific anatomical and physiological conditions of each patient. This requires not only exceptional technical skills but also deep knowledge of all CHD, their embryology, various spectrum of morphology,

pathophysiology, an understanding of all available surgical techniques, including the latest introductions in the armamentarium, the evaluation of the early and late outcomes, the capability of decision-making taking into consideration the mismatch between the patient and the available options in the environment, and the ability to innovate on the spot. The lack of margin for errors makes it difficult to mentor aspiring congenital cardiac surgeons due to the inevitable need to reduce as much as possible from the learning curve of the speciality. The "learning curve" is a commonly used term to quantify the progression of someone gaining a new skill. The curve is also generally a graphical representation of how skilled or proficient they are in a specific process.

Recent studies indicate that mentorship programs with structured feedback mechanisms significantly contribute to flattening the learning curve for new pediatric and congenital cardiac surgeons. A systematic review of mentorship in surgical training has revealed that structured mentorship, involving both hands-on guidance and regular feedback, enhances skill acquisition and significantly reduces the incidence of errors (6). In particular, mentorship that includes iterative feedback on technical performance and decision-making processes is essential for improving outcomes in pediatric and congenital cardiac surgery (7).

There exists a learning curve within pediatric and congenital cardiac surgery where there is a period of increased risk of patient safety when a centre, a new surgeon, and the surgical team are learning a new technique concurrently (8). However, evidence suggests that it is possible to avoid the negative consequences of a new surgeon independently progressing through their learning curve. For example, one study highlighted that the rates of arterial switch operation outcomes had no significant difference in mortality or freedom from reintervention following the appointment and mentorship of three new surgeons (7). The senior surgeon would initially be scrubbed in operating room with the newly appointed surgeon for the entirety of the case and would slowly only scrub for the central part of the procedure or be unscrubbed but remain present in operating room. This encompasses the spectrum of mentorship from absolute involvement to lose association, progressively giving new surgeons a sense of responsibility and independence. Critically, flattening the learning curve or allowing trainees to progress safely and quickly through the curve comes by senior surgeons promptly feeding back on the surgeon's performance and pitfalls. This allows newly appointed surgeons to become accustomed to the intricacies of the speciality and ideally negate the need for the steep learning curve as independent surgeons. Ultimately, this highlights the importance of incorporating mentorship into surgical training programs to reduce the negative impact of the surgical learning curve and improve patient safety.

Evidence also indicates that mentorship enhances surgical skills and professional development, with mentors providing valuable feedback and career guidance (9). Conversely, some studies highlight that the quality and impact of mentorship can vary significantly, particularly when seen from the point of view of the trainees, with some of them reporting inadequate support or mismatched expectations (10). Structured mentorship programs with regular feedback and tailored guidance are generally associated with improved trainee satisfaction and skill acquisition, but these benefits are not uniformly experienced by all trainees (9).

Moreover, mentorship aids in the development of critical thinking and decision-making abilities. Regular discussions of complex cases help mentees develop critical thinking and problem-solving skills, while mentors guide them through the ethical dilemmas often encountered in pediatric and congenital cardiac surgery, fostering sound judgement and professionalism. Mentorship also encompasses the transmission of professional values and the encouragement of innovation. Mentors serve as role models, demonstrating professional behavior, empathy, and dedication to patient care. They encourage mentees to engage in research, promoting a culture of inquiry and innovation. This not only advances the field but also contributes to the mentee's professional growth and knowledge base.

Surgeons are expected to be leaders in the operating room, guiding the multidisciplinary team meetings through complex procedures and its complications. They must communicate effectively, coordinate efforts, and maintain a calm, authoritative presence, especially during the unavoidable crises. However, leadership extends beyond the operating room, involving the establishment of protocols and standards within their institutions. Effective delegation is also crucial in pediatric and congenital cardiac surgery. Surgeons must understand the strengths and limitations of each team member, assigning tasks appropriately to maximize efficiency and safety. This involves trusting the expertise of others while maintaining oversight to ensure that every aspect of the patient's care meets the highest standards.

