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Factors Influencing the Willingness of Hospitalized Children's Parents to Engage in Patient Safety: A Cross-Sectional Study

Yujeong Kim[1,*], Mingi Chang[2,*]

[1]College of Nursing, Research Institute of Nursing Innovation, Kyungpook National University, Daegu, Republic of Korea; [2]College of Nursing, Kyungpook National University, Daegu, Republic of Korea

*These authors contributed equally to this work

Correspondence: Mingi Chang, College of Nursing, Kyungpook National University, 680 Gukchabosangro, Jung-Gu, Daegu, Republic of Korea, 41944, Tel +82-10-6612-9192, Fax +82-53-425-1258, Email mingi4313@naver.com

Background: Hospitalized children's patient safety incidents can have a significant long-term impact on their physical, psychological, cognitive, and social development. Family-centered care emphasizes engaging parents, and parental involvement is an effective way to ensure child safety. This study aims to identify the factors influencing parents of children with hospitalization experiences in their willingness to engage in patient safety.

Methods: In this cross-sectional study, we surveyed 210 parents whose children had been hospitalized within the past one year in South Korea. We used a structured questionnaire including patient safety knowledge, patient safety literacy, children's hospitalization experience, and the willingness to engage in patient safety. The collected data were analyzed using descriptive statistics, *t*-test, chi-square test, analysis of variance, correlational analysis, and regression analysis.

Results: The willingness to engage in patient safety had significant positive correlations with patient safety knowledge (r=0.36, $p<0.001$) and patient safety literacy (r=0.24, $p<0.001$). The variables that had a statistically significant influence on the willingness to engage in patient safety were the birth order of the hospitalized child (β=0.41, $p=0.014$), patient safety knowledge (β=0.25, $p<0.001$), communication with the child (β= −0.25, $p=0.018$), and attention to safety and comfort (β=0.21, $p=0.026$).

Conclusion: This study found that the birth order of the hospitalized child, patient safety knowledge, and children's hospitalization experience are important factors in parents' willingness to engage in patient safety. The findings indicated the need to develop patient safety education programs for parents, considering the facilitators of and barriers to their willingness to engage in patient safety.

Keywords: patient safety, hospitalized child, parents, family, patient participation

Introduction

With recent advances in medical and information technology, the healthcare service process has become complex, which has increased the potential for patient safety incidents.[1] Patient safety refers to all organized activities that establish procedures, technologies, environments, and cultures to reduce the risk of unnecessary harm in healthcare delivery to an acceptable minimal level and mitigate the impact of harm when it occurs.[2] Patient safety is one of the most important current issues in the field of healthcare. The 2019 World Health Assembly mandated the development of a Global Patient Safety Action Plan and established a vision of a world in which no one is harmed in healthcare and every patient receives safe and respectful care, every time, everywhere.[2]

Due to their developmental characteristics, children have a strong curiosity, an urge to explore, and a desire to challenge rules.[3] However, their immature physical and physiological functions and lack of judgment and ability to respond to dangerous situations place them at higher risk of patient safety incidents, which can lead to fatal and serious harm.[4] The number of patient safety incidents reported to the Korea Patient Safety Reporting System for children

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increased from 723 in 2018 to 1419 in 2022, which accounts for approximately 10% of all patient safety incidents.[5] Medication errors, in particular, accounted for the highest proportion of such incidents among hospitalized pediatric patients at 47.2%, followed by falls at 24%.[5] In addition, children are in a stage of rapid growth and development; thus, their patient safety incidents can have a significant long-term impact on not only their physical development but also their psychological, cognitive, and social development.[4] Thus, precautions must be taken to prevent patient safety incidents among children.

Studies have suggested that the active engagement of patients and guardians in patient safety activities would reduce medical accidents.[6] Similarly, Kendir et al[7] emphasized that patients and residents are partners and co-designers of a patient safety initiative. Particularly, family-centered care for children emphasizes engaging parents in principle, and parental involvement is an effective way to ensure child safety.[8] A previous study reported that parents played a buffering role in reducing pediatric patient safety incidents.[9] Thus, parents' level of willingness to engage in pediatric patient safety and its influencing factors must be identified.

