

## Factors influencing the quality of nursing care as perceived by mothers of hospitalized children in South Korea

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**Purpose:** This study aimed to identify the factors affecting the quality of nursing care as perceived by mothers of hospitalized children and provide basic data for the development of nursing care quality improvement programs. **Methods:** The participants consisted of 167 mothers, each of whom had a child hospitalized at a specific children's hospital. Data were collected from June 22 to August 8, 2019. **Results:** The factors that affected how mothers perceived the quality of nursing care were the communication ability of nurses ( $\beta=.44, p<.001$ ) and the mother-nurse partnership ( $\beta=.33, p=.001$ ). The total explanatory power of these factors was 54.1%. **Conclusion:** To improve the quality of pediatric nursing care, it is necessary to improve the communication abilities of nurses and to promote partnership between nurses and the mothers of hospitalized children.

**Key words:** Communication; Mothers; Partnership; Quality of health care; Uncertainty

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## INTRODUCTION

In recent years, the social phenomenon of a declining birth rate, resulting in a relatively low population of children, has emerged as a serious national problem in South Korea [1]. Despite the low birth rate, however, medical expenses for children and adolescents are increasing [2]. This reflects the increased use of medical services due to the expansion of health insurance coverage and parents' greater interest and sensitivity to their children's health.

Since pediatric nurses must provide individualized care to children according to their conditions, developmental status, and age, particular caution should be observed when providing nursing care to this population [3]. Moreover, when a child is hospitalized, both the child and the caregiver experience changes related to hospitalization and have various additional needs [3]. Therefore, pediatric nurses must provide nursing care that addresses both the child and their caretakers.

Positive outcomes have been observed when parents' nursing care needs for their child are met, such as the child's rapid recovery from his or her condition, reduced anxiety, burden, and stress in mothers and guardians, and satisfaction with nursing services [4-6]. Therefore, to provide high-quality nursing care for children and families and increase their satisfaction with nursing services, it is necessary to identify the factors that affect the quality of nursing care [4].

The quality of nursing care affects several variables such as patients' treatments and the need for re-hospitalization, which underscores its importance [6,7]. The quality of nursing care perceived by mothers of hospitalized children is affected by the communication ability of nurses, the mother-nurse partnership, and the degree of uncertainty felt by mothers of hospitalized children [8-10].

To ensure effective nursing care, nurses should cultivate relationships with patients through close interaction; thus, communication is a very important factor [3,4]. In particular, the

communication abilities of children are limited due to their age, and pediatric nurses must collaborate with children's caretakers using effective communication in order to provide quality nursing care [3]. Pediatric nurses' communication abilities enable them to understand the needs and emotions of children and their caregivers, which is essential for improving the quality of pediatric nursing care [4]. Effective communication between children's parents and medical personnel not only enhances hospitalized children's satisfaction with health-care, but also affects health promotion and long-term adherence to treatment [11].

Since children's ability to collaborate is limited due to their developmental status, the mother-nurse partnership-meaning mutual collaboration between nurses and mothers of hospitalized children-is important for children's health management [3]. It has been found that mothers tend to give a high rating to the quality of nursing care, children's adherence to treatment, and their ability to manage their child's condition when they had a positive perception of the mother-nurse partnership [9,12].

When the mother of a hospitalized child is uncertain about the status of her child's health and hospitalization due to a lack of knowledge about her child's condition, the unpredictability of the treatment process, and disease prognosis, this may result in anxiety and fears that in turn negatively affect the course of treatment [13]. Parents of children hospitalized with acute diseases tend to experience a high degree of uncertainty and require more nursing care, while their satisfaction with nursing care and their evaluation of the quality of nursing care is more likely to remain low [10].

