Commentary
http://mjiri.iums.ac.ir
Medical Journal of the Islamic Republic of Iran (MJIRI)

Med J Islam Repub Iran. 2025 (22 Jul);39.97. https://doi.org/10.47176/mjiri.39.97

Development of the Pediatric Emergency Medicine Subspecialty in Iran

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Received: 7 Jan 2025 Published: 22 Jul 2025

Abstract

Pediatric emergency medicine (PEM) emerged as a subspecialty of both emergency medicine and pediatrics to address the specific needs of children requiring urgent care. Originating in the United States (US) in the late 20th century, PEM was formally recognized following collaborative efforts by pediatricians, notably Dr. Foster Jerry, and the establishment of fellowships and certification boards. Since its inception, the subspecialty has significantly advanced pediatric emergency services, with over 29 fellowship programs active in the US by 2021. In Iran, the need for specialized pediatric emergency care led to the first formal request to develop PEM in 2021. Following approval from the Medical Education and Specialization Council and endorsement, Iran University of Medical Sciences initiated the implementation of this vital subspecialty. This article explores the global and national development of PEM and outlines the rationale, progress, and institutional efforts toward its establishment in Iran.

Keywords: Medical Education, Subspecialty, Pediatric Emergency Medicine, Emergency Medicine, Pediatrics

Conflicts of Interest: *None declared*
Funding: *None*

Cite this article as: Jafarnejad S, Esmaeilian S, Ghabousi P, Khoshnezhad Ebrahimi H. Development of the Pediatric Emergency Medicine Subspecialty in Iran. *Med J Islam Repub Iran.* 2025 (22 Jul);39:97. https://doi.org/10.47176/mjiri.39.97

Introduction

Hospitals are essential healthcare institutions, functioning as social and medical organizations that offer comprehensive services to the community (1). The emergency department (ED) is a vital unit providing care during medical emergencies (2). Because of its life-saving role, the ED is crucial in reducing mortality and morbidity (3, 4).

High patient volumes may lead to long waits, space and staff shortages, patient concerns, lower care quality, and dissatisfaction (5). Therefore, adherence to standards in the ED is critical (6).

Emergency Medicine is practiced in acute settings, requiring the ability to manage trauma and a wide range of conditions (7). Emergency physicians help reduce ED overcrowding through rapid diagnosis and timely treatment, improving satisfaction. (8) Over the last 50 years, medicine has increasingly adopted evidence-based practices through guidelines issued by medical associations and agencies to improve care and accelerate knowledge translation (9-11).

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↑What is "already known" in this topic:

Pediatric emergency medicine (PEM) has been established in developed countries for decades to protect the physical and mental health of children, particularly during mass casualty incidents. It recognizes that children are not small adults and that their unique anatomy and physiology require specialized knowledge and techniques. This field has improved outcomes for at-risk, neglected, and abused children. In the Middle East, however, it remained uncommon for many years.

→What this article adds:

Iran has been one of the first Middle Eastern countries to establish a PEM subspecialty. This achievement highlights the value of advancing specialized fields and the need to remove obstacles to ensure public safety and well-being. With the expertise of Iranian specialists, this field can be developed in other countries and expanded internationally through hospital collaborations. It could also serve as a flagship for initiatives supporting children and adolescents, particularly by integrating with social emergency programs to identify and address child mistreatment in communities.

[DOI: 10.47176/mjiri.39.97]

A review in the United States (US) emphasized the urgent need to improve emergency care to meet public expectations. Emergency medicine is well integrated into the US healthcare system and is an effective model of emergency care (12). Recognized in 1950, the need for trained emergency physicians led to the establishment of a residency program at Ohio University by 1974 in response to demand for 24/7 specialized care. Initially, specialists from fields like internal medicine, surgery, anesthesia, orthopedics, and neurosurgery trained emergency residents in EDs. In 1978, Emergency medicine was officially recognized as the 23rd medical specialty in the US (13).

History of the Formation of Emergency Medicine in Iran

Providing medical services to ED patients holds particular importance for the health system. The first official request to establish emergency medicine as a specialty was submitted in 1996 to the Medical Education and Specialization Council. After approval, the Ministry of Health endorsed the initiative, but due to inadequate infrastructure, implementation was delayed until 2000. That year, the Minister of Health assigned the Medical Education Council to assess the need for this specialty. A team led by Dr. Ali Bidari reviewed global emergency medicine programs and recommended the establishment of such a program in Iran. They proposed sending specialists abroad for 6 months of training to learn curricula and teaching methods.

In 2000, a meeting with the Minister of Health and representatives from 7 medical universities supported the proposal. Eight specialists from 4 fields were sent to the US, completing a 6-month emergency medicine fellowship at George Washington University. Later that year, the Medical Education and Specialization Council approved Iran's first emergency medicine residency program at Iran University of Medical Sciences. In 2001, Dr. Ali Bidari established the first emergency medicine group at Rasul Akram Hospital and launched the residency program.

