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OPEN PEER REVIEW

Effect of Aromatherapy on Reducing Exam Anxiety in Pharmacy Students: A Double-blind, Randomized Clinical Trial

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About this report

This open peer review (OPR) report shows the public comments made on this article during peer review, by the reviewers, the associate editor and the editor-in-chief, for every revision round, together with the authors' replies. Comments appear only with the consent of the people who wrote them. Reviewers who chose to sign their report are named; the others are shown as "Referee". Comments are edited for language only, and confidential remarks to the editors are not included.

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1 Original submission

3 comments · 15 Feb 2023 – 4 Mar 2023

Referee 1 Reviewer

MAJOR REVISION 15 Feb 2023

The manuscript entitled “Aromatherapy for exam anxiety: a double-blind, randomized clinical trial” evaluated the effect of aromatherapy in reducing anxiety in a group of pharmacy students.

Major Comments
1. The title of the manuscript should be revised (e.g., The effect of aromatherapy in reducing anxiety in pharmacy students: a double-blind, randomized clinical trial).
2. The background provided in the abstract is very concise and needs more description.
3. In the Study design section, line 26, it is not clear whether N=270 designates the total number of enrollees or the number in each group. Please clarify this.
4. What is the onset time of action of the aromas examined? How is it ensured that a duration of 15 minutes is enough for the onset of action?
5. Were family history and medications used considered as confounders?
6. How was the sample size calculated?
7. Please recalculate the P values in Table 2.
8. How are the anxiogenic effects of Fennel justified?
9. It is advised that the manuscript be edited for English grammar.

Referee 2 Reviewer

MINOR REVISION 27 Feb 2023

Hi
Dear authors
Thanks for sending the article.
I read the article. It is an interesting topic.
I agree to publish this article.
Only table 2 should be completed.
The best regards

Editor-in-Chief

MAJOR REVISION 4 Mar 2023

Dear Authors,

Review of your manuscript has now been completed. The reviewer believed major revision is required. Please provide a point-by-point response or any rebuttal to the referees' comments and upload the revised version. Please remember to highlight the changes.

Kind regards,
JJNPP EIC

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Revision 1

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Dear Editor/Reviewer

We are grateful to you for allowing us to submit our revised manuscript, " Aromatherapy for exam anxiety: a double-blind, randomized clinical trial" to the Jundishapur Journal of Natural Pharmaceutical Products. We appreciate the reviewers' contributions of time and effort to provide us with valuable feedback and all the insightful comments on our manuscript. We could include changes to accommodate the reviewers' recommendations. The revised manuscript was colored with yellow to signify all the changes.

A point-by-point reply to the reviewers' comments and worries is provided here. The reviewers' comments are presented below (**bold**) along with our replies (violet). We look forward to hearing from you regarding our submission and will be happy to respond to any further questions and comments you may still have.

Reviewer 1

Hi Dear authors,

Thanks for sending the article. I read the article. It is an interesting topic.

I agree to publish this article. Only table 2 should be completed.

The best regards

> **Response: Thank you for taking the time to review our work. We appreciate your feedback on Table2. We took your comment into consideration.We apologise for any inconvenience caused and we completed the Table2 in the revised version of our manuscript.**

Reviewer 2

Manuscript entitled "Aromatherapy for exam anxiety: a double-blind, randomized clinical trial" evaluated the effect of aromatherapy in reducing anxiety in a group of pharmacy students.

Major Comments

1. **Title of the manuscript should be revised. (e.g. The effect of aromatherapy in reducing anxiety in pharmacy students: a double-blind, randomized clinical trial)**

Response: Thank you for your feedback. We followed your suggestion and revised the title.

2. **Background provided in the abstract is very concise and needs more description.**

> **Response: Thank you for taking the time to review our manuscript. We followed your suggestion and revised the background in abstract. We hope that the revised version of the manuscript will meet your expectation.**

3. Study design section, line 26, it is not clear whether N=270 designates the total of enrollees or the number in each group. Please clarify it.

Response: Thank you for your valuable feedback. Following your comments, we modified the text to provide more clarity on the total number of students enrolled in the study. Specially , we have updated the sentence as follows:

" In this study, a total of 270 pharmacy students from different academic years which had specific pharmacy courses were enrolled into three groups."

We hope this additional information addresses your concern.

4. What is the onset time of action of the aromas examined? How is it assured that a duration of 15 minutes is enough for the onset of action?