Studies on the quality of nursing care, however, have mostly focused on adults, including a study on the relationship between the quality of nursing care as perceived by parents, satisfaction with medical treatment, and the need for inpatient re-hospitalization [7] and another on the factors that influence of nursing care satisfaction [14]. Studies on the quality of nursing care conducted after the development of a tool for measuring the quality of nursing care for hospitalized children with acute diseases and their families [15] included a study that examined the effect of the mother-nurse partnership on anxiety and quality of nursing care as perceived by mothers of hospitalized children [9] and another comparative study of the quality of nursing care as perceived by pediatric nurses and the mothers of hospitalized children with acute diseases [16]. However, relatively few studies have investigated these issues.

Although some studies have examined the fragmentary relationship between the communication ability of nurses, the mother-nurse partnership, uncertainty, and the quality of nursing care perceived by mothers of hospitalized children, no

studies have explored the integrated relationship between these variables and the quality of nursing care. Therefore, this study examined the effects of the communication ability of nurses, the mother-nurse partnership, and uncertainty on the quality of nursing care as perceived by mothers of hospitalized children.

## METHODS

**Ethics statement:** This study was approved by the institutional review board of Kosin University(No. KU IRB 2019-0031). Informed consent was obtained from the participants.

### 1. Study Design

This descriptive study aimed to investigate the quality of nursing care as perceived by mothers of hospitalized children.

### 2. Subjects

The study participants were mothers of children hospitalized at a 60-bed children's hospital that used a modified primary nursing delivery system located in Busan, South Korea. The specific selection criteria were mothers of children who had been hospitalized for more than 2 days with an acute illness [17] and those who understood the purpose of this study and agreed to participate in this study. The exclusion criterion was mothers of hospitalized children with intractable and severe disease [15].

The sample size required for this study was calculated using the G\*Power 3.1.9.2 program. Using a power (1- $\beta$ ) of 80%, assuming a significance level of  $\alpha = .05$  and an effect size (medium) of .15, which is required for multiple regression analysis, and 17 predictors, the sample size was calculated to be 146 subjects. Given an expected dropout rate of 20%, data from 180 participants were collected [18]. After excluding eight questionnaires that had incomplete information and five that were not returned, data from 167 questionnaires were used for the final analysis.

### 3. Instruments

#### 1) The communication ability of nurses

The communication ability of nurses was measured using a tool developed for medical service providers by Kim and Yu [19] and modified for nurses by Kim [8]. It consists of 13 items with four items on verbal communication and nine items on non-verbal communication that are rated on a 5-point Likert

scale; a higher score indicates that the perceived communication abilities of nurses were better as perceived by mothers of hospitalized children. The reliability of this tool was indicated by a Cronbach's  $\alpha$  of .82 in the study by Kim and Yu [19], .93 in the study by Kim [8], and .96 in this study.

## 2) Mother-nurse partnership

Mother-nurse partnership was measured using the Pediatric Nurse-Parent Partnership Scale developed by Choi and Bang [20]. This tool consists of 34 items with seven subdomains that address reciprocity, professional knowledge and skills, sensitivity, collaboration, communication, shared information, and cautiousness. Items are rated on a 5-point Likert scale; a higher score indicates a better partnership between nurses and the mothers of hospitalized children. The reliability of this tool was indicated by a Cronbach's  $\alpha$  of .96 in the study by Choi and Bang [20] and .97 in this study.

## 3) Uncertainty

Uncertainty was measured using a tool that was translated and modified by Oh [13] based on the Parents' Perception of Uncertainty Scale developed by Mishel [21]. It consists of 22 items with 10 items on ambiguity, eight items on unpredictability related to the inability to foresee the progression of the disease, and four items on the reliability of medical personnel. It is rated on a 4-point Likert scale, and a higher score indicates a higher level of uncertainty. The reliability of the tool was indicated by a Cronbach's  $\alpha$  of .91 in the study by Mishel [21], .83 in the study by Oh [13], and .86 in this study.