In the modern era of surgery, each team within an operating room will have their own leaders including

the anesthetic team, perfusion team, nursing team etc. Ultimately, the surgeon bears the final responsibility for the patient's outcome. This weight of responsibility is significant, as decisions made in the operating room can have life-or-death consequences regardless of whether an error was made by someone other than the consultant surgeon. Surgeons must be prepared to make tough decisions, often in high-pressure situations, and accept the outcomes of those decisions.

Since the advent of public reporting via the National Institute of Cardiovascular Outcomes Research (NICOR) in the UK (3), senior surgeons must carefully balance patient safety whilst allowing new surgeons to hone their technical skills. This makes it difficult to give full autonomy to new surgeons who may well have proven themselves on surgical simulators and their past experiences in adult cardiac surgery but with limited experience in congenital cardiac surgery. Additionally, new surgeons must be safely supervised to prevent irreversible damage to anatomy.

Shaping a pediatric and congenital cardiac surgeon

The cognitive load of pediatric and congenital cardiac surgery involves understanding complex congenital heart anomalies, planning intricate surgical repairs, and anticipating potential complications. This complexity is universal, affecting both HICs and LICs. In resource-limited settings, clinicians often face additional challenges such as limited access to advanced diagnostic tools, making the cognitive demands even more pronounced (11).

Additionally, in LICs, surgeons are confronted with patients with morbid sequalae of long-standing lesions—lesions that would usually have been corrected as a neonate or infant in higher income countries. Decision-making, surgery and postoperative care for these lesions are necessarily complex due to the higher risk and greater resources needed for the long-term care for these patients. A study investigating surgical outcomes in LICs showed that mentorship programs significantly improve surgical outcomes and reduce incidence and severity of complications by enhancing the surgical capabilities of the local caregivers (12).

Technically, surgeons must perform precise, delicate maneuvers on tiny, often fragile, cardiac structures, which requires years of dedicated practice and continuous refinement of skills. In the UK, a Consultant Cardiac Surgeon for pediatric and congenital heart surgery is appointed through competitive process. This is on a background of successful selection via competitive process and completion of 6 to 8 years of cardiothoracic training programme leading to the award of Certificate of Completion of Training (CCT). In the latter part or after completion of cardiothoracic training, a cardiothoracic specialty trainee with interest to specialize in congenital heart surgery further undertakes subspecialty or fellowship training to gain operative experience and hone their decision-making skills in the field.

A trainee survey in the US highlighted that although 65% of trainees had an interest in pediatric and congenital cardiac surgery at some point in their training, only 22.4% of trainees were actively pursuing it with only 6.5% of trainees having access to congenital mentorship (13). Mentorship plays a pivotal role in the development of future pediatric and congenital cardiac surgeons. There are reasons why mentorship may not be immediately available to trainee surgeons. In the contemporary era, the model for providing paediatric services including cardiac surgery is within the setting of a standalone paediatric hospital. As residents undergoing training in cardiac and thoracic surgery in adult hospitals, there may be little contact with congenital surgeons during their residency, or this exposure is limited to the simplest cases operated on in the adult age. Secondly, residency programmes may not incorporate a mandatory period of training in congenital cardiac surgery, limiting exposure to those who volunteer for it. Thus, the early years interest in congenital cardiac surgery declines due to fewer opportunities to foster that enthusiasm during residency.

Recent paediatric and congenital cardiac surgery mentorship programmes focus on providing trainees with high-fidelity simulation experiences, including complex CHDs scenarios rarely encountered in routine clinical practice. The model involves regular simulation sessions followed by debriefing discussions with experienced surgical mentors. A study evaluating this approach found that core trainees who participated in simulation-based sessions demonstrated improved technical skills and decision-making abilities compared to those who received traditional training methods alone (14). The structured feedback and hands-on practice provided by surgical mentors helped trainees gain confidence and proficiency, ultimately contributing to better patient outcomes.

There are differences in the kind of mentor-mentee relationship depending on the stage of training and position of the mentee. It may be broadly categorized into four: (I)

when the mentee is entering the specialty as a new resident or intern; (II) when the mentee is in the final stages of residency, planning to take a consultant or staff position; (III) when the mentee is a newly appointed consultant; and (IV) when the mentee is an early-mid career consultant.

