



## Effects of Singing Songs about Preoperative Care for Tonsillectomy on the Anxiety of Children Undergoing Tonsillectomy

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### Abstract

**Introduction:** Surgery creates anxiety for children, whose control and reduction are among the objectives of nursing care. Nurses have always sought scientific evidence for the use of innovative techniques appropriate for the level of understanding, recognition, and need of children, such as the use of poetry to reduce children's anxiety. Therefore, the present study aimed to investigate the effects singing songs about preoperative care for tonsillectomy on the anxiety of children undergoing tonsillectomy.

**Method:** This quasi-experimental non-random study recruited 76 children aged 7-12 years old presenting to the hospital for tonsillectomy were selected with a convenience sampling method. In addition to the routine care, some songs were sung to children in the intervention group about pre- and post-operative procedures before, on the day of, and after the surgery. Hamilton Anxiety Rating Scale (HAM-A) was filled out before and after the surgery and on the day of discharge in the intervention and control groups in order to measure children's anxiety. Data were analyzed in SPSS software using Chi-square, Mann-Whitney, and Fisher's exact tests.

**Results:** The results showed that the mean and standard deviation of anxiety in both groups (control=19.57 ± 3.65; intervention=19.78 ± 4.87) were not significantly different before the intervention (P=0.48), while a significant difference (P<0.001) was observed on the day of surgery between the two groups (control=34.28 ± 5.68; intervention=26.97 ± 4.6).

**Conclusion:** Nurses can sing songs about pre- and post-operative procedures as an easy, inexpensive way appropriate for children's level of development to reduce their anxiety. Furthermore, the family's engagement in pre-operative training in an innovative manner can be a step forward in the development of family-based care.

**Keywords:** Anxiety, Singing, Tonsillectomy, Children

### Introduction

As a common feeling in children during the pre-operative period, anxiety incurs harmful effects on the children's body and mind, causes negative behaviors, and increases pain scores after surgery [1,2]. Anxiety causes children to resist against and not to cooperate in the pre- and post-operative care [3,4]. Therefore, reducing child anxiety is one of the important nursing tasks. One way to reduce anxiety in children is their physical, emotional and cognitive preparation before performing care procedures [5,6]. Research suggests that informing children and trying to reduce anxiety and fear of surgery results in better adaptation to the care and treatment process such that the proper pre-operative preparation of children reduces anxiety and creates a better memory of the surgery and leads to faster recovery after the surgery [5,7,8]. There is little clinical evidence about the effectiveness of preparing children for care and treatment procedures using joyful, innovative, artistic and creative practices although they are welcomed by nurses [5,7,8]. Meanwhile, singing can be effective in reducing

children's anxiety as it is desirable for them, is appropriate for their cognitive, growth, and mental development needs, and creates a cheerful environment for them [9]. Singing has proved effective due to its systematic and artistic nature in transmitting educational messages especially in children; therefore, training through singing has a great effectiveness [10-13]. Singing is a verbal art, and if it is beautiful, it can attract the audience and become a good tool for training [1]. Several studies have applied singing for changing students' irrational beliefs, decreasing post-traumatic anxiety, decreasing children's aggression, boosting the immune system, and increasing the self-esteem of children and have proved its efficacy; hence it is considered a way to influence the psychological behaviors of children [14-19]. Singing is suggested for teaching especially in children, which may affect their psychological state, too [20,21]. The aim of this study was to integrate the two functions of singing (educational and psychological) and investigate the effect of familiarization with pre- and post-operative care procedures through singing on the anxiety of children undergoing tonsillectomy.

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## Materials and Method

The present study was a non-randomized, quasi-experimental study, with intervention and control groups, conducted on 76 children aged 7-12, who were candidates of tonsillectomy at ENT clinic of Imam Khomeini Hospital in Tehran, Iran. The participants were selected by convenience method and were non-randomly divided into intervention (n=38) and control (n=38) groups. In order to prevent the effect of the intervention on the control group, subjects in the control and intervention groups were in separate rooms, and given the short duration of hospitalization prior to surgery, the two groups did not actually interact or exchange any information. The inclusion criteria were being 7-12 years old, tonsillectomy being their first surgery experience, no underlying diseases, no history of psychological illness, experiencing no other crises in the last six months, no hearing disorders, no mental retardation, and obtaining a HAM-A score above 17. The inclusion criteria regarding the children's mothers were being able to hear and speak, being literate, and having no history of psychological illnesses. The exclusion criteria were changes in the process of child care and treatment, and parents' or children's failure to cooperate.

