



Original Article

Comparing the effectiveness of therapeutic play and storytelling on preoperative anxiety in preschool-age children: a randomized controlled trial

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Abstract

Objectives: This study aimed to compare the effectiveness of storytelling and therapeutic play intervention on preoperative anxiety in preschool-age children at a general hospital.

Methods: This randomized clinical trial involved 102 children admitted for surgery who were randomly assigned to three groups. In terms of inclusion criteria, the first group received storytelling intervention, the second group received therapeutic play, and the control group received routine care from the operating room. Anxiety levels were recorded before and after the interventions based on the Observational Scale of Behavioral Distress-Revised. The data were analyzed using descriptive statistics, analysis of variance, and the Kruskal-Wallis test by using SPSS22 software.

Results: The mean age of the children was 59.75 months, and no significant difference was found between the three studied groups in terms of age ($p=0.176$); 74.7% of the children were boys and 25.3% were girls. Furthermore, a significant difference existed between the mean scores of anxieties before and after intervention in all three groups; thus, there was a 1.2-unit reduction in anxiety in the therapeutic play group ($p<0.001$), a 0.6 reduction in the storytelling group ($p=0.001$), and a 1.2-unit increase in the control group ($p<0.00$).

Conclusion: The results indicated that both therapeutic play and storytelling were effective in reducing preoperative anxiety in children; nevertheless, therapeutic play was more effective than storytelling. Healthcare providers can use play and storytelling interventions to reduce the anxiety of children and their families before surgery in healthcare centers.

Keywords: Therapeutic play; storytelling; preoperative anxiety; experimental; hospital; surgery.

Hospitalization is seen as an exceedingly distressing situation in a child's life, since it involves the deterioration of health conditions as well as displacement from family and social environments, which may result in alterations in the child's

development and long-term repercussions, including anxiety.

^[1] Anxiety disorders were found in 22% of the patients undergoing surgical operations. ^[2] Children have higher anxiety levels than adults due to their limited knowledge of the disease

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What is presently known on this subject?

- Current evidence highlights nonpharmacologic methods and an ordinary activity that is an important part of a child's life that helps children to cope with stressful and anxious conditions and express their concerns.

What does this article add to the existing knowledge?

- The results of this study show that both therapeutic play and storytelling techniques are effective in reducing preoperative anxiety in children. Therapy play was more effective than storytelling in reducing anxiety caused by surgery in children. Therapy play can be utilized as the priority, and storytelling can be employed as a complementary technique to mitigate the preoperative anxiety of children and their families.

What are the implications for practice?

- Nurses, physicians, and other healthcare providers in all health centers can employ storytelling and play therapy intervention as a chip and fun treatment to alleviate anxiety in children who are about to enter operating rooms. In fact, puppets and toys are more effective than short stories in reducing the anxiety of children and their families before surgery in the operating room at healthcare centers.

and its nature and the requirement of surgery as a treatment when confronted with a situation that is new to them and seeing strange medical devices and

Since children have fewer adaptive mechanisms to remove tensions, they are more susceptible to encountering stressful conditions. How children react to such crises is influenced by age, previous disease experience, isolation or hospitalization, adaptive skills, illness intensity, and existing support system.^[5] Children under anesthesia and surgery show preoperative fear and anxiety during induction of anesthesia, and this anxiety may interfere with the normal process of anesthesia and even reduce the percentage of oxygen saturation during surgery.^[6] A study on behavioral symptoms of children in different shifts, including 69 elementary-school hospitalized children, which was conducted in Canada, found that stress in children manifests as crying (94.8%), irritability (62%), anger and aggression (60%), decreased concentration (37.3%), sleep disorders (80%), enuresis (41%), depression (41%), and headache (31%).^[7] Since the primary goal of the preoperative period is to enhance patients' physical and mental health, numerous strategies are employed to prevent the negative impact of fear and anxiety induced by the hospitalization of children.^[8] In this context, nurses can utilize these techniques to assist children who have been accustomed to fear and anxiety sources during hospitalization.^[9] To alleviate preoperative anxiety, therapeutic techniques such as pharmacologic (sedative) and non-pharmacologic (parental presence, preoperative behavioral preparation programs, music therapy, acupuncture, coping strategies, playing with familiar toys, watching movies, and storytelling) are used. However, due to the adverse effects of pharmacologic interventions, nonpharmacologic methods, particularly preparation techniques, are preferred.^[10]

