


BMJ Open Communication challenges and experiences between parents and providers in South Korean paediatric emergency departments: a qualitative study to define AI-assisted communication agents

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ABSTRACT

Objectives This study aimed to explore communication challenges between parents and healthcare providers in paediatric emergency departments (EDs) and to define the roles and functions of an artificial intelligence (AI)-assisted communication agent that could bridge existing gaps.

Design A qualitative study using in-depth interviews and affinity diagram methodology to analyse interview data.

Setting A tertiary paediatric ED in South Korea.

Participants 11 parents of paediatric patients and 11 ED staff members (physicians, nurses and security personnel).

Primary and secondary outcome measures The study examined parent-provider communication difficulties, emotional responses and situational factors contributing to miscommunication and increased workload for ED staff.

Results The study identified key emotional factors—fear, anger and sadness—that negatively affect communication between parents and ED staff. Parents experienced frustration due to uncertainty, insufficient information and difficulty navigating the ED process. ED staff faced challenges in managing anxious or demanding parents, resulting in increased workload and communication breakdowns.

Conclusions An AI-assisted communication agent could help mitigate these challenges by providing timely information, managing non-medical inquiries and supporting both parents and ED staff at critical stages of the ED visit. Implementing such technology has the potential to improve communication and enhance overall patient care in paediatric emergency settings.

INTRODUCTION

Various factors, such as the child's age, illness severity and parents' knowledge, influence the perspectives and needs of patients and their families in paediatric emergency departments (EDs).^{1 2} The ED process is divided into three phases: arrival and triage, assessment and treatment, and end of care and discharge.³ Throughout the ED process,

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This study provides in-depth qualitative insights into communication challenges in paediatric emergency departments (EDs), addressing both parental and healthcare provider perspectives.
- ⇒ The study contributes to the design and functionality of artificial intelligence (AI)-assisted communication agents to improve communication in paediatric EDs.
- ⇒ As a single-centre study, the findings may have limited generalisability to other healthcare settings with different cultural and institutional factors.
- ⇒ While this study explored the potential role of AI-assisted communication agents, it did not include feasibility testing or real-world implementation, requiring further research to assess its effectiveness in clinical practice.

paediatric patients and their families have distinct needs and questions. Therefore, a fundamental understanding of their experiences in the paediatric ED is essential to address these concerns effectively.

Some qualitative studies have investigated parents' emotional distress over their child's illness, a lack of medical knowledge and communication barriers with ED physicians.^{4 5} Meanwhile, paediatric ED physicians face challenges such as dealing with the idiosyncrasies of young patients, variable caregiver health literacy and the complexity of paediatric care.⁶ These factors can lead to gaps in information and emotions between parents and ED physicians, negatively impacting patient care. However, current research lacks an in-depth understanding of these gaps in the paediatric ED context.

Recently, artificial intelligence (AI)-assisted tools have shown significant potential in

healthcare settings by providing real-time information to patients and supporting clinical decision-making for physicians.^{7 8} Some AI applications focus on managing appointments and insurance processes, while other AI-based platforms streamline administrative tasks and improve efficiency.⁸ Moreover, machine learning algorithms can assist physicians by aiding in imaging interpretation or alerting them when patients show signs of clinical deterioration.^{7 9} While these applications rely on data-driven predictive models, addressing communication gaps—especially those involving emotional or situational nuances—remains a challenge. Furthermore, the optimal implementation of AI-assisted communication in healthcare is still unclear, highlighting the need for further research and development.

The aim of this study was to define the roles and functions of an AI-assisted communication agent by analysing in-depth interviews with parents and healthcare providers in the ED. Using a qualitative approach, we explored communication challenges and experiences within the ED setting to identify key barriers, areas for improvement and potential AI-driven solutions.

METHODS

Study designs and setting

A semistructured qualitative interview was conducted with parents of paediatric patients and ED staff working at the paediatric ED. This study was performed at the paediatric ED of Samsung Medical Center (SMC), a regional paediatric emergency medicine facility with attending physicians specialising in emergency medicine and paediatrics.

