ORIGINAL ARTICLE

Public awareness regarding the field of pediatric emergency medicine as a medical subspecialty in Saudi Arabia: a cross sectional study

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ABSTRACT

Introduction: Pediatric Emergency Medicine (PEM) is a critical subspecialty focused on providing emergency care for children within emergency settings. Despite its importance, public awareness of PEM remains limited, including in Saudi Arabia, where pediatric emergency departments, similar to those in many countries worldwide, are frequently overutilized for nonurgent conditions.

Objective: This study aimed to evaluate public awareness, knowledge, and attitudes toward PEM among parents attending a pediatric emergency department in Saudi Arabia, and to identify sociodemographic factors influencing this awareness.

Methodology: A cross-sectional survey was conducted from June to November 2024 at a tertiary care hospital in Jeddah, Saudi Arabia. The study included 332 parents or guardians accompanying pediatric patients aged 0 to less than 14 years of age with mild to moderate medical acuity levels in the Pediatric Emergency Medicine Department. Data were collected using a structured questionnaire and analyzed with Statistical Package for the Social Sciences (SPSS) version 20. Associations between awareness levels and sociodemographic variables were assessed using the chi-square test.

Results: Although 84% of participants were aware of Emergency Medicine as a specialty, only 47.9% recognized PEM as a distinct subspecialty, and only 20% accurately identified the role of PEM physicians in their child's care. The primary reasons for using emergency services were immediate access to care, trust in the emergency team, and limited access to primary care. Parents' awareness of PEM as a distinct medical subspecialty exhibited significant associations with gender, education level, and employment status.

Conclusion: The findings highlight a considerable gap in public awareness of PEM as a medical subspecialty in Saudi Arabia. Targeted public education campaigns, increasing collaborations between pediatric emergency medicine physicians and primary healthcare centers, and integration of PEM awareness into community health initiatives are recommended to optimize healthcare utilization and enhance pediatric outcomes.

Keywords: Pediatric, pediatric emergency medicine, emergency medicine, general public awareness, parents' knowledge, medical specialties

Introduction

In 1968, the American College of Emergency Physicians was founded in the United States, leading to the recognition of Emergency Medicine (EM) as a specialty by the American Medical Association in 1972 and the establishment of board certification in 1979 [1]. In Saudi Arabia, EM did not exist as a specialty before 1990; instead, emergencies were managed by individual

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AMEM

departments such as medicine, surgery, pediatrics, and obstetrics and gynecology within emergency departments (EDs). In the 1990s, two major hospitals in Riyadh-King Faisal Specialist Hospital and the Ministry of National Guard Health Affairs Hospital introduced American-style ED models [2]. EM was formally recognized as a medical specialty in 2001, and the Saudi Board of Emergency Medicine was established in 2005 to standardize curricula for EM and later for Pediatric Emergency Medicine (PEM) [3]. The first recognized PEM fellowship, a two-year program, was launched in 2006 across multiple training sites, with the overarching goal of producing clinicians proficient in PEM practice [2]. The ED is a critical hospital service; however, it is frequently over-utilized for conditions that could be managed in primary healthcare centers, particularly among pediatric patients [4].

Caregiver knowledge and awareness have been shown to play a pivotal role in PEM utilizationand outcomes. Studies have linked non-urgent pediatric visits to the ED with parental knowledge levels. For example, Alruzaiza et al. [4] reported a significant association between parents' sociodemographic characteristics and their knowledge, attitudes, and practices regarding PEM. Similarly, Greenberg et al. [5] found that parents had limited understanding of the roles of ED providers and the scope of pediatric EDs. Olsen et al. [6] also noted that EM as a specialty remains poorly understood by patients, and Leva et al. [7] reported that nearly half of surveyed parents believed that general pediatricians and PEM physicians provide equivalent emergency care. Although public understanding of EM has gradually improved, PEM remains largely unrecognized as a distinct medical subspecialty.

Our study aimed to evaluate parental awareness of PEM as a distinct medical subspecialty and to identify the factors influencing parents' decisions to use PEM services rather than outpatient clinics. The findings will contribute valuable local data on public knowledge and perceptions of PEM in Saudi Arabia.