Previous research on patient safety among parents in Korea and other countries focused on parents' knowledge, attitudes, and behaviors regarding their child's medications,[10] parental awareness of fall prevention,[10] parental awareness of antibiotic safety stewardship,[11] effects of family-centered communication programs,[9] and the priorities of parents of pediatric inpatients regarding pediatric patient safety research.[12] However, few studies have examined the level of willingness to engage in patient safety and its influencing factors among parents. A study on parental involvement in children's healthcare decisions[8] reported that parental involvement was significantly affected by their level of knowledge and understanding of information. In addition, Busch et al[13] suggested that barriers should be identified through a survey including parental perspectives to raise parental involvement in patient safety patients. Previous study findings indicate that parental involvement in their child's safety is affected by parental health literacy, which is the level of knowledge and understanding that parents have, as well as the hospitalization experiences of their child.

Thus, the present study aimed to investigate the level of willingness to engage in patient safety among parents who had children with hospitalization experiences and to examine the influence of parental patient safety knowledge, health literacy, and their children's hospitalization experiences on this willingness.

Materials and Methods

Study Design

We conducted a cross-sectional study to identify the factors influencing parents of children with hospitalization experiences in their willingness to engage in patient safety.

Participants and Data Collection

The participants were parents whose children under the age of 3–18 had been hospitalized within the past one year. The inclusion criterion was having children who were able to communicate at the time of hospitalization using a survey tool for hospitalized children. The exclusion criteria were having children hospitalized for follow-up or hospice treatment; having children treated in the psychiatrist department; or having children who were discharged due to death.

Data were collected through convenience sampling using an online survey conducted from December 26, 2023, to January 4, 2024. A professional research firm (Macromill Embrain) handled the participant recruitment and survey. The data collection was carried out at a national level. An online survey link, along with information about the study, was sent to 3902 parents of children aged 3–-18 who had previously provided basic personal information through a contract with the research firm. The individuals who accessed the online survey link read the information about the purpose and method of the study, along with the inclusion and exclusion criteria; agreed to the contents of the survey; and then participated in the survey. To ensure eligibility, the participants were screened based on the inclusion and exclusion criteria. If the parents were deemed not appropriate based on their responses to the survey, the survey was immediately terminated. The survey was closed once responses were received from 210 eligible parents. The survey took approximately 15 min. The sample size was calculated using G*Power 3.1. For multiple regression analysis with a significance level of 0.05, a power of 0.90, an effect size of 0.15 (medium effect), and 18 predictor variables, the minimum required

sample size was determined to be 183. Considering the dropout rate due to the nature of the online survey, 210 participants were recruited. As no incomplete responses were collected, data from a total of 210 participants were subjected to further analysis.

Instruments

Patient Safety Knowledge

Patient safety knowledge was analyzed using the tool developed by An et al[14] after obtaining permission. The validity and reliability of this tool have been confirmed in a previous study.[15] The tool comprises 10 questions, and each question is scored on a five-point Likert scale (1 = not at all; 5 = very high). Scores range from 5 to 50 points, with higher scores indicating greater patient safety knowledge. Cronbach's α was 0.92 in the study by An et al[14] and 0.86 in the present study.

Patient Safety Literacy

Patient safety literacy was analyzed using the tool developed by Kim et al,[16] who also confirmed its validity and reliability. Permission for its use in this study was obtained. The tool comprises three questions to determine levels of understanding, helpfulness, and practice of patient safety education. Each question is answered on a four-point scale (always, often, occasionally, or never). Higher mean scores indicate a higher level of patient safety literacy. The reliability of the study at the time of development was missing, whereas Cronbach's α of the present study was 0.49.

Children's Hospitalization Experience

Children's hospitalization experience was analyzed using the Child Hospital Consumer Assessment of Healthcare Providers and Systems (Child HCAHPS) developed by Toomey et al[17] after obtaining permission. The validity and reliability of this tool have been confirmed in a previous study.[17,18] The tool comprises 39 questions, including 19 questions for communication with parent, 9 for communication with child, 7 for attention to safety and comfort, 2 for the hospital environment, and 2 for global rating. Each question is scored using a top-box score, measuring either the proportion of the most positive answer (always, yes, or definitely) for each question or scoring answers on a point-point scale. Scores range from 0% to 100%, with higher top-box response rates indicating higher reliability and positive experience. Cronbach's α was 0.90 in the study by Dasso et al.[18] In the present study, Cronbach's α values were 0.93 for communication with parent, 0.93 for communication with child, 0.83 for attention to safety and comfort, 0.74 for hospital environment, and 0.60 for global rating.