By 2004, graduates formed emergency medicine groups at Tehran and Shahid Beheshti Universities, followed by groups in Tabriz, Esfahan, Mashhad, Ahwaz, Bandar Abbas, Kermanshah, Gilan, Mazandaran, and Kerman Universities. The presence of full-time emergency specialists significantly improved service quality and satisfaction in hospitals. The growing number of specialists led to the founding of the Iranian Association of Emergency Medicine in 2005 (14, 15).

The Necessity of Pediatric Emergency Medicine as a Subspecialty

The health status of the pediatric population influences the adequacy of pediatricians. Approximately 26.6% of children have chronic conditions such as asthma, obesity, diabetes, or mental health disorders (16). The growing prevalence of these diseases has increased demand for both primary care pediatricians and pediatric subspecialists (17). Future pediatric care must develop a responsive workforce capable of delivering comprehensive, high-quality services aligned with evolving community demographics (18). Despite such recommendations, concerns remain about meeting the rising demand, especially in pediatric subspecialties (19). Estimates predict a significant shortage in both primary and subspecialty pediatric care by 2032 (20).

A study found that 89% of pediatric emergency visits (age, 0-14 years) occurred in nonpediatric hospitals, 26% in rural or remote centers, and 75% in EDs seeing <7000 children annually. Only 6% of visits occurred in pediatric EDs, and just 6% of EDs had all recommended pediatric equipment. Many lacked pediatric laryngeal masks and neonatal tools, although essential medications were consistently available. About 52% had pediatric quality improvement programs, and 59% were aware of the American Academy of Pediatrics (AAP) and American College of Emergency Physicians (ACEP) guidelines. Departments with more pediatric visits and staff had higher pediatric readiness scores (average score, 55) (21).

The ACEP established its PEM section in 1989, growing to 325 members by 1995. In 1990, the ACEP and the AAP collaborated to propose PEM as a subspecialty, which the American Board later approved as a medical specialty (22). Ongoing assessment of the workforce remains essential to understanding the performance and workload of pediatric and general emergency physicians (23, 24). In 2013, the AAP confirmed a persistent shortage in pediatric subspecialists (19). High-quality pediatric emergency care requires strong infrastructure and pediatric-specific resources (25).

PEM remains relatively new, especially outside the US, where physicians provide most emergency care for children with limited pediatric training (26). In developing countries, understanding the structure of current emergency services is necessary before promoting specialization or recommending changes (27, 28). However, few studies have systematically described pediatric emergency care in these regions. More than half of children and adolescents visiting EDs lack prior psychiatric history or mental healthcare contact (29). As such, emergency visits are essential indicators of access to mental health services (30).

Emergency physicians also play a vital role in identifying and referring children exposed to violence (31). Pediatric concussions—common in EDs—pose diagnostic challenges due to subtle, easily overlooked symptoms. A brief assessment is essential in most trauma cases (32).

Studies show that many pediatric complications and deaths could be significantly reduced with better emergency care (33-35). Improving pediatric emergency services could substantially lower in-hospital mortality. Current global efforts focus on enhancing prehospital systems, triage, community health workers, and training mid-level providers and physicians (36). Most hospital deaths occur within 24 to 48 hours of admission, with 80% of pediatric mortality attributed to treatable causes like infection, malnutrition, and neonatal conditions (37). Developing countries urgently need structured pediatric emergency care. Supporting local healthcare systems is key to establishing these services (38).

In its latest workforce policy, the AAP emphasized the need for adequate numbers of trained pediatricians and specialists to ensure optimal health for all youth (19). Despite some progress, many subspecialty gaps persist (39).

[DOI: 10.47176/mjiri.39.97]

Moreover, discussions on workforce diversity now extend beyond race and ethnicity to include cultural, linguistic, and gender identity characteristics. This broader understanding calls for greater inclusivity across the pediatric specialist workforce (40).

Establishment of the PEM Subspecialty at Iran University of Medical Sciences

Faculty members at Iran University of Medical Sciences played a pivotal role in the proposal and development of the PEM subspecialty within the Medical and Specialization Education Council. Comprehensive modeling and feasibility studies were conducted to support its implementation.

