Investigating the Effect of Muscular Relaxation Technique on Sleep Quality in Children with Leukemia Treated with Chemotherapy in Educational Hospitals of Zahedan

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Abstract

Introduction and objective: Sleep has long been considered as an important factor in human health. Sleepless clinically causes stress and the inability in performing social and job functions and it leaves considerable negative effect on quality of life and health status of people. Therefore, this study was conducted to determine the effect of muscular relaxation technique on sleep quality of parents of children with leukemia treated with chemotherapy. Methods this study is a randomized controlled intervention study in which 120 parents of children with leukemia were assigned in two groups of intervention and control. The intervention group received Benson's relaxation technique. Data collection tool included demographic information questionnaire and Pittsburgh Sleep Quality Index (PSQI). Data were analyzed by SPSS version 18 software, Paired Samples t-test, Wilcox on test, and t-test tests, Pearson correlation test, and One-Way ANOVA test. Results The mean score in the intervention group before and after intervention in the sleep quality was obtained 13.5 ± 60.5 and 5.7 ± 3.43, respectively, and significant difference was found between the quality of sleep in the two groups of intervention and control after intervention, and the relationship between quality of sleep of parents, education, gender, and their living place was not statistically significant. Conclusion The findings indicate that presence at hospital to care for the child could affect the sleep quality, because it disturbs the normal life conditions of the person. To improve their sleep status, is better that health care and management and personnel to take necessary steps to improve the quality of their sleep.

Keywords: Muscular relaxation, Sleep quality, Leukemia, chemotherapy.

Introduction

Problem Statement

Cancer is a major cause of mortality around the world [1], and it is the second leading cause of death in children living in third world countries [2], and the third leading cause of death in Iran [3] and it is considered as a new epidemic after heart disease [1].

In this regard, leukemia (34.1 percent) has been known as the most common childhood cancer in the world and Iran [2, 3]. Awake sleepless for providing better care for child and meeting all his or her needs is sign of full participation and compassionate care in the treatment indicating the maximum devotion of parent [4].

Study conducted by LAM also shows that parents of children with cancer prepare themselves for relatively long staying in hospital and participating in the treatment of their child [5]. Sleepless clinically creates stress and the inability to do job and social functions and it leaves significant negative effects on quality of life, and health status of the people [6].

As nursing care and health of the child and the family are based on the family [7] and the family members of the child with leukemia, especially his or her family, are exposed to tension caused by their child's disease and...
the long-term treatment of their child, the question is that if interventional techniques such as muscle relaxation can increase quality of life and quality of sleep of parents of the children. Hence, this study was conducted to determine the impact of muscular relaxation techniques on the quality of sleep of parents of children with leukemia treated with chemotherapy in Zahedan educational hospitals in 2015.

Methodology
This intervention study is a semi-experimental study in which samples 120 people (in four blocks) were assigned into two groups of intervention (n = 60) and control (n = 60). Intervention in this study was muscular relaxation, which is a type of respiratory relaxation and using it is very easy for most parents and it is associated with reduced activity of sympathetic nervous system. Educational content of sessions included questions and answers about the benefits of relaxation and practical display of relaxation technique, performed hat 2 times per week by researcher.

After an explanation about performing the technique, of the research samples were asked to perform the exercises in the presence of the researcher to ensure accurate performing of them and they were asked to perform these exercises 2 times per week and for 20 minutes in each time. In addition, to follow up performing relaxation technique in samples, researcher contacted them. An educational pamphlet along with CD was provided to research departments and the quality of sleep questionnaire was completed by intervention group before and after 4 weeks of relaxation exercises. Pittsburgh Sleep Quality Index (PSQI) was used in this which contains 9 questions assessing the quality of sleep. Pittsburgh Sleep Quality Index (PSQI) was developed by Buysse et al in Pittsburgh Psychiatry Institute [8]. It has 9 items questionnaire and each question contains 10 sub-items, so total questionnaire has 19 items scored on a 4-point Liker scale from 0 to 3. After collecting the data, they were entered into SPSS software. They were described using the central indices, dispersion, and frequency and percentage. T-test and Chi square tests were used to make quantitative demographic variables, quality of sleep dimension, and qualitative demographic variables homogenous. To compare the quality of sleep dimension in two groups before and after the intervention, Wilcoxon test was used and to determine the impact of muscular relaxation technique on the quality of sleep in two groups, Mann Whitney test was used. As the mean score difference of sleep quality and demographic variables after and before intervention follows normal distribution, to determine the relationship between the quality of sleep and demographic variables, parametric tests such as t-test and Pearson correlation test, and One Way ANOVA test with α=0.05 were used.

Results
The mean age of parents of children with leukemia in the intervention group was 36.9 with SD of 10.9, and it was 38.06 in control group with SD of 12.62, and 53.4 percent of parents had one or two female children and 33.3 percent of them had three male children. The majority of participants (40%) were illiterate, 30 percent had under high school education, and 30% of them had high school education. In addition, 43.3 percent were living in city and 56.7 percent were living in rural areas and the majority of parents (93.3 percent) had income under 10 million Rails. In addition, 43.3% of the parents of were housekeeper and 13.3% of them were employee, and 38.3% of them were self-employed. The majority of subjects (48.6 percent) reported the relaxation time night, 23.4 percent reported the relaxation time morning, and 28 percent reported the relaxation time evening, and 86% of the subjects in the intervention group scored 9 in terms of relaxation.