## 4) Quality of nursing care

The quality of nursing care perceived by mothers of hospitalized children was measured using the Quality of Care Through the Patient's Eyes-Child (QUOTE-Child) developed by Cho et al. [15]. It consists of 19 items with six items on respect, seven items on explanation, three items on kindness, and three items on skillfulness. Items assessing the importance of nursing care and nursing performance as perceived by mothers of hospitalized children are measured on a 4-point Likert scale; higher scores indicate a greater belief in the importance of nursing care and a better nursing performance.

Items assessing the importance of nursing care are given scores of 0 points for "not important" (1), 3 points for "a little important" (2), 6 points for "important" (3), and 10 points for "very important" (4). The collected scores for nursing performance are converted to 1 point for "disagree completely" (1), 0.67 points for "disagree" (2), 0.33 points for "largely agree" (3), and 0 points for "agree." Scores measuring the quality of nurs-

ing care are calculated using the formula  $10 - (\text{score for importance} \times \text{score for performance})$ . Total possible scores range from 0 to 10 points. A higher score indicates a higher quality of nursing care. In the study by Cho et al., the reliability of the tool for measuring the importance of nursing care was indicated by a Cronbach's  $\alpha$  of .93, while Cronbach's  $\alpha$  was .96 for the tool for measuring nursing performance [15]. In this study, the reliability of the tools for measuring the importance of nursing and nursing performance was indicated by Cronbach's  $\alpha$  values of .93 and .94, respectively.

## 4. Data Collection

Data were collected from June 22, 2019, to August 8, 2019. After receiving approval from the institutional review board (No. KU IRB 2019-0031) at Kosin University, located in Busan, South Korea, the researcher visited a children's hospital in Busan to explain the purpose and procedures of this study and received permission from the hospital for data collection. Participants who met the selection criteria were also informed about the purpose and procedures of this study and were asked to provide written informed consent to participate. Participants were subsequently asked to complete a self-report questionnaire.

Since it is difficult to control factors that affect the quality of nursing care in various hospital environments, a single-institution study was conducted to ensure the validity of the study results. Thus, it is difficult to generalize the results of this study for mothers of hospitalized children in other children's hospitals. Nonetheless, this study meaningfully identified the factors that influence the quality of care and provided basic data for the development of programs to improve the quality of nursing care for hospitalized children.

## 5. Data Analysis

The data were analyzed using SPSS/WIN 23.0 (IBM Corp., Armonk, NY, USA). The general characteristics of participants were analyzed using descriptive statistics. The communication ability of nurses, the mother-nurse partnership, uncertainty, and the quality of nursing care perceived by participants were analyzed to determine the mean, standard deviation, and minimum and maximum values. The quality of nursing care according to the general characteristics of participants was analyzed using the t-test and one-way analysis of variance (ANOVA). The relationships between major variables were analyzed using the Pearson correlation coefficient. The factors that affected the quality of nursing care perceived by participants were analyzed using stepwise multiple regression.

## RESULTS

### 1. General Characteristics of Mothers and Their Children

The mean age of the participants was  $34.9 \pm 4.8$  years old. Most of the participants were aged between 30 and 40 years old (76.6%;  $n=128$ ) and were college graduates (76.0%;  $n=127$ ). Almost half of the participants (49.1%;  $n=82$ ) had only one child was the highest. Slightly more than half (52.1%;  $n=87$ ) of the participants reported that they did not practice any religion, and 54.5% ( $n=91$ ) were unemployed. For income, the proportion of those with a monthly family income of over 5,000,000 won was the highest (35.9%;  $n=60$ ). Additionally, 71.3% ( $n=119$ ) of participants were helped by another caregiver.

The highest proportion of hospitalized children (32.2%;  $n=54$ ) were aged between 12 months and 24 months. Most of the children were the first-born child (59.9%;  $n=100$ ), and 54.5% ( $n=91$ ) were male. Mothers were the primary caregiver for most of the children (94%;  $n=157$ ). Bronchitis was the most common diagnosis among the children (26.9%;  $n=45$ ), followed by pneumonia, stomatitis, tonsillitis, and acute gastroenteritis. The largest proportion of children had more than four hospitalizations (37.1%;  $n=62$ ) (Table 1).