There are one or two residents (in paediatrics and emergency medicine) on duty every hour. On average, about 30 paediatric emergency patients visit the centre daily, with cases ranging from children with minor illnesses to those requiring intensive care, including haemato-oncology diseases. The study followed the Consolidated Criteria for Reporting Qualitative Research.¹⁰

Sampling

Prior to recruiting participants for in-depth interviews, an observational field study was conducted at the SMC paediatric ED. Over a period of 3–4 days, including overnight hours, the researchers observed that parents’ perspectives varied based on the frequency of their ED visits, the degree of discomfort they experienced and their willingness to communicate with medical staff. Therefore, based on these observational findings, a screening survey was administered to parents at the SMC paediatric ED to identify representative participants across the observed domains. This survey consisted of 31 questions and ultimately helped categorise nine types of parents, who were then selected as interview subjects (online supplemental materials 1).

Recruitment

Detailed information on the final interviewees is presented in [table 1](#). The interviewees were selected from the screened survey respondents who represented distinct parental characteristics and were grouped into three major categories: paediatric ED experience, frequency of communication with medical staff and extent of discomfort experienced.

Table 1 The selection criteria of participants

Category	Participants, n	Experience type
Specialist	4	Extensive experience interacting with children/caregivers
Resident	3	Limited experience in the paediatric emergency room
Nurse	3	Extensive experience in the paediatric emergency room
Security staff	1	Experience dealing with caregivers of all ages
Parents with different frequency in paediatric emergency room experience	1	Parents with many visits (more than 5 times)
	1	Parents of newborns with few visits
	3	Parents with few visits
	1	Parents with no visits
Parents with different frequency in communication with medical staff	1	Parents with many requests and questions for medical staff
	2	Parents who find it difficult to make requests and ask questions to medical staff
Parents with discomfort in communication with medical staff	1	Parents who find it difficult to understand medical and test results
	1	Parents who have experienced discomfort with the attitude of medical staff

For ED staff, purposive sampling was employed to recruit interview participants. The observational field study revealed that ED staff exhibited varying levels of proficiency and approaches to engaging with patients and families depending on their professional experience. Consequently, staff with diverse roles—ranging from professors and residents to nurses and security personnel—were recruited, reflecting various points of interaction with paediatric ED patients.

Interview process

Three researchers (HP, SH and SJ) conducted semistructured, in-depth interviews. All three had formal academic training in qualitative research and possessed between 4 and over 10 years of interviewing experience, including extensive involvement in service design research and multiple in-depth interviews.

The interview questions were developed based on the findings from the observational field study, focusing on participants' thoughts and behaviours, especially aspects relevant to improving the paediatric ED environment. In line with previous literature, these questions addressed common communication scenarios parents encounter in paediatric EDs and explored their experiences with ED services.^{11–13} For parents, the interview questions were organised into seven categories, reflecting their defining characteristics. For ED staff, the questionnaires were tailored for professors, residents, nurses and security personnel, with four variations each (online supplemental materials 2).

All interviews were conducted between 23 October 2023 and 21 November 2023, each lasting approximately 1 hour, with audio recording and transcription.

Depending on the participants' circumstances, the interviews were either conducted online or face to face. The overall process is summarised in figure 1.

Data analysis

The interview data were analysed in four stages using content analysis and affinity diagram methodology. The affinity diagram analysis is a widely used technique in social science and user experience design for deriving meaningful conclusions from large datasets. This bottom-up approach organises data based on relationships, interdependencies and patterns of inference.¹⁴ The step-by-step analysis method used in this study was reorganised based on prior research and the researcher's redefinition of terms and content into four steps.^{15 16} The overall process of affinity diagram analysis is illustrated in online supplemental figure 1.

- Stage 1: 'Findings'—By transcribing the interview data and reviewing it repeatedly, we applied content analysis to code meaningful words or phrases. The individual statements or words were extracted as separate 'cards'. Each card represented a distinct comment, experience or opinion from participants, enabling us to capture nuanced details of the interview content. We then iteratively sorted these cards into clusters based on their thematic similarities, continually refining the groupings until clear categories emerged.
- Stage 2: 'Mid-Level Categorization'—We merged clusters containing related concepts into broader thematic groups. For example, if multiple clusters touched on various aspects of parental anxiety during wait times, these clusters were integrated into a single mid-level category focusing on 'waiting-related