These techniques have garnered a lot of attention from nursing care programs, and patients seem to benefit from these methods as well. Furthermore, these interventions are effective, simple, and safe, requiring no specific time or expensive equipment.^[11] Playing, as a nonpharmacologic strategy and a

common activity that is a vital part of a child's life and development, helps children in coping with stressful and uncomfortable situations and in expressing their concerns.^[12] Therapeutic play has been shown by international studies to be beneficial in relieving anxiety before surgery in both children and parents, as well as an emotional intervention in reducing negative emotional expressions of postoperative pain in children undergoing surgery.^[13] Moreover, playing with puppets allows children to express their concerns and fears, for instance, interpreting the surgery as a form of punishment, and a sense of inability to cope with the disease, hospitalization, and surgery. These interventions encourage children to learn through play and to participate in health-promoting educational strategies. Playing with puppets before the surgery is a professional approach that has been shown to lessen anxiety in children.^[14–16] Another nonpharmacologic way for reducing preoperative anxiety in children is storytelling. Children like stories and enjoy them. Storytelling is a unique technique among language and literature categories, which has not been superseded by any other method.^[17] A study on aggressive children found that storytelling helped improve social skills by allowing children to imagine themselves as story characters and learn problem-solving strategies.^[16] Ebadinejad and colleagues were able to reduce anxiety in preschool-age children by using storytelling.^[18] Hakim and colleagues carried out a randomized clinical trial study on storytelling and anxiety in children, aged 4–7 years old, in hospitals and found the effectiveness of storytelling in reducing the anxiety of hospitalized children.^[19] There have been few studies on therapeutic play or storytelling, and none of them have compared the effects of therapeutic play and storytelling on preoperative anxiety in preschool-aged children. Therefore, this study compared the effects of therapeutic play and storytelling on preoperative anxiety in children living in Ahvaz, Iran. The goal of this comparison was to determine the most effective and beneficial way as an economical and safe nonpharmacologic treatment that can highly be applied in wider scopes of hospitals and healthcare centers for children to alleviate their preoperative anxieties.

Materials and Method

Study design

This research was a randomized controlled trial with pretest and posttest of two experimental groups and a control group. Furthermore, this study was performed to compare the effect of storytelling and therapeutic play on preoperative anxiety among preschool-age children (3–6 years old) who were referred to Golestan Hospital of Ahvaz City, Iran. The design of this study was approved by the Ethics Committee of Ahvaz Jundishapur University of Medical Sciences (Ref No: IR.AJUMS.REC.1399.104); moreover, the CONSORT flowchart was plotted to indicate the direction of the research (Fig. 1). This study has been approved by the Iranian Register of Clinical Trials (IRCT) with the number: IRCT20181210041915N3. Date of registration: 19/12/2020.

Population and sampling

The sample size was calculated using the following formula

$$N = \frac{(Z_1 - \alpha/2 + Z_\beta) + (SD_1 + SD_2)}{2(\mu_1 - \mu_2)}$$

Here, $\mu_1=9.8$, $\mu_2=8.1$, $\alpha=0.05 \rightarrow Z_{1-\alpha/2}=1.96$, $\beta=0.1 \rightarrow Z_\beta=1.285$, $SD_1=2.64$, $SD_2=1.41$.

The research population comprised children who were candidates for surgery, and the sample was composed of 99 out of 102 eligible children referred to the operation room of Golestan Hospital for elective surgery. After entering the operation room, the children were randomly assigned to one of the interventions, such as storytelling, the therapeutic play of routine care.