Willingness to Engage in Patient Safety

To analyze the willingness to engage in patient safety, the present study used a tool after obtaining the developer's permission. The tool was originally developed by Lee[19] and then modified and validated by Woo et al.[20] It comprises 19 questions, scored on a four-point Likert scale (1 = not all; 4 = highly agree). Scores range from 19 to 76 points, with higher scores indicating a greater willingness to engage in patient safety. Cronbach's α in the study by Woo et al[20] was 0.93, and it was 0.92 in the present study.

Data Analysis

Survey data were analyzed using IBM SPSS 25.0. The general characteristics and levels of the main variables were presented as frequency, percentage, mean, and standard deviation. The differences in the willingness to engage in patient safety based on the characteristics of the participants and their children were analyzed by conducting a chi-square test, *t*-test, analysis of variance, and Scheffé test for post-hoc analysis. Correlations among the main variables were analyzed using Pearson's correlation coefficient. The factors affecting the willingness to engage in patient safety were analyzed by conducting a hierarchical regression analysis.

Ethical Considerations

We conducted this study in accordance with the principles outlined in the Declaration ofHelsinki. This research was approved by the Institutional Review Board (blinded for review). The participants were informed that their anonymity

was guaranteed, they could stop responding at any point during the survey without any disadvantage, and the study results would be used for research purposes only. All parents provided written informed consent before participation. The researcher personally organized the survey data to maintain confidentiality, and the data were encrypted and stored in a locked place. Those who completed the survey were provided with a small compensation.

Results

Levels of the Study Variables

Descriptive data on patient safety knowledge, patient safety literacy, children's hospitalization experience, and the level of willingness to engage in patient safety are presented in Table 1. To determine if the data satisfied the normality assumption, the skewness and kurtosis were examined. All variables were below ±2 in skewness and below ±7 in kurtosis, indicating that they satisfied the normality assumption.

Differences in the Willingness to Engage in Patient Safety Based on the Participant Characteristics

Of the 210 participants, 60.5% were women, with a mean age of 43.38± 6.15 years. More than half of them were college graduates (71.9%), had moderate financial status (82.9%), and had two children (62.9%). Regarding the hospitalized children, 61.4% were first-born, 59.5% were boys, and their mean age was 9.66±4.66 years. The hospitalization duration was less than 7 days for 84.8% of the children, 71.4% had no history of surgery, and 81.9% reported good current health status. In addition, 5.2% reported experiencing patient safety incidents during hospitalization (Table 2).

Of the general characteristics, variables with significant differences in the willingness to engage in patient safety were parental gender, parental age, birth order of the hospitalized child among siblings, and the child's age (Table 2). Of the parents of the hospitalized children, fathers had a higher willingness to engage in patient safety than mothers (t=−3.03, p=0.003), and the parents aged 19–39 years had a higher willingness to engage in patient safety than those who were older (F=7.90, p<0.001). The parents were more likely to engage in patient safety when the hospitalized child was first-born than when the child was third-born (F=4.70, p=0.010). The parents had a significantly higher willingness to engage in patient safety when the hospitalized child was five years or younger than when the child was over five years old (F=7.53, p<0.001).

Table 1 Level of the Study Variables (N = 210)

Variables	Range	Min	Max	M±SD
Patient safety knowledge	5–50	21.00	50.00	34.89±5.42
Patient safety literacy	1–4	1.50	4.00	3.01±0.51
Children's hospitalization experience				
Communication with parent	0–100	0.00	100.00	43.00±32.34
Communication with child	0–100	0.00	100.00	31.26±34.31
Attention to safety and comfort	0–100	0.00	100.00	36.80±34.39
Hospital environment	0–100	0.00	100.00	36.19±40.91
Global rating	0–100	0.00	100.00	12.85±28.54
Willingness to engage in patient safety	19–76	43.00	76.00	62.96±6.97
Make a decision	2–8	4.00	8.00	6.25±0.82
Provide information	3–12	6.00	12.00	10.00±1.47
Ask questions	6–24	13.00	24.00	20.2±2.63
Check	5–20	11.00	20.00	16.2±2.33
Notify	3–12	6.00	12.00	10.3±1.41