Materials and Methods

Data collection tool and technique

The data were collected using REDCap (Vanderbilt University), a secure, web-based data management platform. The survey included a brief introduction outlining the study aims, followed by an option to either "agree" or "disagree" to participate. Selecting "agree" was considered verbal consent, whereas choosing "disagree" resulted in no further data collection.

Data analysis

The data were analyzed using Statistical Package for the Social Sciences (SPSS) (version 20). Descriptive statistics were reported as means ± standard deviations for continuous variables and as frequencies and percentages for categorical variables. Associations between awareness and sociodemographic variables were tested using the chi-square test. *P*-values < 0.05 were used to denote statistical significance.

Study design and study participants

This cross-sectional survey included all pediatric emergency visits to King Faisal Specialist Hospital and Research Center between June and November 2024. Eligible participants were parents or guardians of pediatric patients aged 0 to under 14 years of age presenting with mild to moderate acuity. Exclusion criteria included patients with high-acuity conditions or those requiring resuscitation.

Survey components

The survey collected information including demographics such as age, gender, marital status, nationality, household size, province of residence, highest educational degree, employment status, relationship to the patient, and number of ED visits per year. We also assessed knowledge, including awareness of EM and PEM as distinct specialties and recognition of other pediatric subspecialties (e.g., cardiology, pulmonology). Parents' Perceptions of the Pediatric ED as an appropriate setting for their child's care were also included in the survey. Finally, parental identification of medical care providers' specialties was also assessed. A multiple-choice question assessed parental perceptions of their child's medical care provider's specialty in the pediatric ED. For respondents who expressed trust in the Pediatric ED, additional questions explored the reasons for their preference (e.g., faster care, higher trust, or lack of access to primary care).

Ethical consideration

The study protocol, including objectives and questionnaires, was approved by the Research Ethics Committee of King Faisal Specialist Hospital and Research Center IRB number: (2024-68). All patients presenting to the hospital were informed of its data recording system and provided general agreement for their de-identified data to be used for research purposes, with full confidentiality maintained.

Results

Descriptive statistics

Sociodemographic characteristics

A total of 332 participants with diverse sociodemographic characteristics were enrolled in the study. The largest age group was 30-40 years (45.5%), followed by 40-50 years (35.5%). Females comprised 67.2% of the sample. Most participants were married (90.7%), with 5.1% divorced. The vast majority of the survey respondents were Saudis (97.3%).

In terms of family size, most survey respondents reported having 3-5 family members (46.1%). Geographically, most participants resided in the Western region of Saudi Arabia (75.9%).

Regarding education, nearly half held a bachelor's degree (46.7%). Employment data surveyed showed that almost half of the respondents were full-time employees (44.9%), while the remaining respondents were either seeking employment or did not disclose

Table 1. *The results of the sociodemographic characteristics of the survey participants.*

Feature	Subcategories	Number	Frequency
Age	21:30 years	46	13.9%
	30:40 years	151	45.5%
	40:50 years	118	35.5%
	More than 50years	17	5.1%
Gender	Males	109	32.8%
	Females	223	67.2%
Marital Status	Married	301	90.7%
	Single	10	3%
	Widow	3	0.9%
	Divorced	17	5.1%
	Other	1	0.3%
Nationality	Saudi	323	97.3%
	Non-Saudi	9	2.7%
Family Number	1:3 members	82	24.7%
	3:5 members	153	46.1%
	5:7 members	72	21.7%
	7:9 members	19	5.7%
	More than 9 members	6	1.8%
Residency	Northern area	5	1.5%
	Southern area	67	20.2%
	Western area	252	75.9%
	Eastern area	1	0.3%
	Central area	7	2.1%
Education	Primary education	4	1.2%
	Intermediate education	14	4.2%
	Secondary education	86	25.9%
	Bachelor's degree	155	46.7%
	Master's degree	24	7.2%
	PhD degree	3	0.9%
	Prefer not to say	46	13.9%
Employment	Full-time Employee	149	44.9%
	Part-time job	2	0.6%
	Private work	20	6.0%
	Retired	7	2.1%
	Looking for work	57	17.2%
	Prefer not to say	97	29.2%
Relation to the patient	Father	97	29.2%
	Mother	207	62.3%

their employment status. A summary of these results is provided in (Table 1).