### 2. Communication Ability of Nurses, the Mother-Nurse Partnership, Uncertainty, and Quality of Nursing Care Perceived by Participants

The mean score for the communication ability of nurses as perceived by participants was  $4.59 \pm 0.49$  points (out of 5 points). In addition, the mean score for the mother-nurse partnership as perceived by participants was  $4.39 \pm 0.53$  points (out of 5 points), while the mean score for uncertainty perceived by participants was  $2.03 \pm 0.35$  points (out of 4 points). Lastly, the mean score for the quality of nursing care perceived by participants was  $9.16 \pm 0.93$  points (with possible scores ranging from 0 to 10) (Table 2).

### 3. Differences in the Quality of Nursing Care According to the General Characteristics of Participants

No statistically significant differences were observed after examining the differences in the quality of nursing care according to the general characteristics of participants (Table 1).

### 4. Correlation between the Communication Ability of Nurses, the Mother-Nurse Partnership, Uncertainty, and Quality of Nursing Care Perceived by Participants

There was a statistically significant positive correlation be-

tween the quality of nursing care perceived by participants and the communication ability of nurses ( $r=.71, p<.001$ ), as well as between the quality of nursing care and the mother-nurse partnership ( $r=.69, p<.001$ ). There was a significant negative correlation between the quality of nursing care and uncertainty ( $r=-.33, p<.001$ ) (Table 3).

### 5. Factors Influencing the Quality of Nursing Care Perceived by Participants

To identify the factors affecting the quality of nursing care perceived by participants, stepwise multiple regression analysis was performed for the communication ability of nurses, the mother-nurse partnership, and uncertainty, which were found to be related to the quality of nursing care in correlation analysis.

Testing for multicollinearity in multiple regression analysis to test the assumptions for the independent variables revealed that the tolerance limit value in the regression analysis ranged from 0.31 to 1.00, which was higher than 1, and the variance inflation factor value ranged from 1.00 to 3.22, indicating that there was no multicollinearity between the independent variables. The Durbin-Watson statistic was calculated to test the independence of the residuals, resulting in a value of 1.99, which was close to 2, indicating that there was no autocorrelation.

The factors affecting the quality of nursing care perceived by participants were the communication ability of nurses ( $\beta=.44, p<.001$ ) and the mother-nurse partnership ( $\beta=.33, p=.001$ ). The total explanatory power of these variables for the quality of nursing care was 54.1% (Table 4).

## DISCUSSION

This study aimed to investigate the relationship between the communication ability of nurses, the mother-nurse partnership, uncertainty, and the quality of nursing care perceived by mothers of hospitalized children, as well as the effects of variables on the quality of nursing care as perceived by mothers of hospitalized children.

The mean score for the quality of nursing care perceived by mothers of hospitalized children (mean=9.16, with a possible score range of 0-10) was higher than those of studies by Bae and Lee [9] (mean=8.65) and Cho et al. [15] (mean=7.56) that used the same tool. These differences are perhaps due to differences in the nursing care delivery systems between hospitals. Although most wards and university hospitals generally provide nursing care through functional nursing and team nursing delivery systems [22], the children's hospital at which this study was conducted provided nursing care using a mo-

