

Evidence Based Care Journal

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The online version of this article can be found at
https://ebcj.mums.ac.ir/article_19503.html

Evidence Based Care Journal 2022 11: 48 originally published
online 10 January 2022

DOI: [10.22038/EBCJ.2022.60664.2578](https://doi.org/10.22038/EBCJ.2022.60664.2578)

Online ISSN: 2008-370X

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Effect of Pre-endoscopy Preparation Program on Children's Anxiety and Parental Satisfaction: A Clinical Trial Study

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Received: 11/10/2021

Accepted: 10/01/2022

Evidence Based Care Journal, 11 (4): 48-54

Abstract

Background: Gastrointestinal endoscopy is a useful diagnostic method in children. The level of anxiety in children is one of the important factors on the patient's acceptance of endoscopy.

Aim: This study aimed to investigate the effect of a pre-endoscopy preparation program on children's anxiety and parental satisfaction.

Method: This clinical trial study investigated 76 children aged 6 to 18 years and their parents referred to the endoscopy unit of Besat Hospital, Hamadan, Iran, in 2019. The patients were randomly assigned into two equal groups. The experimental group was trained using pamphlets and face-to-face training before endoscopy, and then the two groups were compared in terms of children's anxiety and parental satisfaction. The data were collected using the Demographic Information Questionnaire, Spielberger State-Trait Anxiety Inventory, and Parental Satisfaction Questionnaire.

Results: Before the intervention, the mean±SD values of the state anxiety in the experimental and control groups were 48.92±2.81 and 49.18±2.86, respectively, and it was statistically lower in the experimental group (P=0.042). Moreover, after the intervention, the mean±SD values of the trait anxiety in the experimental and control groups were 48.47±31.10 and 49.86±2.87, and there was no statistically significant difference between the two groups (P=0.339). Parents' satisfaction in the experimental group was higher than that in the control group, which was statistically significant (P<0.001).

Implications for Practice: The pre-endoscopy preparation program reduced the anxiety of the children. Findings can be utilized in planning to improve their parents' satisfaction.

Keywords: Anxiety, Children, Endoscopy, Gastrointestinal, Parents, Satisfaction

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Introduction

Advances in technology have made it possible to perform many invasive procedures in children. Most invasive procedures create painful and stressful experiences for children and their parents. For this reason, the mental readiness of the child and his family before performing the procedure is very important (1-3). Among the procedures used for children, upper gastrointestinal endoscopy is a useful method for diagnosing and treating gastrointestinal diseases. One of the most important factors influencing children's acceptance of endoscopy is their level of anxiety before the procedure (4,5). The results of a study indicate that the level of anxiety in children before endoscopy is moderate to severe (2). In one study, the level of anxiety in children before endoscopy was reported to be 80% (5). In another study, there was no relationship between anxiety in children before endoscopy and their personal, as well as underlying characteristics (6).

According to another study, factors such as age, gender, level of education, history of endoscopy, type of endoscopy, and the level of awareness of individuals affect the tolerance and anxiety of patients undergoing endoscopy (7). High levels of anxiety before endoscopy can lead to low patient acceptance, and as a result, failure to perform endoscopy or use of high doses of sedatives; moreover, it increases the risk of complications associated with these medications. When a child needs invasive medical procedures, such as gastrointestinal endoscopy, it may cause anxiety in the family, and such anxiety may increase with a lack of information or misconceptions (6).

One of the most important roles of pediatric nurses is to provide adequate information to patients about the nature, treatment, and prognosis of the disease, as well as the emotional and physical support of the child and his or her family when the child becomes ill and hospitalized. Accordingly, the family will need to receive adequate explanations about the procedure and their reciprocal duties as the child's family. Preparation of the child for the procedure will reduce his anxiety and also make him more cooperative; in addition, it creates a sense of dominance in him when confronted with a potentially stressful event (1,8).