Analysis of the participants' answers in the questionnaire

While there was substantial recognition of EM as a specialty among survey participants, awareness of PEM was considerably lower with only some viewing it as a distinct medical subspeciality. Nearly half of the participants (56.3%) reported fewer than five emergency department (ED) visits in the past year. When asked about their perceptions of the medical specialties of care providers in the pediatric ED, a majority believed their initial care was provided by a general pediatrician (50.5%), far fewer accurately identified their provider as a PEM physician (20.5%), and even less (17.2%) assumed they were seeing a general practitioner (Table 2).

The following part of the survey assessed the parents' knowledge about the existence of different pediatric subspecialties and explored parents' perceptions of the ED as the most appropriate setting for their child's medical care.

Most respondents (73.2%) confirmed their knowledge of different pediatric subspecialties. In addition, a majority of participants (89.5%) concurred that the emergency department was the most optimal setting for their child's care. The predominant reason cited was immediate access to medical attention (50.9%). Furthermore, a greater level of trust in the Emergency staff was emphasized (29.2%), and some indicated the lack of primary care physicians as a reason (13.9%). (Table 3)

Inferential statistics

Factors affecting the public's awareness of EM as a medical subspecialty

Analysis of factors influencing public awareness of EM as a medical specialty showed that education level was the only statistically significant variable associated with awareness ($p = 0.049$). In contrast, employment status, family size, marital status, age, and gender demonstrated no significant effect on the participants' awareness (Table 4).

Factors affecting awareness of PEM as a medical subspecialty

The statistical analysis indicated that multiple factors influenced participants' awareness of PEM as a medical subspecialty. Female parents demonstrated significantly higher awareness of PEM ($p = 0.004$). Furthermore, both educational level ($p = 0.000$) and employment status ($p = 0.003$) were identified as significant determinants of parental awareness of PEM (Table 5).

Reasons why parents believe that the ED is the most suitable place for their child's medical care

A statistically significant difference was observed between parents who considered the ED the most appropriate setting for their child's medical care and those who did not. The reasons cited included the availability of immediate care in the pediatric ED, greater trust in PEM physicians, and the lack of access to primary care providers (Table 6).

Discussion

Pediatric Emergency Medicine (PEM) is a critical subspecialty within both Emergency Medicine and Pediatrics, focusing on the prompt evaluation, diagnosis, and management of children presenting with acute illnesses or injuries. As a rapidly expanding discipline, PEM plays an increasingly important role in modern

Table 2. *Awareness of the population regarding emergency medicine and pediatric emergency medicine as medical specialties.*

Question	Answer	Number	Frequencies
How many times did you visit the Emergency Department during the last year?	<5 visits	187	56.3%
	5:10 visits	116	34.9%
	>10 visits	29	8.7%
Do you know about the existence of Emergency Medicine as a medical specialty?	Yes	279	84%
	No	53	16%
Do you know about the existence of Pediatric Emergency Medicine as a medical subspecialty?	Yes	159	47.9%
	No	173	52.1
What is the medical specialty of the physician providing care for your child in our Emergency Department?	General Pediatrician	168	50.5%
	Pediatric Emergency Medicine Physician	68	20.5%
	General Practitioner (GP)	57	17.2%
	I do not know	39	11.7%

Table 3. *Parents' knowledge and perception of pediatric care settings and subspecialities.*

