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THE EFFECT OF INHALING LAVENDER ON HEMODIALYSIS PATIENT'S ANXIETY

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Abstract

Anxiety increases numerous physical problems of hemodialysis patients due to physiological changes of the whole body system. If anxiety disorders of hemodialysis patients is not treated, biochemical reactions will happen due to adrenaline increase which have negative effects on their treatment.

Materials and method

This is a random witnessed clinical trial study which was carried out in 1394. Its population included hemodialysis patients in Khatam Al Anbia and Imam Ali hospitals in Zahedan. 35 patients were selected by sampling formula and 35 others as witnesses. Szpillburger standard questionnaire was used to gather the data. Only the qualified patients were included in the study. They had inhaled the lavender for 20 minutes once a month and their anxiety was measured both before and after the study.

Findings

Results of the study indicated that there is a significant difference between state and trait anxiety marks in examined groups according to one sided variance analysis (P=0.001)

Results: Considering the anxiety complications, this study recommends aromatherapy with lavender essence as a preferred non-pharmacological treatment.

Keywords: inhaling, lavender essence, anxiety, hemodialysis

Nature of a chronic disease make the patient need long term treatment and nursing cares and one of them is chronic renal failure .

The prevalence of the end stage renal failure disease has been reported 350 out of 1 million a year (1). Prevalence and incidence of end stage renal failure disease and supplementary treatment has increased from 49.9 out of 1 million in 2000 to 63.8 out of one million in 2006 (2). Available statistics of Iran shows a considerable increase of chronic renal failure. There are 22000 hemodialysis patients in Iran according to statistics of 1393 (3) and it increases by 20 percent annually while it is 5 to 10 percent for universal standards (4, 5). Hemodialysis is the most common treatment method for patients with chronic renal failure disease (6, 7) which is a stress imposing procedure. It causes not only numerous psychotic and social diseases but also mental disorders and imposes economic burden on society (8, 9). Anxiety is one of the most common reported problems of hemodialysis patients and its prevalence is from 45% to 89% (10, 11, 12). It increases numerous physical problems of hemodialysis patients due to physical changes of the whole body systems. When the central nervous system is stimulated many other systems are also engaged causing pain, discomfort and disorder finally affecting their performance due to concentration and decision making disorders (13, 14, and 15). If anxiety disorders of hemodialysis patients is not treated, biochemical and parasympatic reactions will happen which have negative effects on their treatment (16).

Studies have shown that hemodialysis patients' anxiety will lead to complications like overload and muscular cramps which increases their need for more visits (17). It also does not let them follow their recommended treatments and regimen and affect self-care (12,18). Anxiety declines performance and satisfaction and patients with anxiety disorders suffer more occupational problems (19).

Although medicine is the common treatment for anxiety (20, 21, 22, and 23) but it has side effects and temporary effect which will lead to researches related to non-pharmacological methods or complementary alternative medicine. They almost have less complications and dangers or can be used along with other methods. If these methods are combined, their treatment effect will be certainly increased (24,25) that nurses can apply. One of these interventions that has been used in different studies on patients is lavender aromatherapy (26,27) which is of effective methods to decrease hemodialysis patients anxiety. World health organization has recommended about this complementary medicine that human beings have the right to use the most effective, cheapest, safest and easiest universal medicine methods to cure their diseases (28,5,25,29). Aromatherapy is a name given to treatment with herbal essence to heal and improve mentally and physically. Lavender is one of Volatile oils which changes behavior effectively, it is called the versatile essence due to its

many usages (30,31). Results of the carried out studies (the aromatherapy effect of lavender essence on fatigue and anxiety of hemodialysis patients has been different or antithetical for instance the effect of this essence in a study (examining the effect of aromatherapy with lavender essence on fatigue level of hemodialysis patients) was not confirmed (32). The effect of inhaling lavender essence on hemodialysis patients anxiety improvement was not confirmed in two other studies (27,33). The role of aromatherapy is weak in nursing cares in Iran and no studies has been carried out on hemodialysis patients anxiety so the researcher decided to carry out a study to examine the effect of aromatherapy with lavender essence on hemodialysis patients anxiety with regard to stated musts, anxiety control importance from different perspectives and verification of various resources about inadequacy of pharmacologic treatments on anxiety and fatigue control and the necessity to have control plans therefore it can be used as a safe, cheap, simple and non-aggressive method in nursing cares if effective. Finally increasing renal failure patients' awareness of cares lessens treatment costs and economic burden of society or patients problems and paves the way for further researches.