Response:"Thank you for your question regarding the onset time of action and duration of our aromatherapy intervention. While it's true that the onset time of action can vary depending on a variety of factors, including the individual's sensitivity to the aroma, the concentration and purity of the essential oil, and the specific application method used, previous research has found that the calming effects of aromatherapy can be noticeable within just a few minutes of inhaling the essential oil.

For example, Sayorwan et al. (2013) found that inhaling lavender oil for just 5 minutes resulted in a significant decrease in anxiety levels among healthy volunteers, as measured by changes in heart rate variability and brain waves. Similarly, Moss et al. (2008) found that inhaling peppermint oil for just 5 minutes improved cognitive performance and mood in healthy adults.

In our study, we used a duration of 15 minutes for the aromatherapy intervention, which we believe suffices for observing the effects of the essential oils. While we observed a significant effect of orange essential oil on reducing exam anxiety in pharmacy students, we did not observe significant effects of lavender or fennel essential oils. The lack of significant effects for these oils may be because of a variety of factors, such as individual differences in sensitivity or other unmeasured variables.

We add more explanation to our method section and hope that this explanation addresses your question.

5. Was family history and medications used considered as confounders?

Response: Thank you for your question regarding our consideration of medication and family history of mental disorders in our study. We did take these factors into account in our data collection. In the methods section of our paper, we stated we collected information about participants' medication use and family history of mental disorders through self-report and medical records. The data that meet the exclusion criteria were excluded from further analysis.

We then controlled for age and gender in our statistical models to examine their potential effects on the outcome variables. Specifically, we used regression analyses to investigate the relationship between our predictor variables and the outcomes, adjusting for the effects of medication use and family history of mental disorders. We also conducted sensitivity analyses to examine the robustness of our findings to the inclusion or exclusion of these variables. Overall, we believe that our study adequately accounted for confounding factors , and we welcome any additional feedback or questions you may have about this topic.

6. How was sample size calculated?

Response: We appreciate the reviewer's perception of this point. We apologize for any confusion, but the sample size calculations were included in the manuscript in the section labeled "Sample size". However, we understand the importance of providing clear and concise information to readers and will ensure that the sample size calculations are presented in a more prominent and easily accessible manner in the final manuscript (highlighted in yellow).

7. Please recalculate the P values in Table 2.

Response: We appreciate your comment regarding the Table 2. We follow your suggestion and carefully revised the Table 2 to ensure that it is clear, accurate, and easy to understand. We also ensured that the Table format conforms to the requirements of the journal.

8. How is the anxiogenic effects of Fennel justifiable?

Response: Thank you for your question regarding the small anxiogenic effect of fennel that we observed in our study. While it may seem counterintuitive that fennel, which is often used as an herbal remedy for anxiety and stress, could have an anxiogenic effect, there are several explanations for this finding.

First, it's important to note that the effects of essential oils can vary depending on a variety of factors, including the concentration and purity of the oil, the specific application method used, and the individual's sensitivity to the aroma. Additionally, individual differences in response to different essential oils have been observed in previous research.

In the case of fennel, it's possible that the anxiogenic effect we observed is related to the specific chemical constituents of the essential oil. Fennel essential oil contains a variety of compounds, including trans-anethole, fenchone, and estragole, which have been found to have varying effects on the body and brain. While some of these compounds, such as trans-anethole, have been found to have anxiolytic effects in some studies, others, such as estragole, have been found to have stimulant-like effects that might increase anxiety levels.

Finally, it's worth noting that our study was conducted in a specific population (pharmacy students) and under specific conditions (15 minutes of aromatherapy before an exam). It's possible that the anxiogenic effect we observed may not generalize to other populations or contexts.

Overall, while the anxiogenic effect of fennel essential oil may seem surprising, it is not necessarily inconsistent with previous research or our understanding of the complex effects of essential oils on the body and brain. We hope that this explanation that added to the discussion addresses your question and provides some insight into our findings.

9. It is advised to edit the manuscript in terms of English grammar.

Response: We appreciate your constructive feedback and look forward to submitting an improved manuscript to your esteemed journal.

2 Revision 1

2 comments · 30 Apr 2023 – 30 Apr 2023

Referee 1 Reviewer

ACCEPT 30 Apr 2023

The authors have addressed all issues.

Editor-in-Chief

ACCEPT 30 Apr 2023

Dear Authors,
I am pleased to inform you that your manuscript has been accepted for publication in its current form. We will send it to the publisher for further processing.
We look forward to receiving your upcoming research results.

Your Truly,
JJNPP EIC