Question	Answer	Number	Frequency
Do you know about pediatric subspecialties e.g. Pediatric Cardiology, Pediatric Pulmonology, and pediatric Nephrology?	Yes	243	73.2%
	No	89	26.8%
Do you believe the Emergency Department is the best place for your child to get medical care?	Yes	297	89.5%
	No	35	10.5%
parents' reasons for choosing the Emergency Department as the most suitable place in to provide care for their child			
Because we receive immediate medical care		169	50.9%
I don't have a primary care physician for my child		46	13.9%
We have more trust in the Emergency Department staff		97	29.2%

healthcare systems. Despite its importance, public awareness and understanding of PEM remain limited. The findings of this study showed that although most participants were familiar with Emergency Medicine (EM) as a medical specialty, fewer recognized PEM as a distinct subspecialty. Awareness of PEM was significantly associated with several demographic factors, including educational level, gender, and employment status. Furthermore, most respondents identified the emergency department (ED) as the most appropriate setting for their child's care, primarily due to the immediate availability of treatment and their trust in the medical team. This preference highlights the perceived importance of rapid access to specialized care for children with acute conditions and the need to improve public awareness of PEM and its role within emergency healthcare services.

One of the more striking findings of our study is the discrepancy between awareness of EM and PEM. Although a large proportion of participants (84%) were familiar with EM as a specialty, less than half (47.9%) recognized PEM as a distinct pediatric subspecialty. Furthermore, only 20% correctly identified that a PEM physician is primarily responsible for providing care to children in the emergency setting. In comparison, more than half of the participants (50.5%) believed that general pediatricians were the main providers in the ED. These results reveal a substantial knowledge gap among parents regarding the professionals specifically trained to manage pediatric emergencies.

This gap is consistent with findings reported in previous studies. *Olsen et al*. [6] observed that only 64% of their participants were aware of EM as a specialty, with many holding misconceptions, such as believing that EM physicians performed surgeries or ran outpatient clinics. Similarly, Greenberg et al. [5] found that many parents were unclear about the role of ED physicians, with half assuming they also practiced in private clinics and one-third believing they carried out surgical procedures. Such misconceptions contribute to a blurred public perception of the scope and responsibilities of EM, which ultimately extends to PEM. In addition, the public often lacks clarity about the hierarchy within EDs, including the roles of attending (consultant) physicians, residents, and interns. Similar observations about public understanding have been reported in Germany, where Von Dem Knesebeck et al. [8] documented widespread knowledge gaps and limited ability among citizens to identify or appropriately respond to emergency medical situations.

In our study, the majority of parents (89.5%) considered the ED the most appropriate setting for their children's medical needs. Among these, more than half (50.9%) cited rapid access to care as the primary reason, followed by greater trust in PEM staff (29.2%) and limited

Table 4. *Factors affecting awareness regarding emergency medicine as a medical specialty according to the survey.*

Factor	Description	Yes	No	*P*-value (Chi-Square test)
Age	21:30 years	38	8	0.799
	30:40 years	127	24	
	40:50 years	101	17	
	More than 50years	13	4	
Gender	Males	94	15	0.444
	Females	185	38	
Marital Status	Married	256	45	0.07
	Single	8	2	
	Widow	3	0	
	Divorced	12	5	
	Other	0	1	
Family Number	1:3 members	66	16	0.128
	3:5 members	136	17	
	5:7 members	59	13	
	7:9 members	13	6	
	More than 10 members	5	1	
Education	Primary education	4	0	0.049
	Intermediate education	9	5	
	Secondary education	66	20	
	Bachelor's degree	136	19	
	Master's degree	19	5	
	PhD degree	3	0	
	Prefer not to tell	42	4	
Employment	Full-time Employee	127	22	0.789
	Part-time job	2	0	
	Private work	15	5	
	Retired	6	1	
	Searching for job	46	11	
	Prefer not to tell	83	14	

Table 5. *Factors affecting parents' awareness of pediatric emergency medicine as a medical subspecialty.*

