The Effect of Red Rose Essential Oil and Lavender Aromatherapy on the Frequency of Lucid Dreaming, Recalling Dreams and Sleep Quality in Female Students

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Abstract

The purpose of the present research was to study the effects of red rose essential oil and lavender aromatherapy on the frequency of lucid dreaming, recalling dreams and sleep quality in female students. Forty five female students of Karaj Azad University were volunteered; and 26 individuals of them were qualified to participate in the test. The subjects were randomly selected in the three groups of red rose essential oil, lavender and control groups. The tools for carrying out the research included personal information questionnaire, lucid dream frequency scale (Schredl & Erlacher, 2011), Pittsburg sleep quality index, interviews and filling out dream notebook for recalling dreams. The experimental group underwent the treatment of aromatherapy for 7 nights. The data were analyzed by kolmogorov-smirnov and Kruskal Wallis test, the only significant difference was observed between dream recall of red rose and control group. This result shows the necessity of further studies in the field of aromatherapy and dreams.

Keywords: *aromatherapy, rose essential oil, lavender, lucid dream, sleep quality, dream recall, female students*

1. Introduction

Sleep is a physiological behavior forming some part of everyday life, and it is considered as an appropriate trend in processing, renewing and reviving the performance of nervous system and physiological systems of the body a well. Sleep is considered the body's physiological mechanism in recovering the energy lost and the tiredness resulting from the activities of brain and body during an individual's everyday life as well as an important criterion in maintaining the physical and mental health of humans (Gau, et al, 2007). Regarding the effects of sleeplessness on the quality of sleepless people's lives and comparing them with the ones having a useful sleep, the scientists have found that sleepless people have reported to have worries such as health problems and physical restrictions, physical problems, and anxiety resulting from social activities, problems concerning mental health. Finally, they had low general health compared to those having useful sleep (Buman & King, 2010). In this regard, psychologists are looking for strategies to improve the sleep quality in this segment of the community.

Dreams are considered the important components of sleep influenced by environmental conditions. Dreams are a representation of important psychological aspects of humans used as a key to diagnose mental troubles (Gerrans, 2012). Since when dreaming, gestures and commands and efferent nerve are stopped by nerve structure in the brain stem, the

physical body is paralyzed along with the high activity of the brain (Erlacher &Schredl, 2010). A special kind of time dream is called REM, "lucid dreaming". In this stage the dreamer is aware that he or she is dreaming (Erlacher &Schredl, 2004) and after they become conscious of dreaming they can recall their awake memory, and consciously have effect on the context of dream (Erlacher , 2009). This "ability in dreaming makes the dreamer aware that he is dreaming while he is awake". This principle definition is often observed in the research (Zadra, 1990). Garfield declared that lucid dream provides the dreamer self-confidence to face the challenges very well. Moreover, it is an ability that can be employed in the real life. LaBerge observed that mental and physical health have a relationship with lucid dream. With regard to this particular experience of this kind of dream, LaBerge (1988) pointed out that an increased self-confidence, quality of life and mental health are effects of lucid dream. Therefore, several strategies have been provided in order to improve the quality of sleep recently. For example, sedatives and painkillers can effectively increase the quality of sleep. Although, medicinal factors usually occur with several side-effects, supplementary therapies like aromatherapy, muscle relaxants, using glasses and hearing aid can improve the quality of life without causing any serious side-effects (Mehta, Shah, Shinde, Kamble, Mahadik, 2014).

