



Effect of Viola Odorata Nasal Drop on Sleep Quality of Older Adults

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ABSTRACT

Sleep is one of the essential biological processes and has been recognized as one of the basic needs of human. It includes one third of human life. Although sleep problems are not among the inevitable consequences of aging, its rate increases with increase of age. Sleep disorders may result in various consequences among elderlies which have to be considered. Present study is a randomized clinical trial including two groups: intervention (Viola odorata oil) and control (parafin) which was carried out to investigate the effect of Viola odorata oil on sleep quality of older adults. Sampling was carried out by referring to nursing houses of Sabzevar city, elderlies unit of health center and retirement homes of the city. The data were analyzed by SPSS V 20 with significance level of $p < 0.05$. Results showed that application of Viola odorata oil nasal drop can affect the sleep initiation, level of hypnotic drug application, sleep quality indices, mental quality of sleep and its duration with correlation coefficients of 0.51, 0.35, 0.42, 0.43 and 0.36, respectively. present study showed that application of Viola odorata oil nasal drop is effective in improvement of sleep duration among older adults.

Key words: Nasal Drop, Viola Odorata Oil, Sleep Quality, Elderlies

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INTRODUCTION

Sleeping is an inseparable part of human life and resolves fatigue by various mechanisms and makes the human ready for daily activities again. Normally, sleep disorders would be increased by aging and it is one of the complaints of older adults. About half of the people above 65 years old suffer from sleep disorders. Therefore insomnia is common among elderlies [1]. Increase in population of older adults due to reduction in birth, improvement of health care and enhanced

life expectancy has highlighted the necessity to consider the problems of this group of people. Sleep is one of the effective problems of this vulnerable group. Studies have shown that low-quality sleep is in the third rank of elderlies' problems and is one of the common underlying reasons for their reference to physician [2]. More than 30% of people suffer from sleep disorders. Researches have indicated that sleep-related problems can result in numerous physical and psychological problems such as decrease of appetite, physical and mental fatigue, lack of concentration, nervous and physiological changes, decrease of analysis speed, and increase of human errors, accidents and reduction of consciousness level and also depression and anxiety. Problems such as cardiovascular diseases increased digestive

problems and tendency to drug consumption could be also formed due to sleep disorders [3].

Sleep quality is one of the min indicators of health among the elderlies and is recognized as a major concept in clinical researches about sleep. Sleep quality indicator involves feeling of renewed power and lack of any drowsiness after waking from the sleep [5].

Statistics have shown that in spite of advancements in chemistry and pharmacology, application of alternative drugs especially herbal has increased [6]. In this regard, the past decade witnessed return to natural herbals and a new insight on herbal studies and their effects [7]. Iran is a rich country in terms of biodiversity in herbal plants. The positive effect of *Viola odorata* on sleep quality has been discussed in Iran traditional medicine [8]. *Viola odorata*, known as sweet *Viola odorata*, is from violacea family which has been used for treatment of insomnia, cough, fever, cold and headache [9]. This plant includes vitamin C, glycoside, alkaloids and mucilage [10]. Due to its relaxing [11], anti-oxidative, anti-hypertension, anti-fever, antifungal [12] and its impacts on body weight loss [13], it is considered as an effective herbal plant. So far, no health threat or side effects have been mentioned for *Viola odorata* [14]. In an study, hypnotic effect of *Viola odorata* has been addressed. This study suggests that *Viola odorata* extract can increased sleep duration without any neurotoxicity. Presence of compounds with low and medium polarity such as lanoids, estroles, alkanes and some trinoeids can result in hypnotic effects [15]. Regarding insomnia problem in older adults and its consequences and also as the effect of *Viola odorata* on elderlies' sleep has not been addressed and no side effect has been reported for this compound [16], the aim of this study is to assess the effect of *Viola odorata* aromatherapy through inhalation on insomnia of old adults of Sabzevar. The main objective of this study is to determine the hypnotic effects of *Viola odorata* nasal drop on quality of sleep among older adults.

MATERIALS AND METHODS

The present study is a randomized clinical trial carried out on two groups (intervention group (*Viola odorata* oil) and control group (parafin)) to investigate the effect of *Viola odorata* oil on sleep quality of older adults dwelling in nursing homes, elderlies unit of health center and retirement houses of Sabzevar city. Sampling took 6 months. Interview with elderlies and investigation of their files were carried out. Questionnaires were filled up every 15 days and the process was followed up by phone. In the present study, *Viola odorata* oil was investigated as the independent variable and sleep quality was considered as dependent one. Background variables such as sex, marital status and residential status were also included. Sample volume was calculated by G*Power software and the number of research units with confidence level of 95%, test power of 80%, was determined as 25 for each group which was considered as 30 regarding probable drop in the number of participants. Sampling was done by accessible sampling method (total volume sample: 60). The applied tools included research unit selection forms, demographic data form and Petersburg sleep quality questionnaire. The present study is a pretest-post-test clinical trial performed on 60 elderlies with weak sleep quality.