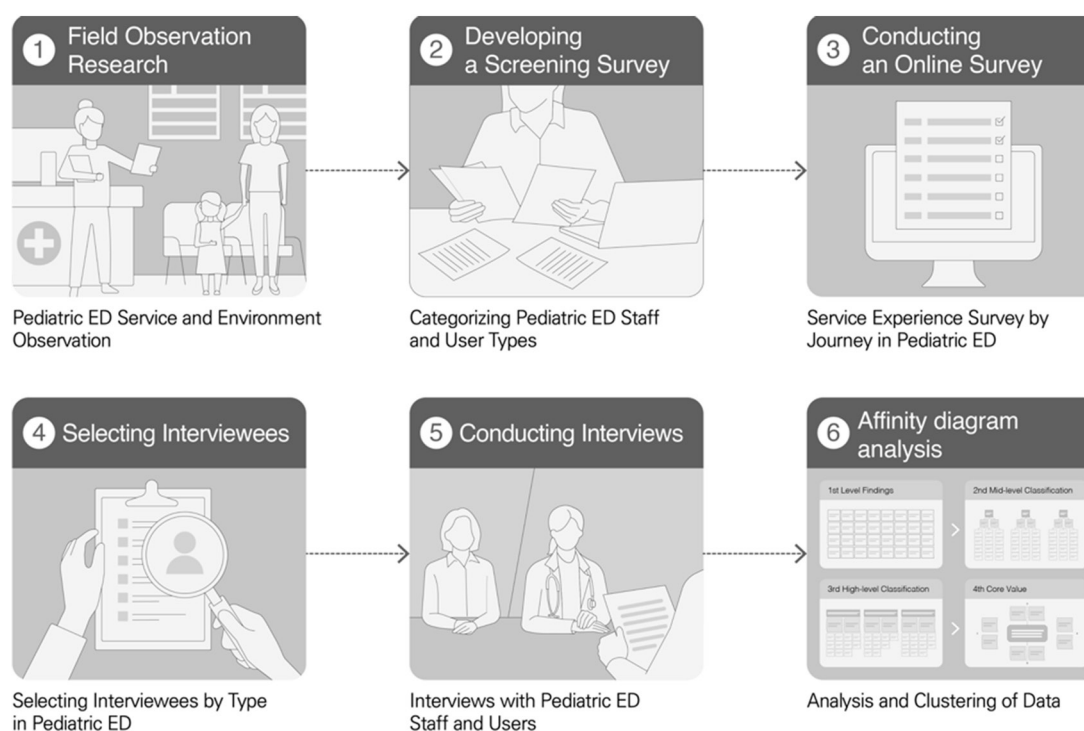


Figure 1 Overall schema of the study. ED, emergency department.

anxiety'. After integrating similar items, a comprehensive statement was derived for each category to define its characteristics.

- Stage 3: 'High-level Categorization'—The mid-level categories identified in the second stage were consolidated into high-level categories. For example, analysis revealed that emotion was a common underlying factor in parental statements, despite their diverse opinions and experiences. Parents explicitly conveyed their emotions in some cases, while in others, their emotions were inferred through contextual elements such as word choice and situational context, with researchers engaging in discussions to ensure accurate interpretation.
- Stage 4: 'Core Values'—In this stage, the core values of parents and ED staff were identified by synthesising their primary needs and expectations. Based on these core values, strategies were developed for different stages of ED care—before, during and after treatment. The data from parents and ED staff were analysed independently, and common themes were identified and cross-validated according to the stages of ED care. These shared challenges were then used to define the role and key functions of the AI communication agent to address prevalent issues effectively.

Patient and public involvement

Patients and the public were not directly involved in the design, conduct, reporting or dissemination of this study. However, this study was based on in-depth interviews with parents of paediatric ED patients, incorporating their perspectives to identify key communication challenges and needs. The findings from this research will be used

to develop AI-assisted communication solutions aimed at improving the paediatric ED experience for both parents and healthcare providers.

RESULT

Characteristics of study participants

11 parents and 11 ED staff members participated in the in-depth interviews, and their characteristics are detailed in [table 2](#). The median age of the parents was 38 years (IQR: 34–43 years), with the majority being female (90.9%). The most common reason for visiting the ED was fever (45.4%), followed by respiratory symptoms (27.3%), gastrointestinal symptoms (18.2%) and altered mental status (9.1%). Seven children (63.6%) were discharged from the ED and four (36.4%) were admitted. Over half of the parents were infrequent visitors, having visited the paediatric ED fewer than three times.¹⁷

The median age of the ED staff was 34 years (IQR: 30–37 years), with the majority being female (63.6%). The staff included four paediatric ED professors, three paediatric or emergency medicine residents, three paediatric ED nurses and one security guard. The residents were in their second, third and fourth years of residence. The paediatric ED nurses had a median of 4 years of experience, while the security guard had 6 years of experience.

