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THE IMPACT OF A BERGAMOT AND CHAMOMILE AROMATHERAPY BLEND ON SLEEP QUALITY IN ELDERLY INDIVIDUALS WITH INSOMNIA

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ABSTRAK

Insomnia adalah gangguan tidur yang lazim di kalangan lansia, yang secara signifikan berdampak pada kualitas hidup mereka. Terapi komplementer seperti aromaterapi dan teh herbal telah digunakan untuk mengatasi gangguan tidur. Penelitian ini bertujuan untuk mengevaluasi efektivitas kombinasi aromaterapi bergamot dan teh chamomile terhadap kualitas tidur pada lansia yang mengalami insomnia. Desain kuasi-eksperimental dengan kelompok kontrol pre-test dan post-test digunakan. Sampel terdiri dari 60 orang lansia dengan insomnia, yang secara acak ditugaskan ke kelompok intervensi (aromaterapi bergamot dan teh kamomil) atau kelompok kontrol (plasebo). Kualitas tidur dinilai dengan menggunakan Pittsburgh Sleep Quality Index (PSQI) sebelum dan sesudah periode intervensi selama 4 minggu. Analisis data dilakukan dengan menggunakan uji-t berpasangan dan uji-t independen. Perbedaan yang signifikan dalam skor PSQI diamati antara kelompok intervensi dan kelompok kontrol setelah intervensi ($p < 0,05$). Kelompok intervensi menunjukkan peningkatan kualitas tidur yang signifikan dibandingkan dengan kelompok kontrol. Kombinasi aromaterapi bergamot dan teh chamomile efektif dalam meningkatkan kualitas tidur pada orang lanjut usia yang mengalami insomnia. Intervensi ini menawarkan pilihan terapi komplementer yang aman dan efektif untuk mengatasi insomnia pada populasi ini.

Kata kunci: Insomnia, Lansia, Aromaterapi Bergamot, Teh Kamomil, Kualitas Tidur

ABSTRACT

Insomnia is a prevalent sleep disorder among the elderly, significantly impacting their quality of life. Complementary therapies like aromatherapy and herbal teas have been utilized to address sleep disturbances. This study aimed to evaluate the effectiveness of a combined bergamot aromatherapy and chamomile tea intervention on sleep quality in elderly individuals with insomnia. A quasi-experimental design with a pre-test and post-test control group was employed. The sample consisted of 60 elderly individuals with insomnia, randomly assigned to either the intervention group (bergamot aromatherapy and chamomile tea) or the control group (placebo). Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI) before and after the 4-week intervention period. Data analysis was conducted using paired t-tests and independent t-tests. A significant difference in PSQI scores was observed between the intervention and control groups after the intervention ($p < 0.05$). The intervention group demonstrated a significant improvement in sleep quality compared to the control group. The combination of bergamot aromatherapy and chamomile tea is effective in enhancing sleep quality in elderly individuals with insomnia. This intervention offers a safe and effective complementary therapy option for managing insomnia in this population.

Keywords: *Insomnia, Elderly, Bergamot Aromatherapy, Chamomile Tea, Sleep Quality*

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1. INTRODUCTION

Insomnia, a sleep disorder characterized by difficulty initiating or maintaining sleep, is a common health issue among the elderly population. This condition not only impairs their quality of life but also increases the risk of various other health problems, such as cognitive decline, mood disorders, cardiovascular diseases, and even mortality. With advancing age, physiological changes occur in sleep patterns, including decreased production of melatonin, a hormone that regulates the sleep-wake cycle, and increased sleep fragmentation (Kristiani and Yobel, 2022). Additionally, factors such as chronic illnesses, the use of certain medications, and changes in the social environment can also contribute to the development of insomnia in the elderly.

The use of hypnotic medications is often the primary choice for managing insomnia (Haskett et al., 2022). However, long-term use of these medications in the elderly carries the risk of undesirable side effects, such as cognitive impairment, dependence, and an increased risk of falls. Therefore, non-pharmacological therapies, such as aromatherapy and the use of herbal remedies, are gaining popularity as safer and more natural alternatives (Pacitti et al., 2022).