Table 2 Differences in Willingness to Engage in Patient Safety Based on Characteristics (N = 210)

Characteristics		Categories	n (%) or M ± SD	Willingness to Engage in Patient Safety		
				M ± SD	t or F	*p* (Scheffé)
Parents	Gender	Men	83 (39.5)	61.22±6.34	−3.03	0.003
		Women	127 (60.5)	64.09±7.06		
	Age	19–39[a]	69 (32.9)	65.06±6.88	7.90	<0.001
		40–49[b]	106 (50.4)	61.58±7.13		(b,c<a)
		≥50[c]	35 (16.7)	61.91±5.12		
		Total	43.08±6.15			
	Education level	High school graduate or lower	32 (15.2)	64.81±7.22	3.231	0.052
		College graduate	151 (71.9)	62.20±6.81		
		Master's or higher	27 (12.9)	65.00±7.03		
	Financial status	Low	17 (8.1)	63.88±7.29	0.235	0.791
		Moderate	174 (82.9)	62.81±6.96		
		High	19 (9.0)	63.47±7.15		
	Number of children	1	59 (28.1)	63.23±6.53	0.290	0.748
		2	132 (62.9)	63.00±6.91		
		3	19 (9.0)	61.84±8.83		
Children	Birth order of hospitalized child	First-born[a]	129 (61.4)	63.96±7.02	4.70	0.010
		Second-born[b]	73 (34.8)	61.75±6.31		(c<a)
		Third-born[c]	8 (3.8)	57.87±8.85		
	Gender	Boys	125 (59.5)	63.26±7.12	0.760	0.448
		Girls	85 (40.5)	62.51±6.78		
	Age	≤ 5 years[a]	54 (25.7)	65.94±7.46	7.53	<0.001
		6–10 years[b]	61 (29.1)	61.26±6.15		(b,c<a)
		≥ 11 years[c]	95 (45.2)	62.35±6.73		
		Total	9.66±4.66			
	Hospitalization period (days)	≤ 7 days	178 (84.8)	62.80±6.81	−0.776	0.439
		> 7 days	32 (15.2)	63.84±7.89		
		Total	5.88±5.81			
	History of surgery	Yes	60 (28.6)	62.88±6.17	0.103	0.918
		No	150 (71.4)	62.99±7.29		
	Current health status	Poor	6 (2.9)	67.16±7.88	1.125	0.327
		Moderate	32 (15.2)	62.75±7.18		
		Good	172 (81.9)	62.85±6.90		
	Experience of patient safety incidents during hospitalization	Yes	11 (5.2)	61.45±10.07	0.735	0.232
		No	199 (94.8)	63.45±6.79		

Note: a, b, c: Scheffe test.

Correlations Among Patient Safety Knowledge, Patient Safety Literacy, Children's Hospitalization Experience, and Willingness to Engage in Patient Safety

The willingness to engage in patient safety had significant positive correlations with patient safety knowledge (r=0.36, $p<0.001$) and patient safety literacy (r=0.24, $p<0.001$) (Table 3). In addition, the willingness to engage in patient safety had significant positive correlations with communication with parent (r=0.27, $p<0.001$), communication with child (r=0.14, $p=0.035$), and attention to safety and comfort during children's hospitalization (r=0.25, $p<0.001$). Conversely, the willingness to engage in patient safety had no significant correlations with the hospital environment and global rating during children's hospitalization.

Factors Affecting the Willingness to Engage in Patient Safety

To identify factors affecting the willingness to engage in patient safety, hierarchical regression analysis was performed. Model 1 applied the age and gender of the parents as well as the birth order and age of the hospitalized child as variables. These factors were identified as significant for the willingness to engage in patient safety. In addition, Model 2 considered

Table 3 Correlations Among Patient Safety Knowledge, Patient Safety Literacy, Children's Hospitalization Experience, and Willingness to Engage in Patient Safety