Each stage requires a different type of approach from a mentor to provide the right type of support. In group 1, the mentee's seemingly bottomless fervor for the specialty needs to be steered in the right direction to maximize their academic and surgical productivity. The mentor is usually a role model who can provide the wisdom from their own career, and a coach who translates enthusiasm into results (15). Experienced surgeons impart technical skills, clinical knowledge, and professional values to their trainees, regardless the point they want to reach in their professional career. Ultimately, mentors guide the mentee's enthusiasm and provide foundational knowledge and skills (9).

In the second group, the mentee needs support in choosing fellowships, and support in competing for a consultant position. The mentor instils confidence into the mentee who may be anxious about competing for their first staff position and transitioning into an independent surgeon. Here, the mentor provides support with acquiring a job, applications and recommendations. Mentorship also provides emotional support, helping trainees navigate the stresses and challenges of this demanding field. For newly appointed consultants, mentorship in their first years of independent clinical practice becomes crucial for navigating leadership roles and integrating into established teams (16).

It is as a newly appointed consultant that the role of a mentor is the most pivotal. Here, the mentee is not only a new face in an established team of dozens (or even hundreds) of professionals but is also inserted into a leadership role as a consultant, with the unavoidable screening for the obtained outcomes. Inevitably, this transition can be jarring. Unlike the informal nature of other groups, the mentor may be formally assigned to the newly appointed surgeon with an official brief, and time and resources allocated for mentoring. In the final group, the mentee is looking for support in developing new services, growing the department, or stepping into senior leadership roles, and even more important, to start him/herself training junior colleagues.

It is rare for a mentee-mentor relationship to span the four groups in our field of pediatric and congenital cardiac surgery, with the limitations described earlier. Many mentors regard it as a point of professional pride to see mentees progress through their career, even considering them a more enduring legacy than their own achievements.

Though many surgeons credit their mentors for their support at crucial junctures, it is not so easy to articulate a formula to find the perfect mentor-mentee pairing. In the early stages of residency interested mentees initiate the conversation with a request to undertake an observership or undertake academic work with a congenital cardiac surgery department. The junior resident may be mentored through these early years by their immediate supervisor, usually a non-congenital surgeon, as well as by a congenital surgeon who can guide their training path towards congenital surgery.

In the last 10 years, the UK has had a pediatric and congenital cardiac surgeon turnover rate of 56% with 55% of those moving abroad for work (5). Surgeons reported the reasons for leaving were financial, work-life balance, working conditions within the NHS, and some highlighting the national review process. In light of this, new surgeons should be prepared to face and tackle the challenges associated with surgical training in the speciality. The mentor does not simply reconstruct an ideal vision of him/herself but uses their seniority and experience to hone a pediatric and congenital cardiac surgeon for who they are.

From a trainee's perspective, mentorship offers invaluable opportunities for skill development, learning, and professional growth. However, trainers face significant limitations, including time constraints and the need to balance patient safety with educational opportunities. Ensuring that trainees gain hands-on experience without compromising patient outcomes is a delicate balance. Despite these challenges, effective mentorship remains crucial for training competent, confident, and innovative surgeons.

Many surgeons develop skills of mentorship early in their careers, particularly during residency, when they provide advice to aspiring students or newly qualified doctors in applying to residency programmes. It is as a senior resident or fellow assisting a junior from the left side of the table, that one starts to develop skills in building confidence, nurturing leadership skills and providing vital feedback to their juniors. Usually this takes place in adult cardiac surgery, as it is commonplace for consultants to be scrubbed in for virtually all congenital operations. It is not uncommon therefore, for senior trainees in pediatric and congenital cardiac surgery, to not have had the opportunity to develop their own mentorship skills during residency.

In the operating room, the surgeon often assumes a leadership role without formal authority over all team

members. This requires the ability to inspire confidence, foster collaboration, and maintain a focus on patient safety as teamwork in congenital cardiac surgery involves a uniquely coordinated effort among various specialists. Congenital cardiac surgery deals with a wide range of anatomical variations and patient sizes, from neonates to older children. This requires a tailored approach and seamless teamwork to adapt to each unique case. Previous surveys have shown that earlier hand-on-experience and adequate mentorship leads to higher satisfaction within surgical trainees (17).

