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Research Article

Mediating Role of Emotional Intelligence in the Relationship between Hospital Perception and Fear of Medical Procedures in Children

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Abstract

Aim: This study investigated the relationship between children's hospital perceptions, their fear of medical procedures, and the role of emotional intelligence as a potential mediator.

Material and Method: The population of the research consists of 4th grade students (10-year-old students) studying in primary schools in the 2023-2024 academic year. The study included 343 students and employed a relational-cross-sectional-descriptive design. Data were collected using the Personal Information Form, Medical Procedure Fear Scale, Hospital Perception Scale for Healthy Children, and Ten-Year-Old Emotional Intelligence Scale. Data were analyzed with IBM SPSS V23 and IBM AMOS V24. Compliance with normal distribution was examined with the assumption of skewness, kurtosis, and multiple normality. Path analysis was used to test the mediator model, and Maximum Likelihood (ML) was used as the calculation method. Analysis results were presented as frequency (percentage) for categorical variables, mean±standard deviation, and median (minimum−maximum) for quantitative variables. The significance level was taken as p<0.05.

Results: The study found that children's hospital perceptions predicted their fear of medical procedures. Specifically, there was a statistically significant positive relationship between hospital perception and fear of medical procedures (β=0.565; p<0.05). According to the mediated structural model analysis results, hospital perception had a statistically significant negative effect on the mediator variable emotional intelligence (β=-0.327; p<0.05). By including the mediator variable emotional intelligence in the model, the path coefficient between hospital perception and fear of medical procedures was statistically significant (β=0.554; p<0.05).

Conclusion: In the study, it was found that emotional intelligence, the mediator variable, played a role in the relationship between hospital perception and fear of medical procedures.

Keywords: Child, emotional intelligence, fear of medical procedures, hospital perception

INTRODUCTION

Children may need to go to hospital for diagnosis, treatment, and short or long-term hospitalizations. Children's perceptions of hospitals can vary widely depending on various factors such as their age, previous experiences, and understanding of illness and medical procedures (1). Children's perceptions can be affected by their developmental levels, personal experiences, indirectly acquired information, supportive environment, and parental attitudes. Younger children may have a limited understanding of medical concepts and may perceive hospitals as scary or intimidating due to unfamiliarity. As children age, their knowledge of illness and medical procedures becomes more sophisticated, which may help alleviate some fears. Positive experiences, such as receiving gentle care from hospital staff or successfully recovering from an illness, can shape a child's perception of hospitals in a positive way. Conversely, negative experiences, such as painful procedures or feeling frightened or lonely during a hospital stay, can lead to negative associations with hospitals (1,2). Children may form perceptions of hospitals based on what they see in media, books, or stories from friends and family. Depictions of hospitals in media can range from reassuring to frightening, and these portrayals can influence how children view hospitals. A supportive and child-friendly environment within the hospital can play a significant role in shaping children's perceptions. Child life specialists, playrooms, and other amenities designed to make the hospital experience more comfortable can help alleviate anxiety and foster positive associations with hospitals (2-4). The attitudes and behaviors of parents and caregivers can impact children's perceptions of hospitals. If parents convey fear or anxiety about hospitals, children may adopt similar feelings. On the other hand, parents who provide

reassurance and support can help children feel more at ease. Healthcare providers must consider children's perceptions and emotional needs when providing care in hospital settings. Creating a supportive and child-friendly environment can help mitigate fears and promote positive experiences for pediatric patients (4,5). Suppose a child has been hospitalized before, involving an invasive procedure, pain, discomfort, discomfort, fear, or much crying. In that case, they will likely experience the same fears during another hospital experience. Some children may even experience fear of disability or death (2-4). Pediatric patients experience anxiety and stress at different levels due to fears such as being separated from family and loved ones, physical and emotional harm, medical procedures, and the unknown, starting from their hospitalization (4). These fears of children reduce their participation in health practices, may prevent them from receiving health care in case of illness, and may negatively affect the treatment process (5). Studies have shown that children often experience high levels of anxiety during hospital experiences (3,6). That negative childhood experiences are associated with harmful effects on children's well-being (7). Therefore, nurses are essential in protecting children from the negative emotions and effects caused by hospital experiences and stressful medical procedures (8).