Aromatherapy is a method that not only helps improve physical symptoms, but it also helps physiological symptoms, and can lead to an increased quality of mental health in humans (Mehta, Shah, Shinde, Kamble, Mahadik, 2014). Inhalation and using oils in any method are useful for therapeutic purposes, all of which form the basis of aromatherapy (Garg, 2005). After studying and investigating about the history on flowers and plants, we noticed that therapeutic plants and flowers had been used to cure all diseases and discomforts in past periods. For example, some of the components of essential oils such as linalool and terpineol have a big impact on the central nervous system, in such a way that they lower the physical activity of humans and animals, reduced anxiety and facilitate sleeping (Prusinowska & Smigielski, 2014). One of the odors used in aromatherapy is the red rose. In Iran, Rosa Damascene is known as Gole-Mohammadi. Red rose has an old history and using it goes back at least 1500 years ago. Essential oil of red rose is a fragrant plant, and in addition to the effect of its odor and fragrance, several medicinal characteristics have been reported including anti-HIV effect, anti-Bacterial, anti-oxide, Hypnotism, anti-diabetes and relaxant (Boskabadi, Shafei, Saberi, & Amini, 2011). This plant has several therapeutic and healing characteristics such as mental comforting, reducing depression, anxiety, and treating the problems of digestive system (Nikbakht & Kafi, 2004). Among other plants used in this field is lavender, the odorous leaves of which are used vastly in aromatherapy. Lavender (lavandula angustifolia) is a bush from lamiaceae species in the Mediterranean, which contains 3% antocianine oil, fitosterols, sugary materials, mineral materials and tannin. Some of its effects include; painkillers, anti-depression, anti-contraction, anti-spasm, anti-bacterial and tropical anesthesia. In addition, this plant is used to pacify migraine and sleeplessness. Studies concerning the benefits of the nice odor of lavender indicate that linalyl and linalool acetate present in this plant can stimulate the nervous system and thus be effective (Olapour, et al., 2013). Clinical experiments in aromatherapy indicate that the useful effects of odors and fragrances are not only used by vapor inhalation, but they are also used by absorbing the odor's molecules through the skin. In this regard, Sanatkaran, Bahari and Atashi carried out a research studying the therapeutic effect of red rose essential oil on the sleep quality of twenty male student futsal players by means of Pittsburg quality index. The result showed that the four-night intervention of therapeutic effect of red rose essential oil on the quality of athletes' sleep was not significant before the match. In another study, Haji Bagheri, Babaei, and Adib (2014) studied therapeutic effects of red rose essential oil on the sleep quality of sixty cardiac patients. The subjects were evaluated by Pittsburg sleep quality index after three consecutive night of receiving the red rose essential oil. The results showed that aromatherapy of red rose can significantly improve the sleep quality of cardiac patients. In their study, Ikei, Komatsu, Song, Himoro & Miyazaki (2014) studied physical and mental sedative effects of watching red roses among the office clerks. The results showed a significant effect of physical and mental sedation resulting from the office clerks' were being exposed to the red rose.

Based on the studies mentioned above, each carried out separately in order to study the effects of red rose and its essential oil on the sleep quality, mental factors and sedative effect over athletes, patients and clerks, and also other researches most of which have been done over several patients and other different mental factors, it is concluded that very few studies have been performed concerning sleep and several factors involved. According to various reports, based on the positive effect of aromatherapy that can be used as mental-physiological intervention, carrying out a study that is capable of providing the effect of aromatherapy coherently by two different essential oils like red rose and lavender over various sleep components like lucid dream, recalling and studying quality of sleep seems necessary. The present research has been carried out with the purpose of studying the therapeutic effect red rose essential oil and lavender on lucid dream, recalling, and sleep quality of female students.

2. Method

The method of the research is semi-experimental and the design of study is intergroup accompanied by pre-post tests in two experimental and control groups by using the therapeutic effect of red rose essential oil and lavender. Statistical population of this research were among the female students of Karaj Azad University, who were mentally and physically healthy, among whom 45 individuals were sampled to be accessible and volunteer to be chosen randomly in the three groups of: red rose essential oil, lavender, and control. During the process of examination, the number of individuals reduced to 26 due to the allergy they had to red rose and lavender, and finally the control group, lavender group and red rose group consisted of 10, 9, and 7 individuals, respectively. Regarding the skill of lucid dreaming, the levels of the subjects were low in this research.

2.1 Instruments

The tools of the research included a questionnaire of an individual, lucid dream frequency scale (Erlacher &Schredl, 2011), having stability coefficient of 93% in eight reports of lucid dream experience together with a sheet of paper to be familiar with lucid dream, Pittsburg dream quality index (PSQL) (1989) and a dream notebook for recalling dreams on the basis of interview and filling out the notebook.

2.2 Procedure

The total process of the project as well as the purpose was completely explained to the subjects, and they were ensured that all their information will be kept secretly and won't be given to anyone. Then, all subjects filled out the form showing their consent in the research, and they took part in the study with complete consent. Furthermore, they were allowed to withdraw from the study anytime they wished. The researcher provided the best possible environmental conditions for the participants of experimental group in order that all moral and ethical aspects of the research would be observed. In the first stage, one week before the onset of intervention, the participants were given some information with regard to the nature of lucid dreaming for 15 minutes. In this study, the individuals having low capability in lucid dreaming participated. Then, the subjects of all three groups made notes of their lucid dream experience for seven nights. Having accepted the condition, the red rose group took a rest over a cushion over both parts of which there was a handkerchief marked with red rose essential oil, and lavender group carried out their task in a similar way, and nightly sleep of control group continued within seven nights with no changes and interventions. Finally, on the seventh day all groups took the post-test.