The most important goal in caring for sick children is to treat or reduce the symptoms of the disease, which ultimately leads to parental satisfaction. Parental satisfaction has important consequences, such as better acceptance of the child's treatment regimen, and is considered an important factor in measuring the quality of health care services (2).

Adequate information of the child and his parents about endoscopy can create a positive experience and results for the child and his family (9). The findings of some studies have shown that teaching through brochures and pamphlets, as well as psychological preparation using visual images, reduces anxiety in patients and their parents (5,6,10,11). Previous research has shown that children need to be psychologically well-prepared before undergoing stressful medical procedures (2,12). Proper psychological preparation of the child before endoscopy and the child's understanding of the procedure reduces stress on both the child and parents. Previous studies have shown different results regarding the factors related to the anxiety of children undergoing endoscopy and their parents' satisfaction. Accordingly, this study aimed to investigate the effect of a preparation program on anxiety in children undergoing endoscopy and their parents' satisfaction.

Methods

This clinical trial study included 76 children aged 6 to 18 years, referred to the outpatient endoscopy unit of Besat Hospital, Hamadan, Iran, in 2020. They were then randomly divided into two equal control and intervention groups. The participants were selected by available methods due to the fact that pediatric endoscopy was performed in the endoscopy unit on Saturdays and Tuesdays. To prevent the publication of data from the experimental to the control group on the first of each week, a lottery was conducted for days to determine the experimental and control groups. The data were collected using the Child and Parent Demographic Information Questionnaire, the Spielberger State-Trait Anxiety Inventory STAI, and the Parental Satisfaction Questionnaire. The STAI consists of two separate sections for determining State and Trait anxiety. The first and second sections each include 20 statements to determine the State and Trait anxiety, respectively. The statements are rated on a 4-point Likert scale from 1 to 4. Higher scores indicate greater anxiety, and the total score of each section ranged from 20 to 80. Anxiety was finally categorized as mild (score of 20-39), moderate (score of 40-59), and severe (score of 60-80) (13). Based on the results of a study conducted by Spielberger et al., the internal consistency coefficients for the scale were obtained at 0.86-0.95.

Furthermore, the test-retest reliability coefficients were ranged from 0.65 to 0.75 over a two-month interval (13).

Considering 95% confidence intervals and 90% power test, and based on similar studies (8) sample size in each group was estimated at least 38 people.

The inclusion criteria included: 1) age of 6 to 18 years, 2) physician's prescription to perform the selected endoscopy of the upper gastrointestinal tract, and 3) no previous history of upper gastrointestinal tract endoscopy. On the other hand, the children with severe anxiety and fear, and those who canceled the endoscopy, and cases who did not complete the questionnaires were excluded from the study.

At the beginning of the study, the goals of the study and research methodology were explained by the researchers to the children and their parents, and informed consent was obtained from them. For the control group, the STAI was completed by the researcher's assistant 15 min before endoscopy based on children's responses. Furthermore, 15 min after the endoscopy, the parents' satisfaction questionnaire was completed by the parents of the children. The reliability of the instrument was obtained at 0.937 by calculating the internal consistency using Cronbach's alpha.

For the intervention group, STAI was initially completed based on the children's response by the researcher's assistant. Subsequently, before the endoscopy, the children and their parents were trained by the researcher in groups of 2-4. The training was about all the steps of endoscopy with color photographs, as well as simple and understandable explanations, according to the age of the children. They were allowed to see the endoscope room and the endoscopic device. The STAI was completed again by the researcher's assistant 15 min before endoscopy based on the children's answers. In addition, 15 min after the endoscopy, the parents' satisfaction questionnaire was completed by the parents of the children. Following that, the two groups were compared in terms of children's anxiety and parental satisfaction.