In the random assignment, when a child underwent the surgery, a random number was selected; if the unit number of the selected figure ended with 1, 2, and 3, then the child was assigned to the first intervention group (storytelling); if it ended with 4, 5, and 6, then the child was assigned to the second intervention group (therapeutic play); and if it ended with 7, 8, and 9, then the child was assigned to routine treatment groups (control). If the selected number ended with 0, another number was chosen from the random number table. Accordingly, 34 subjects were assigned to each group. The blinding method was not employed in this research.

Inclusion/Exclusion criteria

The inclusion criteria were as follows: parents' consent for participation in the study, the mental health of the child and lack of psychological disorders, nonadmission or surgery over the past 12 months, and no concomitant pharmacologic treatment. If the children did not pay attention to the story or played for less than 20 min, they were excluded from the study.

Data collection instruments

In this study, we used the Observational Scale of Behavioral Distress-Revised (OSBD-R) for assessing the children's anxiety. Any observed behavior obtained a score of 0.5, and nonobserved behavior obtained 0. A sum of scores (1 and less) of no anxiety (1.5–2), mild anxiety (2.5–3), moderate anxiety (3.5–4), and severe anxiety (3.5–4) was considered.^[20] Sadat Hosein and colleagues approved the content validity of OSBD-R based on the opinions of 12 faculty members of the Tehran University of Medical Science. The reliability of the instrument was estimated at 70%, based on Cronbach's alpha coefficient.^[21]

Intervention/treatment

Before going to the operation room, all three groups were evaluated and scored in terms of anxiety and demographic traits using relevant questionnaires. After the intervention, the children were evaluated and scored using the OSBD-R.

Finally, scores given to anxiety within two steps before and after intervention were compared to measure the minimum and maximum (0–4) scores of each participant. Any observed behavior obtained a score of 0.5, and nonobserved behavior obtained 0. The first experimental group received a storytelling intervention. At the entrance time when the child was sitting on the wheelchair or trolley, some short stories, such as Hassani's story (a famous and popular story in Iranian folklore literature), with attractive and colorful images were selected for children to convey educational, health, nutritional, social rules, and regulation messages. These books were read by the author in the presence of parents, and if children were not satisfied, the books were given to parents to read to children. This intervention continued for 20 min under the supervision of the researcher.

The second intervention group received therapeutic play. When the child entered the operating room on a trolley or wheelchair, some toys were given to the children (puppets, kitchen accessories, or home budding parts, weapons, and home-building sets) and they were allowed to choose their favorite toys and play with them. This intervention was continued for 20 min under the supervision of the researcher. Three children were excluded from therapeutic play if they lost their attention to our intervention. The control group received the common protocol of the hospital. In this protocol in the triage room and on the trolley, the safe anesthesia equipment was used under the supervision of an anesthesiologist to prescribe midazolam. If the child did not calm down, an appropriate dose of sodium thiopental was used to sedate restless children. Parents of those children who did not need any sedative were allowed to be with their children, and sometimes one of the caregivers, including an anesthesiologist or operating room specialist could stay with the child. To observe ethical principles, subjects who were not able to provide consent were excluded from the study, and parents were ensured that there would not be any disturbance in the treatment procedure of their children if they did not want to participate in this study.

Ethical dimensions of the study

Note that in this study, we explained clearly about objectives and consequences of intervention and the anonymity of data; furthermore, informed consent was obtained from legal guardians/parents of the participants. Moreover, this study was performed according to the declaration of Helsinki and was approved by the Biomedical Ethics Committee of the Ahvaz Jundishapur University of Medical University (Reference Number: IR.AJUMS.REC.1399.104). It was performed as a clinical trial (code: IRCT20181210041915N3).