Factor	Description	Yes	No	*P*-value (Chi-Square test)
Age	21:30 years	29	17	0.134
	30:40 years	72	79	
	40:50 years	51	67	
	More than 50years	7	10	
Gender	Males	40	69	0.004
	Females	119	104	
Marital Status	Married	144	157	0.850
	Single	5	5	
	Widow	1	2	
	Divorced	9	8	
	Other	0	1	
Family Number	1:3 members	40	42	0.122
	3:5 members	79	74	
	5:7 members	27	45	
	7:9 members	8	11	
	More than 10 members	5	1	
Education	Primary education	4	0	0.000
	Intermediate education	7	7	
	Secondary education	37	49	
	Bachelor's degree	90	65	
	Master's degree	15	9	
	PhD degree	3	0	
	Prefer not to say	3	43	
Employment	Full-time Employee	77	72	0.003
	Part-time job	2	0	
	Private work	8	12	
	Retired	4	3	
	Searching for job	36	21	
	Prefer not to tell	32	65	

availability of primary care services (13.9%). These findings are in line with those of Mahmoud et al. [9], who reported that 45.7% of parents sought care at the ED as their first option for a child's illness, compared with only 28% who used PHCCs. Similarly, Alnowaiser et al. [10] reported that a large proportion of parents opted to go directly to the ED instead of visiting PHCCs .

Knowledge gaps have also been observed among Saudi medical students. Al-Rabiah et al. [11] reported limited awareness of EM, particularly among preclinical students. These findings highlight the importance of encouraging further education on mindful healthcare use and a deeper understanding of different medical specialties within the medical school curriculum. Olsen et al. [6] also noted that media depictions may simultaneously enhance visibility but also perpetuate misconceptions about the scope of medical specialties.

In examining the reasons behind parents' preference for PEM services, our study adds to the growing evidence that such decisions are often shaped by convenience, trust, and systemic limitations. These findings align with those of Alnowaiser et al. [10], who studied over 1,000 participants and found that parents favored visiting the ED over PHCCs primarily for immediate medical care and time efficiency . In their study, 6% of parents reported choosing the ED because of greater trust in the medical team, 5% were uncertain about the urgency of their child's condition, whereas >74% believed the condition was urgent. The study highlighted the central reasons some parents chose the ED over PHCCs, even when the issue was nonurgent. Similarly, Alruzaiza et

Table 6. *Reasons why the participants believe the emergency department is the most suitable place for their child's medical care.*

Whether parents believe Emergency Department is the most suitable place for their child's medical care	Reasons why the participants believe that Pediatric Emergency Medicine (PEM) is the most suitable setting for their child's medical care.					
	Blank response (20 participants)	Immediate medical care	We Don't have a primary care physician	We have more trust in the PEM team	Total	P-value (Chi-Square test)
Yes		161	38	95	297	0.000
No		8	8	2	35	

al. [4] identified factors such as service quality, parental uncertainty in assessing severity, limited PHCC working hours, and the higher cost of ED services as key drivers of this preference. Al-Ghadeer et al. [12] investigated factors influencing pediatric ED visits, noting that parents often cited the urgency of their child's condition and the perceived convenience of the ED services. Additional considerations, such as physician availability and hospital resources, were also reported. Conversely, parents often preferred the ED over PHCCs, citing limited-service hours and a perception that urgent cases might be addressed more promptly in the ED rather than in primary care settings.

The misalignment between healthcare service availability and public expectations contributes to emergency department overcrowding, longer waiting times, and increased strain on resources. Almulhim et al. [13] further highlighted that the preference for EDs over PHCCs stems largely from perceptions of superior quality, accessibility, and availability. Importantly, this trend is not limited to pediatrics; similar patterns have been observed among adult populations in Saudi Arabia [13,14].

Our study also explored the relationship between sociodemographic characteristics and awareness of PEM. Significant associations were observed with gender, education level, and employment status. Female respondents demonstrated greater awareness of PEM compared to males. This aligns with the findings of Al-Anazy et al. [15], who reported that men were more inclined to call EMS during perceived emergencies, whereas women preferred to accompany patients directly to the ED. Although this may suggest a gender-based difference in engagement with emergency services, other studies, including those by Alruzaiza et al. [4] and Al-Jabir et al. [14], did not identify statistically significant variations by gender .