Situational awareness and the ability to perform under time pressure are critical in pediatric and congenital cardiac surgery. Surgeons must constantly be aware of the patient's status, the progression of the surgery, and any arising complications. This heightened awareness allows for swift, accurate decision-making, especially under the significant time pressures that characterize these procedures. The ability to remain composed and effective during critical moments can be the difference between life and death, making this skill indispensable. In the modern era, neonates are born with more complicated multi-system pathologies requiring a vast array of medical knowledge with a need for more holistic care. Effective mentorship programs, especially in high-volume centers, provide mentees with diverse experiences and the skills necessary to handle even complex cases (18).

Effective communication and coordination are essential throughout the entire perioperative process. Miscommunications can lead to severe consequences, including increased morbidity and mortality. Clear, concise communication is vital during patient transport, handovers to Intensive Care Unit staff, and intraoperative coordination. Structured communication protocols, such as checklists and briefings, can help minimize errors and enhance team performance. The operative room is a high-stakes environment where precise communication ensures that everyone is aware of their roles and responsibilities, thereby reducing the likelihood of mistakes.

The importance of a mentor

It is important to first delineate between teaching, coaching, and mentorship. Teaching is a structured form of pedagogy whereby knowledge including technical skills are imparted onto students for specific learning outcomes. Similarly, coaching aims to achieve a specific goal or outcome by improving performance over a period of time. However, mentorship encompasses a long-term professional and personal development whereby a mentor shares wisdom and supports the holistic growth of a trainee. The commitment of a mentor to addressing the challenges of surgical training and fostering both technical and leadership skills is crucial (6).

The crucial factor between mentorship and other forms of coaching is the personal commitment a mentor takes in helping the mentee overcome the challenges of surgical training. Research has shown that congenital cardiac surgical trainees with a mentor are more satisfied with their training programmes and independent practice than with those without a formal mentor (19). This is underscored by the fact that surgeons with a mentor experience lower levels of burnout and higher levels of job satisfaction (20).

Effective mentorship can reduce the incidence of burnout and increase job satisfaction among pediatric and congenital cardiac surgeons by providing emotional support and career guidance (21). However, some studies argue that the mentor-mentee relationship can sometimes contribute to additional stress if not managed properly, especially if there is a miscommunication and/or mismatch in expectations or support levels (22).

Technical mentorship goes beyond didactic technical instructions. It includes simulation-based learning, pre-operative case discussions for complex cases, and regular feedback to enhance skill acquisition and build confidence in performing complex procedures. A mentor's role is to cultivate the talent and idiosyncrasies every new surgeon brings to the operating table. As care is increasingly consultant-delivered (as opposed to consultant-led) in congenital cardiac surgery in the UK, surgical (and cardiology) trainees, may not be exposed to the leadership aspect of the job which they will inevitably have to take up when becoming a consultant. Ideally, a mentor should guide a trainee to take on leadership roles during training, so they feel confident as a new consultant when tasked with managing several teams (23).

A center in India developed a comprehensive mentorship model in congenital cardiac surgery which emphasized both technical skills development and formal training in leadership. According to a recent study, this programme integrates modules on managing surgical teams, ethical decision-making, and crisis management alongside clinical training (24). Surgeons who participated in the programme were found to be better prepared for independent practice, showing enhanced abilities in team management and communication. This case underscores the critical role of

mentorship combined with leadership training in preparing future leaders in pediatric and congenital cardiac surgery.

Mentorship in LICs

The positive consequences of mentorship are more profound in LICs where an experienced surgeon may not only provide mentorship to a single surgeon, but an entire surgical team. Long term goals of surgical mentorship should focus on capacity building, ensuring that congenital cardiac surgical care is accessible and sustainable within their centers and communities. Effective mentorship will foster self-reliance within local teams, to reduce dependency on external aid including humanitarian mission trips. Mentorship programmes that focus on sustainable practice improve the local healthcare providers' ability to operate independently (25). Formal mentorship programmes can create resilient and self-sustaining centers in LICs. Furthermore, mentorship programs that include training in leadership and administration have led to significant improvements in the management and operational efficiency of cardiac surgery units in Kenya (26).