Parental satisfaction was determined using a researcher-made questionnaire based on similar studies (2,12,14). This questionnaire consisted of three domains of medical care (7 questions), nursing care (6 questions), and welfare services (3 questions). The scoring of the Parents' Satisfaction Questionnaire is in the form of a Likert scale from 0 to 4 in four domains. This questionnaire has four scores related to three domains and one score related to the total score. A linear conversion formula was employed to convert the scores of these domains, as well as the total score into a 0-100 scale. To assess the validity of the Parents' Satisfaction Questionnaire, content validity was used based on the opinions of the faculty members of Hamadan University of Medical Sciences, Hamadan, Iran. The final version of the instrument was completed by 20 patients, followed by the assessment of its internal reliability. Cronbach's alpha coefficient was determined at 0.86. The training was prepared using scientific and credible sources and included preparations before the procedure. All stages were explained before, during, and after endoscopy through color photographs, as well as simple and understandable explanations according to the age of the children. Their parents were allowed to see the endoscopy room, the endoscopy machine, and the monitor. In this study, quantitative and qualitative variables were described using mean \pm SD, as well as frequency and percentage, respectively.

All analyzes were performed using SPSS software (version 23) at a 95% confidence level. An independent t-test was utilized to compare the two groups in terms of quantitative demographic characteristics. Moreover, qualitative demographic characteristics and clinical variables were analyzed using the Chi-square and Fisher's exact tests (if necessary). These tests were also employed to compare the two groups in terms of state and trait anxiety levels. In addition, the comparison of the state and trait anxiety of each group with themselves before and after the training program was performed using the paired t-test. Furthermore, the comparison of the state and trait anxiety of children in the two groups and parental satisfaction at different levels of qualitative demographic characteristics was made through an independent t-test and analysis of variance. The relationship between quantitative demographic characteristics, as well as the level of state and trait anxiety in children and parental satisfaction, was assessed using the Pearson correlation coefficient.

Results

This study investigated a total of 76 children who were aged 6 to 18 years and divided into two equal

groups (Figure 1). Out of 38 children in each intervention and control group, 20 (52.60%) and 17 (44.74%) cases were male, respectively. The mean ages in the intervention and control groups were 10.60 ± 2.96 and 11.91 ± 2.73 years, respectively. There was no statistically significant difference between the two groups in terms of demographic characteristics ($P > 0.05$).

Regarding the state and trait anxiety before the intervention, both groups were at a moderate level, and there was no statistically significant difference between them ($P > 0.05$). After the intervention, state anxiety was statistically lower in the intervention group ($P = 0.046$). However, there was no statistically significant difference between the two groups in terms of trait anxiety after the intervention ($P = 0.639$; Tables 1 and 2).

Parents' satisfactions with medical care, nursing care, and welfare services, as well as their overall