Materials and methods:

This is a random witnessed clinical trial study which was carried out in 1394. Its population included hemodialysis patients in Khatam Al Anbia and Imam Ali hospitals in Zahedan.

Sample size

Sample size was estimated based on carried out researches on similar cases (5) for the difference of anxiety and fatigue mark in two groups using the following formula:

26 samples in each group were estimated to be examined but 35 samples (totally 105 samples) in each group were estimated due to reduction possibility with confidence level of 95% and power test of 80%.

Patients were divided into two groups randomly using lottery according to referring days of the week, then they were assigned to group A (aromatherapy) or group B (control group). Intervention was executed according to the programmed plan.

We considered age and sex factors to assimilate the samples. Having determined samples in groups using simple random method, two groups were analyzed according to sex and age before instructional and pre-test sessions. Groups' assimilation was confirmed regarding age and sex. Only those patients who were 20 to 60 years old entered the study. one of the important entrance criteria was achieving anxiety mark from 32 to 64 for obvious anxiety and 32 to 62 for hidden

anxiety bases on Szpillburg anxiety scale and those who had low, high and very high anxiety were not included in this study (5). They also had the following entrance criteria:

They should not have allergic rhinitis or respiratory problems (aromatherapy precautions)

They should not have olfactory disorder or history of lavender odor allergy

They have not used sedatives or other treatments (herbal essence and regular practice) to decline anxiety.

Data gathering tools in this study included the following

1-research credit selection list

2-disease and personal information questionnaire

3-Szpillburger hidden and obvious anxiety questionnaire

4-Aromatherapy registration checklist.

Demographic data and disease list were registered using interview and file registration in two sections.

A: personal information of research units which included age, height, sex, weight, marital status, children numbers, job, education and residence

B: disease status which included hemodialysis duration, blood test results and those data related to patients anxiety mark.

Szpillburger's trait and state anxiety is the standard tool for measuring anxiety, which was designed and published by him in 1983. It has forty phrases related to obvious and hidden anxiety scale which includes twenty likert's scale multiple choice questions. Research unit was used to determine obvious and hidden anxiety rate which assesses the anxiety as an attribute and status. Tested persons have to state their emotions at the time of filling the form while answering obvious anxiety scale. They should mention their usual emotions while answering hidden anxiety scale. The questionnaire reliability has been confirmed by Szpillburger (1983), Quick (2004), Mahram (1372) and Nazemian (1387) (34, 35,36,12) and it has been used in various researches in Iran and overseas (5,27,37,38, 39, 40). Its reliability was R=89% in Nazemian's study using test re-test method for hemodialysis patients in Mashhad and it has been .91% and .90% respectively based on Cronbach Alpha for attribute and status anxiety scale in Mahram's study (34,35). Those patients who had the qualification were selected and entered the study.

Intervention group patients in three 60 minutes sessions (each group separately) at the time of referring to hemodialysis wards were instructed to know how it is done in groups. The patients were also individually instructed to take samples

before, during and after the dialysis in the first week. Having coordinated with ward supervisor, aromatherapy training was done in a separate room which was assigned for patients rest.

Materials and method of lavender essence group:

Two drops of 5% lavender essence combined with sweet almond oil was poured by dropper on cotton and was attached by pin to patients' collar in addition to common cares of hemodialysis ward, and then they were asked to breathe normally for 15 to 20 minutes. This method was done daily two times during four weeks in hemodialysis ward and home (5,41).

Control group method:

Only common cares of hemodialysis ward was performed for control group and no interventions were performed for them.

B) The stage after intervention

Having finished the intervention at the end of the fourth week, Szpillburger questionnaire was filled out for the two groups by patients or the researcher.

Data analysis

Having finished the sampling and gathered the data, the forms were encoded and entered to Computer.