The core value of AI-assisted communication agent

The core values of parents and ED staff were identified by synthesising their primary needs and expectations. Parents prioritised rapid information delivery and psychological reassurance, whereas ED staff emphasised efficient workflow and precise communication based

Table 2 The characteristics of parent participants

Variables	Total participants (n=11)
Gender	
Female	10 (90.9%)
Male	1 (9.1%)
Age	
Age, median (IQR)	38 (34–43)
ED visit frequency	
Infrequent visitors (<3)	8 (72.7%)
Frequent visitors (≥3)	3 (27.3%)
Reason for visit	
Fever	5 (45.4%)
Respiratory symptoms (asthma, respiratory distress, pneumonia)	3 (27.3%)
Gastrointestinal symptoms (vomiting, abdominal pain)	2 (18.2%)
Altered mentality	1 (9.1%)
Outcomes	
Discharged	7 (63.6%)
Admission	4 (36.4%)
ED, emergency department.	

on professional expertise. By analysing the underlying emotions driving parental priorities, key challenges and corresponding needs were identified and translated into the design principles and functional roles of the AI communication agent.

Before meeting a doctor, parents often experience confusion, anxiety and frustration due to unfamiliarity with ED processes and lack of information. The AI communication agent can provide pre-emptive guidance and preparatory information, enabling parents to better anticipate the process and facilitating smoother interactions with ED staff. During consultation, emotional distress and the complexity of medical information create communication barriers. The AI agent can mitigate these challenges by delivering personalised explanations, addressing non-medical concerns and reducing emotional burden.

For healthcare providers, managing patient education, responding to non-medical inquiries and repeated communication with caregivers impose significant time and emotional demands in paediatric ED settings. The AI agent can assist by facilitating these tasks, allowing clinicians to focus on critical clinical decision-making. Additionally, it can ensure effective information delivery, address remaining questions and handle repetitive caregiver inquiries, ultimately reducing the workload on ED staff.

Based on these findings, strategies were developed to optimise communication at different stages of ED care—before, during and after treatment. These strategies are summarised in [figure 2](#), outlining the specific points at

which the AI communication agent can intervene, along with the type of information and support it can provide.

Analysis of parents of paediatric ED patients

Through affinity diagram analysis, we identified 330 distinct findings in the first step. In the second step, these findings were grouped into 70 main comment categories based on shared causes or meanings. As previously described, emotional elements were consistently found to underlie parents' experiences in the ED, shaping their behaviours and communication with medical staff. In the third step of our categorisation, we focused on structuring the key functions required for the AI communication agent, prioritising parents' emotional responses. To systematically organise these findings, we applied Robert Plutchik's wheel of emotions (online supplemental table 1). This theory was selected for its clear structure of eight core emotions and its ability to distinguish nuanced negative emotions frequently observed in this study.¹⁸ Its established use in healthcare and service design further validated its applicability.¹⁹

The 70 main comment categories were classified into eight basic emotions: anger, anticipation, joy, trust, fear, surprise, sadness and disgust. Among these, the most frequently expressed emotions were fear (66 instances), sadness (51 instances) and anger (47 instances). The interview results and the 70 categorised parent comments are detailed in online supplemental table 2.

