

# Intervention Study of Medical Social Group Work on Medical Fear In Children Undergoing Surgery

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## Abstract

Medical fear is a common psychological reaction in children, which can be characterized by crying, silence, and resistance to medical staff and procedures, and if not managed correctly, it can affect the children's treatment and recovery, and in some cases, psychological well-being. The fears of hospitalized children, especially those who need to undergo surgery, are even more acute when they are faced with an unfamiliar medical environment and the invasive medical procedure of surgery. Therefore, the group of children who undergo surgery has certain special characteristics. In this study, 14 non-surgical children with high levels of medical fear were studied in the Children's Orthopaedic Department of N Hospital, and a medical social work intervention study was conducted.

Based on the literature review, analysis of theoretical foundations, observation, and interviews, in this study, treatment modality perceptions and coping behaviors were used as mediating variables, and medical fear was used as an outcome variable, with medical fear measured using the Children's Medical Fear Scale and treatment modality perceptions and coping behaviors measured through interviews, Venham's Clinical Ratings of Anxiety and Cooperative Behavior and various self-designed scales.

Based on the steps of the social work intervention study, the problem theory, of preoperative medical fear in children undergoing surgery were sorted out, and the intervention program was designed and refined based on this, and group activities guided by cognitive-behavioral theory were conducted according to the intervention program. This intervention study used a quasi-experimental design in which eligible children with surgery were assigned to the intervention group and the control group according to the wishes of the child and the caregiver and were measured pre and post using a scale, with children in the control group not receiving group intervention and children in the intervention group participating in group activities. In the group, activities such as games, drawings, picture books, and crafts were chosen to guide and help the children present

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negative perceptions of treatment modalities, reshape and reinforce positive perceptions of treatment modalities, reinforce positive behaviors, and decompress, to promote cognitive and behavioral changes in the children, and thus facilitate the improvement of their medical fears.

The intervention results and quantitative data showed that there was no significant difference between the pre-measurement scale scores of the intervention and control groups, and the level of medical fear was not significantly different. After receiving the social work intervention, there was a significant difference between the pre-and post-measurement scale scores of the intervention group, and the medical fear of the children in the intervention group was significantly alleviated. In addition, the qualitative data analysis showed a significant change in the children's coping behaviors and perceptions of healthcare professionals and related medical operations. The study showed that the group intervention was effective in promoting changes in the children's cognitive and coping styles, thus improving their medical fears.

Keywords: Social Group Work, Intervention Study, Children's Medical Fear,  
Children with Surgery

## Introduction

In recent years, the spectrum of childhood diseases has been changing, and psychological and behavioral disorders have become new risks that have attracted widespread attention in society. Among them, fear and anxiety, as psychological problems, are particularly common in children (Gullone et al., 2001). A survey on fear and anxiety in children and adolescents found that medical procedures were one of the top five fears during childhood (King et al., 1989). It is common for children to experience fear and anxiety related to medical treatment due to the unfamiliar hospital environment and medical experiences. Hospitalized children, especially those undergoing surgery, not only have to face unfamiliar hospital environments but also experience disruptions in their activities, learning, and daily lives. Additionally, the burden of illness, including pain and discomfort, as well as a lack of accurate understanding of the surgical environment and treatment methods, can significantly impact the psychological well-being of these children, leading to higher levels of medical fear. If children have high levels of medical fear, it can result in reduced treatment compliance, affecting their confidence in overcoming the disease, and even negatively impacting their psychological and physical development (Xia, 2016). Therefore, intervention is needed.

However, current interventions mainly focus on hospitalized children and those with prolonged illness, with less attention given to children undergoing surgery, especially those with shorter treatment durations. Existing research in social work interventions for children's medical fear mainly focuses on injection fear (Fung, 2009) and dental fear (Vincent et al., 2020). There is a lack of research on social work interventions for children's medical fear in China, with most studies focusing on hospitalized children and being primarily master's theses. The interventions mainly utilize group work and individual case work methods. In addition, researchers have combined group work with play therapy (Liu, 2017), expressive arts therapy (Ding, 2022), and desensitization therapy (Zhang, 2020) to carry out group activities aimed at reducing children's medical fear, and significant effects have been achieved in alleviating children's medical fear. However, current research on interventions for children's medical fear, especially for children undergoing surgery, mainly focuses on changes in numerical values of medical fear, with less attention given to the process of change in children's medical fear. Therefore, it is necessary to conduct medical social work interventions.

