

ORIGINAL RESEARCH PAPER

The Effect of Concomitant Exercise and Inhalation of Lavender Fragrance On Surgical Technologists' Fatigue Severity

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ABSTRACT

Introduction: Stressful innate of the operating room, unpredictable types of activities, and prolonged standing during surgeries cause chronic fatigue in surgical technologists, resulting in reduced quality of care. It is essential, therefore, to provide specialized methods to reduce the surgical technologists' fatigue severity. This study was conducted to evaluate the effect of concomitant exercise and inhalation of lavender fragrance on surgical technologists' fatigue severity.

Material and Methods: Ninety seven surgical technologists were recruited in this clinical trial study, working in the operating rooms of Tabriz educational hospitals. They were randomly divided into three groups (Exercise, Lavender & Control) after fulfilling informed consent. The instruments for data collection included demographic information form as well as a multidimensional fatigue inventory questionnaire. In the experimental groups, concomitant exercise training and Lavender inhalation were both used for a period of six weeks while no intervention was given to participants in the control group. Statistical analyses were carried out using SPSS 20 as well as ANOVA and repeated measurement tests.

Results: No significant difference was observed between Exercise, Lavender, and Control groups regarding demographic characteristics ($P > 0.05$). The mean score of fatigue between exercise and control groups and between Lavender and control groups showed a significant decrease ($P < 0.05$). However, the results showed no significant difference statistically between the exercise and Lavender groups ($P > 0.05$).

Conclusion: The concomitant exercise and Lavender fragrance in the operating room positively affect and reduce the fatigue severity in surgical technologists. Planning to implement similar interventions in the operating room is recommended.

Keywords: Concomitant Exercise, Lavender fragrance, Fatigue, Surgical Technologists

1. INTRODUCTION

Fatigue is a state of mind that everyone, whether healthy or sick, experiences that through various ways throughout life. Fatigue is characterized by feelings of weakness and exhaustion, lethargy, lack of energy, decreased physical strength, drowsiness, insufficient concentration, and decreased

motivation (1). Surgical technologists in operating rooms are more prone to feel fatigue due to the particularly stressful conditions in these wards. Given the importance of surgery as a critically stressful profession in addition to the complications of fatigue level affecting the quality of surgery and care through the surgery process from the beginning to the end, it seems that determining

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appropriate methods and techniques helping to reduce chronic fatigue in these individuals is greatly essential. In many studies, different strategies have been developed to prevent and eliminate fatigue. Noteworthy, considering the problems and side effects of taking medications in fatigue treatment, it makes sense to use complementary and non-pharmacological methods to relieve fatigue, including exercise and aromatherapy (2, 3). Therefore, this study was conducted to determine the effect of concomitant exercise and inhalation of Lavender fragrance on the fatigue severity of surgical technologists.

2. MATERIAL AND METHODS

The present study was a clinical trial performed on surgical technologists working in the operating room wards of the hospitals affiliated to Tabriz University of Medical Sciences. In this study, ninety-nine surgical technologists who reported moderate to high fatigue severity were selected and randomly classified into three different groups; concomitant exercise group (33 people), inhalation of Lavender fragrance (33 people), and control group (33 people). In this study, no intervention was performed for the control group. An exercise program with concomitant exercises (stretching-strength) suitable for the working environment of the operating room was used in the exercise group. In the Lavender fragrance group, the fragrance was inhaled by surgical technologists for two hours in each shift. Each of the interventions (i.e., inhaling Lavender fragrance and performing concomitant exercises) in the experimental groups was repeated four times a week. At the end of the week, participants were asked to complete a multi-dimensional fatigue inventory (MFI) questionnaire. This questionnaire has 20 items and evaluates five dimensions of fatigue, including general fatigue, physical fatigue, mental fatigue, decreased activity, and decreased motivation. It may help a researcher to provide a deeper and more accurate understanding of a person's fatigue level. The MFI questionnaire was first proposed by Smet et al. in 1996, and its validity and reliability have been assessed in various groups, such as cancer patients undergoing radiotherapy and patients having chronic fatigue syndrome (4). In Iran, this questionnaire has been used in various studies, and its validity and reliability have been confirmed (5).

