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THE IMPACT OF FOOT REFLEXOLOGY MASSAGE ON ANXIETY CAUSED BY BLOOD TRANSFUSION IN CHILDREN WITH THALASSEMIA

Sadegh Dehghanmehr¹, Ghodsieh Sheikh^{*1}, Ahmadreza Siyasaki¹, Ameneh Sheikh¹, Safoora Nooraieen¹ and Morteza Salarzai²

Student Research Committee¹, Nursing and Midwifery School, Student of Medicine², Zabol University of Medical Sciences, Zabol, Iran.

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Correspondence to Author:

Ghodsieh Sheikh


Student,
Student Research Committee,
Nursing and Midwifery School,
Zabol University of Medical
Sciences, Zabol, Iran.

E-mail: mr.mortezasalar@gmail.com

ABSTRACT: Introduction: Based on the results of formerly conducted studies, the application of invasive methods, such as blood transfusion, for the treatment of children with thalassemia cause distress and anxiety symptoms in these children; therefore, it is attempted to apply non-invasive, non-pharmacological, simple, and inexpensive nursing practice to improve these deficiencies. Thus, the present study was conducted to investigate the effect of foot reflexology massage on anxiety caused by blood transfusion in children with Thalassemia. **Methodology:** The present quasi-experimental study was carried out on 60 children with thalassemia who qualified according to inclusion criteria. Patients were randomly divided into three groups of intervention (recipient of reflexology massage), placebo (common massage), and control. The anxiety level of the patients with the anxiety scale was evaluated based on the obsessive-compulsive disorder (osbd-r) 20 minutes before transfusion. Patients of intervention group received 10 minutes of reflexology massage and those categorized in placebo group received 10 minutes of common massage. After transfusion, the anxiety level of the patients was measured; collected data was analyzed through SPSS22, paired t-test and ANOVA. **Findings:** There was a significant difference between the mean anxiety score of the patients in the intervention and placebo groups before and after the intervention ($P < 0.05$). However, in the control group, the anxiety score of the patients before and after intervention was not significantly different ($P > 0.05$). There was no significant difference between the mean score of anxiety in the three groups before intervention ($P > 0.05$). Subsequently, there was a significant difference between the mean score of anxiety in the three groups after intervention ($P < 0.05$). **Conclusion:** based on the findings of the present study, foot reflexology and common massage are quite helpful in reducing the anxiety of children with blood thalassemia. It is easy and cost-free to use this method to educate them on the parents of children with thalassemia, an effective step to reduce the anxiety of these children and for any other patient who might be suffering from anxiety for any miscellaneous reasons.

INTRODUCTION: Thalassemia is the most common genetic disorder in the world. In this disease, the defect in the production of beta protein in hemoglobin results in an anemia and the

Individual needs to be regulated by regular blood transfusion and medical care¹. About 200 million people worldwide are afflicted with this disorder². There are more than 20,000 thalassemic patients in Iran and 1600 patients are added to this number each year³. Sistan and Baluchestan with a population of two million and seven hundred thousand people and 2000 patients with thalassemia major has the highest rate of thalassemia major among the provinces in the country⁴. Children with thalassemia major face stress and anxiety

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throughout their lives. Subsequent blood sampling for testing, fatigue due to sequential blood injections, as well as subcutaneous injection of iron chelators afflict these individuals greatly; most of these patients have, also, psychiatric disorders⁵. The fear and anxiety caused by injections in these children are so important that they express the most difficult aspect of their illness⁶.

One of the important interventions in this section is to reduce child anxiety. In addition to traditional methods, using non-pharmacological methods to deal with anxiety can be useful⁷. Control of children's fear and anxiety is one of the main goals of nurses. Failure in controlling these issues has caused many problems for the child and his or her family, including the reduction of family satisfaction and reduced social, mental and physical performance. As a result, the intensity of anxiety that usually occurs during routine care interventions, such as blood transfusion, should be reduced as much as possible⁸.