2.3 Statistical Analysis

In this research, descriptive statistic was used in order to calculate frequencies, determine central indexes, distribution, drawing tables and charts; deductive statistic (kolmogorov-smirnov test) and Kruskal-wallis test were used in order to analyze the data with a certainty level of 95%. Moreover, all statistical calculations were performed using the software SPSS 20.

3. Results

Table (1) indicates the results of Kruskal-wallis test in the pre-post test stage of all three groups concerning lucid dream variables, recalling lucid dreams, confused dreams and sleep disorders.

Table 1: Kruskal-Wallis test results in pre-post test stages of all three groups concerning lucid dream variables, recalling lucid dreams, confused dreams and sleep disorders

Variable	Group	Pre-test median	Post-test median	Test statistics		Freedom degree	Significance level
Lucid dream	Control	0.00	0.10	.955		2	0.620
	Lavender	0.00	0.22				
	Red rose	0.00	0.28				
Recalling lucid dream	Control	0.30	0.60	8.36		2	0.015
	Lavender	0.55	1.22				
	Red rose	1	2.14				

Variable	Group	Pre-test median	Post-test median	Test statistics	Freedom degree	Significance level
Confused dream	Control	1.4	1.3	2.81	2	0.244
	Lavender	1.11	0.66			
	Red rose	1.42	0.85			
Sleep disorder	Control	1.6	1.6	3.13	2	0.209
	Lavender	1.33	1.11			
	Red rose	1.85	1			

The results showed that: In the pre-test stage, in the three groups of control, red rose and lavender, there was no significant difference between lucid dreaming median degrees where p = 1.00, X^2= .00; recalling dreams median degrees where p=.157, X^2=3.69; confused dreams micro-scale median degrees where p=.571, X^2= 1.12; sleep disorder median degrees where p=.571, X^2 = 3.71. Therefore, no significant difference was observed between the groups based on the variables of this research.

In the post-test stage, in the three groups of control, red rose and lavender, there was no significant difference between the median degrees of lucid dreaming (X^2=.955, p=.620). Also, there was no significant difference between dream recalling median degrees of the three groups of control, lavender, and red rose (X^2=8.36, p=.015).

Results of pairwise comparison with alpha level modified indicated that there was a significant difference between medians of lucid dream recalling of red rose (19.2) and control groups (9.20), that is p=.012. It means that the median of recalling dreams in red rose group was significantly higher than control group, while there was no significant difference between the medians of dream recalling of lavender (13.8) and control group (9.20), that is p=.479.

Comparing the median degrees of recalling in lavender and red rose groups indicated that there was no significant difference between recalling dreams in these two groups (p=369).

No significant difference was observed between sleep quality median degrees of confused dream micro-scales in the three groups of control, lavender, and red rose (X^2=2.81, p=.244).

No significant difference was observed between sleep quality median degrees of sleep disorder micro-scales in the three groups of control, lavender, and red rose (X^2=3.13, p=.209).

4. Discussion

The purpose of the present research is to study the effects of red rose essential oil and lavender aromatherapy on the frequency of lucid dreaming, recalling dreams and quality of dreams in female students. Results of a seven-night intervention with aromatherapy showed there was not any significant difference concerning lucid dreaming among the three groups of control, lavender, and red rose. There was no significant difference between dream recalling of red rose and control groups; furthermore, no significant difference concerning dream recalling was observed between lavender and control groups; there was no significant difference between sleep quality median degrees of confused dream micro-scale in the three groups.

Results regarding lack of significant effect of aromatherapy on sleep quality was consistent with the findings of Sanatkaran, Bahari, Atashi and (2015), Olapour, et al. (2013). However it was not consistent with Haji Bagheri, Babaei, and Adib (2014), Ikei, Komatsu, Song, Himoro, & Miyazaki (2014), Igarashi, Song, Ikei, Ohiro, & Miyazaki (2014). With regard to the possible reasons of this inconsistency, the subjects difference in having diseases and number of intervention sessions (3 sessions) can be mentioned in the research of Haji Bagheri, Babaei, and Adib; difference in the kind of intervention, number of intervention sessions, difference in gender and ages of the subjects in the research of Ikei, Komatsu, Song, Himoro, & Miyazaki; difference in the variables under study in the research of Igarashi, Song, Ikei, Ohiro, & Miyazaki . In addition, it can be said that the red rose has been considered in Iranian medical books and aromatherapy as a mild but powerful anti-depression since ancient times, and sexual desire enhancer in women and men and a great essential oil in skin care (Lis-Balchin, 2006). Also, sexual desire is very high in REM sleep and red rose essential oil is also used in aromatherapy to increase sexual desire, an individual can be affected by increased sexual desire caused by red rose essential oil and he is sexually stimulated and as a result the relaxant effects of red rose essential oil might have been neutralized. Other possible reasons of ineffectiveness of aromatherapy may be because sleeping is an active and complicated experience and sleep quality is affected by several factors and sleep patterns undergo many changeability in different people (Shapiro, 1982). Findings are indicative of the fact that an individual's variability while sleeping may have an important role in the genetic elements and environmental factors, depending on the characteristics of a normal sleep like organization of sleep stages, sleep time, sleep quality, sleep disorders like sleeplessness, and sleep disorders resulting from interference with biological time (Shapiro, 1982). Furthermore, among other inconsistent reasons, the