Data were entered to SPSS 16 statistical software using the following methods:

To describe the attributes of research units in both groups descriptive statistics like mean and SD for quantitative variables, frequency distribution for qualitative ones, evenTtest, independent T test and one sided variance analysis were used for results analysis. To determine the normality of the data we used chormogroph Smirnov or Shaipirovilkz. Other parallel non parametric methods were used if data were not normal. Co-variance analysis method was applied to control confounding variables.

Results:

Mean age of research units was 42.73 ± 12.16 who were in age range from 20 to 60. 59 men (56.19%) and 43 women (43.8%) were in two groups. 81 persons (77.14%) of research units were married so that married persons frequency percent was (77.14%) in aromatherapy group and (80%) in control group.

Considering the occupation, 60 persons (57.14%) were jobless so their frequency percent was (57.14%) in aromatherapy group and (65.71%) in control group. Considering the first purpose of this study according to even T test, mean of

obvious anxiety changes point did not show a significant difference after intervention than before the intervention in two relaxation groups (P=0.001) but it is not significant in control group.

Table 1: comparison of mean and SD of obvious anxiety mark changes, before and after the intervention in two groups according to one sided variance.

Mean of marks changes	P value	Paired sample T test	After intervention	Before intervention	Group
				±SD	
-13.86 ±6.91	0.001	-10.793	33.06 ±3.27	46.93 ±6.57	Lavender
-2.00 ±7.11	0.164	-1.433	41.80 ±43.80	43.80 ±6.41	Control
P=0.001			P=0.001	P=0.185	One sided variance analysis P=0.001

Considering the second purpose of the research, There is a significant difference between mean of obvious anxiety mark changes after the intervention than before it in aromatherapy group according to even T test (P=0.001)

Table 2: comparison of mean and SD of trait anxiety mark changes before and after the intervention in two groups of study according to one sided variance analysis.

Mean of marks changes	P value	Paired sample T test	After intervention	Before intervention	Group
				±SD	
-6.04 ±5.35	0.001	-5.178	47.28 ±4.36	53.33 ±6.21	Lavender
-0.68 ±5.11	0.512	-0.665	49.96 ±6.36	50.64 ±7.44	Control
P=0.001			P=0.01	P=0.085	One sided variance analysis P=0.001

Considering the second purpose of the research, There is a significant difference between mean of total anxiety mark changes after the intervention than before it in aromatherapy group according to paired sample T test (P=0.001) but it is not significant in control group, The mean of total anxiety mark changes has been significantly higher in aromatherapy group than the control group based on one sided variance analysis.

Table (3) Comparison of mean and SD of total anxiety mark changes before and after the intervention in two groups of study according to one sided variance analysis.

Mean of marks changes	P value	Paired sample T test	After intervention	Before intervention	Group
				±SD	
-19.10 ±8.99	0.001	-9.2	81.8 ±7.17	100.4 ±14.00	Lavender
-6.7 ±12.95	0.02	-2.5	91.9 ±13.3	98.9 ±10.1	Control
P=0.001			P=0.007	P=0.112	One sided variance analysis P=0.001

The effect of aromatherapy with lavender essence on anxiety

Results of this study showed that those patients who had inhaled lavender essence had a significant decrease in state and trait anxiety level than before the intervention. Their state and trait anxiety decreased than before the intervention by (-13.86±_6.91) and (-6.04±-5.35) respectively. The difference between the stage before and after the intervention had been significant for both anxieties so it had been two times more in trait anxiety.

Some of the studies which confirms this point are Kanani et al (the effect of inhaling lavender and orange essence on hemodialysis patients anxiety (5)), Hosseini et al (1394) (the effect of inhaling lavenderessence on cardiac surgery nominated patients anxiety (39), Myung-Haeng et al (2013) (the effect of aromatherapy on anxiety, vital signs and sleeping quality in IV coronary patients in ICUs (42), Hoya et al (2008) (the effect of providing non-pharmacological methods like relaxing and optimal environments using lavender essence, showing compact discs containing natural sedative images and sounds on patients anxiety before gastroscopy(42) and Itai et al (2000) (the effect of lavender and hiba essence on anxiety and depression of hemodialysis patients (43).