Based on the age and psychological characteristics of children, interventions using group work can leverage the mutual influence among peer groups. Therefore, from the perspective of medical social work, this study will use group work methods to intervene with school-age children who have not undergone surgery to explore the effectiveness of group social work interventions on medical fear in surgical children. The aim is to provide practical recommendations and experiences for future social work interventions for surgical children.

## Methods and Procedures

### 1. Research Participants

The medical fear intervention group was conducted with school-age children in the orthopedics department at Hospital N who had not undergone surgery. Based on previous field research and assessments, social workers gained an understanding of the medical fear experienced by children who had not undergone surgery and recruited participants for the intervention study. The participants primarily included school-age children who were undergoing their first surgical treatment and had a certain level of self-care ability. A total of 14 children participated in this study, and based on their preferences, they were divided into a control group (n=7) and an intervention group (n=7). Medical fear questionnaires were administered before and after the experiment to evaluate the effectiveness of the intervention program. Considering the cognitive level of children, the questionnaire survey was primarily conducted through interviews.

Table 1 Basic information about the research participants

Number	Gender	Age	Disease diagnosis
A1	male	8	Pain in left calf, weakness in left lower extremity
A2	female	6	Fracture of the lower end of the right tibia
A3	female	7	Fracture of the lower end of the right tibia
A4	female	6	Right Monsignor's fracture
A5	female	6	Right femoral head; ischemic necrosis
A6	female	7	Fracture of the lower end of the right tibia
A7	male	8	Left lower limb weakness
B1	female	6	Fracture of the right radial-ulnar diaphysis
B2	male	7	Unequal length of both lower limbs
B3	female	8	Fracture of the right radial-ulnar diaphysis
B4	female	6	Right femoral stem fracture
B5	female	6	Fracture of the lower end of the right tibia
B6	male	6	Left horseshoe-shaped foot
B7	female	8	Right femoral stem fracture

### 2. Medical Fear Intervention Program Design

#### 2.1 Theoretical Foundation

To conduct interventions, it is important to analyze the mechanisms underlying the occurrence of medical fear. Medical fear is a manifestation of maladaptation to medical care. In this study, Roy's Adaptation Model was chosen to analyze the generation of medical fear in children and guide the intervention.

Roy's Adaptation Model proposes that individuals are adaptive systems that integrate

physiological, psychological, and social attributes. They engage in a series of activities to achieve adaptation to the environment. This adaptive system can be divided into input, control processes, adaptation modes, and output. Specifically, after stimulus input, the two subsystems in the control process, regulator and cognator, play a role. Through four adaptation modes - physiological function, self-concept, role function, and interdependence - specific reactions are output. These reactions can be adaptive or ineffective. Based on this model, the analysis of medical fear in children undergoing surgery reveals that surgery, as a stimulus, enters the child's adaptive system. The cognator and regulator in the control process then play their roles. Negative perceptions and cognitions about illness and surgery can have a negative impact on the cognator and subsequently affect the regulator, resulting in negative medical coping behaviors. Therefore, the focus of the intervention is on the child's cognition and behavior related to medical procedures and treatment.

## 2.2 Empirical Foundation

Before the intervention study commenced, a survey was conducted on the medical fear levels of surgical children aged 6-12 years who received treatment in the pediatric orthopedics department from August to October 2022. Children with a history of hospitalization and surgery were excluded, and a total of 80 valid questionnaires were collected.

According to the survey results of the Children's Medical Fear Scale, the average score of the total medical fear of the investigated children was 19.1630, and the total medical fear of the hospitalized children without surgery was significantly higher than that of the children who had surgery ( $p < 0.05$ ). According to the results, there were significant differences in the fear levels of interpersonal fear, self-fear and medical operation fear in different treatment stages ( $p < 0.05$ ), among which fear of medical operation was more prominent, and the difference of the mean value was -2.23. This also shows the necessity of carrying out intervention activities for children without surgery to a certain extent. In addition, by comparison, children's fear of medical operation and interpersonal relationship is high, but the fear of medical environment and self-fear also need to be paid attention to.