**Table 1.** General Characteristics of Participants and Scores for Quality of Nursing Care (N=167)

Characteristics		Categories	n (%)	M+SD	Quality of nursing care		
					M+SD*	t or F	p
Mother	Age (year)	< 30	16 (9.6)	34.9±4.8	9.44±0.78	1.30	.274
		≥ 30 & < 40	128 (76.6)		9.15±0.92		
		≥ 40	23 (13.8)		8.95±1.04		
	Education	≤ High school graduate	31 (18.6)	1.62±0.70	9.25±0.81	1.09	.338
		College graduate	127 (76.0)		9.17±0.94		
		≥ Graduate school	9 (5.4)		8.74±1.12		
	Number of children	1	82 (49.1)	1.62±0.70	9.06±1.01	0.92	.401
		2	68 (40.7)		9.25±0.87		
		≥ 3	17 (10.2)		9.27±0.73		
	Religion	Yes	80 (47.9)	1.62±0.70	9.10±0.95	0.71	.476
		No	87 (52.1)		9.21±0.91		
	Employment status	Employed	76 (45.5)	1.62±0.70	9.15±0.93	0.12	.907
		Unemployed	91 (54.5)		9.17±0.93		
	Family income (10,000 won)	< 200	7 (4.2)	1.62±0.70	8.75±0.96	1.89	.114
≥ 200 & < 300		21 (12.6)	8.98±0.93				
≥ 300 & < 400		42 (25.1)	8.98±0.99				
≥ 400 & < 500		37 (22.2)	9.16±0.96				
≥ 500		60 (35.9)	9.39±0.83				
Received help from another caregiver	Yes	119 (71.3)	1.62±0.70	9.21±0.91	1.17	.245	
	No	48 (28.7)		9.03±0.98			
Child	Age (month)	< 12	22 (13.2)	35.9±29.5	8.87±1.01	1.32	.266
		≥ 12 & < 24	54 (32.2)		9.05±0.97		
		≥ 24 & < 36	34 (20.4)		9.19±0.92		
		≥ 36 & < 48	23 (13.8)		9.37±0.87		
		≥ 48	34 (20.4)		9.33±0.83		
	Birth order	First	100 (59.9)	35.9±29.5	9.15±0.97	0.08	.923
		Second	55 (32.9)		9.19±0.90		
		≥ Third	12 (7.2)		9.07±0.78		
	Sex	Male	91 (54.5)	35.9±29.5	9.22±0.89	0.92	.360
		Female	76 (45.5)		9.09±0.97		
	Caregiver	Mother	157 (94.0)	35.9±29.5	9.14±0.93	1.09	.275
		Other	10 (6.0)		9.47±0.95		
	Diagnosis	Bronchitis	45 (26.9)	35.9±29.5	9.17±0.95	0.81	.544
		Pneumonia	34 (20.4)		9.28±0.87		
		Stomatitis	33 (19.7)		9.07±0.95		
		Tonsillitis	28 (16.8)		9.30±0.89		
		Acute gastroenteritis	14 (8.4)		8.77±1.06		
		Other	13 (7.8)		9.13±0.96		
	Hospitalization period (day)	2	56 (33.5)	3.14±1.10	9.13±0.98	0.07	.978
		3	57 (34.1)		9.20±0.96		
		4	34 (20.4)		9.16±0.82		
		≥ 5	20 (12.0)		9.11±0.95		
	Number of hospitalizations	1st	34 (20.3)	3.67±3.10	9.04±1.00	0.61	.607
		2nd	41 (24.6)		9.08±0.85		
		3rd	30 (18.0)		9.14±1.03		
		≥ 4th	62 (37.1)		9.28±0.90		

\*Average conversion score.

**Table 2.** Scores for the Communication Ability of Nurses, the Mother–Nurse Partnership, Uncertainty, and the Quality of Nursing Care (N=167)