The age group of 7-12 years old was selected due to the prevalence of tonsillectomy and also the better ability of measuring anxiety in this age group. However, the main reason for selecting this group was their ignored need of a happy environment and training through playing.

### Data collection tool

In this study, a demographic questionnaire was used to collect the demographic data of the subjects and their mothers. The face validity of this researcher-made questionnaire was confirmed by ten faculty members of universities of medical sciences in Iran. The reliability of the questionnaire was confirmed by test-re-test method resulting in a 100% correlation.

The Hamilton Anxiety Rating Scale (HAM-A) was used to assess children's anxiety. HAM-A was filled out by the researcher through interviewing the child and the parents simultaneously, on the day of admission to the clinic, before the surgery and on the discharge day. On the day after the surgery, questions were only asked of mothers because the children were ill. HAM-A has 14 components, each covering a set of symptoms. Each of these components is scored from 0 (no symptoms) to 4 (very severe). The overall score ranges from 0-56. A score of 0-17 indicates mild anxiety, 18-24 indicates moderate anxiety, 25-30 indicates severe anxiety, and a score above 30 indicates extremely severe anxiety. Several studies have reported the validity of this test in Iran as 0.84, including Gharayi & Tashakkori, and Arabgol & Panaghi [7]. The reliability of this test was confirmed in the present study by Cronbach's alpha method (0.754). HAM-A was filled out by the researcher in four phases. First, it was filled out in the clinic for enrolling the subjects, then on the day before the operation and after the intervention, then on the day of operation, and finally on the day of discharge from the hospital. HAM-A was not filled out after admitting the subjects and before the intervention, which can be considered a limitation of the study. The reason for this limitation was that we could not complete the questionnaire before the intervention because the child was admitted in the afternoon of the day before the surgery and, upon admission; the intervention had to be started because care and interventions such as venipuncture, the onset of intravenous nutrition, and fasting for the surgery would start immediately. As a result, there was practically not much time before the intervention to complete HAM-A. Furthermore, frequent filling of the questionnaire would result in fatigue and familiarity of the subjects and their parents, which would undermine the accuracy of the findings.

## Ethical considerations

First, the Joint Ethics Committee of the Faculty of Nursing and Midwifery of Tehran University of Medical Sciences approved the study (IR.TUMS.FNM.REC.1396.2207), and it was registered in IRCT (201708285163N5). Then, necessary permissions were obtained for sampling, and the researcher visited the ENT clinic of Imam Khomeini Hospital in Tehran. After examining the children by a physician and scheduling an appointment for surgery, the researcher performed sampling by introducing themselves to the subjects, obtaining written consent from the children's parents, and oral consent from the children. First, the demographic questionnaire and then HAM-A were completed by the researcher, and the children entered the study according to the inclusion criteria.

## Preparation of the familiarization songs booklet

Using reliable textbooks and articles, the contents and subjects needed for the song booklet were collected for pre- and post-operative preparation. The subjects and scientific accuracy of the collected materials for writing the songs were approved by three faculty members of the School of Nursing and Midwifery of Tehran University of Medical Sciences. Then the songs were written by the researchers and were approved by three specialists in children's poetry in terms of observing the rhyme and rhythm rules of poetry. The songs were then compiled in a booklet. They were also sung by the researcher in a studio and recorded as a digital file.