Evidence from the role of formal mentorship in congenital cardiac surgery in LICs has shown that the mentorship is associated with a significant reduction in postoperative complications and mortality rates in congenital cardiac surgery (27). The coronavirus disease 2019 (COVID-19) pandemic has forced us all to adopt the work-from-home initiative. In light of this, several centers have implemented remote mentorship programmes, often to provide surgical expertise to LICs that would otherwise have no access to specialized care and advice (28).

Technology has enabled mentorship at a distance, allowing surgeons to stay in touch not only through internet-connected audio and video calls, but also to have intra-operative guidance in real-time through live-streaming of head-cameras or ceiling cameras. Surgeons who undertake fellowships in LICs can remain in touch virtually even beyond their fellowship. Online meetings that enable virtual multi-disciplinary team meetings to take place allow teams to gain expertise. These technological advances have revolutionized the way mentorship is delivered, allowing for continuous professional development and support regardless of geographic distribution.

A remote mentorship program in Kigali, Rwanda, utilized new technology to connect local surgeons with mentors based in the United States (28). Through this initiative, surgeons in Rwanda received real-time virtual support during pediatric cardiac operations, including live case discussions and guidance when facing technical challenges. The telemedicine platform enabled remote mentorship which would have otherwise not been possible, enhancing the skills and confidence of the local surgical team and demonstrating the importance of such mentoring modalities in resource-limited settings.

Additionally, virtual reality and augmented reality provide immersive learning experiences whereby surgeons in LICs can actively participate in real cases performed in HICs to aid with technical knowledge transmission (29). In many LICs, the role of the congenital cardiac surgeon spans across the whole patient pathway, from pre-operative work-up, perioperative intensive care and post-operative follow-up, contrasting with the specialization and division of responsibility in many heart centers in HICs. Hence, surgeons from LICs may need support and mentorship from other specialists as well when building their local programmes.

The use of technology, such as artificial intelligence, virtual reality and telemedicine, is praised for enhancing mentorship and training opportunities (30). Technological tools offer significant benefits for remote mentorship and training, yet they need to be complemented by direct and personal interactions to ensure comprehensive skill development and support (31).

Mentorship in LICs is crucial for nurturing a culture of local research and innovation in congenital cardiac surgery. Experienced mentors can guide local surgeons and healthcare teams in developing research skills, enabling them to conduct studies that address region-specific challenges and solutions. These studies are mutually beneficial for HICs and LICs whereby centers in HICs can learn how to achieve similar outcomes with more limited resources.

Evidence points to the benefits of integrated training programmes, where surgical fellowships in LICs offer a more hands-on and immersive learning environment (32). These programmes expose surgeons to diseases unknown in HICs, different healthcare systems, and patient demographics. This approach not only enhances individual skills but also promotes cross-cultural collaboration and knowledge exchange, which are vital for advancing surgical care worldwide.

In recent years, there has been a growing emphasis on the globalization of the paediatric cardiac surgical workforce, aiming to establish globally coordinated training programmes that encompass LICs. These initiatives are

pivotal in preparing the next generation of cardiac surgeons to manage a diverse spectrum of patients and contribute to advancements in research. Leveraging recent technological advancements such as virtual Multidisciplinary Team Meetings, simulation training platforms, and online mentorship programs is essential in developing a cohesive global training curriculum. By fostering collaboration between surgeons from HICs and LICs, these efforts not only enhance clinical skills but also facilitate the exchange of knowledge and expertise. Ultimately, the establishment of a unified global paediatric cardiac surgical workforce holds the promise of narrowing the mentorship gap between HICs and LICs, thereby advancing the field and improving patient outcomes worldwide.

Conclusions

In conclusion, teamwork and mentorship stand as indispensable pillars in the realm of pediatric and congenital heart surgery, each playing a crucial role in shaping the future of this complex field. The collaborative efforts of multidisciplinary teams ensure seamless patient care and optimal outcomes, highlighting the necessity of coordinated expertise across various specialties. Mentorship, on the other hand, not only imparts technical skills but also nurtures critical thinking, ethical decision-making, and professional values among trainees. This guidance is particularly vital in LICs, where mentorship programs can catalyze local capacity building and foster sustainable surgical care. As global initiatives continue to evolve, leveraging advancements in technology promises to further enhance training opportunities and bridge the gap between HICs and LICs.

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Footnote

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