Of course, children's perceptions of the hospital may differ depending on their developmental level and cognitive status. Developing logical thinking skills in children between 7 and 10 affects their perceptions. As rational thinking skills develop, children ages 7 to 10 begin to have a more complex understanding of disease and medical treatment. They may be able to grasp concepts such as cause and effect more efficiently, which can help them understand why they need to visit the hospital and what treatment involves. Children in this age group may fear the unknown less than younger children (9). They are more likely to ask questions and seek information to understand what to expect during hospital visits; This can help relieve anxiety. With the development of logical thinking skills, children in this age range can better follow instructions given by healthcare providers. This can make medical procedures and treatments less stressful for the child and the healthcare team. As children become more independent at this stage of development, they may also desire more autonomy and control over their healthcare experience (8). Healthcare providers can include them in decision-making whenever possible, empowering them and making them feel more comfortable in the hospital environment. Children in this age group may also be influenced by their peers' perceptions and experiences of hospitals. Positive experiences shared by friends or classmates can help reinforce a child's positive perception of hospitals. In general, children between the ages of 7 and 10 become more capable of understanding and coping with hospital visits. Healthcare providers can adapt their communication and care approaches to accommodate these developmental changes and promote positive experiences for pediatric patients (7-10).

Stressful medical procedures cause emotionally damaging behavioral changes in children (8). The ability of people to define their emotions correctly and cope with the problems they encounter is closely related to the concept of emotional intelligence (10). The most important innovation that the concept of emotional intelligence has brought to the literature is that it treats emotions as developable abilities rather than personal characteristics that are difficult to change (11). Definitions put forward by different researchers in the field of emotional intelligence generally refer to the ability of a person to make sense of the emotions they have, to understand the emotions of others, to develop appropriate reactions to them, to adapt to the environment, to cope with the difficulties they encounter, to take action to perform desired actions by taking advantage of the motivating power of emotions, and to They are united in being able to accurately control negative emotions that may hinder actions (12). In the literature research, no research was found examining the role of emotional intelligence in the relationship between children's hospital perceptions and their fear of medical procedures. The current study contributes to the literature in this sense. In this context, this study aimed to examine the role of emotional intelligence in the relationship between children's hospital perceptions and their fear of medical procedures.

MATERIAL AND METHOD

Universe and Sample

This study was conducted in a correlational-cross-sectional-descriptive model. The population of the research consists of 4th grade students (10-year-old students) studying in primary schools in the 2023-2024 academic year. There are 35 primary schools in the city center and 851 students studying in the 4th grade in these schools. These schools provide full-time education. The research sample must be at least 269 with a 95% confidence interval and a 5% margin of error (13). The study was conducted with 343 students who met the inclusion criteria.

Inclusion Criteria

- Parent and child volunteering to participate in the research.

Exclusion Criteria

- The child has a neurodevelopmental and psychiatric problem,
- The child has a chronic disease,
- The child has vision, hearing and speech problems that may prevent the child from communicating.

Data Collection Tools

In collecting data; Personal Information Form, Medical Procedure Fear Scale, Hospital Perception Scale for Healthy Children and Ten-Year-Old Emotional Intelligence Scale were used.

Personal Information Form

Form; it consists of 12 questions that question the sociodemographic characteristics of the mother/father

such as age, education, employment and income status and family type, and the child's information such as gender and hospital experience (14,15).

Medical Procedure Fear Scale (MPFS)

The validity and reliability study of the scale in Türkiye was conducted by Alak (14). The scale is a Likert type scale with 29 questions and 3 options. For each item in the scale, the child is asked to choose one of the following statements: "I am not afraid at all" (1 point), "I am a little afraid" (2 point), "I am very afraid" (3 point). The lowest score on the scale is 29 and the highest score is 87. Those who score 0-29 on the scale are considered less fearful; those who get between 29-58 points are a little afraid; a score between 58-87 is considered very fearful. The Cronbach alpha internal consistency coefficient for the total scale was found to be 0.93 (14). In this study, the scale's Cronbach alpha internal consistency coefficient is 0.91.

Hospital Perception Scale for Healthy Children (HPSHC)

The scale was developed by Ekici (15) to evaluate the hospital perception of children aged 8-10 years. The scale consists of 25 items designed to assess different aspects of children's perceptions of hospitals. These items are rated on a 3-point Likert scale, ranging from "I never think this way" (0 points) to "I sometimes think this way" (1 point) to "I always think this way" (2 points). Factor Structure: The scale has a six-factor structure, each representing a different aspect of hospital perception: Factor 1: Separation, Factor 2: Invasive and non-invasive interventions, Factor 3: Fear and loss of control, Factor 4: Body image, Factor, 5: Physiological needs and Factor 6: Hospital environment. The total score range of the scale is from 0 to 50 points. A score of 0-24 indicates a "less negative hospital impression," while a score of 25-50 indicates a "largely negative hospital perception." A higher score suggests a more negative opinion about hospitals. The Cronbach alpha internal consistency coefficient for the total scale was found to be 0.87 (15). In this study, the scale's Cronbach alpha internal consistency coefficient is 0.86.