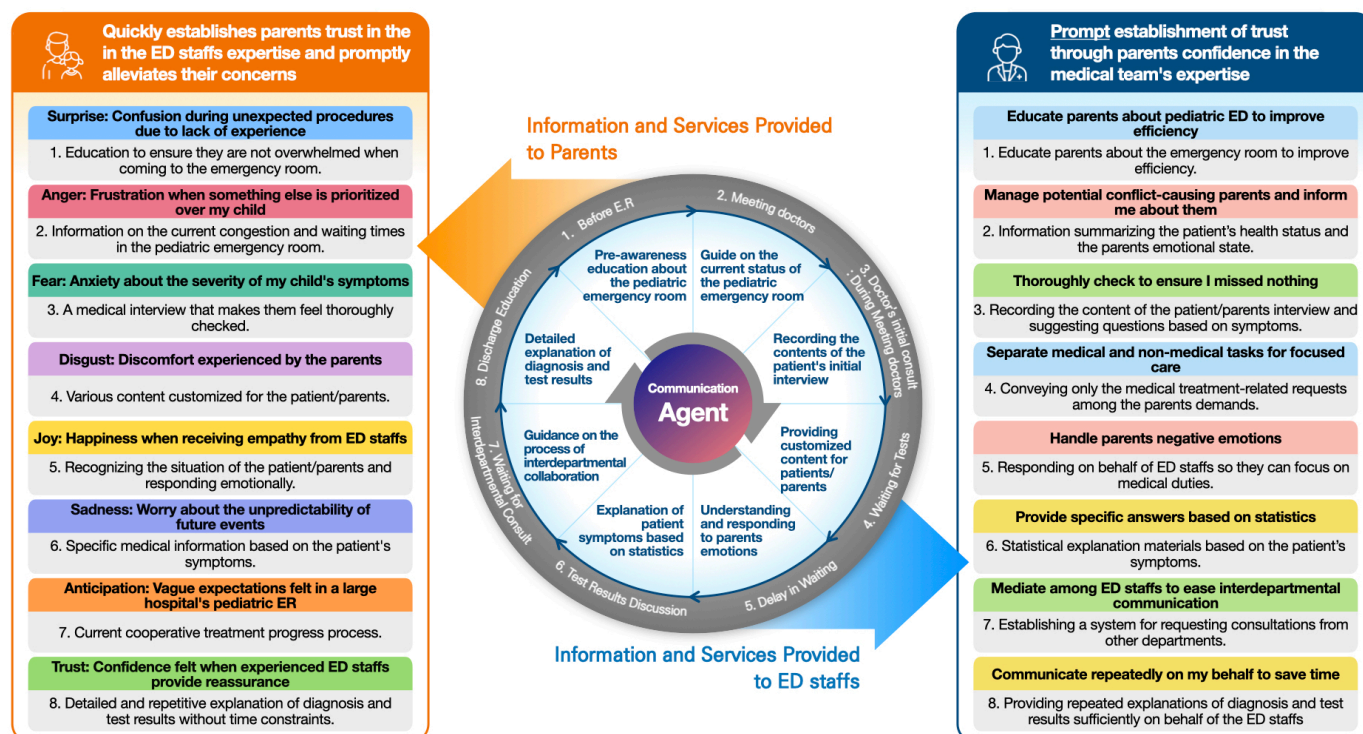


Figure 2 The core value of artificial intelligence (AI)-assisted communication agent. ED, emergency department; ER, emergency room.

Surprise

Surprise and confusion were commonly observed during the initial stages of ED experience, particularly among parents with little or no prior ED experience. These parents often felt a significant sense of embarrassment when confronted with their child's symptoms and the unfamiliar ED process. They expressed feelings of fear and embarrassment, especially during registration, which they found unfamiliar and distracting. Many noted the need for better guidance and general information about the process, particularly for first-time visitors to the paediatric ED. Due to this lack of information, parents were often unprepared for what was needed before arriving at the hospital. As a result, they struggled to respond promptly and appropriately to physicians' questions during consultation. Frequently, parents lacked crucial details about their child's condition, which led to delays and contributed to an overall negative experience in the ED.

When my baby had trouble breathing, I was so shocked that I immediately called an ambulance. I was alone and could only think, "What should I bring?" (P3)

During the medical interview, they asked about vaccination dates, and I was so flustered I couldn't remember. I even had to think hard about my baby's birth week. (P4)

I want to know and prepare for the questions beforehand, like medications, fever duration, and the highest temperature. (P3)

Anger

Anger and frustration were often expressed by parents with limited prior ED experience, particularly in situations where there were delays in medical attention. Parents felt annoyed when they perceived that other children, who arrived later, were prioritised for treatment, except in cases of recognised severity. These emotions were also prevalent when the ED process and regulations seemed inflexible or inconsiderate towards patients and their parents. To address this, we proposed a communication agent to assist in overcrowded ED situations by explaining the process to parents and quickly responding to non-medical requests or questions on behalf of the medical staff.