Analysis of the data

The data were analyzed using SPSS for Windows, Version 16.0 software (SPSS Inc., Chicago, IL, USA), and descriptive and inferential statistics were produced. The normal distribution was evaluated using the one-sample Kolmogorov-Smirnov test,

Table 1. The mean and standard deviation of age (based on month) of studied subjects in three different groups (n=99)

Group	N	Mean±SD	Min	Max	Test	P-value
Therapeutic play	31	62.52±10.165	36	72	1.770	0.176
Storytelling	34	59.56±9.777	43	72		
Control	34	57.41±12.621	32	71		
Total	99	59.75±11.036	32	72		

Table 2. Frequency distribution and percent in different groups based on gender (n=99) groups (n=99)

Groups	Gender			Test statistic	P-value
	Male Frequency (percent)	Female Frequency (percent)	Total Frequency (percent)		
Therapeutic play	22(71)	9(29)	31(100)	8.133	0.017
Storytelling	21(61.8)	13(38.2)	34(100)		
Control	31(91.2)	3(8.8)	34(100)		
Total	74(74.7)	25(25.3)	99(100)		

and since the significance values were <0.05 , nonparametric tests were used for advanced analysis. Furthermore, descriptive statistics (percentage, mean, SD, minimum, and maximum) were used to analyze the demographic characteristics of the students. Analysis of variance (ANOVA), Kruskal–Wallis test, and pairwise comparisons were used at the significant level of 0.05.

Results

Of the 102 studied children, 99 participated in the posttest, including 31 in the therapeutic play group, 34 in the storytelling group, and 34 in the control group. Finally, the relevant data were analyzed. Table 1 reports the difference between the age averages of subjects in three groups. According to the obtained p-value, findings indicate that all three groups were

homogenous regarding their age, so there was not any significant difference between them in terms of age (Table 1).

According to Table 2, the Chi-square test was used to examine the relationship between gender and group. Results showed different gender distributions in the studied groups ($p=0.017$). The number of boys was significantly greater than girls. The results of the Kolmogorov–Smirnov test as well as the Shapiro–Wilk test, which is used to assess the normal distribution of anxiety scores, indicated that this variable does not follow normal distribution before and after the intervention. Therefore, the Kruskal–Wallis test, which is a nonparametric test of ANOVA was used to examine the association between scores of anxiety (before and after intervention) and group (mean score differences of anxiety between three groups of therapeutic play, storytelling, and control) (Table 3).

According to the results of the Kruskal–Wallis test in Table 4

Table 3. Comparison between the mean and standard deviation of anxiety score before and after intervention in three studied groups (n=99)

		N	Mean±SD	Min	Max	Test statistic	P-value
Anxiety score after intervention	Therapeutic play	31	2.77±1.17	0	4	27.81	<0.001
	Storytelling	34	2.25±1.18	0	4		
	Control	34	1.04±1.17	0	4		
Anxiety score before intervention	Therapeutic play	31	1.50±1.37	0	4	6.053	0.048
	Storytelling	34	1.62±1.38	0	4		
	Control	34	2.20±1.15	0	4		