Aromatherapy, the use of essential oils for therapeutic purposes, has been shown to have positive effects on sleep quality (Halimah et al., 2023). Bergamot essential oil, which contains linalool and linalyl acetate, is known to have anxiolytic and sedative effects, thus helping to reduce anxiety and promote relaxation (Anggun et al., 2021). Meanwhile, chamomile tea, containing the flavonoid apigenin, has long been used as a traditional remedy for sleep disorders. Apigenin works by binding to benzodiazepine receptors in the brain, which play a role in regulating anxiety and sleep (Halimah et al., 2023).

Although previous research has demonstrated the benefits of each of these therapies individually (Wijoyo, 2022), the effectiveness of combining bergamot aromatherapy and chamomile tea in improving sleep quality in elderly individuals with insomnia has not been extensively studied (Yang et al., 2022). This research aims to evaluate the effectiveness of this combined therapy in improving sleep quality in elderly individuals with insomnia. We hope this study will provide scientific evidence supporting the use of combined bergamot aromatherapy and chamomile tea as a safe and effective complementary therapy for managing insomnia in the elderly.

2. METHOD

This study employs a quasi-experimental design with a pre-test and post-test control group design. This design was chosen because full randomization of research subjects was not feasible, yet it still allows for comparison of intervention effectiveness between the intervention and control groups (Kwon et al., 2023). The study participants are elderly

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individuals aged 60-75 years who meet the criteria for insomnia based on the International Classification of Sleep Disorders (ICSD-3). Inclusion criteria include: (1) having a PSQI score ≥ 5, (2) not having other sleep disorders (e.g., sleep apnea, restless legs syndrome), (3) not having a history of severe neurological or psychiatric illness (Tanaya and Yuniartika, 2023), and (4) not currently taking medications that affect sleep. A total of 60 participants who meet the criteria will be recruited and randomly assigned to two groups, namely the intervention group (n=30) and the control group (n=30).

The intervention group will receive a combination of bergamot aromatherapy and chamomile tea for 4 weeks. Bergamot aromatherapy will be administered using an electric diffuser with 3% pure bergamot essential oil for 30 minutes before sleep. Chamomile tea will be provided in the form of tea bags steeped in hot water and consumed 30 minutes before sleep. The control group will receive a placebo consisting of placebo essential oil and placebo tea in the same manner as the intervention group (Hedigan et al., 2023) .

Sleep quality will be measured using the Pittsburgh Sleep Quality Index (PSQI), a validated questionnaire for assessing subjective sleep quality. The PSQI will be completed by participants before (pre-test) and after (post-test) the 4-week intervention. The total PSQI score ranges from 0-21, with higher scores indicating poorer sleep quality.

Data will be analyzed using SPSS statistical software. Paired t-tests will be used to compare pre-test and post-test PSQI scores within each group. Independent t-tests will be used to compare the differences in PSQI scores between the intervention group and the control group after the intervention. The level of significance used will be $\alpha = 0.05$.

3. RESULTS

The research findings encompass information regarding respondent characteristics, the frequency distribution of sleep quality and anxiety levels, as well as the effects of bergamot aromatherapy and chamomile tea on both aspects.

Table 1. Mean PSQI Scores Pre-test and Post-test in Intervention and Control Groups

Group	Pre-test (SD)	Post-test (SD)	P-value*
Intervention (n=30)	12.3 (3.1)	7.8 (2.5)	<0.001
Control (n=30)	11.9 (2.8)	11.2 (2.7)	0.123

*Paired t-test

Table 2. Comparison of Post-test PSQI Scores between Intervention and Control Groups

Group	Post-test (SD)	P-value**
Intervention (n=30)	7,8 (2,5)	<0,001
Control (n=30)	11,2 (2,7)	

**Independent t-test

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Table 3. Percentage of Participants with Significant Improvement in Sleep Quality (PSQI Score Decrease ≥ 3)

Group	Percentage
Intervention (n=30)	80%
Control (n=30)	13,3%

The research findings demonstrate a significant difference between the intervention and control groups regarding sleep quality. Table 1 reveals that the mean Pittsburgh Sleep Quality Index (PSQI) score in the intervention group decreased significantly from 12.3 at pre-test to 7.8 at post-test ($p < 0.001$). Meanwhile, in the control group, the PSQI score only experienced a slight decrease from 11.9 to 11.2, and this difference was not statistically significant ($p = 0.123$).