During the investigation process, an observation of the children's awareness of medical care and their coping behaviors were conducted. It was found that some surgical children thought that medical treatment would bring unknown experience and pain experience to them, and appeared negative medical behaviors, and the fear of medical treatment was obvious. In addition, this is the first time for children to face the strange treatment of surgical treatment, without systematic science popularization and education, lack of basic cognition of treatment, lack of correct cognition and irrational cognition lead to fear of treatment, and then in the face of medical behavior and medical staff, "escape" and "resistance" behavior and psychology are prominent, and medical fear is obvious. Affect the medical effect.

### 2.3 Theoretical Framework

#### 2.3.1 Problem Theory

Previous studies have suggested that factors such as gender (Yan & Rin, 2000; Kong et al., 2021; Wu et al., 2014), age (Mahat et al., 2004), hospital environment (Li et al., 2021), factors related to surgery and treatment, cultural background, and parenting styles can influence children’s medical fear. Therefore, in this study, variables such as gender, age, response to new environments, only child status, parenting style, parents’ educational level, occupation type, and place of residence were considered as moderating variables. According to Roy’s Adaptation Model, the occurrence of negative cognition affects behavior, leading to the development of medical fear in children. Therefore, illness cognition and coping strategies were considered as mediating variables, while medical fear was the outcome variable, forming the problem theory model of this study.

Using a group intervention guided by cognitive-behavioral therapy, efforts were made to guide and help children undergo cognitive and behavioral changes, thereby promoting changes in the mediating variables of cognition and coping strategies. This intervention aimed to promote positive development in children’s illness cognition and encourage the use of proactive coping strategies, thereby alleviating medical fear in children undergoing surgery as the outcome variable. Ultimately, this intervention aimed to improve children’s mental health, treatment compliance, and treatment outcomes.

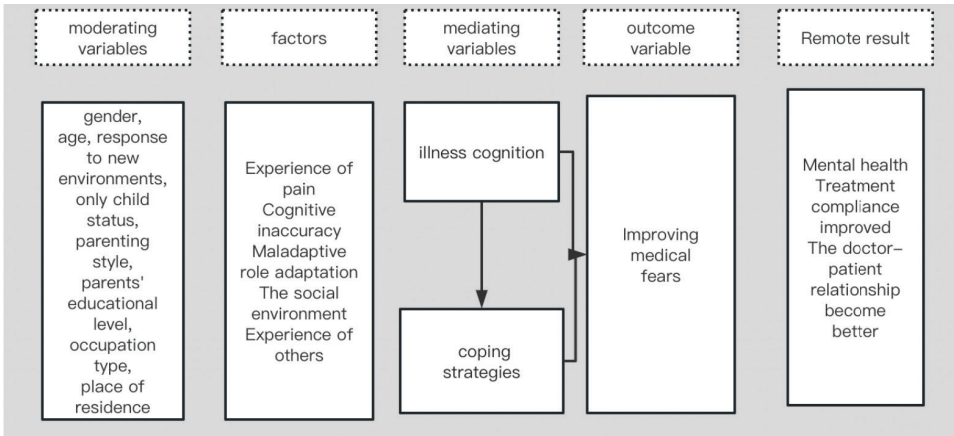


Figure 1: Problem Theory Model

### 2.3.2 Intervention Programming

Table 2 Basic information on group activities

Service stage	Service sessions	Dimensionality	Activity Theme	Goal	Name of activity
Examining Negative Perceptions of Medical Behavior, Reshaping and Building Positive Perceptions	Section I	Fear of the medical environment, fear of relationships	Relationship building, negative cognitive checking	Building trusting relationships, checking irrational perceptions	"Pediatric Orthopedics In My Eyes."
	Section 2	Fear of the medical environment, fear of relationships	Negative Cognitive Examination, Reshaping Positive Cognition	Checking irrational perceptions and building rational perceptions	"The most beautiful medical moments."
	Section III	fear of medical manipulation	Reshaping Positive Perceptions	Establishment of rational cognition, imitation exercises	"I'm a Little Doctor."
	Section IV	fear of medical manipulation	Cognitive reinforcement	Consolidating change	"Preparation for the surgical expedition"
Soothe	Section V	Relationships and self-fear	decompression training	emotional management	"I have a pair of skillful hands"
Cognitive Behavioral Reinforcement to Consolidate Change	Section VI	/	Cognitive Behavioral Positive Reinforcement	Consolidating change	"I'm the best!"

