Journal of Paediatric Surgeons of Bangladesh (2026) Vol. 17 (2)
Official Journal of the Association of Paediatric Surgeons of Bangladesh
https://doi.org/10.3329/jpsb.v17i2.93384

Journal of Paediatric Surgeons of Bangladesh

Editorial

Role of Artificial Intelligence in Surgical Care of Children in Bangladesh: How to Become a Master of This Transformative Technology

Introduction

Artificial Intelligence (AI) is no longer a futuristic concept; it has become a practical tool that is reshaping healthcare worldwide. From disease diagnosis and medical imaging to precision surgery and postoperative monitoring, AI is transforming the way healthcare professionals deliver care (1,2-5).

For paediatric surgeons, the emergence of AI presents a unique opportunity to improve the quality, safety, and accessibility of surgical services for children (1,6).

In Bangladesh, where healthcare resources remain limited and specialised paediatric surgical services are concentrated in a few urban centres, AI offers innovative solutions to bridge gaps in expertise, infrastructure, and access (7-9).

Enhancing Diagnosis and Clinical Decision-Making

AI-assisted image analysis can help detect congenital anomalies, evaluate radiological findings, and identify subtle abnormalities that may be missed during routine reviews. Machine learning algorithms can support interpretation of ultrasonography, CT, MRI, and pathology reports (2,3,10).

In Bangladesh, AI-assisted diagnostic support can potentially improve early detection and timely referral of surgical conditions (7-9).

Improving Surgical Planning

Modern AI systems can analyse imaging data and create three-dimensional anatomical reconstructions, helping surgeons better understand complex congenital malformations (1,5,8).

AI-supported planning may improve surgical precision and outcomes for complex paediatric surgical conditions (1,8,11).

Supporting Minimally Invasive and Robotic Surgery

AI can enhance laparoscopic and robotic procedures by providing image guidance, instrument tracking, tissue recognition, and real-time decision support (1,5).

Bangladesh has an opportunity to prepare its future workforce for these advances by incorporating AI literacy and digital surgical technologies into surgical training programs (7.9).

Predicting Outcomes and Improving Safety

AI systems can analyze large volumes of patient data to predict complications, assess operative risks, and identify patients requiring closer monitoring (1,8,11).

Predictive analytics may help reduce postoperative complications and improve patient safety (1,11).

Expanding Access Through Telemedicine

AI-powered telemedicine platforms can facilitate remote consultations, triage referrals, and support surgeons working in peripheral centres (7,9).

Such systems could strengthen collaboration between tertiary hospitals and district healthcare facilities (7,9,12).

Challenges and Ethical Considerations

Several challenges require careful attention, including patient privacy, algorithmic bias, accountability, transparency, and equitable access to innovation (8,13).

AI should always remain a supportive tool rather than a replacement for clinical judgment (5,13,14).

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How Can Paediatric Surgeons Become Masters of AI?

Develop AI Literacy: Every paediatric surgeon should understand basic AI concepts, including machine learning, large language models, predictive analytics, and data science (1-3).

Learn to Use AI Responsibly: AI-generated outputs should always be critically evaluated against established clinical guidelines and patient-specific circumstances (13,14).

Incorporate AI into Research: AI can assist with literature reviews, data management, statistical analysis, and manuscript preparation (1,2,6).

Build Collaborative Teams: Future surgical innovation will emerge from collaboration between clinicians, engineers, computer scientists, and policymakers (7,13).

Contribute Local Data: Development of indigenous datasets will improve the relevance and reliability of AI applications in Bangladesh (6, 8,9).

Embrace Lifelong Learning: Continuous professional development is essential to remain at the forefront of AI-driven innovation (1,7).

The Future for Bangladesh

Bangladesh is well positioned to integrate AI into paediatric surgical care through expanding digital health infrastructure, telemedicine services, and health technology initiatives (7, 9,12).

National professional societies, academic institutions, healthcare administrators, and government agencies should collaborate to promote responsible AI adoption (7,9,13).

Role of APSB

Workshop on “AI for Pediatric Surgeons”

The Association of Paediatric Surgeons of Bangladesh (APSB) organized a workshop titled**“AI for Pediatric Surgeons”** to provide pediatric surgeons across Bangladesh with a structured introduction to the effective and responsible use of AI technologies.