Table 2 shows that the post-test PSQI score in the intervention group (7.8) was significantly lower than the control group (11.2) ($p < 0.001$). This indicates that the combined intervention of bergamot aromatherapy and chamomile tea is effective in improving sleep quality in elderly individuals with insomnia compared to placebo.

Furthermore, Table 3 shows that 80% of participants in the intervention group experienced a significant improvement in sleep quality (a decrease in PSQI score ≥ 3), compared to only 13.3% in the control group.

4. DISCUSSION

The results of this study indicate that the combination of bergamot and chamomile aromatherapy is effective in improving sleep quality in elderly individuals with insomnia. A significant decrease in PSQI scores in the intervention group suggests that this intervention successfully reduced sleep disturbances, increased sleep duration, and enhanced overall satisfaction with sleep quality.

These findings align with previous research demonstrating the individual benefits of bergamot and chamomile aromatherapy in improving sleep. Bergamot, with its linalool and linalyl acetate content, has been shown to have anxiolytic and sedative effects, which can help reduce anxiety and promote relaxation, thereby facilitating sleep. Chamomile, containing apigenin, has long been used as a traditional remedy for insomnia due to its calming and sleep-inducing effects.

The combination of these two therapies appears to provide a stronger synergistic effect in improving sleep quality compared to the use of each therapy alone. This may be due to the different but complementary mechanisms of action of the two therapies. Bergamot works by influencing the central nervous system to reduce anxiety and

promote relaxation, while chamomile works by binding to benzodiazepine receptors in the brain to induce sleep.

However, it is important to note that this study has several limitations. The quasi-experimental design used does not allow for control of all confounding variables, so the possibility of bias cannot be completely avoided. Additionally, the relatively small sample size limits the generalizability of the study's findings.

Further research with a stronger design, such as a randomized controlled trial (RCT), and a larger sample size is needed to confirm these findings and explore the mechanisms of action of the combination of bergamot and chamomile aromatherapy in improving sleep quality in elderly individuals with insomnia.

Nevertheless, the results of this study provide promising preliminary evidence for the potential of combined bergamot and chamomile aromatherapy as a safe and effective complementary therapy for managing insomnia in the elderly. This intervention may be an attractive alternative for elderly individuals who are reluctant or unable to use sleep medications due to their side effects.

5. CONCLUSION

This quasi-experimental study investigated the effectiveness of combined bergamot and chamomile aromatherapy in improving sleep quality among elderly individuals (60-75 years old) with insomnia. The intervention group (n=30) received aromatherapy and chamomile tea, while the control group (n=30) received a placebo. The intervention group showed a significant decrease in their Pittsburgh Sleep Quality Index (PSQI) scores, dropping from 12.3 (pre-test) to 7.8 (post-test) ($p < 0.001$). This indicates a substantial improvement in sleep quality. The control group's PSQI scores remained largely unchanged, decreasing only slightly from 11.9 to 11.2 ($p = 0.123$), which was not statistically significant. The intervention group's post-test PSQI score (7.8) was significantly lower than the control group's (11.2) ($p < 0.001$), highlighting the effectiveness of the combined therapy. 80% of participants in the intervention group experienced a clinically meaningful improvement in sleep quality (PSQI score decrease ≥ 3), compared to only 13.3% in the control group.

The combination of bergamot and chamomile aromatherapy appears to be a safe and effective complementary therapy for improving sleep quality in elderly individuals with insomnia. The results suggest that this intervention not only reduces sleep disturbances but also increases sleep duration and overall sleep satisfaction. While promising, the study's quasi-experimental design and relatively small sample size limit the generalizability of these findings. Future research, ideally randomized controlled trials with larger sample sizes, are needed to confirm these results and further explore the mechanisms behind this combined therapy's effectiveness.

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