The overall goal of the intervention was to alleviate medical fears in children undergoing surgery, promote psychological well-being, and improve disease compliance.

In this study, the children's medical fear condition was analyzed based on theoretical perspectives and survey results, based on which a six-session group activity was designed, taking into account the children's characteristics and needs as well as the objectives of the group intervention and activity. The activity used cognitive-behavioral theory as the theoretical basis for the group design, combined with group work in social work, in order to change the illness cognition and illness coping styles of children undergoing surgery (mediating variable), and then improve the preoperative medical fear condition of the children (outcome variable), with three main intervention phases: examination of negative cognition and establishment of positive cognition; soothing of emotions as well as cognitive-behavioral reinforcement to consolidate changes.

Children undergoing surgery in children's orthopedic department have to go through preoperative examination, preoperative education, surgery scheduling, etc. after admission, and usually undergo surgery in the second week of admission. According to the survey in children's orthopedic department, children have medical fear, and even

have resistance behavior. In addition, many children have the need for preoperative health education and postoperative care. Therefore, under the guidance of the program director and the medical staff of the department, the author, based on the preliminary investigation and related information, carried out group activities to improve the medical fear of children in the period between the admission of children to the hospital and the preoperative period. During the group process, the social workers promoted changes in the group members' perception of illness and coping styles through reviewing the activities and thematic activities; used warm-up activities to enliven the atmosphere of the group and increase the motivation of the group members; set up a sharing session to provide a platform for the group members to express their true feelings and gains, and to learn about their suggestions for the group; and, through summarizing, reviewing, and previewing the group activities to promote group members' understanding of the group's theme and the group's activities. By summarizing, reviewing and forecasting the group activities, the group members are encouraged to understand the theme and content of the group, and the time and place of the group activities are clarified.

### *2.3.3 Evaluation of the impact of the intervention*

This study used a combination of quantitative and qualitative methods of effect evaluation, with quantitative data obtained through questionnaires to examine the achievement of the intervention goals, and detailed information obtained through interviews and observations to understand the effects of the entire intervention program and the feelings of the children and other participants about the intervention.

This study utilized the Children's Medical Fear Scale as an overall intervention effectiveness assessment tool, which has been shown to have good reliability and validity (Broome & Hellier, 1987; Rigor, 2000). Before and after the intervention, social workers measured the children's medical fear in the control group and the intervention group in one-on-one interviews. The scale includes four dimensions, namely, fear of the medical environment, fear of relationships, fear of the self, and fear of medical manipulation, with a total of 17 items, and "Not at all afraid" to "very afraid" were scored on a 0-4 scale.

In addition, in terms of children's medical cognition and medical coping behaviors, this study designed corresponding questionnaires to understand the children's changes, before and after the development of surgical preparation thematic activities, the study designed a questionnaire to assess the group members' knowledge of surgical preparation. And in terms of coping styles, as it was found in the preliminary survey that some children would not admit their fears, therefore, in the understanding of the changes in medical coping styles, as it was found in the preliminary survey that some of the children would not admit their fear, the questionnaire "Fear of medical staff and medical equipment" (filled in by the caregivers) and the Venham Clinical Anxiety and Behavioral Scale (filled in by the medical staff), which were designed according to the content of the group, were used to know about changes in medical coping styles of group members



before and after the group activities, and to assess the effectiveness of the intervention.