difference in the dose consumed, the method of performance seasonally, and experiencing positive or negative memories can be mentioned (Smells can stimulate memory, if the smell of essential oils is associated with negative memories in patients, it may possibly lead to negative results), (Salamati, et.al, 2014). Moreover, these findings were consistent with the findings of Erlacher, Stumbrys and Schredl (2012), Schädlich and Erlacher (2012), Schredl and Elarcher (2011), Erlacher and Schredl (2010), Voss et.al (2009), LaBerge and Levitan (1995). Considering the reasons of this inconsistency can be mentioned in the following: difference in the subjects' types in Erlacher's research, Stumbrys and Schredl (2012) who were athletes, and were the subjects of the students' study; in the Schädlich and Erlacher (2012), this difference was in training the subjects to have lucid dream, and the difference in the variable under study which was the dreaming application; and in Schredl and Elarcher (2011), Elarcher and Schredl (2010), the difference may be the type of study, and also the variable "physical training" and considering the difference in the type of intervention being light, the degree of ability in having lucid dream, and intervention time are mentioned (LaBerge & Levitan, 1995).

In this regard, we can say that in lucid dreaming, the simulated world of dream can be controlled by dreamer so a lucid dreamer can practice motional assignments in his dream Elarcher and Schredl (2010). Therefore, bearing this in mind, lucid dreaming is a skill that has been studied in the student's subjects and probably the lack of skill in this field has affected the results being significant. Intervention of time can be mentioned to be among other obvious possible reasons that has been carried out in other research more than a month, and frequency has been reported at least once a month; however, in this research, only 7 sessions in less than a month have been dedicated to study and is likely to affect the results.

The results of the study indicated that there was a significant difference concerning recalling the dreams between the two groups of control and red rose. The results of this study concerning recalling the dreams were consistent with the research of Schredl & Fulda (2005), Schredl & Reinhard (2008) and were congruent with Schredl (2008) and Schredl & Sartorius (2006). Analyzing daily diaries of the subjects indicated that interpersonal fluctuations and intrapersonal differences during sleep had effect on recalling the dreams. In this regard, researchers state that even sleeping for one more hour has 20% effect on recalling the dreams (Scherdl & Fulda, 2005). Therefore, considering this fact, it is possible that the experimental group benefited from better sleep and more time and had a significant effect on recalling dreams. Furthermore, since recalling dreams is connected to temporoparietal junction as well as medial prefrontal cortex (Eichenlaub, et al. 2014), there is the possibility that red rose essential oil caused this areas of the brain to be active. Increased activity in this area of the brain is one of the possible reasons of increased recalling of dreams in the red rose essential oil. Evidence shows that relaxation causes increased recalling of dreams (Reed, 1987). Considering the anti-anxiety and pacifying effect which red rose seems to have (Nikbakht & Kafi, 2004), increased level of recalling dreams can be justified in red rose group. Therefore, the results of the findings of Igarashi, et al. back the idea.

With regard to the findings of this research and background concerning studying the therapeutic effect of red rose essential oil and lavender on lucid dreams, recalling lucid dreams and sleep quality of female students, the results indicated that aromatherapy intervention, mentioned above, had no effects on lucid dreams and sleep quality of female students, rather it had a significant effect on recalling their dreams. Regarding the degree of a positive relationship concerning recalling dreams with lucid dreaming (Erlacher, Stumbrys, & Schredl, 2012) and the effect of red rose essential oil on recalling dreams, it is recommended that the research on the therapeutic effect in future be studied by using the techniques to access lucid dreams. Taking the results into consideration, we find that by considering the differences like gender, age, genetic factors, suffering from mental of physical diseases, etc. the frequency level and the length of recalling dreams would be different in individuals. In addition, having lucid dreaming would be regarded as a skill, which the subjects have to dedicate some time to be familiar with it and be engaged in the exercises. At the end, it can be said that considering the factors related to sleep indicated that short-term intervention cannot have significance, and studies lasting at least for a month would be required, this last point is recommended from the present research.

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