Variables	1	2	3–1	3–2	3–3	3–4	3–5	4
	r (*p*)							
1. Patient safety knowledge	1							
2. Patient safety literacy	0.42 (<0.001)	1						
3–1. Communication with parent	0.36 (<0.001)	0.36 (<0.001)	1					
3–2. Communication with child	0.27 (<0.001)	0.23 (<0.001)	0.74 (<0.001)	1				
3–3. Attention to safety and comfort	0.28 (<0.001)	0.24 (<0.001)	0.68 (<0.001)	0.73 (<0.001)	1			
3–4. Hospital environment	0.27 (<0.001)	0.24 (<0.001)	0.53 (<0.001)	0.50 (<0.001)	0.53 (<0.001)	1		
3–5. Global rating	0.27 (<0.001)	0.101 (0.143)	0.40 (<0.001)	0.49 (<0.001)	0.43 (<0.001)	0.43 (<0.001)	1	
4. Willingness to engage in patient safety	0.36 (<0.001)	0.24 (<0.001)	0.27 (<0.001)	0.14 (0.035)	0.25 (<0.001)	0.126 (0.068)	0.07 (0.252)	1

patient safety knowledge and patient safety literacy as well as the subdomains of children's hospitalization experience as variables. These factors were found to have significant correlations with the willingness to engage in patient safety. When the basic assumption of the regression analysis was tested, the Durbin–Watson index was 2.03. This was close to 2, satisfying the independence assumption of the residuals. Moreover, tolerance was at least 0.1, and the variance inflation factor was below 10, indicating no multicollinearity issues.

In Model 1, the variables that had a statistically significant influence on the willingness to engage in patient safety were parental gender and birth order of the hospitalized child. Fathers had a higher willingness to engage in patient safety than mothers (β=0.17, p=0.015), and the parents had a higher willingness to engage in patient safety when their hospitalized child was first-born than when the child was third-born (β=0.43, p=0.016) (Table 4).

Table 4 Factors Affecting Willingness to Engage in Patient Safety (N = 210)

Variables		Step 1			Step 2		
		B	β	t (*p*)	B	β	t (*p*)
(Constant)		59.71		10.24 (<0.001)	45.87		7.56 (<0.001)
Parent's age		−0.59	−0.05	−0.47 (0.635)	−0.09	−0.08	−0.79 (0.428)
Parent's gender (ref=man)	Woman	2.54	0.17	2.44 (0.015)	1.00	0.07	0.99 (0.323)
Birth order of the child (ref= third)	Firstborn	6.22	0.43	2.42 (0.016)	5.94	0.41	2.48 (0.014)
	Second-born	4.55	0.31	1.78 (0.076)	4.64	0.31	1.95 (0.052)
Child's age		−0.12	−0.08	−0.83 (0.404)	−0.04	−0.03	−035 (0.723)
Patient safety knowledge					0.32	0.25	3.50 (<0.001)
Patient safety literacy					1.00	0.07	1.02 (0.306)
Children's hospitalization experience							
Communication with parent					0.03	0.14	1.43 (0.154)
Communication with child					−0.05	−0.25	−2.37 (0.018)
Attention to safety and comfort					0.04	0.21	2.24 (0.026)
R^2, adjusted R^2 (Δadj. R^2)		0.09, 0.07			0.24, 0.21 (0.14)		
F (*p*)		4.47 (<0.001)			6.36 (<0.001)		

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In Model 2, the variables that had a statistically significant influence on the willingness to engage in patient safety were the birth order of the hospitalized child, patient safety knowledge, communication with child, and attention to safety and comfort. In other words, the parents had a higher willingness to engage in patient safety when their hospitalized child was first-born than when the child was third-born (β=0.41, p=0.014) and if they had higher patient safety knowledge (β=0.25, p<0.001). As for the subdomains of children's hospitalization experience, the parents were less willing to engage in patient safety if they had more communication with their child (β=−0.25, p=0.018), whereas they were more willing to engage in patient safety if they exhibited more attention to safety and comfort (β=0.21, p=0.026). Furthermore, both Models 1 and 2 exhibited acceptable goodness of fit.