Ten Years Emotional Intelligence Scale (TYEIS)

Coşkun et al. validity and reliability analyses of TYEIS developed by (2017) were conducted based on data obtained from 492 primary school students. TYEIS has a single-factor structure consisting of ten items. The scale is rated into three categories: "Not True" (1 point),

"Somewhat True" (2 point), and "Very True" (3 point). In the TYEIS, negative items are reverse-scored. The highest score that can be obtained from the scale is 30, and the lowest score is 10. The Cronbach alpha internal consistency coefficient for the total scale was found to be 0.89 (16). In this study, the scale's Cronbach alpha internal consistency coefficient is 0.72.

Data Collection

The research data was collected between November 30, 2023, and February 15, 2024. Before the researcher collected the data, information about the study was given, and written consent of the parents and verbal consent of the children were obtained. Informed consent was obtained from all participants and their legal guardians. Children who volunteered and met the inclusion criteria were included in the study. Personal Information Form, Medical Procedure Fear Scale, Hospital Perception Scale for Healthy Children, and Ten-Year-Old Emotional Intelligence Scale were administered face to face to the children, and their data were collected. Before starting the research, ethics committee approval was obtained from the university, and institutional permission was obtained from the Provincial Directorate of National Education.

Data Analysis

Data were analyzed with IBM SPSS V23 and IBM AMOS V24. Compliance with normal distribution was examined with the assumption of skewness, kurtosis, and multiple normality. Before starting to work on structural equation modeling, all problems with the data (outlier values, flat and skewed values, missing data, etc.) must be resolved. In order to use maximum likelihood, the data must comply with normal distribution. In the Multivariate normality test, the critical value was determined to be 0.375 (Table 1). Byrne, considered values >5 as an indicator of non-normally distributed data (17). While this value is below 10 is an excellent result, studies have shown that it generally does not pose a problem up to 20. The assumption of multiple normality is satisfied. Path analysis was used to test the mediator model, and Maximum Likelihood (ML) was used as the calculation method. Analysis results were presented as frequency (percentage) for categorical variables, mean±standard deviation, and median (minimum−maximum) for quantitative variables. The significance level was taken as $p < 0.05$.

Table 1. The result of the multivariate normality test should be reported						
	Minimum	Maximum	Skewness	Critical rate of skew	Kurtosis	Critical rate of kurtos
Hospital perception total score	0	40	0.234	1.773	-0.465	-1.757
Emotional intelligence total score	16	30	-0.616	-4.654	0.226	0.854
Medical procedures fear total score	29	76	0.749	5.667	-0.196	-0.740
Multivariate					0.222	0.375

Ethical Approval

The Bayburt University Research Ethics Committee approved the research (2023/402-21). Before the

researchers collected the data, the Declaration of Helsinki informed parents and children about the study, and their written/verbal consent was obtained. All methods

were conducted according to relevant guidelines and regulations.

RESULTS

47.8% of the participants are girls and 52.2% are boys. 74.1% have a nuclear family type. 47.2% have two siblings. 82.8% have a medium income. The mother's education level, 23.6%, is high school. The mothers of 71.4% are housewives. The father's education level, which is 34.1%, is high school. The father of 46.1% is a worker. 48.1% have never been hospitalized 70.8% of them have a family member who has been hospitalized before. The average age of the mother is 35.69, and the average age of the father is 41.32. All descriptive statistics are presented in detail in Table 2.