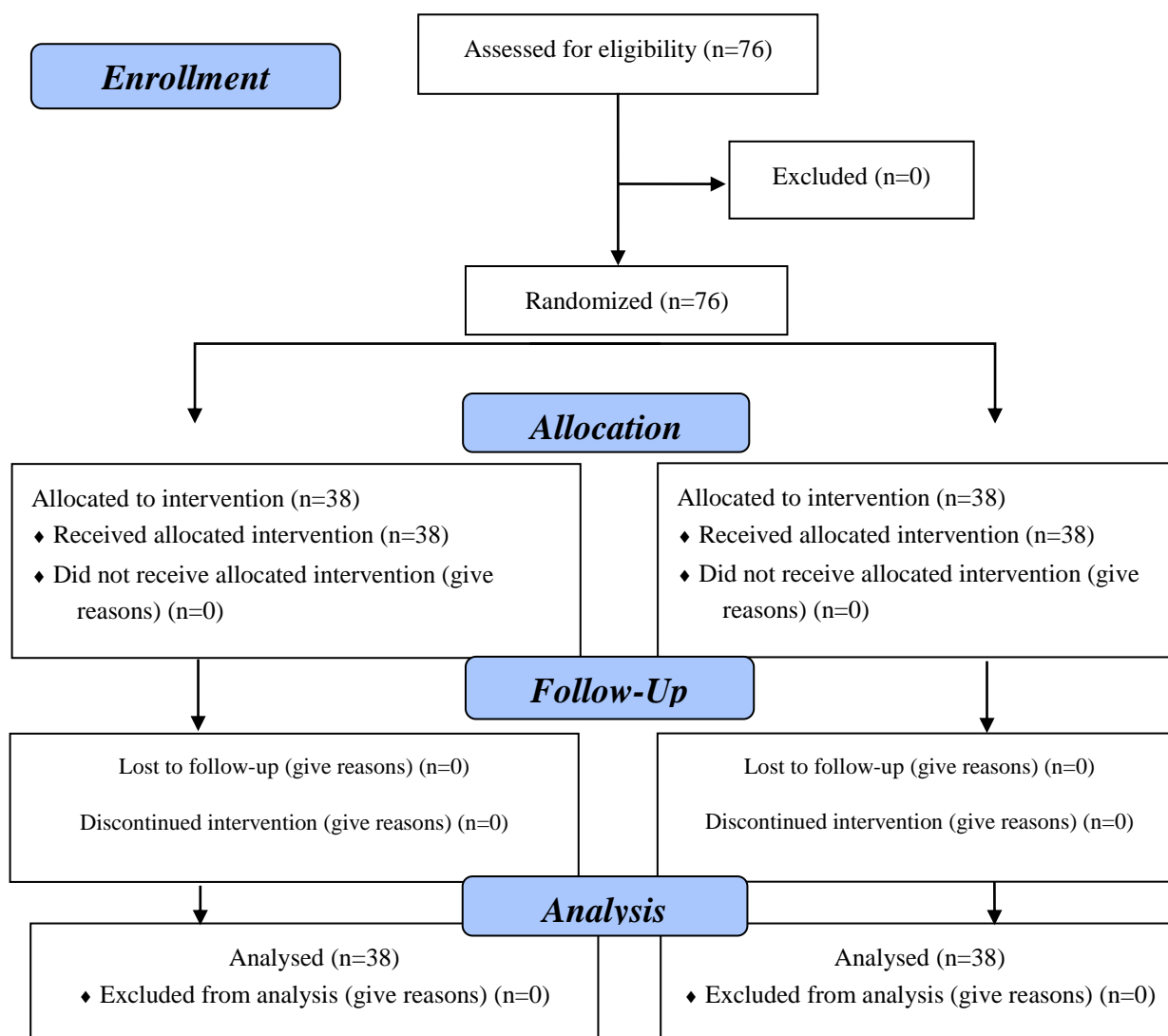


Figure 1. Research procedure diagram

Table 1. Comparison of the mean scores of children's trait anxiety before and after the preparation program

Measurement time point	Mean±SD		Independent t-test statistic
	Intervention N=38	Control N=38	
Before preparation	55.92±3.31	55.61±2.25	t =0.49, P=0.628
After preparation	55.11±2.05	55.93±2.77	t =0.47, P=0.639
Paired t-test statistic	t=1.20, P=0.239	t=1.38, P=0.177	

Table 2. Comparison of the mean scores of children's state anxiety before and after the preparation program

Measurement time point	Intervention N=38	Control N=38	Independent t-test statistic
	Mean±SD	Mean±SD	
Before preparation	48.92±2.81	49.18±2.86	t=0.41, P=0.687
After preparation	48.47±3.10	49.86±2.87	t=2.03, P=0.046
Paired t-test statistic	t=0.78, P=0.442	t=1.47, P=0.148	

Table 3. Comparison of parental satisfaction with the preparation program after endoscopy

Variables	Intervention N=38	Control N=38	Independent t-test statistic
	Mean±SD	Mean±SD	
Satisfaction with medical care	33.39±1.52	30.45±2.33	t=6.53, P<0.001
Satisfaction with nursing care	28.94±1.37	24.97±2.92	t=7.60, P<0.001
Satisfaction with welfare services	12±1.85	9.65±2.12	t=5.12, P<0.001
Total satisfaction	74.34±3.80	65.21±6.47	t=7.47, P<0.001

satisfaction, were higher in the intervention group, compared to the control group, which was statistically significant ($P<0.001$; Table 3). The results of the present study showed no statistically significant relationship between demographic characteristics and anxiety levels before and after endoscopy. Furthermore, there was no significant relationship between parental satisfaction and demographic characteristics, except for the father's occupation.