The results of the study of Kanani et al (1377) showed that there was a statistically significant difference between groups using orange and lavender essence and the common group but it was significant between orange and lavender groups, he believed that inhaling lavender and orange decrease hemodialysis patients anxiety (5). Probably the compatibility reason of Kanani study with the present study is applying effective and similar method of lavender essence, although anxiety of

patients in Kanani study was less than the present study after intervention regarding the same anxiety measurement tool.

The studies of Heydari (1392) and Cho MY (2013) also indicated anxiety decline in patients who had inhaled lavender which is compatible with the present study. There was also a statistically significant difference in state anxiety of aromatherapy group in the study of Cho MY (39,40). Probably the reason of this compatibility is using the effective method of applying lavender, although they have used the same measurement tool the patients anxiety level was far less than those of the present study because cardiac surgery is more anxiety imposing than hemodialysis. The reason of this difference in anxiety level decrease may be short time of inhaling lavender essence in cardiac surgery nominated patients in abovementioned studies which has caused the difference in anxiety level decline.

Hoya et al (2008) also showed in their study that non-pharmacological methods like optimal and relaxing environment is effective for declining anxiety during and after gastroscopy which can be one of the reasons of intervention effectiveness in the present study (41) although it has used a bit different methods and evaluation tools from the present study. Patients were in a relaxing and optimal environment using lavender essence and compact discs containing natural relaxing sounds and images, while in our study only lavender was used which indicates its effectiveness.

The study of Itai et al (2000) showed that using hiba essence declines the patients' depression and anxiety significantly but lavender had only decreased hemodialysis patients' anxiety significantly which confirm the present study results (42).

Itai study included 14 women who were put in normal environment, odorless environment (using deodorant) and environment with lavender and hiba essence, their anxiety and depression were measured by Hamilton's depression and anxiety evaluation tools. Although different methods and anxiety evaluation tools have been used in Itai study, it showed the effect of lavender on anxiety decrease. Low sample size, vague dose or percent of lavender and patients exposing time for examining their anxiety and depression make it impossible to overgeneralize the results for the society while in the present study acceptable high sample size, method and lavender dose were defined and clarified which is strength for the present study. Inhaling lavender essence was not effective on patients anxiety opposed to the present study results according to studies of Nisi et al (2013) (the effect of aromatherapy with lavender essence on hemodialysis patients anxiety (27) and Tayebi Aet al (1393) (the effect of inhaling lavender essence on hemodialysis patients anxiety, stress and depression (33). The study of Nisi et al (2013) indicated the ineffectiveness of inhaling lavender essence on hemodialysis patients anxiety which is not compatible with the present study (27), probably its reason is using different method and

amount of lavender(one drop of essence for 15 minutes three times a week during three weeks of dialysis, Nisi believed that probably the reason of this difference is due to effect of various factors like short duration of intervention, education level and age.

Finally, it can be concluded that results of the present and the other similar studies indicate the effect of aromatherapy with lavender essence on patients fatigue and anxiety. Some differences are observed in fatigue or anxiety in some studies or the useful or positive effects of these methods on fatigue or anxiety has not been shown, the reason of this difference may be various factors like short term intervention, method, lavender essence dose, low sample size, evaluation tool or its sensitivity, demographic variables (education and age) and intervening psychotic factors which have caused the difference in these studies results.

Conclusion

Having considered the general purpose of this study (the effect of aromatherapy with lavender essence on hemodialysis patients' anxiety and fatigue level) its Results and findings showed that aromatherapy with lavender essence can effectively reduce the anxiety of these patients. It can also be said that anxiety level in control group had been almost unchanged due to not receiving non-pharmacological or complementary treatment to reduce or eliminate anxiety which indicates the importance of non-pharmacological or complementary treatments to reduce or eliminate anxiety. This study recommends aromatherapy with lavender essence as a preferred non-pharmacological treatment regarding the high prevalence of anxiety and its side effects. It is a distinct prospect for using alternative complementary medicine especially aromatherapy with lavender essence by nurses who take care of patients. They are one of the most important members of medical staff who have a critical role to protect and maintain the body and mind of patients. Some of their most important duties are examining and observing patients' verbal and non-verbal behaviors and determining their anxiety and fatigue level also the most important purpose of medical team is saving patients' lives or minimizing the complications after and before the hemodialysis so aromatherapy with lavender essence is recommended for similar clinical conditions to control fatigue and anxiety of the patients.

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