Table 2. Descriptive statistics		Frequency	Percentage
Gender	Female	164	47.8
	Male	179	52.2
Family type	Nuclear family	254	74.1
	Extended family	89	25.9
Number of siblings	No siblings	28	8.2
	Two siblings	162	47.2
	Three siblings and above	153	44.6
Income status	Low	32	9.3
	Middle	284	82.8
	High	27	7.9
Mother's education level	Primary school	118	34.4
	Middle school	120	35
	High school	81	23.6
	University and above	24	7
Mother's occupation	Housewife	245	71.4
	Civil servant	51	14.9
	Worker	47	13.7
Father's education level	Primary school	79	23
	Middle school	93	27.2
	High school	117	34.1
	University and above	54	15.7
Father's profession	Tradesman	54	15.7
	Civil servant	95	27.7
	Worker	158	46.1
	Retired	36	10.5
Hospitalization experience	Never	165	48.1
	Once	96	28
	2 or more	82	23.9
Previous hospitalization of a family member	No	100	29.2
	Yes	243	70.8
		Mean±S.Deviation	Median (Min-Max)
Mother's age		35.69 ± 5.46	35 (25 - 49)
Father's age		41.32 ± 5.52	41 (31 - 56)

The mediating role of emotional intelligence in the effect of hospital perception on fear of medical procedures is given in Table 3. According to the analysis results, it was determined that hospital perception predicted the fear of medical procedures ($\beta=0.565$; $p<0.05$). The coefficient of determination (R^2) for fear of medical procedures is 31.9%.

A separate model was built in which emotional intelligence was the mediating variable. According to the mediated structural model analysis results, hospital perception had a statistically significant negative effect on the mediator variable emotional intelligence ($\beta=-0.327$; $p<0.05$). Emotional intelligence's coefficient of determination (R^2) is 10.7% (Table 3).

The effect of the mediator variable, emotional intelligence, on the dependent variable, fear of medical procedures, was not statistically significant ($\beta=-0.035$; $p>0.05$). However,

when the mediator variable, emotional intelligence, was included in the model, the path coefficient between hospital perception and fear of medical procedures was found to be statistically significant (β=0.554; p<0.05) (Table 3, Figure 1).

An analysis was conducted based on the Bootstrap method to test whether the emotional intelligence variable mediates the relationship between hospital perception and fear of medical procedures. 5000 resamples were preferred in bootstrap analysis. The 95% confidence interval (CI) obtained from the analysis performed with the Bootstrap technique should not include the zero value. As a result of the bootstrap analysis, the indirect effect of hospital perception on fear of medical procedures through emotional intelligence was not found to be statistically significant (β=0.011; 95% CI [-0.021-0.046]) (Table 3).

Table 3. The mediating role of emotional intelligence in the effect of hospital perception on fear of medical procedures				
	Outcome variables			
	Emotional intelligence		Fear of medical procedures	
Prediction variables	β (95% CI)	SE	β (%95 CI)	SE
Hospital perception (Total impact)			0.565 (0.489;0.634)*	0.037
R^2			0.319	
Hospital perception	-0.327 (-0.426;-0.219)*	0.052		
R^2	0.107			
Hospital perception (Direct effect)			0.554 (0.476;0.636)*	0.041
Emotional intelligence			-0.035(-0.137;0.064)**	0.050
R^2			0.320	
Indirect effect			0.011(-0.021;0.046)***	0.017

*p<0.05; **p>0.05; ***Bootstrap indirect effect; SE: Standard error; β: Standardized coefficients; R^2: Coefficient of determination
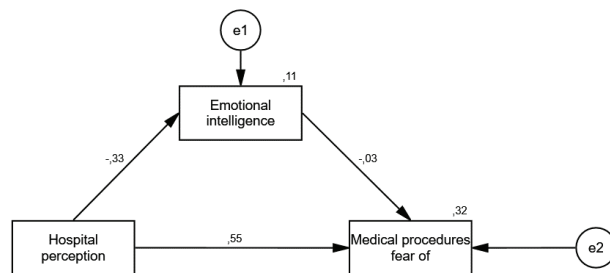

Figure 1. Standardized path coefficients

DISCUSSION

Although hospital perception varies depending on age group, it generally creates anxiety and fear in the child (18). Hospital perception and fear of medical procedures may reduce children's participation in health care practices, prevent them from receiving health care in case of illness, and negatively affect the treatment process (18,19). Physical diseases significantly affect children's psychological states and social lives and can even be traumatic (19). Emotional intelligence helps individuals cope with problems more efficiently by correctly recognizing their emotions and feelings (10).