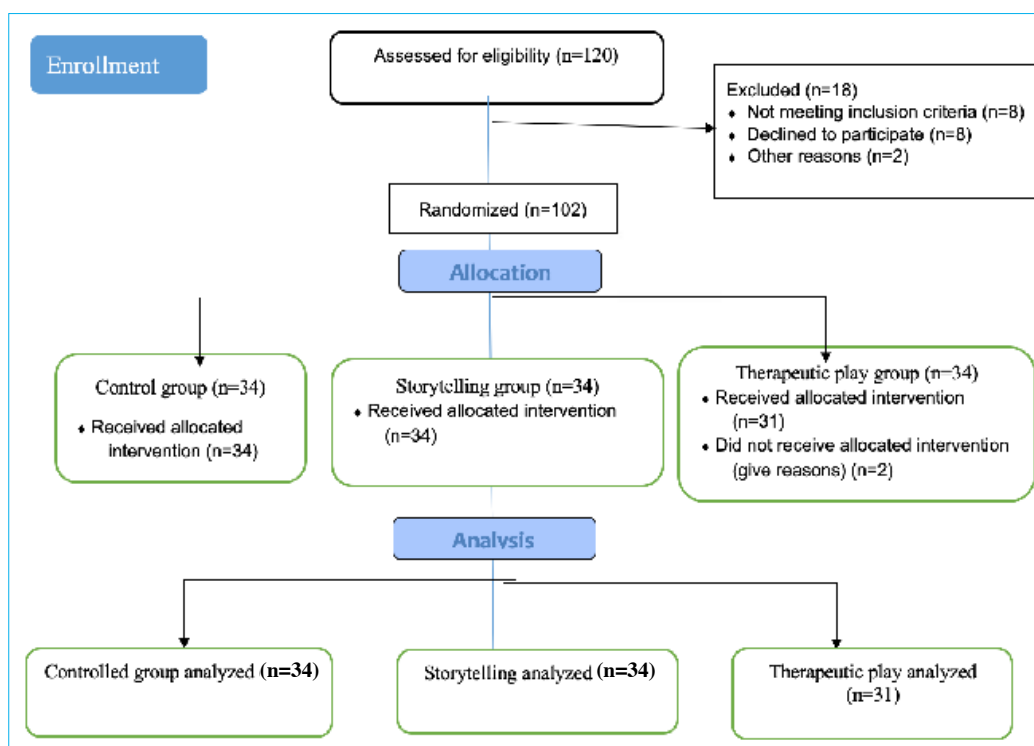


Figure 1. Flow diagram of recruitment and retention of participants in the study based on CONSORT-2010

and Figure 2, the mean score of anxiety in the three groups was different before and after the intervention. The findings indicated that the pretest anxiety score in the control group was significantly smaller than the two experimental groups

($p < 0.001$). However, the posttest anxiety score of the two experimental groups was highly reduced after the intervention, whereas this score experienced an increase in the control group ($p = 0.048$).

Table 4. Difference between anxiety levels before and after intervention based on the study groups (n=99)					
Group		Anxiety before intervention	Anxiety after intervention	Test statistic	p-value
Therapeutic play	No anxiety	4(12.9)	17(54.8)	-4.10	<0.001
	Mild	5(16.1)	6(19.4)		
	Moderate	9(29.0)	2(6.5)		
	Severe	13(41.9)	6(19.4)		
Storytelling	No anxiety	7(20.6)	16(47.1)	-2.94	0.003
	Mild	11(32.4)	6(17.6)		
	Moderate	7(20.6)	6(17.6)		
	Severe	9(26.5)	6(17.6)		
Control	No anxiety	23(67.3)	7(20.6)	-3.88	<0.001
	Mild	5(14.7)	11(32.4)		
	Moderate	3(8.8)	8(23.5)		
	Severe	3(8.8)	8(23.5)		
Total	No anxiety	34(34.3)	40(40.4)	-1.49	0.136
	Mild	21(21.2)	23(23.2)		
	Moderate	19(19.2)	16(16.2)		
	Severe	25(25.3)	20(20.2)		

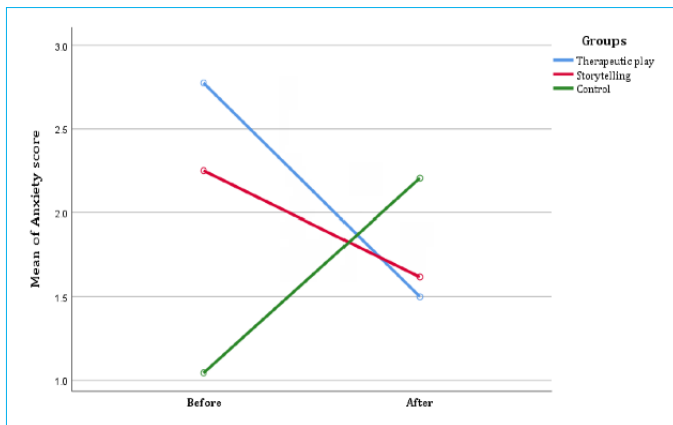


Figure 2. Comparison between mean scores of anxieties before and after intervention in three different groups

According to findings obtained from the Wilcoxon test in Table 5 and Figure 3, the anxiety level was reduced after intervention in two intervention groups including therapeutic play ($p < 0.001$) and storytelling ($p = 0.003$) groups while anxiety level was significantly increased in the control group ($p < 0.001$). Based on Table 5, the difference between mean

scores of anxieties before and after intervention based on gender was not significant. This assessment was done using an independent t-test.