A total of 150 pediatric surgeons from different regions of the country registered for the program. To facilitate effective participation and hands-on learning, the attendees were divided into two cohorts, with day-long workshops conducted at the Training Center of Dhaka Medical College Hospital on 3 and 4 July 2026.

Rather than approaching AI as a distant technological innovation, the workshop focused on its practical applications across five major domains of a pediatric surgeon’s professional life: personal use, academic teaching, clinical and professional practice, research, and productivity enhancement. The opening session introduced participants to essential concepts including artificial intelligence, machine learning, deep learning, large language models, hallucinations, generative AI, and agentic AI. Emphasis was placed on the principles of structured prompting, including defining role, context, task, format, and constraints. Participants were encouraged to view effective prompting as a critical skill that distinguishes meaningful AI-assisted work from superficial use of the technology.

Subsequent sessions provided hands-on experience with widely used AI platforms, including ChatGPT, Claude, Gemini, NotebookLM (Google Notebook), Perplexity, and Elicit. Participants explored a variety of practical applications such as converting handwritten documents into editable word files, preparing academic schedules and rosters, generating notes and summaries from YouTube videos, creating referenced and bookmarked study materials from textbooks, summarizing clinical guidelines, and designing small-group teaching activities. The workshop also demonstrated the creation of infographics, flashcards, quizzes, presentations, and mind maps. Additional exercises included interpretation of radiological images and calculation of weight-based drug dosages with reference to Bangladeshi pharmaceutical brands.

The clinical and professional practice segment focused on the use of AI in operative note preparation, development of preoperative checklists, planning of practice-related projects, and drafting communications for parents and caregivers. A particularly important component of this session addressed the ethical necessity of anonymizing patient information before uploading any data to AI platforms.

Publication ethics and responsible AI use in scientific writing were also discussed extensively. Participants reviewed guidance from COPE, WAME, ICMJE, and major scientific journals. The workshop highlighted concerns regarding undisclosed use of AI in scholarly publishing and noted that thousands of articles were retracted in 2024 alone because of undisclosed AI involvement. Participants were further introduced to AI-assisted literature searching, evidence synthesis, creation of evidence tables using Perplexity and Elicit, and the strengths and limitations of various AI platforms.

The concluding productivity session demonstrated the use of AI for generating presentations, educational images and videos, and medical illustrations. Participants were introduced to platforms such as Microsoft Copilot, Gamma, Gemini Nano Banana, Canva, Google Flow, and CapCut, with practical examples of how these tools can support teaching and academic activities.

For pediatric surgeons working in Bangladesh, where clinical workloads are often heavy, faculty time is limited, and access to subspecialty expertise and scientific literature may be constrained, AI tools have the potential to provide meaningful support. When used responsibly and with appropriate safeguards for ethics and data privacy, these technologies can facilitate faster preparation of teaching materials, more efficient literature reviews, improved documentation, and enhanced professional productivity.

The workshop was chaired by Professor Md Abu Jafor, President of APSB. The closing session was honored by the presence of Professor Dr. Nazmul Hossain, Director General of Medical Education, and Professor Dr. Pravath Chandra Biswas, Director General of Health Services, as distinguished guests. Dr. Tanvir Kabir Chowdhury, Associate Professor of Pediatric Urology at Chittagong Medical College, served as the workshop facilitator. Significant organizational contributions were also made by Prof. Dr. Md. Nazrul Islam, Secretary General of APSB; Dr. Mohammad Mahabubul Alam, Scientific Secretary; and Dr. Kaisar Yamin Ishad, Member Secretary of the workshop.

The success of this initiative demonstrates the growing interest among pediatric surgeons in embracing emerging technologies and highlights APSB's commitment to preparing its members for an AI-enabled future in surgical practice, education, and research.

Acknowledgement
I am grateful to Associate Professor of Paediatric Urology of Chittagong Medical College Dr. Tanvir Kabir Chowdhury and Scientific Secretary of APSB and Associate Professor of Paediatric Surgery of Dhaka Medical College Dr. Mohammad Mahabubul Alam for providing updated information in writing this editorial.

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