



## Relationship Between Psychological Variables and Postoperative Pain in Children

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### Abstract

**Background:** Despite advances in pediatric pain management, postoperative pain remains a significant concern. By recognizing the multifaceted nature of pain and its susceptibility to various factors, there is a growing need to identify risk factors for postoperative pain and effective pain coping strategies.

**Objectives:** This study aimed to investigate the relationship between psychological variables and postoperative pain in children.

**Methods:** A descriptive-correlational study was conducted with a sample of 171 children aged 6 - 13 years, conveniently selected from a children's hospital in Tehran, Iran, based on specific inclusion criteria. The data were collected through a demographic questionnaire, the Child Pain Anxiety Symptoms Scale (CPASS), Spielberger's State-Trait Anxiety Inventory (STAI), and the Coping Strategies Questionnaire (CSQ). Statistical analysis was performed using SPSS software (version 21).

**Results:** The majority of the 171 participants were male (65.5%), with an average age of 9.58 years. Abdominal surgery was the most common procedure (53.2%), with an average duration of 134.29 minutes. Regression analysis revealed a statistically significant association between psychological variables and postoperative pain. Specifically, for each point increase in children's and parents' mean anxiety scores, postoperative pain increased by 0.31% and 0.30%, respectively. Conversely, for each point increase in children's mean coping score, postoperative pain decreased by 0.14%.

**Conclusions:** Child and parental anxiety and coping strategies were linked to postoperative pain. Accordingly, higher levels of anxiety in children and their parents were associated with an increased likelihood of postoperative pain; nevertheless, better coping skills in children correlated with reduced postoperative pain. Therefore, implementing psychological interventions might prove effective in managing postoperative pain in children.

**Keywords:** Anxiety, Coping, Postoperative Pain, Children, Parents

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## BACKGROUND:

- Despite advances in pediatric pain management, postoperative pain remains a significant concern. By recognizing the multifaceted nature of pain and its susceptibility to various factors, there is a growing need to identify risk factors for postoperative pain and effective pain coping strategies. Objectives: This study aimed to investigate the relationship between psychological variables and postoperative pain in children.



# METHODS

- This study was conducted following a descriptive-correlational study design. The study determined psychological variables related to postoperative pain in children aged 6-13 years hospitalized in the selected children's hospital in Tehran, Iran.
- The inclusion criteria encompassed children who met the following conditions: Admission solely for surgery, ages between 6 and 13 years, absence of physical or mental disorders according to records and parental statements, and placement in surgeon services utilizing the same pain management protocol. The exclusion criteria included the occurrence of a stressful incident during the study, a child becoming unwell to the extent of necessitating life-saving measures, and incomplete questionnaire responses. Initially, 200 children were considered for the study; however, ultimately, 171 children were selected based on the specified inclusion and exclusion criteria.

# TOOLS

- demographic characteristics questionnaire
- Numerical Rating Scale (NRS)
- The Child Pain Anxiety Symptoms Scale (CPASS)
- The Spielberger's State-Trait Anxiety Inventory (STAI)
- The Coping Strategies Questionnaire (CSQ)



# RESULTS

**Table 2.** Frequency Distribution of Demographic Variables in Children Admitted to the Surgical Wards of Mofid Hospital in Tehran, Iran, Within 2017 - 2018

Variables	No. (%) or Mean $\pm$ Standard Deviation
<b>Child's age (y)</b>	8.58 $\pm$ 2.233
<b>Gender</b>	
Female	59 (34.5)
Male	112 (65.5)
<b>Type of surgery</b>	
Abdominal	91 (53.2)
Genitourinary urine	51 (29.8)
Other surgeries	29 (17)
<b>Experience of pain</b>	
Mild	102 (59.7)
Medium	38 (22.2)
Severe	31 (18.1)
<b>Duration of surgery (min)</b>	134.29 $\pm$ 68.58
<b>Mother's age</b>	34.38 $\pm$ 6.663
<b>Father's age</b>	39.63 $\pm$ 6.342
<b>Mother's job</b>	
Housewife	137 (80.11)
Manual worker	7 (4.09)
Employee	16 (9.36)
Freelance job	11 (6.44)
<b>Father's job</b>	
Unemployed	8 (4.67)
Manual worker	54 (31.5)
Employee	26 (15.21)
Freelance job	83 (48.54)
<b>Mother's education</b>	
Illiterate	9 (5.26)
High school	55 (32.16)
Diploma	30 (17.58)
Bachelor	77 (45)
<b>Father's education</b>	
Illiterate	16 (9.35)
High school	65 (38.02)
Diploma	65 (38.02)
Bachelor	25 (14.61)
Child Pain Anxiety Symptoms Scale	53.66 $\pm$ 21.284
<b>Spielberger's State-Trait Anxiety Inventory</b>	
Manifest	47.85 $\pm$ 15.11
Latent	30.15 $\pm$ 12.43
<b>Coping Strategies Questionnaire</b>	
Competition	125 $\pm$ 14.92

**Table 4.** Results of Linear Regression Analysis of Postoperative Pain with Predictive Psychological Factors

Model	Unstandardized Coefficients		Standardized Coefficients, Beta	t	Sig.	F	r <sup>2</sup>
	B	Standard Error					
Constant	3.489	1.014		3.442	0.001	18.215	0.28
Child Pain Anxiety Symptoms Scale	0.009	0.002	0.311	4.271	0.000		
Spielberger's State-Trait Anxiety Inventory	0.040	0.009	0.311	4.271	0.000		
Coping Strategies Questionnaire	-0.047	0.023	-0.147	-2.082	0.039		

## DISCUSSION



- The aim of this study was to determine the psychological variables related to postoperative pain in children hospitalized at the selected children's hospital in Tehran. The results of the present study revealed that most children experienced moderate to severe postoperative pain, and those children and their parents with higher anxiety levels were more likely to experience postoperative pain; nevertheless, children with higher coping abilities were less likely to experience postoperative pain.

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# CONCLUSIONS



- The research findings indicate that most children experience moderate to severe postoperative pain. Child anxiety and parental anxiety are positive predictors of postoperative pain; nevertheless, coping strategies are negative predictors of postoperative pain. Therefore, identifying children at risk and providing psychological interventions can be effective in managing postoperative pain in children and improving their comfort.