Discussion

This study aimed to compare the effectiveness of therapeutic play and storytelling on preoperative anxiety in preschool-aged children (3–6 years old). Results revealed that there was an almost 6.0-unit decline in anxiety in the storytelling group. This finding was in line with results obtained by Altay et al.^[22] who proved that drawing, writing, and storytelling technique could reduce the anxiety level of children undergoing treatment. In this case, Ebadinejad explained that storytelling could decrease the anxiety of children.^[18] These results are matched with findings of studies on the effectiveness of storytelling in reducing anxiety and concerns of children about dentistry, medical environments, and any other cases. Ajorloo et al.^[23] used storytelling to mitigate concerns among hospitalized children and showed how storytelling could reduce some feelings, such as fear and sadness among hospitalized children. The finding of this study was in line with the research

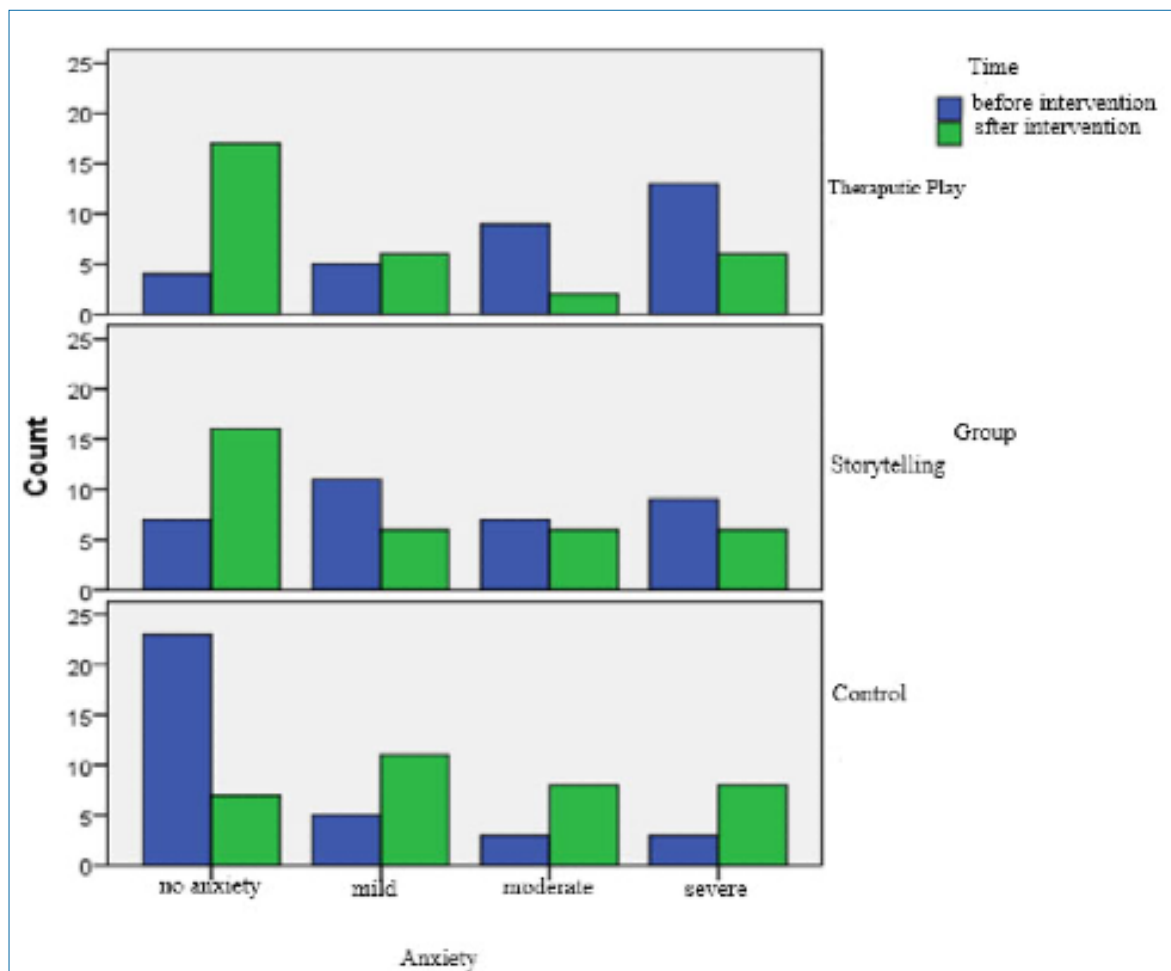


Figure 3. Comparison of anxiety level before and after intervention in three studied groups

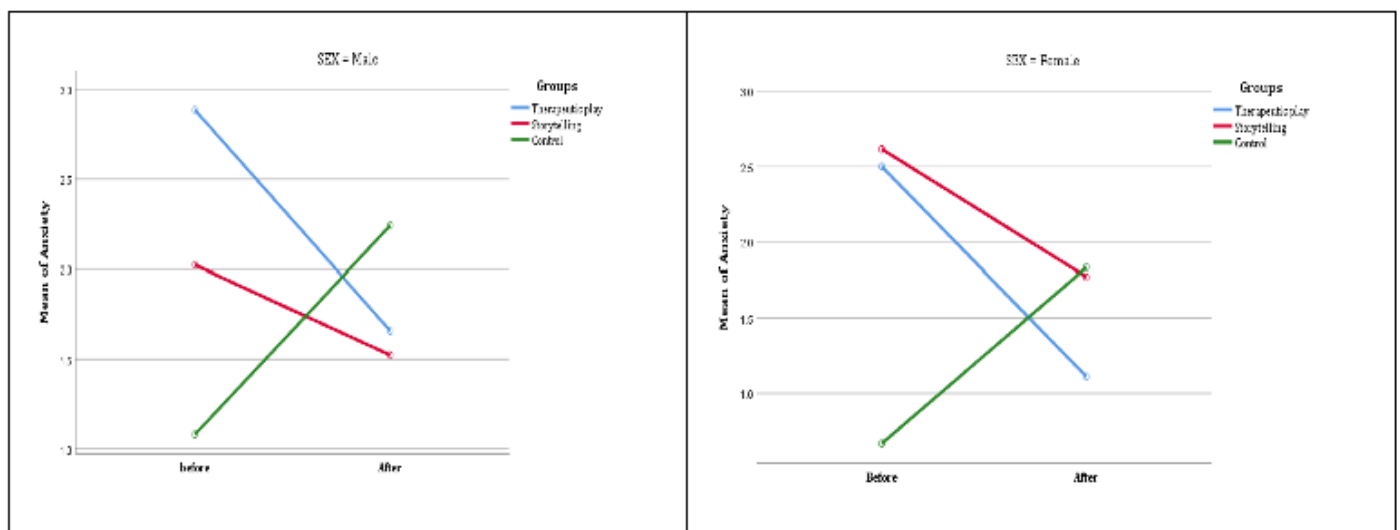
Table 5. The mean and standard deviation of anxiety based on gender before and after of intervention (n=99)