Variables	M±SD	Min–Max	M±SD*	Range
Communication ability of nurses	59.63±6.37	40–65	4.59±0.49	1–5
Verbal communication ability	18.11±2.22	12–20	4.53±0.55	1–5
Non-verbal communication ability	41.52±4.36	28–45	4.61±0.48	1–5
Mother–nurse partnership	149.41±18.25	103–170	4.39±0.53	1–5
Reciprocity	39.77±5.33	23–45	4.42±0.59	1–5
Professional knowledge and skills	31.16±4.02	19–35	4.45±0.57	1–5
Sensitivity	26.13±3.68	16–30	4.35±0.61	1–5
Collaboration	13.57±1.57	8–15	4.52±0.52	1–5
Communication	16.58±2.77	10–20	4.15±0.69	1–5
Shared information	13.16±1.85	6–15	4.39±0.62	1–5
Cautiousness	9.05±1.06	6–10	4.52±0.53	1–5
Uncertainty	44.72±7.72	27–65	2.03±0.35	1–4
Ambiguity	19.74±5.15	10–31	1.97±0.51	1–4
Unpredictability	16.98±3.00	8–25	2.12±0.38	1–4
Reliability of medical personnel	8.00±1.60	4–12	2.00±4.02	1–4
Quality of nursing care	174.00±17.67	126–190	9.16±0.93	0–10
Respect	55.58±5.93	37–60	9.26±0.99	0–10
Explanation	62.97±7.29	43–70	9.00±1.04	0–10
Kindness	27.99±3.12	16–30	9.33±1.04	0–10
Skillfulness	27.46±3.40	17–30	9.15±1.13	0–10

\*Average conversion score.

**Table 3.** Correlations between the Communication Ability of Nurses, the Mother–Nurse Partnership, Uncertainty, and the Quality of Nursing Care

Variables	A	B	C	D
	r (p)	r (p)	r (p)	r (p)
A. Communication ability of nurses	1			
B. Mother–nurse partnership	.83 (<.001)	1		
C. Uncertainty	-.35 (<.001)	-.40 (<.001)	1	
D. Quality of nursing care	.71 (<.001)	.69 (<.001)	-.33 (<.001)	1

**Table 4.** Factors That Influenced the Quality of Nursing Care as Perceived by Participants

Variables	B	SE	β	t	p	R <sup>2</sup>	VIF
(Constant)	2.29	0.47	–	6.08	<.001		
Communication ability of nurses	0.84	0.18	.44	4.63	<.001	.508	3.22
Mother–nurse partnership	0.57	0.17	.33	3.46	.001	.541	3.22
R <sup>2</sup> =.541, Adj. R <sup>2</sup> =.536 F=96.69, p<.001							

VIF, variance inflation factor.

dified primary nursing delivery system. The quality of nursing care perceived by nurses in wards that use modified primary nursing was higher than that of wards that use functional nursing [22]. However, to identify the factors that result in such differences, it is also necessary to consider the demographic factors of nurses, such as career status, marital status,

and education level, which have been found to cause differences in the quality of nursing care in previous studies [23]. A previous study that examined the sub-factors related to the perceived quality of nursing care found that kindness was the most highly perceived factor, followed by respect, skillfulness, and explanation ability. The kindness factor refers to the abil-

ity of nurses to administer care for hospitalized children with sympathy and compassion [15]. In that study, the explanation factor was the lowest-rated of the sub-factors that affect the quality of nursing care perceived by mothers of hospitalized children, whereas the skillfulness factor was the lowest-rated in studies by Bae and Lee [9] and Cho et al. [15]. This is possibly due to differences in various other factors such as hospital size (including the number of beds), which nursing care delivery systems were used, and the clinical experience of nurses. Therefore, to identify various factors that affect the quality of pediatric nursing, further studies are needed to examine both the characteristics of mothers and their children and the characteristics of nurses and hospitals. One study found that mothers of hospitalized children believed explanation to be the most important factor in nursing care [16]. Mothers of hospitalized children experience fears about the hospitalization of their children and anxiety about the unfamiliar hospital environment, their hospitalized child's condition [3], and a lack of information on their child's disease and treatment. Therefore, nursing care can contribute to relieving the increased anxiety of mothers of hospitalized children, and they should be provided with education and information accordingly [9]. The quality of nursing care administered by pediatric nurses should also be improved [15], and ways to strategically improve nurses' abilities in practice to provide care-related explanations to mothers of hospitalized children should be explored.