Discussion

The mean willingness to engage in patient safety in this study was lower than that reported by Woo et al[20] using the same tool with inpatients of military hospitals (69.26 points). This is consistent with previous studies indicating that younger patients without underlying conditions and with less severity had higher participation in patient safety.[21,22] Most inpatients of military hospitals are active-duty soldiers, young, have no underlying conditions, and exhibit less severity than those in general hospitals. Thus, they are able to perform most activities, including patient safety, during hospitalization, which may be attributed to the somewhat higher willingness to engage in patient safety than what was observed in the present study.[20] Conversely, despite not using the same tool, a study with general adult inpatients reported that the participants' willingness to engage in patient safety was moderate (3.5 out of 7 points).[23] For children, parents are involved in the decision-making for treatment and recovery, which appears to lead to a higher parental willingness to engage in patient safety than among general adult inpatients. The World Health Organization[24] stated that children and families have the right to receive appropriate information about their illness and treatment, as well as the right to participate in decision-making processes and patient safety. It emphasized the need for hospitals to ensure participation in patient safety in response to the needs of children and families. However, most previous studies on the willingness to engage in patient safety have focused on hospitalized patients, making it difficult to directly compare them with this study, which focused on the parents of hospitalized children. Therefore, further studies are necessary to compare the willingness to engage in patient safety between patients and their families or guardians.

In the present study, the identified factors that affected the willingness to engage in patient safety among the parents with hospitalized children were (in order of significance) the birth order of the hospitalized child, communication with the child during hospitalization, attention to safety and comfort during hospitalization, and patient safety knowledge. This result was similar to that of Jang and Yi,[25] who found that parents with one or two children had a higher willingness to engage in training than those with three children. This suggests that parents with more children have more experience and knowledge and have developed their own methods of coping and confidence in caring for a hospitalized child.[25] Furthermore, parents whose first-born child is hospitalized tend to pay attention to medical staff's activities, concentrate and listen to in-hospital education due to their lack of experience and knowledge, and actively participate in patient safety in the hospital.[20,25] Thus, medical staff should encourage parents whose second- or third-born child is hospitalized to pay attention to the possibility of patient safety incidents and actively participate in patient safety activities.

Of the subdomains of the children's hospitalization experience, better communication between medical staff and children was associated with a lower parental willingness to engage in patient safety. As younger children have difficulty with verbal communication, their parents participate in decision-making while observing the nonverbal expressions of their child and acting as their child's advocate or interpreter.[26] However, children can engage in direct bidirectional communication with medical staff as their verbal communication skills improve; consequently, parents indirectly participate in patient safety, lowering their willingness to engage.[27] The Joint Commission produced a video called "Speak Up: Kid Power!" emphasizing that children have the right to ask questions and voice their concerns if they do not understand something.[28] In addition, it was reported that UCLA Mattel Children's Hospital's "Chase Child Life" Program applied an AI telepresence robot developed for hospitalized children to overcome loneliness and isolation, improving satisfaction among children and parents.[29] As such, a patient safety education program tailored for children must be developed to increase their awareness of patient safety, encourage them to ask medical staff questions about their

care, and help them actively participate in patient safety. Media such as AI robots and AR or VR games that can attract children's attention should be used.

Of the variables of the children's hospitalization experience in the present study, more attention to safety and comfort was associated with a higher parental willingness to engage in patient safety. This result was similar to that of a previous study, which found that patients became more aware of patient safety through healthcare workers' patient safety activities during hospitalization, which made them more willing to engage in patient safety activities.[30] Attention to safety and comfort refers to pediatric patients' experience with safety and comfort, which includes confirmation of pediatric patients by checking their ID, birth date, and name written on the wristband before they are given medication by medical staff; careful checking of their pain; and immediate support if they press the call button.[17] Through the Speak-Up Campaign for patient safety, the WHO has been promoting the active participation of patients and families in their care.[31] In addition, the Joint Commission[32] introduced videos for patients and families that present methods for speaking up during medical procedures with a high risk of patient safety incidents, such as surgery, anesthesia, sedation, and antibiotic administrations. In addition, they produced a brochure titled "Prevent Errors in Your Child's Care" that informs parents they can make a difference in their child's care by asking the right questions and being actively involved. Medical institutions should implement education and promotional efforts to show parents how they can participate in the care of their children to prevent patient safety incidents.