Variable	Gender	N	Mean±SD	Test Statistic	P-value
Anxiety score before intervention	Male	74	1.88 ± 1.43	-1.44	0.153
	Female	25	2.34 ± 1.16		
Anxiety score after intervention	Male	74	1.86 ± 1.34	1.06	0.254
	Female	25	1.54 ± 1.29		

performed by Hakim and her colleagues who examined the impact of storytelling on the anxiety of hospitalized children.^[19] Shahabizadeh and Khaje Aminian studied the effectiveness of narrative therapy based on the cognitive-behavioral perspective on the reduction of generalized and social anxiety, which this reduction is the common point between these two studies.^[24] Alavian and colleagues proved the effectiveness of therapeutic play in decreasing depression and anxiety in children as well as improving parent-child relationships.^[25] According to the obtained results, there was a 2.1-unit reduction in anxiety among subjects in the therapeutic playgroup. This finding was in line with results obtained by Asghari et al.^[26] who examined the effects of structured cognitive-behavioral group therapeutic play on anxiety and depression in children with cancer. Furthermore, Adamson emphasized the effectiveness of therapeutic play in improving mental health and reducing the anxiety of children with cancer.^[27] The finding of the abovementioned study highly concurs with the results of the present research. However, these results were not matched with findings obtained by Aghaei et al.^[28] who examined the effect of group therapeutic play on a certain apprehension of children aged 2–11 years and by McGive who studied group play therapy, behavioral and emotional problems, and self-control among children.^[29] Such mismatch may stem from the different interventions and plays used in the abovementioned

studied in which painting therapy had been used as a kind of therapeutic play, whereas puppets and toys were used in the present paper to reduce the anxiety of children.

According to the comparison between the impacts of storytelling and therapeutic play on the preoperative anxiety level of preschool-age children, there was a reduction in anxiety scores in the two groups of therapeutic play and storytelling, whereas this score was increased in the control group. These differences were significant. Results reveal that anxiety has decreased in both intervention groups; however, this decreasing trend has been more considerable and effective among children of the therapeutic playgroup. Shojaee and their colleagues conducted a comparative study on the impacts of therapeutic play and storytelling on the reduction of anxiety in children and explained that storytelling and therapeutic play both could be used as a treatment to reduce anxiety and depression in children. However, therapeutic play was more effective than storytelling in reducing anxiety and depression symptoms. This study was in line with the present paper.^[30] Garcia et al.^[31] carried out a clinical trial in Spain to examine the reduction of preoperative anxiety in children using non-pharmacological techniques. They concluded that costumes, games, magic tricks, and jokes are associated with a reduction in levels of anxiety in children who are about to undergo a programmed surgery and these interventions show similar

**Figure 4.** Comparison between mean scores of anxieties before and after intervention in three different groups based on gender

efficacy in both genders. Hence, the results of these studies indicate that those children who receive such therapies (therapeutic play and storytelling) have experienced less anxiety after the intervention. Therefore, it is recommended to use such therapies considering their advantages in children to reduce their anxiety.

Limitations of the study

The small sample size of this study can limit its generalizability of this study. Moreover, the COVID-19 pandemic at this time period may have added to the anxiety in the children, and the situation has affected some hospital treatment protocols, which may limit the generalizability of the study.

Conclusion

Finally, it can be concluded that both therapeutic play and storytelling techniques are effective in reducing preoperative anxiety in children. The results of this study show that therapeutic play was more effective than storytelling in reducing the anxiety of children. Therefore, therapeutic play can be used as the priority, and then, storytelling can be employed as a complementary technique to mitigate the preoperative anxiety of children and their families. Regarding the short history of storytelling and therapeutic play as treatments, further studies should be conducted to evaluate the effects of these methods, especially when these techniques are employed for children.

The strength point of this study was reminding nurses of children's wards that storytelling and therapeutic play can be used besides other treatments to reduce anxiety caused by surgery in children. The low number of samples can be mentioned as a constraint in this study, which could generalize results to a problematic case; however, this was outside the authority of the researcher.

Abbreviations

ANOVA: analysis of variance; OSBD-R: Observational Scale of Behavioral Distress—Revised SPSS: Statistical Package for the Social Science, WHO: World Health Organization.

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