3. RESULTS AND DISCUSSION

In this study, ninety-nine eligible surgical technologists entered the study categorized into three groups. In the third week of the study, two participants were dropped out of the study from the Lavender fragrance and concomitant exercises groups due to their unwillingness to continue cooperation. Ninety-seven of them, however, worked with researchers in the concomitant exercises (32 people), Lavender fragrance (32 people) and control (33 people) groups until the end of the study. The mean fatigue score of surgical technologists in the concomitant exercise group was 60.9 ± 7.5 prior to performing concomitant exercises while at the end of the fourth week, the fifth week, and the sixth week, it changed to 52 ± 7.9 , 48.2 ± 8 , and 44.7 ± 7.3 , respectively. The mean score of fatigue in the Lavender fragrance group, was 58.5 ± 5 , prior to the intervention commence while the mean scores of surgical technologists' fatigue were changed to 53.6 ± 7.2 , 50.8 ± 7.2 and 48.8 ± 6.7 , respectively, four weeks after the intervention, five weeks after that, and at the end of the sixth week. The mean score of fatigue in the control group was 57.1 ± 6.2 , before beginning the study. The mean scores of the control group's fatigue were 55.3 ± 6.9 , 54.8 ± 6.9 and 54.2 ± 6.6 , respectively, four weeks, five weeks and six weeks after intervention commence, respectively (Fig.1). This study showed a positive effect of concomitant exercise on reducing the fatigue of surgical technologists. The mean score of fatigue at the end of the study was 26.6% lower than that in the beginning of the study (Table.1). The findings of this study were in line with the research of Jam Barsang et al. (6). In contrast, Doring et al. and Surakka et al. showed that moderate-intensity exercise did not affect reducing fatigue of multiple sclerosis patients (7). It seems that the differences observed in the type and the number of research populations, the type of instruments used to measure fatigue, the kind, manner, and duration of exercise are some of the reasons for the variations seen in results. Also, the presence of diseases and underlying problems related to research populations can contradict the results of researches. According to the present study results, which were performed on people without systemic disease, the path of decreasing fatigue during the intervention time promises that if the concomitant exercise continues for a more extended period, the fatigue may decrease gradually or even completely disappear.

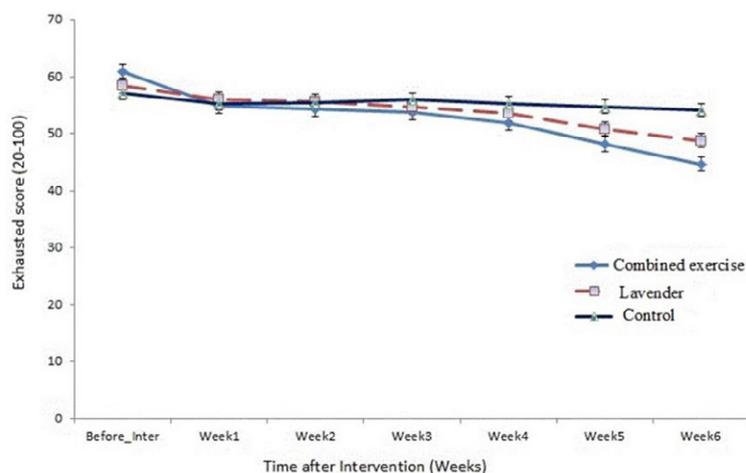


Fig 1. Comparison of the mean score of surgical technologists' fatigue in the pre and post-intervention stages in three groups

Table 1. comparison of the mean difference in fatigue severity at different stages compared to the pre-intervention stage

Groups	fatigue mean differences					
	First week MD*(%)	2 nd weeks MD(%)	3 rd weeks MD(%)	4 th weeks MD(%)	5 th weeks MD(%)	6 th weeks MD(%)
Exercise	5.9(9.7%)	6.5(10.7%)	7.1(11.7%)	8.9(14.6%)	12.7(20.6%)	16.2(26.6%)
Lavender	2.5(4.3%)	2.9(5%)	3.8(6.5%)	4.9(8.4%)	7.7(13.2%)	9.7(16.6%)
Control	1.8(3.2%)	2.2(3.9%)	1.6(2.8%)	2.3(4%)	2.8(4.9%)	3.4(5.9%)

*mean difference

Table 2. frequency distribution of fatigue severity in studied groups before the intervention

Groups	Fatigue level			Fisher's exact test
	mild(20-46.99) N(%)	Moderate(47-73.99)	severe(74-100)	
Exercise	0(0%)	29(90.6%)	3(9.4%)	P= 0.527
Lavender	0(0%)	31(96.9%)	1(3.1%)	
Control	0(0%)	32(97%)	1(3%)	

Table 3. frequency distribution of fatigue severity in studied groups at the end of the intervention

Groups	Fatigue level			Fisher's exact test
	mild(20-46.99) N(%)	Moderate(47-73.99)	severe(74-100)	
Exercise	24(75%)	8(25%)	0(0%)	P< 0.001
Lavender	14(43.7%)	18(56.3%)	0(0%)	
Control	2(6.1%)	30(90.9%)	1(3%)	

Regarding the effect of Lavender fragrance on the fatigue severity of surgical technologists, the results of the present study showed that after the intervention, the fatigue rate of surgical technologists significantly decreased by 16.6% (Table. 1). Jeong et al. also concluded that inhaling Lavender fragrance reduces fatigue and stress in operating room nurses (8). The positive effect of

Lavender fragrance on reducing fatigue is probably related to the mechanism of the effect of its sedative-soothing features.

At the end of the study, the reduction of fatigue among the surgical technologies from severe or moderate to mild was 75% in the exercise group, 43.7% in the aromatherapy group, and only 6.1% in the control group, respectively (Table. 2,3).

4. CONCLUSIONS

Performing concomitant exercise and inhaling the Lavender fragrance in the operating room positively affected the severity of the fatigue severity of surgical technologists. Easiness of learning the concomitant exercise program, low cost of both types of intervention (especially concomitant exercise), no need for significant time and no complications cause these two methods to be applicable for surgical technologists who are prone to chronic fatigue due to the sensitivities of surgery, the stressful environment of the operating room, the physical limitations of workspace and prolonged standing postures..

5. ACKNOWLEDGMENT

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6. REFERENCES

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