I was holding my baby, and my husband had the oxygen device. A nurse told us, without explanation, that one guardian had to leave due to regulations. My baby's oxygen levels were dropping, but they only talked about rules and didn't offer alternatives. Despite explaining, they insisted, making me very angry. (P8)

My baby went to the ER, and we couldn't have dinner. I tried to get some bread, but they didn't

allow me to go outside. We left around dawn, and my wife, baby, and I hadn't eaten for over 7–8 hours. (P9)

Fear

Fear typically manifested as anxiety about the child's conditions, stemming from uncertainty about the causes and a lack of clear answers from doctors. These emotions were dominant during consultations, diagnostic tests and while waiting for results. Parents felt fearful in situations where they could not predict or control their child's symptoms. Sometimes, this fear extended to concerns about the reliability of doctors, which impacted their communication with medical staff.

I had never been to the pediatric ER before, so when the doctor told us to go to a big hospital for tests, I worried my child might have a serious illness. (P1)

I wanted to know why my child had a fever, what illnesses could be causing it, and whether it was common or serious, but the ED visit didn't provide enough explanation. (P2)

Waiting outside to switch with my wife, not knowing what was happening in the ED was distressing. I had no idea about my child's condition or treatment. (P3)

I took photos of all the medications and IVs given to my child, worried about drug allergies, and to keep a record in case there's an issue later. (P4)

Disgust

Disgust was often associated with deficiencies in the ED environment. Parents reported feeling disgusted by poor facility conditions, lack of privacy during consultations and a shortage of necessary equipment, such as wheelchairs. This emotion was also triggered by long waiting times without adequate explanation, and when parents perceived unfriendliness or lack of empathy from medical staff.

My child can't walk or sit like an adult, and when the ER is crowded, there's no place to lay them down. We need two or three chairs, but I've never seen a space equipped for that. (P4)

The ER waiting area for caregivers was inadequate. It had only a folding chair, and felt bleak for a place with children—just a TV and no other amenities. (P8)

The wait was understandable, but my child and I were bored. I had to monitor the IV, so we couldn't leave. We ended up watching YouTube on my phone. (P6)

I understood the long wait, but one caregiver was talking loudly on the phone, which was distracting and exhausting, especially with many infants and stressed mothers around. (P5)

Sadness

Sadness was the most frequently reported emotion. Parents often experienced it when they struggled to make

requests or ask questions, finding it difficult to communicate their concerns to busy healthcare workers. This frustration made it harder for them to actively participate in the treatment process, leading to a sense of helplessness. Additionally, seeing their child in pain and crying during medical procedures intensified feelings of sadness and contemplation.

They explained how to switch caregivers, but I couldn't understand well. The staff looked so busy and tired that I felt bad asking again, so I pretended to understand and asked another caregiver instead. (P7)

When I couldn't answer unexpected questions, I felt like a terrible mother. When the doctor said, "How could you bring your child in so late with such a serious condition?" I was so shocked, I could only cry, thinking it was all my fault. (P4)

My child had a spinal tap, and since it was painful, I wasn't allowed to watch. Waiting outside and hearing my child cry was extremely distressing and remains a painful memory. (P2)

Joy, anticipation and trust

Positive emotions were reported less frequently. Parents felt joy when ED physicians treated their children with kindness and gentleness. Anticipation and relief were expressed when appropriate consultations were arranged, and long-term care plans were established, giving parents hope for the child's recovery. Trust in healthcare providers grew when doctors offered detailed explanations about the child's condition and made efforts to reassure parents, fostering a sense of confidence and security in the treatment process.

The doctor gave a detailed plan, including using medication for six months, collaborating with other departments if needed, and considering laser treatment after a year. There were many people waiting, but the doctor took the time to explain everything thoroughly. They even reassured me to take my time, which was very comforting. (P4)

When my child was a newborn and there was a flu outbreak, a nurse noticed and quietly guided us to another room to avoid the flu patients. I thought the nurse was very rational and skilled. (P7)

The professor first empathized with me, saying, "It's normal for mothers to feel scared and confused in such situations, but it's nothing serious. It happens to everyone, and it will go away." They also set up a collaborative plan, which was very helpful as a first-time mother. (P4)

Needs of paediatric ED staff

Using affinity diagram analysis, we initially extracted 350 findings from the ED staff. In the second stage, these were grouped into 23 main comments based on similar causes or meanings, and the third stage revealed that

the predominant focus of healthcare providers lay in communication needs. Details regarding the second and third stages are presented in online supplemental table 3. Healthcare professionals identified four critical needs that this AI communication agent addresses, as follows.