<table>
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<th>Variable</th>
<th>Sleep quality</th>
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| Age                    | \( r = -0.025 \)  
\( P=0.790 \)  |
| Weight                 | \( r = 0.054 \)  
\( P=0.556 \)  |
| Number of female child | \( r = 0.03 \)  |

Table 1: Relationship between fatigue, overt anxiety, covert anxiety and sleep quality and demographic variables (qualitative) among parents of children with leukemia treated with chemotherapy in educational hospitals in Zahedan in 2015

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In the dimension of quality of sleep, the mean before the intervention in intervention group and the control group was in its maximum value, representing undesirable quality of sleep and after intervention, this mean significantly dropped. Based on the test results, there is a significant difference between the intervention and control groups after the intervention on the quality of sleep and in parents of children with leukemia treated with chemotherapy.

The results showed a significant negative correlation between the number of male children and quality of sleep so that as the number of male children increased, their sleep quality was reduced, but this difference in the age and the number of the female child and weight was not significant.

Additionally, significant relationship was not found between blood group and sleep quality, but there was significant relationship between job and the quality of sleep quality and sleep quality of parents who were employee was lower. Additionally, there was no statistically significant relationship between sleep quality and income, but significant relationship was found between sleep quality and living place.

Discussion

In a study conducted by Wills, after the definitive diagnosis of leukemia in children, mothers decided to stay with their children in hospital at night, and fathers visited their children after their work [9]. In a study conducted by Ames in Canada, parents had full participation in caring their children with presence beside their children in intensive care units, Children Hematology and Oncology Department [10]. In a study conducted by Lam, parents have willingness for relatively long staying at the hospital [5].

In our study, as most parents of Sistan and Baluchestan province referred to capital of province for continuation of treatment and had no proper place for resting and as they were receiving chemotherapy continuously, sleep quality of them before the intervention was not desirable. Morian et al. In its research concluded that samples received cognitive behavioral treatments showed significant improvement in variables such as overall sleep time and sleep quality compared to control group [11] that it is in line with present study, and probably parents after receiving the intervention techniques felt its effect and reported it due to inappropriate conditions and lack of compliance with these conditions.

Other studies showed that complementary therapies like energy preservation strategies are effective in reducing fatigue of patients so that based on this research, it was found that 5-20 minutes relaxation session causes caused energy preservation and storage for one hour [12] that this time had more impact on the subjects of this study due to performing it twice in week and for four weeks. A study conducted by Akbar Zadeh et al to determine the effect of Benson relaxation method on the sleep quality of chronic heart disease patients showed that Benson relaxation as one of the components of cognitive-behavioral therapy had significant impact on sleep quality of on patients with heart disease [13].

This study also showed progressive muscle relaxation significantly improved sleep quality of parents of children with cancer. On the other hand, high difference was seen in the intervention and control groups compared to other dimensions that it can be used as a method useful in improving sleep quality and increasing their quality of life. In the study conducted by Saidi et al [14], the impact of one of the components of cognitive-behavioral therapy on the relaxation of muscle called as progressive muscular relaxation on the severity of sleepless in hem dialysis patients was studied and results showed that the progressive muscular relaxation improves the overall score of sleepless severity index and its dimensions in patients undergoing hem dialysis. Based on the studies, it can be concluded that the quality of sleep in patients and their parents is not acceptable and factors such as age, gender, marital status, and job are involved in it.

To improve the sleep condition of them, it is better that health personnel and
management to take necessary steps to improve their quality of sleep [15]. In the study conducted by Merlino et al., high age was reported as an independent risk factor for sleep disorders in hemodialysis patients [16]. In the study conducted by Eryilmaz et al., younger samples had lower quality of sleep significantly [17]. In another study, people with lower education and female gender had lower quality of sleep [11].

The results of study conducted by Eryavuz et al. showed a significant correlation between age and score of sleep quality among subjects of study [18]. Research conducted by Saidi et al. also showed that among the quantitative demographic variables, only the age of subjects had significant correlation with the quality of their sleep before and after the intervention of relaxation so that their sleep quality decreases as age increases [14].

Presence in the hospital to take care of the child might affect their sleep quality, because it disturbs the normal condition of life. It is clear that different factors are involved in it that the most important of them is the child hospitalization. Other factors include anxiety and stress, being away from family and displacement of sleep place and its inappropriateness, presence of triggers such as noise and light.

**Conclusion**

Findings of this study can provide the conditions for family-centered nursing cares through the appropriate educational interventions including family therapy and parent training in groups.

In this regard, developing a coherent planning and programs for parents of children with cancer to participate in classes and training muscle relaxation techniques beside other parents and understanding each other's situation seems to be an essential. Relaxation techniques and its training by nurses and awareness and having knowledge on using it clinical management of patients and families are an effective method to improve the quality of health of the family. This paper was derived from a project approved by Kerman University of Medical Sciences with code of IR.KMU.REC.1394.599.

**References**