In this study, the mean score for the communication ability of nurses perceived by the mothers (mean=4.59, with a possible score range of 1-5) was higher than that of a study by Lee et al. [24] (mean=4.38) in which the communication ability of nurses perceived by parents of high-risk newborns was measured using the same tool. This difference may be because, in the study by Lee et al. [24], communication between nurses and parents of high-risk newborns took place in the context of limited visiting hours in a neonatal intensive care unit. However, in this study, communication between nurses and mothers of hospitalized children occurred in a pediatric ward that presented relatively more opportunities for regular communication. In this study, the mean score for nurses' non-verbal communication ability was higher than the mean score for nurse's verbal communication ability. This result is similar to that of a study by Lee et al. [24] concerning the parents of high-risk newborns. However, a study by Kim [8] on adult inpatients found that the mean score for nurses' verbal communication ability was higher than the mean score for nurses' non-verbal communication ability. Therefore, the non-verbal communication ability of nurses is more important than their verbal communication ability in pediatric nursing than it is in adult nursing. Additionally, since the mean age of the hospi-

talized children in this study was 35.9 months, pediatric nurses primarily used non-verbal communication to interact with patients. Therefore, it is more important for pediatric nurses to empathize with hospitalized children and understand them and their mothers using non-verbal expressions such as eye contact, gestures, and tone of voice rather than providing explanations in simple verbal expressions. Thus, non-verbal communication education programs should be provided to improve the non-verbal communication abilities of nurses and, in turn, the quality of nursing as perceived by mothers of hospitalized children.

In this study, the mean score for the mother-nurse partnership perceived by mothers of hospitalized children (mean=4.39, with a possible score range of 1-5) was similar to that of a study by Bae and Lee [9] (mean=4.06) that used the same tool. In this study, of the subdomains related to the mother-nurse partnership, cautiousness had the highest mean score. In this context, cautiousness refers to the sense that mothers of hospitalized children and nurses care for each other and are careful about what they say and do. Such a high level of cautiousness reflects the culture of South Korea in which people do not want to hurt others [20]. In addition, the mean score for cautiousness was also likely high due to mothers of hospitalized children wanting to receive nursing care that entailed careful consideration from nurses, warm words, and cautious behavior. Of the subdomains related to the mother-nurse partnership as perceived by mothers of hospitalized children, the mean score for communication was the lowest. Although pediatric nurses should engage children's parents in their nursing practices by using effective communication and maintaining a cooperative relationship, the results of this study reflect the reality of the situation in which nurses mostly perform one-way direct nursing without considering the needs of children and parents [25]. Therefore, to provide effective nursing care for children and families and build better partnerships, it is necessary to improve the communication abilities of pediatric nurses.

In this study, the mean score for uncertainty perceived by mothers of hospitalized children (mean=2.03, with a possible score range of 1-4) was lower than the mean scores of studies by Yoo (mean=2.65) [26] and by Oh (mean=2.37) [13] that used the same tool. The reason why perceived uncertainty was low in this study was likely because this study primarily involved mothers whose children were hospitalized during an acute phase of illness at a single children's hospital, whereas the participants in the studies by Yoo [26] and Oh [13] were mothers whose children were hospitalized at university hospitals and had severe or chronic diseases. After examining the scores for the subdomains of uncertainty, the mean score for unpredictability was found to be the highest, followed by the

reliability of medical personnel and ambiguity. However, in a study by Oh (mean=2.77) [10] on the parents of children who visited pediatric wards as outpatients or who were admitted to an emergency room, the mean score for uncertainty was higher than that of this study. In addition, although Oh's study [10] included only the parents of patients with acute diseases, scores for perceived uncertainty were higher for parents of children who were admitted to an emergency room than for parents of pediatric outpatients. These findings indicate that, even for parents of children with acute diseases, perceived uncertainty may increase depending on the environments of the wards they visited, their unique hospitalization situation, and the progress and severity of their child's disease. Therefore, further studies are needed to investigate uncertainty perceived by mothers of hospitalized children that consider their specific hospitalization situations, include patients in inpatient wards, and account for the severity of children's conditions.