## Intervention

The control group received the routine intervention of the ward, which included an educational pamphlet and the nurses' explanation about the pamphlet for the child and the family on the day before the operation. Everything was the same for the two groups except for singing. In addition to the routine care, the intervention group received a booklet including information on the method of and need for venipuncture, pre- and post-operative preparation for tonsillectomy, the concept of the operating room and its environment, and anesthesia in form of songs on the day before the surgery. First, the researcher sang the songs for the children. Then the mothers sang the songs for the children during the transfer of the child to the operating room and at the time of the child's presence in the ward after the surgery or whenever the child requested. HAM-A was completed through interviews with children and their mothers by the researcher at the time of sampling (for the inclusion of subjects with an anxiety score of above 17), the night before surgery, after surgery (after recovery and start of feeding) and on the day of discharge (the day after the surgery).

Data were analyzed in SPSS-16 software using Chi-square for child gender, Mann-Whitney for anxiety score, Fisher's exact test for literacy of mothers and children's rank of birth and Friedman test for intra-group comparison of anxiety score. It should be noted that the electronic file was provided to both groups in order to observe ethical considerations. In addition, according to the positive results, the file was provided to the ward for use in familiarizing children with tonsillectomy procedures.

## Results

The mean age of the subjects was  $8.63 \pm 1.69$  in the control group and  $8.42 \pm 1.67$  in the intervention group. The analysis revealed that the two groups did not have a significant difference in demographic characteristics and anxiety scores in the time of sample collection (Table 1).

The results of the comparison of the anxiety level by the Mann-Whitney test indicated that the anxiety level of the intervention group in all phases was significantly lower than that of the control group. Although Friedman's test in intra-group comparison showed that anxiety level decreased in both groups, this level was significantly



lower in the intervention group (Table 2). Comparison of mean anxiety differences showed that there was a significant difference between the day before surgery and the day of surgery, the day before surgery and the day of discharge, and the day of surgery and the day of

discharge in the intervention group, while there was no significant difference in the control group between the day before surgery and the day of discharge (Table 3).

Variable	control		Intervention		statistics	
	No	Percent	No	Percent		
Gender	Male	21	55.30%	18	47.40%	Chi-squared test: P=0.49
	Female	17	44.70%	20	52.26%	
Mother's Literacy	School	21	55.30%	16	42.10%	Fisher's exact test P=0.56
	University	14	36.80%	17	44.70%	
	Post graduate	3	7.90%	5	13.20%	
Birth rank of the child	1-3	35	92.10%	37	97.40%	Fisher's exact test P=0.042
	4-5	3	7.90%	1	2.60%	
Anxiety score	Control Mean ± SD		Intervention Mean ± SD		Mann Whitney P=0.48	
	19.57 ± 3.65		19.78 ± 4.87			

Table 1: Comparison of demographic variables in the time of sample collection.

Anxiety Score	Intervention Mean± SD	Control Mean± SD	Mann Whitney Test
The day before operation	24.18 ± 4.68	27.55 ± 6.45	P=0.027
The day of operation	26.97 ± 4.6	34.28 ± 5.68	P=0.00
The day of discharge	21.36 ± 4.16	27.15 ± 6.45	P=0.00
Friedman Test	P=0.00	P=0.00	

Table 2: Comparison of the score of anxiety.

Group	Comparison between the day before operation and the day of operation Mean ± SD P Value	Comparison between the day before operation and the day discharge Mean ± SD P Value	Comparison between the day of operation and the day of discharge Mean ± SD P Value
Intervention	2.78 ± 0.54 P=0.00	2.81 ± 0.75 P=0.002	5.6 ± 0.6 P=0.00
Control	-6.73 ± 1.09 P=0.00	0.39 ± 1.29 P=1	7.13 ± 0.89 P=0.00

Table 3: Comparison of mean and SD of anxiety score between days.