Discussion

The results of the present study showed a statistically significant difference between the two groups in terms of state anxiety after the intervention; however, there was no statistically significant difference between them regarding latent anxiety. In addition, the level of parental satisfaction with medical care, nursing care, and welfare services, as well as their overall satisfaction in the intervention group was higher than that in the control group. Outpatient invasive procedures for children are challenging due to the short-term contact with the child and his parents, as well as the lack of sufficient time to prepare them (1). Children and their parents should be allowed to ask questions about the child's disease, its treatment, and the procedures that are performed for the child (14).

Eman et al. (6) conducted a study in Egypt to reduce the level of anxiety in children undergoing endoscopy using a psychological preparation program (including introducing children to endoscopic devices and equipment, as well as using illustrated images of endoscopic procedures). The results showed a decrease in anxiety in the intervention group, compared to the control group. The findings were consistent with the results of the present study. Moreover, Volkan et al. (11) in Turkey performed a study to investigate the effect of basic education of children about endoscopy on anxiety and decreased salivary cortisol levels. The results indicated that the anxiety score; duration of relaxation, endoscopy, and recovery; Propofol dose; and cortisol level were significantly reduced in the intervention group after endoscopy.

Similarly, Fernandes et al. (15) revealed that children who received educational material before surgery had less anxiety than controls. According to the results of the studies, it can be concluded that anxiety in children is caused by the fear of facing the new environment, separation from parents, feeling suffocated, and fear of unpleasant accidents. Accordingly, educating children, familiarizing them with the working method, and creating opportunities to experience the procedure in a calm environment can reduce children's fears and anxiety. In a study performed by Felley et al. (16), there was no relationship between anxiety and patient awareness of the procedure. The reason for the difference in the results of the study may be attributed to the intervention methods and research samples.

In the same line, Hagiwara et al. (5) in Japan assessed parental anxiety about pediatric endoscopy, and the results showed that more than half of the parents were anxious about the procedure. In a study performed by Kose et al. (14), the effect of pre-endoscopic preparation using a cartoon show was investigated on children's fear and anxiety, as well as their parents' satisfaction in Turkey. The findings revealed no statistically significant difference between the two groups in terms of parental satisfaction; however, the anxiety of children in the intervention group was significantly reduced.

Additionally, Abdolfadi et al. (2) investigated the level of parental satisfaction with the nursing care of children under endoscopy in Sudan. According to the results, the parents were more satisfied in hospitals that were more prepared for medical services and care. Considering the similarity of the results of this study with the findings of other studies, it can be concluded that the preparation of the children and their parents before endoscopy reduces their anxiety, and the proper follow-up after the procedure ultimately leads to their satisfaction. Hospitals that are more prepared for medical services and care also get more parental satisfaction. Moreover, one of the reasons for increasing satisfaction can be the provision of correct information of the procedure to parents, thereby raising their awareness of endoscopy and its services, which increases parental satisfaction.

Implications for Practice

The results of the present study showed that the preparation program before endoscopy reduced the anxiety of the studied children and increased their parents' satisfaction. Therefore, it is recommended that children and their parents be adequately educated before performing invasive procedures on children.

Acknowledgments

This study was extracted from an MSc thesis in pediatric nursing that was approved by the Ethics Committee of Hamadan University of Medical Sciences, Hamadan, Iran (IR.UMSHA.REC1397.77) and was registered in the Iranian clinical trial registration database (IRCT2019022104272N1). The authors would like to thank all the children and their parents who participated in the study.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of the study.

Funding

None declared.

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