Challenges in parent-ED staff communication

ED staff reported feeling more uncomfortable and challenged when communicating with parents of paediatric patients compared with interacting with adult patients or caregivers of elderly patients. They found it particularly difficult to manage interactions with parents who exhibited high levels of anxiety or made excessive demands. The staff suggested that understanding the emotional state or specific circumstances of the parents in advance could facilitate better communication and make interactions smoother.

Compared to the adult emergency room, we tend to be more cautious in the pediatric emergency room. Some people consider even slightly stern behavior as unkind, so we try to be extra friendly to avoid unnecessary complaints. (Nurse 1)

It's very difficult to deal with parents who are extremely anxious. Of course, it's understandable that they are scared and worried about their child, but sometimes they make unreasonable demands or act out of the norm, like begging on their knees, when we can't provide the care they want. (Professor 1)

There are some parents who are always complaining and challenging us, asking if we will take responsibility, and these often lead to concerns. Communicating with such people is the hardest. I have enough experience to handle it, but the residents find it very challenging. (Professor 1)

Nowadays, perhaps because of the widespread use of social media, many parents come with a lot of information and try to lead the questioning. They ask why we don't do things like their personal pediatrician does, or why we prescribe certain medications. It seems that having more information has led to a decrease in trust in the medical staff. (Professor 1)

The need for systematic reminders

ED staff emphasised the importance of documenting medical history and examination details to ensure accurate patient care. They noted that the process of taking a medical history and asking questions is essential for accurately understanding the patient's symptoms and for facilitating effective communication with other healthcare providers.

Moreover, in the busy environment of treating multiple patients simultaneously, there can be delays or lapses in conducting additional tests, prescribing medications or consulting other departments. To address these issues, the ED staff suggested the appropriate reminders to

ensure that all critical actions and communications are timely and complete.

In the triage stage, we only check very basic things, so there are hardly any records. We just note if there was a fever. When we ask the parents again, they sometimes get annoyed because they feel they've already provided the information. It would be helpful to pre-check and recorded in advance to enter the ED room. (Resident 1)

Even among doctors, skills and perspectives vary. To detect the severity of the patient and prevent accidents, we need to meticulously follow each step in the medical history process and have a concept of double-checking. (Professor 2)

Bridging information gaps: strategies for effective patient education

ED staff expressed the need for support when providing explanations to parents, particularly in situations where parents repeatedly requested information or when the paediatric ED was overcrowded, leaving them with insufficient time. Additionally, parents occasionally asked for statistical data, such as disease prevalence rates, which physicians found difficult to quickly access and convey. To address these challenges, ED staff suggested that a communication agent could assist by efficiently retrieving and presenting medical information to parents in a timely manner.

Parents often ask, "Can't the child be admitted in this case?" Sometimes they come with all their belongings packed for admission, even though the child only had a fever for a day and doesn't need to be admitted. In such cases, showing statistics might help. For example, showing the percentage of children with a fever for certain hours who needed admission. (Resident 2)

Explaining in detail about the symptoms, the use of antipyretics, and when to return helps parents understand better, but it's often difficult to cover everything due to time constraints. (Professor 2)

Sometimes I wish I could just record my answers and play them back, as parents frequently ask the same questions. Sometimes it gets so repetitive that I can predict their questions. (Professor 1)

Managing non-clinical demands in the ED

ED staff have reported significant interruptions in patient care due to addressing non-medical questions and requests. For instance, parents frequently ask ED physicians or nurses about parking, hospital facilities and other topics that do not necessarily require medical staff intervention or fall outside their expertise. Additionally, some parents have a lack of understanding of ED environments, leading to unnecessary calls and requests. These non-medical demands increase the workload on ED healthcare providers, as the ED lacks personnel

or systems to handle such issues. Consequently, there is a growing request for the development of emergency medical systems to manage these non-medical questions and requests effectively.