Insufficient relief from anxiety may cause fear in the family and the child for future treatment. Massage is one of the most important complementary therapies in nursing science and it is considered, by many nurses, to be valuable and, adding to nursing skills, can provide comprehensive care⁹. Since complementary therapies which can be carried out by nurses without the need for a physician's instruction, they can pave the way for professional nurses to gain professional independence¹⁰. Based on the results of formerly conducted studies, the application of invasive methods, such as blood transfusion, for the treatment of children with thalassemia cause distress and anxiety symptoms in these children; therefore, it is attempted to apply non-invasive, non-pharmacological, simple, and inexpensive nursing practice to improve these deficiencies. Thus, the present study was conducted to investigate the effect of foot reflexology massage on anxiety caused by blood transfusion in children with thalassemia.

MATERIALS AND METHODS: The present semi-experimental study included, using the review article and considering the study of Sadat Hosseini and his colleagues¹¹, turned out to be 60 subjects, categorized in three different groups.

Sampling was done randomly out of patients who met inclusion criteria, which were satisfaction to participate in the study, having an age of less than 12 years of age, the health of the location of massage, and no pain and anxiety on the part of the child due to this intervention; The exclusion criteria included taking anxiety and relaxation medicines, resistance to massage, and pain and anxiety caused by this intervention in the child. Required data was collected through Demographic Information Questionnaire and anxiety measurement form based on Observational Scale of Behavioral Distress-Revised (OSBD-R).

The child's demographic information questionnaire included information on age, gender, and the age of the diagnosis, which was recorded by interviewing the child's parent or checking medical record of the individual. To measure the patient's anxiety score, anxiety-based form was used based on the obsessive-compulsive behavioral observational scale (OSBD-R), which was completed before the implementation of foot reflexology massage and after blood transfusion in the intervention group and before common massage and after transfusion in the placebo group. In the control group, the anxiety level was measured 20 minutes before transfusion in order to control the effect of time in all three groups; these rates were, again, measured after transfusion.

In the course of all stages of intervention, the researcher monitored the patient and whenever he experienced an unpleasant feeling in the patient, he did not pressure or continued to massage, and the sample was excluded from the study. Data was collected and analyzed through SPSS21; Descriptive statistics (central indexes and distribution, frequency and percent) and inferential statistics were used for the explication of the data. To compare the anxiety score of each group before and after the intervention, paired t-test and ANOVA test were used.

Findings: The age range of participants in the present study was from 6 to 12 years in all three groups; the highest mean age was related to the control group (1.97 ± 8.30). Based on Kruskal Wallis statistical test, there was no significant difference between the three groups in terms of age ($P = 0.24$). The majority of patients in all three

groups of intervention, placebo, and control were boys, with the rates of 75%, 55%, and 65% in order. also, the Chi-square test showed a significant difference between three groups in terms of gender ($P < 0.05$).

The minimum age of diagnosis was 2 years old in intervention and control groups and 1 year in the placebo group and the highest age of diagnosis turned out to be 11 years in all three groups. Mean age of diagnosis in the control group (2.11 ± 6.41) was more than the other two groups. There was no statistically significant difference in the age of diagnosis among these three groups ($P = 0.27$). The mean of anxiety scores before and after the

intervention was compared in the intervention group; the results of this comparison showed that the mean score of anxiety in the intervention group before intervention was higher than after intervention, and this difference was statistically significant ($P = 0.003$) **Table 1**.

However, in the placebo group, which received common massage, the mean of anxiety before transfusion was higher than the mean post-transfusion anxiety level, which was statistically significant ($P = 0.005$) **Table 2**. But in the control group, there was no significant difference between the mean scores of anxiety before and after transfusion ($P = 0.09$) **Table 3**.

TABLE 1: MEAN AND STANDARD DEVIATION OF ANXIETY IN THE INTERVENTION GROUP BEFORE AND AFTER TRANSFUSION

Anxiety level / Intervention time	Minimum	Maximum	SD \pm mean	Statistical tests	P-value
Before intervention	0	4	1.42 ± 1.27	Wilcoxon	0.003
After intervention	0	2.5	0.63 ± 0.70		

TABLE 2: MEAN AND STANDARD DEVIATION OF ANXIETY IN THE PLACEBO GROUP BEFORE AND AFTER TRANSFUSION

Anxiety level / Intervention time	Minimum	Maximum	SD \pm mean	Statistical tests	P-value
Before intervention	0	3	1.63 ± 0.94	Wilcoxon	0.005
After intervention	0	4	0.83 ± 1.05		

TABLE 3: MEAN AND STANDARD DEVIATION OF ANXIETY IN THE PLACEBO GROUP BEFORE AND AFTER TRANSFUSION

Anxiety level / Intervention time	Minimum	Maximum	SD \pm mean	Statistical tests	P-value
Before intervention	0	3.5	1.15 ± 1.11	Wilcoxon	0.09
After intervention	0	4	1.40 ± 2.18		

The anxiety level of the patients in the three groups was compared with Kruskal Wallis test before and after the intervention **Table 4**. The highest mean anxiety before the intervention was in the placebo group and the mean score of anxiety in the three groups was not significantly different before the intervention ($P = 0.11$).