### 3. Results

#### 3.1 Overall assessment of effectiveness

The results of the analysis showed that after the group activity intervention, the mean value of the post-test score of medical fear of the intervention group members was 17.86, which was significantly lower than the post-test score of the control group members ( $p < 0.05$ ), which means that after the intervention, the medical fear of the intervention group members was improved, and the degree of medical fear of the intervention group members was significantly lower than that of the control group. It can be seen that the group intervention is more effective in helping children to alleviate their fear of medical treatment.

Table 3 Posttest scores for medical fear in the intervention and control groups

	Group (mean ± standard deviation)		t	p
	Intervention group (n=7)	Control group (n=7)		
Children's Medical Fear Scale	17.86±2.85	23.71±2.81	-3.868	0.002**

\*  $p < 0.05$  \*\*  $p < 0.01$

#### 3.2 Evaluation of the intervention process

##### 3.2.1 Changes in medical perceptions

Medical cognitive change is mainly through the third and fourth theme activities to help group members to correctly understand the treatment modality and change the negative perception of medical treatment.

In the third thematic activity, study used the game to let the group members recognize the role of medical devices in role-playing, to promote the change of their understanding of the treatment modality, and to more accurately recognize the treatment modality to help the children to reduce the fear of medical devices and improve compliance. According to the observation, during the group activities, the group members' knowledge of treatment modalities changed, and they had a better understanding of the role of medical devices. During the role-playing process, the group members were more knowledgeable about the role and use of medical devices when they played the medical operation game, they were able to act like a little doctor, explaining the treatment modalities to their patients.

In the fourth thematic activity, the author used picture book reading to help the group members recognize surgery, understand the process of surgery, precautions and preparations to be made. Before and after the start of the group's activity, the study

prepared questions related to surgery to investigate the group members and assess the effectiveness of the activity and the change in the group's understanding of the treatment modality based on the comparison of the before and after results. According to the answers of the group members, they were divided into three categories: know, vague, and don't know, and the vague was classified as don't know in statistics, and the results of the pre and post-tests were analyzed by using the chi-square test.

Table 4 Pre- and post-test analysis of surgical preparation theme activities

Thematic	Pre-test and post-test	realize	I don't know.	$\chi^2$	p
surgical procedure	pre-testing	2	5	4.667	0.031*
	post-test	6	1		
preoperative examination	pre-testing	1	6	10.500	0.001**
	post-test	7	0		
surgical site	pre-testing	5	2	2.333	0.127
	post-test	7	0		
Contraindications to surgery	pre-testing	0	7	10.500	0.001**
	post-test	6	1		
Pre-operative preparation	pre-testing	1	6	7.143	0.008**
	post-test	6	1		

\* p<0.05 \*\* p<0.01

According to the results, it can be seen that the group members' knowledge of surgery-related knowledge other than «surgical part» has significantly improved. Based on the interviews, it can be seen that the group members are more aware of the part of the surgery that they need to undergo, but they do not know the specific surgical method. In addition, most of the group members changed from “don't know” or “not quite right” before the activity to “know” and can tell the relevant content after the activity. In the post-test, most of the children had knowledge related to surgical preparation, and those who knew about it in the pre-test were more motivated to participate in the activity, and their knowledge related to surgery was more thorough after participating in the activity, while those who did not know anything about it at all had a great improvement after the activity.

### 3.2.2 Changes in medical coping style

The data of the pre - and post-test questionnaires met the requirements of the parameter test, and the paired sample T-test in the parameter test was used to analyze the pre-test and post-test data. According to the analysis results , after the intervention, the children in the intervention group had reduced their scale scores and significantly improved their medical coping behaviors (p<0.05). Specifically, The reaction of the children in the face of medical equipment and medical staff showed significant positive changes. In addition, the anxious behavior of the children was also significantly reduced when facing the medical operation of the medical staff.

Table 5 Posttest scores for each scale at pre-test and post-test in the intervention group (n=7)

	Group (mean ± standard deviation)		t	p
	pre-testing	post-test		
Homemade Fear Questionnaire for Healthcare Professionals and Medical Devices	12.00±1.83	6.56±1.95	-2.375	0.018*
Venham Clinical Anxiety and Various Behavioral Levels Identification Scale	2.71±0.73	1.79±0.802	-2.941	0.012*

\* p<0.05 \*\* p<0.01

It can be seen that after participating in the group activities, the children's negative cognition of the treatment modality was improved, their understanding of the unknown surgery they were about to face was significantly improved, their negative medical coping behaviors were significantly improved, and their resistance behaviors were significantly reduced, and the medical social work had a significant effect on the children's cognition of the treatment modality and their medical coping behaviors.