Recognizing the growing significance of this field, multiple pediatric educational and medical centers across Tehran and other cities formally submitted requests to the Council. Concurrently, a series of proposals and collaborative meetings with engaged faculty members were held to define the essential requirements and curriculum framework for the subspecialty. This initiative culminated in the formal approval of the program at the 96th meeting of the Medical and Specialization Education Council in July 2022. Table 1 outlines the details of the request form

Table 1. The details of the Request Form Submitted for the Subspecialty's Approval by the Medical and Specialization Education Council in July 2022

Section	Details
Core Values of the PEM Program	- Upholding the right to life for all children. - Ensuring timely, effective, and appropriate access to emergency care for every child. - Delivering high-quality pediatric emergency services with minimal medical errors. - Providing equitable care regardless of gender, race, religion, social status, or financial ability. - Maintaining professional ethics in all aspects of care, education, and research. - Safeguarding children's health and lives as the foundation of a healthy society. - Establishing 24/7 pediatric emergency services and a reliable safety network to reassure families. - Prioritizing critically ill children in emergency settings. - Promoting teamwork and multidisciplinary collaboration. - Recognizing that children are not small adults and tailoring care accordingly. - Respecting patients and their families, with an emphasis on family-centered care. - Enhancing satisfaction among pediatric patients and their parents within emergency services.
Professional Responsibilities of Graduates	As Caregivers: - Evaluate, resuscitate, stabilize, diagnose, and treat children in emergency triage. - Triage and assign pediatric patients based on severity. - Provide appropriate follow-up. - Decide on hospitalization, discharge, consultation, referral, and post-discharge care. - Perform diagnostic and therapeutic procedures. - Provide emergency services across facilities. - Ensure high-quality access to emergency care. - Reduce emergency department stay and increase satisfaction. - Implement essential pediatric emergency procedures. As Educators: - Educate children, families, healthcare teams, and communities. As Researchers: - Conduct research, review literature, and support pediatric emergency research. As Consultants: - Offer expert consultations to families, professionals, health authorities, and legal bodies. As Managers: - Manage pediatric emergency departments and coordinate care. As Prevention and Patient Safety Promoters: - Promote public health education and injury prevention. - Participate in national planning to prevent injuries. - Support passive defense and evidence-based preventive strategies.
Principles of Professionalism	- Altruism - Duty and Responsibility - Integrity and Honesty - Respect for Others - Professional Excellence
Educational Centers for PEM Subspecialty	Iran University of Medical Sciences: - Ali Asghar Hospital - Rasool Akram Hospital
PEM Faculty Members	- Dr. Ali Bidari - Dr. Elham Talachian - Dr. Hossein Saeidi - Dr. Shabahang Jafarnejad - Dr. Hamidreza Khoshnezhad Ebrahimi - Dr. Seyedeh Mahsa Mahmoudinezhad Dezfouli

[DOI: 10.47176/mjiri.39.97]

required for the subspecialty's establishment.

Conclusion

Pediatric healthcare administrators must utilize workforce data to inform strategic planning and guide a long-term vision that ensures children receive the clinical care, research innovations, and support essential to achieving optimal health outcomes. The sustainability and advancement of any medical field are directly linked to its ability to attract qualified applicants to its educational programs. Strengthening the pipeline of pediatric applicants requires addressing key issues such as workforce diversity, geographic distribution, and the underlying factors influencing trainees' career decisions.

A comprehensive assessment of the pediatric workforce is critical to fulfilling the clinical, academic, and public health objectives of the pediatric community. Today's trainees—and future generations—form the foundation of the field, and their career choices across general and subspecialty pediatrics reflect our most important mission: providing high-quality, accessible care to children throughout the country.

In Iran, pediatric patients in need of urgent medical attention are typically admitted through 1 of 3 main pathways: (1) 24-hour clinic systems; (2) children's hospitals; and (3) EDs within general hospitals. These centers are often staffed by professionals trained under varying systems, leading to inconsistencies in medical practice. EDs in children's hospitals operate around the clock and are usually managed by pediatric residents or general emergency medicine physicians, with minimal involvement from PEM specialists. This results in varied levels of care quality, particularly in the management of critically ill children.

We hope that the establishment of the PEM subspecialty will address several key challenges in Iran's pediatric emergency care system—including the lack of standardized training, limited coordination between emergency units, and the underdiagnosis of severe conditions such as child abuse. In addition, current gaps in prehospital care—such as insufficient pediatric-specific training and equipment—underscore the need for a more structured and specialized approach.

Authors' Contributions

S. J. conceived the study and developed the discussions, S. E. & P. G. collected & analyzed the data, and, H. K. developed the discussions. S. J. wrote the first draft of the manuscript & all other authors critically revised it.

Ethical Considerations

Not applicable.

Acknowledgment

The authors thank all the faculty members of the Pediatric Emergency Medicine Department at Iran University of Medical Sciences and the hardworking staff of the university hospitals, whose attention and guidance helped us compile and gather the present collection.

The authors also acknowledge the assistance of AI-based language support (ChatGPT, developed by OpenAI) for helping improve the clarity, grammar, and conciseness of the manuscript. The primary prompt used was as follows: "Can you make it grammatically correct and shorter?".

Conflict of Interests

The authors declare that they have no competing interests.

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[DOI: 10.47176/mjiri.39.97]

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[DOI: 10.47176/mjiri.39.97]