Age also played an important role in shaping awareness and utilization of ED services. Al-Anzy et al. [15] noted that younger individuals (18-24 years) possessed greater EMS knowledge, likely due to exposure through social media and the Internet. Our study found that parents aged 30-50 years were more likely to seek emergency care for their children. This age group may represent parents with greater experience and a stronger sense of responsibility, leading to more proactive responses to health concerns. These findings are consistent with prior research, in which parental age was among the demographic factors associated with healthcare-seeking behavior and general medical knowledge [14,16,17].

In terms of parental educational status, our study revealed that individuals with secondary and bachelor's degrees demonstrated higher awareness of PEM compared to those with only primary education. Al-Anazy et al. [15] suggested that highly educated individuals may sometimes overestimate their knowledge or hesitate to acknowledge gaps, which could contribute to underreporting . In contrast, parents with secondary education might be more open to health education and are more proactive in seeking accurate information. This trend supports prior studies linking higher education levels with greater awareness of emergency services [4,10,13]. However, conflicting findings exist. For example, Mahmoud et al .[9] and Al-Jabir et al. [14] reported no significant correlation between education and awareness, implying that other factors, such as health literacy, access to information, and prior healthcare experiences, may play important roles.

Limitations

Although this study offers valuable insights into public awareness and perceptions of PEM in Saudi Arabia, several limitations should be considered. First, the research was conducted at a single tertiary care center, which may not accurately reflect the diversity of populations and healthcare settings across the Kingdom, limiting generalizability. Second, the cross-sectional design captures perceptions at only one point in time, making it difficult to assess changes in awareness over time or to evaluate the effects of public health interventions. Third, reliance on self-reported questionnaires introduces the risk of recall bias and social desirability bias because participants may have overestimated their knowledge or provided responses that they deemed more acceptable. Furthermore, the study did not explore in detail the severity or urgency of pediatric visits, which may have provided greater insight into the rationale behind parental choices. Finally, certain potential confounding factors, such as previous healthcare experiences, exposure to media, and varying levels of health literacy, were not assessed and may have influenced the results.

Recommendations

1- Developing public health campaigns to raise awareness of PEM as a distinct medical subspecialty. These efforts should highlight the differences between EM and PEM, clarify the types of conditions that require emergency care, and educate families on when to seek services at PHCCs instead of EDs.

2- Increasing collaboration between Pediatric Emergency Medicine Physicians and PHCCs which

will hopefully enhance children's healthcare outcomes. These collaborations will facilitate a valuable exchange of knowledge and expertise, ultimately enriching the care provided to children.

3- Creating partnerships between educational institutions and medical societies with a goal of introducing basic health literacy into school curricula, fostering a generation that is better informed and more proactive in managing health needs.

One notable finding from our study is that parents often prefer Emergency Departments (EDs) over Primary Health Care Centers (PHCCs) when seeking care for their children, a choice that significantly shapes healthcare-seeking behavior. To encourage greater utilization of PHCCs, it is essential to continue to raise awareness about the range of services they provide and how these services can effectively meet the needs of families.

Conclusions

This study highlights a gap in public awareness of PEM as a distinct medical subspecialty in Saudi Arabia. While many individuals are familiar with EM, recognition of PEM remains comparatively limited. Public awareness levels were significantly influenced by factors such as gender, educational attainment, and employment status. These findings highlight a need for targeted public education initiatives and comprehensive health communication strategies to clarify the role and importance of PEM. In parallel, strengthening collaborations between Pediatric Emergency Medicine physicians and primary healthcare centers could help reduce the overuse of emergency departments for non-urgent pediatric conditions. Addressing these issues has the potential to enhance healthcare resource utilization and improve pediatric patient outcomes.

Conflict of Interest

The authors declare that there are no conflicts of interest related to this study.

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Ethical Approval

This cross-sectional study was conducted at King Faisal Specialist Hospital & Research Centre. Ethical approval was obtained from the Institutional Review Board (2024-68) of King Faisal Specialist Hospital & Research Centre. As the study utilized anonymized data collected as part of routine clinical care, informed consent was waived by the IRB.

Data Availability

The datasets generated and/or analyzed during the current study are not publicly available due to institutional regulations and patient confidentiality policies but are available from the corresponding author on reasonable request, subject to institutional approval

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Supplementary content (If any) is available online.

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