## Discussion

The results of this study showed that singing songs about preoperative care for tonsillectomy is effective on the anxiety level of 7-12 year-old children, that is, it led to a greater reduction of anxiety in the intervention group as compared with the control group. Tunney & Boor, showed the role of using storybooks on reducing children's preoperative anxiety in a study on 80 children aged 5-11 years undergoing tonsillectomy. Their study showed that children undergoing tonsillectomy experience some degrees of anxiety, which is in line with the present study, and also showed that reading a storybook was effective in reducing their anxiety [19]. Tavassoli et al., reported the effect of familiarization with the disease, treatment, and care of thalassemia on the severity of anxiety in pre-school children with thalassemia. During the familiarization game, children's anxiety reduced by using syringes, drug vials, wet cotton balls, and dolls, which were the sources of anxiety in children [15]. Their study showed that the familiarization of children with procedures and equipment used in the hospital can reduce their anxiety. Majzoobi et al. showed that children's psychological preparation for surgery had a significant effect on reducing their preoperative anxiety symptoms. They psychologically prepared children by familiarizing them with the operating room, surgery equipment, and surgery team on the day before surgery. The results showed that psychological preparation

significantly reduced their preoperative anxiety, and that children in the intervention group showed less preoperative anxiety than those in the control group [7]. Shoja et al., also showed that preoperative preparation can reduce children's anxiety [18].

In a familiarization program with hospital procedures, Talebi et al., compared the effect of face-to-face training methods and visual conceptual posters (illustrated songbooks) about the procedures that children face in the hospital and examined their effects on children's fear and anxiety. Their study had three groups. They concluded that the use of visual conceptual posters was more effective than the face-to-face approach in reducing the trait and total anxiety of hospitalized children. Their study is consistent with the present study in terms of investigating the effect of familiarization through song booklets and its effect on anxiety [22]. Therefore, all studies have shown that familiarization with surgical and care procedures reduce anxiety, which is consistent with the present study. Singing was used for the familiarization of the children in the following study.

A study titled "Children's poetry meaning: A methodology" by Coat, showed that children's poetry can be considered as a means of playing and participating in social life by preserving the rhythm and pleasure of body language and facilitating emotional and physical alignment with others, and can control the emotional environment and reduce anxiety in children [9]. Shamshiri et al., suggested that training children through art is not merely for the sake of their entertainment, rather with such education, they can face their own self [21]. Art is a kind of treatment and development, and it is a great way to discover the identity. Sao and Mauerya also acknowledged the role of art in reducing the anxiety of hospitalized children in their study [23]. Khoshrange quoted Muriaty et al., that they studied the effects of game-therapy and art-therapy in preschool children [5]. Their results emphasized the role of art in decreasing the anxiety of hospitalized children, too. Considering the use of poetry as a branch of art in this study, it can be concluded that the results of abovementioned studies are consistent with the present study in terms of using art to reduce anxiety. According to these studies, the use of art at the bedside can have an irrefutable effect on the anxiety of hospitalized children. Therefore, despite the fact that familiarization has reduced the anxiety in both groups, it appears that a greater reduction in anxiety in the intervention group than that in the control group was due to the influence of poetry as an innovative method appropriate to the level of growth and development of school-age children.

## Limitations

The most important limitation of the present study was the non-random allocation of samples into two groups. In order to prevent the effect of the intervention on the control group, the two groups were hospitalized

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in two separate rooms and the allocation of the samples to the two groups was based on their hospitalization room. Another limitation was the fact that the questionnaire was not filled out before the intervention, which was practically impossible because the procedures were performed quickly after hospitalization and the children had to be familiarized with them in the shortest possible time. In order to provide more evidence, it is recommended that further studies measure mother's anxiety in addition to children's anxiety to determine whether the intervention and participation of the mother in familiarization of the child has any effect on their anxiety.

## Conclusion

According to the results of the abovementioned studies, art is the common and familiar language in all cultures. Using the language of art is a safe method that has positive psychological effects. Nurses can use the language of art as an acceptable and innovative non-pharmacological approach for care processes, especially for familiarization and education of patients. In this way, establishing an effective communication and mitigating the psychological effects of the hospital environment, they can improve the psychological health of patients. Therefore, it is recommended that nurses use songs to familiarize children with pre- and post-operative procedures, such that, in addition to receiving the necessary training, children and their family experience a happy and pleasant environment, which reduces children's anxiety. Furthermore, signing is associated with good memories in children and it appears that this association helps reduce the psychological complications of surgical procedures in children. It is also recommended that further studies investigate the long-term effects of this method and its effect on the satisfaction of the child and the family. The researchers also suggest that the effects of mother's signing for children be examined on maternal anxiety.

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