Our results revealed that the communication ability of nurses and the mother-nurse partnership were the factors that most affected the quality of nursing care as perceived by mothers of hospitalized children. The total explanatory power of these two factors was 54.1%. The communication ability of nurses perceived by mothers of hospitalized children was found to have the greatest effect on the quality of nursing care. That is, a more positive perception of the communication ability of nurses by mothers of hospitalized children was associated with a more positive perception of the quality of nursing care. Since there have been few previous studies on the communication ability of nurses and the quality of nursing care as perceived by mothers of hospitalized children, it is difficult to compare our results to those of previous studies. However, a study by Kim [8] that examined the relationship between the communication ability of nurses and satisfaction with nursing service—a factor that is similar to the quality of nursing care—found that higher scores for the communication abilities of nurses were associated with higher scores for satisfaction with nursing service, which supports our results. Therefore, to improve the quality of nursing care perceived by mothers of hospitalized children, it is necessary to develop communication improvement programs for pediatric nurses to enhance their communication abilities. In this study, the communication skills of nurses encompass interactions between parents and nurses through verbal and non-verbal communication [19]. This is distinct from the fragmentary contents of communications, which is a subdomain of the mother-nurse partnership, in which parents talk to nurses about their discomfort or their children's health status [20]. Considering that the targets of nursing care are children and their families, communication skills should account for nonverbal commu-

nication methods for children with undeveloped language skills.

According to our results, one of the factors that affected the quality of nursing care was the mother-nurse partnership as perceived by mothers of hospitalized children. This finding is consistent with that of a study by Bae and Lee [9], which found that the mother-nurse partnership affected mothers of hospitalized children's perception of the quality of nursing care. Additionally, a study by Choi and Bang [20] found that a better partnership between pediatric nurses and the parents of hospitalized children was associated with higher satisfaction with nursing service, which is a similar factor to the quality of nursing care. Therefore, to improve the quality of nursing care perceived by mothers of hospitalized children, mother-nurse partnership promotion programs should be developed, and their effects should be examined. More specifically, considering that explanation was the subdomain of quality of nursing care and the mother-nurse partnership with the poorest perception by mothers of hospitalized children, it is necessary to prioritize communication ability as one of the core competencies of pediatric nurses for improving the quality of pediatric nursing.

In this study, uncertainty was correlated with the quality of nursing care, but that does not necessarily mean that it affected the quality of nursing care in a causal sense. The quality of nursing care is affected by factors such as nurses' characteristics (nurse resilience) and organizational and environmental characteristics (nursing organizational culture, the nursing delivery system, and the nursing working environment) [23, 27]. Therefore, in the future, it will be necessary to examine the influence of various factors—including but not limited to uncertainty—on the quality of nursing care. The principal limitation of this study is that it is difficult to generalize the results since the subjects were all children with acute illnesses who were below preschool age and treated at a single hospital. In addition, various factors such as the characteristics of nurses and the characteristics of nursing jobs that affect the quality of nursing were not taken into account. Therefore, in the future, it is necessary to expand the pool of research subjects to include school-aged hospitalized children and adolescents with severe and chronic diseases in hospitals of various levels and to examine the quality of nursing care using various factors as predictive variables.

## CONCLUSION

This descriptive research study aimed to examine the factors that affect the quality of nursing care as perceived by mothers of hospitalized children and provide basic data for the development of programs aimed at improving the quality



of nursing care. Factors that affected the quality of nursing care perceived by mothers of hospitalized children included the communication ability of nurses and the mother-nurse partnership. Higher scores for nurses' communication abilities and the mother-nurse partnership were associated with more positive perceptions of the quality of nursing care. Therefore, to improve the quality of pediatric nursing, strategies should be explored for improving the communication abilities of nurses and the partnership between nurses and mothers of hospitalized children.

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## Authors' contribution

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## Conflict of interest

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