#### 4. Discussion

The mean medical fear score of the children in the intervention group before the intervention was 32 points, and after the group's intervention, the medical fear was significantly alleviated, and there was a decrease of about 14 points at the end of the intervention compared to the pre-intervention score, and this difference was statistically significant ( $p=0.018<0.05$ ), and furthermore, at the end of the intervention group, the vast majority of the intervention group members were satisfied with the group and showed high ratings for themselves, the group, and the social worker, and expressed confidence in the treatment to come. In addition, both healthcare professionals and group caregivers were positive about the effectiveness of the group. We can conclude that the group intervention has a good effect on the alleviation of preoperative medical fear in children. However, it is worth pointing out that the author, influenced by practical factors, did not follow up the subsequent changes in the children's medical fear, so whether such changes can be maintained for a longer period of time needs to be further verified.

Group work has a positive impact on the amelioration of medical fear in children undergoing surgery. First of all, group social work can enhance the interaction between children and promote expression and communication. In this study, group work was conducted to intervene in the medical fear of surgical children because of the uniqueness of group work, in which the clients who participate in the group are guided by the social worker to interact with the group members in the group and grow and develop themselves in the guidance and interaction. Secondly, the group provides a platform for group members to interact with each other in which diversified activities promote group members' expression and strengthen their social support. In addition, group members have

different backgrounds from each other, and group members can have different emotional experiences during group interactions.

Secondly, this study combines painting, games, picture books and other forms of children's cognitive development with group social work, and social work concepts and techniques are used throughout the group, based on which a series of relaxing and enjoyable activities are carried out. Various activities in line with the characteristics of children's cognitive development can increase the children's motivation to participate in the group, thus facilitating the group's goal achievement.

This study shows that by participating in the intervention group, the medical fear of group members was significantly reduced, and their satisfaction with the group was higher, and the surgical children who participated in the group not only acquired more knowledge about medical behaviors, but their medical coping behaviors also gained positive changes, and they mastered some emotional regulation skills, and their medical fear was alleviated to a certain extent, which in turn had a positive impact on their recovery and treatment. This in turn had a positive impact on their recovery and treatment.

In this study, a group guided by cognitive-behavioral therapy was effective in increasing medical fear in children undergoing surgery and is generalizable, but there are some limitations to this study:

First of all, due to the epidemic, the group size needed to be controlled, in addition, and because of the physical condition of the group members and the arrangement of surgical preparations, the sample of this study is only seven children.

Secondly, the duration of this intervention was short, focusing only on pre-surgical fear, and the timeliness of the intervention effect needs to be further explored. Considering that the research subjects of this study are mainly non-operated children, and the intervention needs to be completed before the children's surgical treatment, the length of this group's intervention is one week. In addition, due to the impact of the epidemic, this study only focuses on the change of medical fear before the surgery, and the medical fear of the children affected by the surgery may rise again, so whether the changes brought by this intervention study for the children can be maintained for a longer period of time needs to be further verified. In addition, the medical behavioral cognition and medical coping behaviors acquired by the group members in the group need to be internalized by the service users in order to get the continuous retention of the service effect. At the end of the group activities, the medical fear has been obviously alleviated, and it still needs to be internalized by the group members themselves to become habitual behaviors, but due to the influence of various factors, it was not able to be continuously tracked after the intervention, which is also the shortcoming of the present intervention study. This is also a shortcoming of this intervention study.

In conclusion, this study believes that there is more room for medical social work to

grow in the area of practice-oriented interventions for children undergoing surgery. From the perspective of medical social work, are there other more appropriate interventions to alleviate the medical fears of children undergoing surgery? In terms of social work methods, which method is more advantageous in alleviating the medical fear of children undergoing surgery, casework or group work? Due to various factors, these questions were not explored and therefore are not presented in the paper, but they are worthy of further reflection and exploration.

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