After the intervention, the anxiety scores of the patients were also compared in the three groups and control group had the most anxiety and the mean of the anxiety score in the intervention group was less than the placebo and control group; the comparison of the anxiety score in the three groups showed a significant difference ($P = 0.0001$).

TABLE 4: MEAN AND STANDARD DEVIATION OF ANXIETY LEVEL BEFORE AND AFTER INTERVENTION IN THREE GROUPS OF INTERVENTION, PLACEBO, AND CONTROL

Group / Anxiety level	Intervention group	Placebo group	Control group	Statistical tests	P-value
	SD \pm Mean	SD \pm Mean	SD \pm Mean		
Before intervention	1.42 ± 1.27	1.63 ± 0.94	1.15 ± 1.11	Kruskal Wallis	0.11
After intervention	0.63 ± 0.70	0.83 ± 1.05	1.40 ± 2.18		0.0001

DISCUSSION: The present study was conducted to investigate the effect of foot reflexology massage on anxiety caused by blood transfusion in children with thalassemia. The results of this study showed that anxiety score of patients in the intervention group and placebo experienced more

decrease in comparison to that of the control group and the mean score of anxiety in the intervention group was higher than that of the placebo group. Results show that foot reflexology is more effective than conventional massage in reducing the anxiety of children with thalassemia.

The results of Mirzaei *et al.*, study (2008), which was conducted on prenatal women, showed that reflexology led to anxiety reduction in the intervention group¹². The results of Sadat Hosseini *et al.*, study (2010) confirmed the impact of massage on pre-anxiety disorder in children aged 7 - 11 years¹³; both studies turned out to be significant with the findings of the present study. The results of Razmjoo *et al.*, study (2011), which investigated the impact of foot reflexology massage on two anxieties of women after elective cesarean section, showed that reflexology had no impact on controlling the anxiety of the patients¹⁴, which was not consistent with the findings of the present study; the main causes of such difference of results might be different in study population and different understanding of pregnant women and children from the concept of anxiety.

The results of Najafi *et al.*, study (2017), which was conducted to investigate the effect of massage on the anxiety of patients with burn wounds, showed that massage does not reduce the anxiety level of patients and there was found no association between anxiety and massage; these findings are inconsistent with the results of the present study. Burning wounds are one of the most painful injuries one can experience and this might be the main reason behind different achievements of these two studies. Gholami Motlagh studied the effect of two kinds of Swedish massage on patients' anxiety. He divided the patients into two groups, one group receiving back, chest, and neck massage and the other receiving face, foot, and arm massages; then the anxiety levels of these two groups were compared before and after the intervention.

The results of his study showed that there was significant difference between the rate of anxiety of both groups before and after reception of massage, confirming the positive effect of massage on vital signs and anxiety in the two groups; this was consistent with the results of the present study¹⁵. Eguchi *et al.*, study was conducted on Japanese men and women; the findings of this study showed that massage therapy could reduce anxiety and improve quality of life. However, this reduction in anxiety was not significant, unlike the present study according to which reflexology resulted in a significant reduction in anxiety¹⁶. The results of Peng *et al.*, study (2015) showed that massage led

to anxiety reduction in cardiovascular patients prior to invasive procedures, which turned out to be consistent with the findings of the present study¹⁷. According to Pinar *et al.*, study (2015), massage might reduce the meaning of stress and improve the quality of sleep in cancer patients¹⁸, which was also consistent with the findings of the present study.

CONCLUSION: Since the present study showed that reflexology massage can be effective in reducing anxiety and depression and improving vital signs and considering inexpensiveness and simplicity of this method, instructing this technique to patients, their families, and nurses can be quite helpful in reducing anxiety and stabilizing vital signs of patients suffering from various disorders.

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