Finally, higher patient safety knowledge was associated with a higher willingness to engage in patient safety. This is consistent with the results of preceding studies with patients, which revealed that patient safety knowledge increased the willingness to engage in patient safety and that patient safety education induced participation in patient safety.[20,33] In clinical practice, patients' knowledge is positively correlated with patient participation during hospitalization; therefore, educational methods to improve patient knowledge have been diversified utilizing the advancement of IT technology.[33] Recent studies on educational programs for patient safety targeting hospitalized patients used educational programs with media, such as video training by motion graphics[34] and a mobile application.[33] The advancement of educational media using mobile and tablet PCs has enabled hospitalized patients to proactively learn what they need to know, which contrasts with past methods where medical staff provided education verbally or using printed materials.[33,34] However, few studies have examined patient safety education programs for hospitalized children, highlighting the need to develop a patient safety education program relevant to children.

In the present study, parental age and gender and age of the hospitalized children did not significantly influence parental willingness to engage in patient safety. These findings are similar to those of Shin,[32] who reported that the general characteristics of adult patients, such as age, gender, and educational level, did not significantly influence their intention to engage in patient safety. Patient safety literacy is an individual's ability to acquire and understand information about patient safety. A previous study[16] demonstrated that patients who had higher patient safety literacy exhibited higher patient safety participation as they could ask and inform medical staff of their status. However, in the present study, patient safety literacy did not significantly influence the willingness to engage in patient safety. This was likely due to the low reliability of the patient safety literacy tool, which had only three questions. Thus, a more specific and reliable tool should be developed to assess patient safety literacy. Moreover, of the variables of the children's hospitalization experience in the present study, communication with parents did not significantly influence the willingness to engage in patient safety. This contradicted a preceding study, which found that communication between medical staff and patients increased the willingness to engage in patient safety. Potential differences in communication with medical staff between adult patients and parents as guardians[33] should be comparatively explored.

The present study investigated the willingness to engage in patient safety among parents with hospitalized children and revealed that it was associated with not only parental patient safety knowledge but also communication with the child, attention to safety and comfort during the child's hospitalization, and the birth order of the hospitalized child. Particularly, this study targeted parents of pediatric patients when identifying the factors influencing willingness to engage in patient safety, contrasting with previous studies that mostly targeted medical staff or patients. The results of the present study can be used as fundamental data to establish strategies and education programs to increase willingness to engage in patient safety among parents whose children are hospitalized. In addition, the results help establish a social perception that not only patients but also their guardians should willingly participate in patient safety to prevent patient

safety incidents in hospitals. Future studies are recommended to explore interventions that employ various methods (eg, games, virtual reality, augmented reality, metaverse) to engage both hospitalized children and their parents in patient safety. Furthermore, the Korea Institute for Healthcare Accreditation issues a "Patient Safety Caution Alert" to hospitals, enabling them to share information about patient safety incidents and learn about prevention strategies. We propose that the government and local communities educate parents on the major types of patient safety incidents related to children, as well as how to prevent them, and conduct promotional campaigns to increase participation in patient safety.

This study had some limitations. First, the participants were selected through convenience sampling from parents whose child was hospitalized within the past year. Due to sampling bias, the results cannot be generalized to all parents of hospitalized children. Additionally, since the survey focused on hospitalization experiences within the past year and relied on the participants' memory, recall bias may have occurred, potentially affecting the accuracy of the assessment. Therefore, future studies should measure hospitalization experiences immediately before or after discharge. Finally, as the patient safety literacy tool used in the present study had low reliability, a more suitable and highly reliable tool should be developed.

Conclusion

This study aimed to identify the factors influencing parents of children with hospitalization experiences in their willingness to engage in patient safety. The results revealed that patient safety knowledge, communication with the child during hospitalization, attention to safety and comfort during hospitalization, and the birth order of the hospitalized child were significant influencing factors. Our findings suggest the need to develop patient safety education programs for parents, considering the facilitators of and barriers to their willingness to engage in patient safety. In addition, governments, medical institutions, and medical staff should implement and promote active participation in patient safety activities for parents of hospitalized children.

Data Sharing Statement

Data are available upon reasonable request from the corresponding author.

Ethics Approval and Consent to Participate

This study was approved by the ethical committee of Kyungpook National University (approval No. KNU-2023-0632). All participants completed an informed consent prior to providing their response. All responses were retained anonymously.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare no conflicts of interest in this work.

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