The study examining the role of emotional intelligence in the relationship between children's hospital perceptions and their fear of medical procedures determined that hospital perception predicted the fear of medical procedures. Children's perceptions of hospitals vary depending on their developmental level, their own experiences, and the indirect knowledge they have previously acquired about hospitals (1,20). Children who have been hospitalized before, experienced an invasive procedure, and experienced

pain, fear, and distress will probably experience fear in another hospital experience (2-4). Research has shown that children often experience high levels of anxiety about the hospital (4,6,21). Additionally, research has shown that adverse childhood experiences negatively affect physical and psychological health (7). In a study, the difference between children's fear of hospitalization, chronic disease, constant medication use, and invasive procedures and their fear of medical procedures was found to be statistically insignificant (22). Children's perceptions of hospitals vary according to their developmental levels and needs. For example, children between the ages of 7 and 10 have different ways of thinking because they begin to develop logical thinking skills at this age. They begin to isolate themselves from their environment. As the influence of the social environment on children increases, their need for autonomy and control over their bodies and lives increases (20-22).

According to the mediated structural model analysis results, hospital perception had a statistically significant adverse effect on the mediator variable emotional intelligence. The ability of a person to recognize their emotions correctly and to cope with the problems he encounters more easily is related to the concept of emotional intelligence (10). The most important innovation that the concept of emotional intelligence has brought to the literature is that it treats emotions not as personal characteristics that are difficult to change but as skills that can be developed (11).

The effect of the mediator variable, emotional intelligence, on the dependent variable, fear of medical procedures, was not statistically significant. However, when the mediator variable, emotional intelligence, was included in the

model, the path coefficient between hospital perception and fear of medical procedures was statistically significant. Children's perceptions of health care are critical. The positive/negative experiences experienced by hospitalized children will be recorded in their memories and affect their reactions to the disease (23). The child's developmental period, the type of disease, family support, and the attitudes of the healthcare team are the main factors affecting children's hospital experience. In this context, the attitude of pediatric nurses is critical (24). Diseases, hospitalization, and invasive/noninvasive interventions can leave significant scars, especially in the lives of children (5,25,26). Emotional intelligence is the individual's ability to perceive, define, and manage their emotions, distinguish differences between emotions, and reflect these situations in their behaviors (27). Baltaş (2015) defined emotional intelligence as the individual's ability to recognize, understand, and effectively use emotions that help him cope with himself and others (28). Emotional intelligence effectively copes with negative emotions such as unhappiness and stress (29). It is known that children experience fear and anxiety due to medical procedures. Children's hospital perceptions and fears of medical procedures are affected by many variables, such as the child's age, previous experiences, disease status, parents' education level, and approach (25,26,30,31).

In the study, the indirect effect of hospital perception on fear of medical procedures through emotional intelligence was not found to be statistically significant. Salmela et al., in 2011 (32), when the fear levels of school and hospitalized children were compared about the equipment used in the hospital, it was stated that the fear levels of both groups were the same. In line with these results, it can be seen that the child's fear of medical procedures does not change whether he has hospital and medical procedure experience or not. A similar study by Eren and Örsal (2023) stated that the fear of medical equipment in hospitalized children was higher than that of children at school (33). Additionally, another study examining hospital fear reported that hospital fear was higher in children who experienced injections (30). In a similar study, children with hospital experience feared medical procedures more than those without (22). Hospitals are foreign environments where children are far from home, full of unknowns and often painful procedures, and where they see their parents less (34-36). Children may experience more fear in such an environment due to their experiences (1).

Hospital perception, emotional intelligence, and fear of medical procedures have a complex structure as they can be affected by many factors in daily life and need to be tested with different models. Importantly, future research should further investigate the design, feasibility, and effectiveness evaluation of interventions focused on increasing children's levels of emotional intelligence.

Limitations and Strengths

The strength of this study is that it is the first time that the role of emotional intelligence in the relationship between children's hospital perception and their fear of medical procedures has been investigated. The study results show the importance of emotional intelligence for developing strategies to reduce children's hospital perceptions and fears of medical procedures. However, this research had some limitations. First, although the results suggest the importance of emotional intelligence in the relationship between children's perceptions of hospitals and their fear of medical procedures, the cross-sectional study design must accurately investigate the causal process. Therefore, more longitudinal studies are needed. Another limitation of the study is that the scales used are based on self-report.

CONCLUSION

Study results showed that children's perception of hospitals predicted their fear of medical procedures. According to the mediated structural model analysis results, hospital perception had a statistically significant negative effect on the mediator variable, emotional intelligence. The impact of the mediator variable, emotional intelligence, on the dependent variable, fear of medical procedures, was not statistically significant. However, when the mediator variable, emotional intelligence, was included in the model, the path coefficient between hospital perception and fear of medical procedures was statistically significant. In the study, the indirect effect of hospital perception on fear of medical procedures through emotional intelligence was not found to be statistically significant.

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