I think the call button should be used when the medical staff need to provide direct care, but some parents use it to ask for the location of the water dispenser or the bathroom. It can be a burden to stop working and respond to these non-medical requests. (Nurse 1, 2)

Parents often ask about costs, but the amount varies for each individual. Since we can't provide answers about costs, we usually tell them to check with the administrative office. (Resident 1)

Parents really don't understand that the emergency room operates based on the severity of the emergency, not the order of registration. Even when we are performing CPR on an emergency patient or having a serious discussion in the resuscitation room, some parents ask, "When will my child be discharged?" (Professor 3)

DISCUSSION

This study highlights the complex communication challenges between parents and healthcare providers in paediatric EDs. Our findings show that parents' emotional difficulties, often worsened by a lack of prior knowledge and unfamiliarity with medical processes, can lead to communication breakdowns. This leaves parents feeling overwhelmed and less able to engage effectively with ED staff.^{4 20 21} ED staff emphasised the need for systems that could reduce these difficult interactions, allowing them to focus on critical clinical tasks. We aimed to show that an AI-assisted communication agent could serve as a potential solution to these challenges by acting as an intermediary that enhances understanding and communication between parents and ED staff.

Several studies have explored communication challenges in the ED, with efforts focused on adopting mobile and AI-based technologies to address administrative and procedural inefficiencies.^{22-24 25-27} Digital tools, such as those used in the informed consent process, have been shown to enhance patient understanding compared with traditional methods.²⁸ Additionally, mobile healthcare systems have demonstrated potential in supporting clinicians by optimising patient education and documentation, offering a viable alternative to conventional approaches.^{29 30}

Beyond these advancements, socially assistive robots (SARs) have emerged as a complementary technology that can enhance communication and emotional support in paediatric emergency settings.^{14 31 32} Nishat *et al* explored the needs of children and caregivers in the ED, emphasising that AI-enhanced social robots could facilitate age-appropriate communication and reassurance during stressful medical encounters.³¹ Additionally, Di Sarno *et al* highlighted SARs' ability to complement

AI-assisted systems by enhancing assessment and prediction of adverse outcomes.³² However, no reported systems were designed to coordinate communication between families, patients and healthcare providers with tailored support for each side.

The AI communication agent could mitigate communication issues by addressing some of the concerns that lead to parental anxiety, thereby reducing challenging interactions. Furthermore, the agent could support ED staff by ensuring that key information is consistently conveyed to parents, reducing the risk of miscommunication and the associated negative outcomes.

In a broader context, our findings emphasise the importance of systematically addressing parental emotions and informational needs in time-critical paediatric ED environments. Future work should focus on conducting feasibility assessments, pilot testing and iterative refinements of the AI communication agent to ensure seamless integration into clinical workflows. In particular, considerations around data security, ethical guidelines and user-centred design will be crucial for effective adoption.

The implementation of a communication agent in paediatric ED could represent a significant advancement in bridging the communication gaps between parents and healthcare providers. Future research should focus on the development and testing of such a communication agent to assess its effectiveness in real-world clinical environments.

Limitation

This study has several limitations. First, it was conducted at a single tertiary paediatric ED in South Korea, which may limit the generalisability of the findings to other healthcare settings with different patient populations, resource availability or cultural contexts. Second, the small sample size may not capture the full range of experiences. Future studies employing larger and diverse participant groups could enhance the robustness of the results. Lastly, we did not include feasibility assessments of such a system. Future research should focus on prototype development and real-world evaluation to assess its effectiveness in paediatric emergency settings.

CONCLUSION

Emotional and informational gaps contribute to communication barriers, highlighting the need for structured communication support. AI-assisted communication tools have the potential to address communication challenges between parents and healthcare providers in paediatric EDs, facilitating more accurate information delivery to parents and improving clinical workflow efficiency.

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Contributors Study design and supervision: MHS. Data collection and analysis: SJ, HP, SY, SH. Interpretation of results: SH. Visualisation: SJ. Manuscript drafting and revision: SH. Guarantor: MHS. I have used AI (ChatGPT) solely for language improvement purposes, specifically for grammar correction in this manuscript. The AI did not contribute to the generation of original content, analysis or interpretation of data. It was only employed to enhance the clarity and fluency of the text.

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Patient consent for publication Not applicable.

Ethics approval This study involves human participants and was approved by the Institutional Review Board of Samsung Medical Center (IRB No 2023-08-119-001). Participants gave informed consent to participate in the study before taking part.

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Data availability statement Data are available upon reasonable request.

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