RESULTS

Variance analysis of the repeated measurement showed that, without modulating the effect of disturbing variables, among three variables of time, group and group-time interactive effect, only the variable of time has significant impact. This shows that there is no significant difference between the two groups throughout the time. But their temporal effects are significant. Further investigation when the effect of disturbing variable was not considered showed that the interactive effect of time and group is also

significant. This shows that at least at two times of investigations, the effect of therapy in two groups of intervention and therapy was significant in comparison with the other times. Other disturbing variables made no significant impact on the mentioned index.

Table 1. sleep efficiency variance analysis

| Factor | group | Before intervention | | After intervention | | Follow-up | | P value of group-time interaction | Inter-group P value | Time P value |
|------------------|---------|---------------------|--------------------|--------------------|--------------------|-----------|--------------------|-----------------------------------|---------------------|--------------|
| | | mean | Standard deviation | mean | Standard deviation | mean | Standard deviation | | | |
| Sleep efficiency | Control | 1.5 | 1.07 | 1.73 | 1.37 | 2.08 | 1.26 | 0.621 | 0.177 | 0.002 |

Table 2. effect of descriptive factors on sleep efficiency

| Factor | Sum of square | Degree of freedom | Mean of sum of square | F | P value |
|--------------------|---------------|-------------------|-----------------------|-------|---------|
| Age | 0.205 | 1 | 0.205 | 0.085 | 0.772 |
| Sex | 3.909 | 1 | 3.909 | 1.626 | 0.209 |
| Marital status | 3.254 | 1 | 3.254 | 1.354 | 0.251 |
| Underlying disease | 0.532 | 1 | 0.532 | 0.221 | 0.64 |
| medication | 5.581 | 1 | 5.581 | 2.322 | 0.135 |

Table 3. non-parametric test of sleep efficiency

| Factor | group | Before intervention | | After intervention | | Follow-up | | P value (Freedman Test) |
|----------------|--------------|---------------------|--------------------|--------------------|--------------------|-----------|--------------------|-------------------------|
| | | mean | Standard deviation | mean | Standard deviation | mean | Standard deviation | |
| Sleep efficacy | Control | 1.5 | 1.07 | 1.73 | 1.37 | 2.08 | 1.26 | 0.023 |
| | intervention | 0.96 | 1.17 | 1.56 | 1.19 | 1.72 | 1.17 | 0.012 |

Table 4. Mann-Whitney U test for sleep efficiency

| factor | group | mean | Standard deviation | P value (Mann-Whitney Test) |
|---------------------|--------------|------|--------------------|-----------------------------|
| Before intervention | control | 1.50 | 1.07 | 0.077 |
| | intervention | 0.96 | 1.17 | |
| After intervention | control | 1.73 | 1.37 | 0.533 |
| | intervention | 1.56 | 1.19 | |
| | | 2.08 | 1.26 | 0.129 |

Application of non-parametric results will lead to different results. Freedman test showed that in both groups, sleep efficiency was at least different

in two or three times. Also, comparison of the two groups in the three times showed that there is no significant difference in none of these three times between the intervention and control group.

Therefore, application of *Viola odorata* oil nasal drop is effective on quality of sleep for elderlies. This hypothesis was confirmed by correlation coefficient of 0.51

According to the obtained results, the relationship between *Viola odorata* and all the variables were verified except its impact on daily activities of the elderlies.

DISCUSSION AND CONCLUSION

Among the disturbing variables, marital status had a significant impact on application of hypnotic drugs. During the three measurement intervals, between the two groups, there was no significant

difference in terms of performance disorders. However, comparing the two groups before and 1 month after intervention showed a significant difference in functional disorders. Investigation of sleep efficiency showed that there is no significant difference between the two groups throughout the time. On the other hand, there was no significant marginal difference in sleep efficiency of the two groups. Results also revealed that intervention can improve the sleep quality in the intervention group 15 days and one month after the intervention. In terms of sleep duration, results indicated that sleep duration was increased in both of the measurement times after the intervention. Moreover, the sleep disorders were not statistically the same in the three times of investigation and the sleep disorders significantly decreased in intervention group. For delay in falling asleep, comparing the mean of three times between the two groups showed that there is a descending trend in this parameter in the intervention group; while it remained constant in the control group. Investigations also revealed that age has a significant impact on delay in falling asleep/ comparing this parameter showed that it had a significant decrease in the intervention group in both times (15 days and 1 month after the intervention). Study of Feizabadi *et al.* in 2014 showed similar results and *Viola odorata* was effective on sleep initiation, stability, early wake-up. Interference with daily activities, weak points due to sleep disorders, concerns about sleep problem and satisfaction from sleeping patterns in the elderlies. Another study in 2013 also verified the sleep increasing effect of *Viola odorata* oil nasal injection on rats [17]. Study of Monadii *et al.* (2015) compared the effect of *Viola odorata* with diazepam which led to similar results. In this study, it was also determined that this extract has better tranquilizing and anaesthetic effect in comparison

with diazepam [19]. In the other words, there is a significant difference between the sleep initiation in elderlies, test and control groups research units at three stages of assesemnt ($p=0.002$). results of this study are in agreement with the results of Monadi *et al* (2013) [20] and HajiBagheri *et al* (2012) [21] on effectiveness of *Viola odorata* on sleep efficiency of older adults. Therefore, accrding to the obtained results, it can be conclded that, in comparison with control grup, sleep efficiency will be increased in intervention group by application of *Viola odorata* oil.

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