

## The Effectiveness of “Body-Centered Meditation” on Insomnia and Agitation in Alzheimer’s Patients

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### Abstract

**Objective:** Alzheimer’s is a progressive and debilitating disease of the brain that causes serious damage to human thoughts and memory and is associated with psychological disorders such as insomnia and agitation. This study aimed to determine the effectiveness of body-centered meditation on insomnia and agitation in Alzheimer’s patients.

**Method:** The research method was semi-experimental with a pretest-posttest design and a control group. From the statistical population of patients with Alzheimer’s disease in mild to moderate levels referred to clinics and Alzheimer’s Association of Tehran province, 20 people were selected randomly based on inclusion criteria and assigned into experimental (n = 10) and control groups (n = 10). The research questionnaires were Morin’s insomnia (1993) and Cohen-Mansfield’s Agitation (1986). Meditation was administered to the experimental group in eight sessions of 90 minutes. The research data were analyzed using multivariate covariance.

**Results:** The results of covariance analysis showed that post-test scores of insomnia and agitation of patients with Alzheimer’s in the experimental group were significantly lower than the control group ( $P \leq 0 / 005$ ).

**Conclusion:** Body-centered meditation can be used to improve insomnia and agitation in Alzheimer’s patients.

**Keywords:** Alzheimer’s Disease, Agitation, Insomnia, Meditation, Psychiatry.

### Introduction

Dementia is one of the most common neurological diseases and one of the most important threatening factors to the health of the elderly. Dementia is the progressive destruction of cognitive functions which manifests itself in a state of total consciousness. The destruction of mental strength appears in forms of recollection, concentration, thinking, and comprehension malfunctions; although, it generally

involves other psychological functions such as personality, mood, judgment, and social conduct as well. The most common cause of dementia, which 50 to 80 percent of the elderly suffer from, is the one caused by Alzheimer’s disease (Zare & Siahjani, 2019).

Alzheimer’s is identified as the decline of memory and thinking which also affects the ability of individuals in performing their daily activities (Lorenko et al., 2019). In other words, Alzheimer’s is an epidemic disease that affects cognition, mood, and daily activities drastically (Winchester et al., 2013). Since low cognitive function correlates with the progression of the disease and its related disorders, losing independence, hospitalization, and death, it affects the patients’ lives by restricting their social interactions and gradually diminishing their

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independence (Antones et al., 2015). According to the report by the Alzheimer's Association, one out of three people above the age of 65 dies as a result of Alzheimer's or other diseases associated with dementia. From 2000 to 2010, the mortality rate due to cardiovascular disease, strokes, and immune deficiency viruses has decreased, but the mortality rate as a result of Alzheimer's has increased by 67 percent (Barence, 2015).

Insomnia in the elderly, especially in ones suffering from Alzheimer's, is the most common cause of sleep disorder which involves disorders in falling asleep and complaints about insufficient refreshing sleep (Wittchen & Fehm, 2011). Since in several studies the negative outcomes of insomnia in psychological changes (Sobel & Markov, 2015), general health conditions (Briones et al., 1996), life satisfaction, mood, and quality of performing tasks (Ramsawh et al., 2009) have been revealed, and also with a high prevalence of sleep disorders in various diseases, especially Alzheimer's; many researchers have shifted their focus towards studying sleep disorders and insomnia and its related causes and the cures during the past 10 years. Accordingly, sleep medicine has found a special place in modern medicine so that in developed countries there are few hospitals and cities that have not taken into account this issue seriously (Mucsi et al., 2014).

Around one-third of adults suffer from insomnia worldwide. This problem becomes worse by aging and increasing the number of chronic diseases, such as Alzheimer's, which is rising up to 69 percent (Taibi et al., 2007). According to studies, complaints about sleep disorders and insomnia are quite common, but sufferers rarely seek treatment (Weldi et al., 2015).

Among the behavioral signs of Alzheimer's, the family members and the nurses of Alzheimer's patients have introduced agitation as one of the most challenging behaviors (Afkham Ebrahimi, Zare, & Birashk, 2009). Since these behaviors have a great impact on the families of these patients, residents of nursing homes, and patient care centers

and also impose a lot of costs on them (Ho et al., 2018), Experts have always sought to find the ways with the least negative effects and costs and most effectiveness. Currently, there is no certain cure for Alzheimer's, but decreasing the behavioral problems caused by it can improve the quality of lives of these patients and lower their stress. Many treatments are recommended to control, reduce, or prevent insomnia and restlessness behaviors in these patients, most of which are pharmacological; however, due to the side effects of drug therapy, the use of other therapeutic approaches seems necessary (afkham Ebrahimi et al., 2009). Non-pharmacological treatments that may be effective for Alzheimer's patients include meditation and nature therapy.

One of the useful and effective ways to confront the stress and the problems of chronic diseases such as Alzheimer's is mediation. Meditation is a universal term which in Arabic is called 'Moraqebah' (Moosavi et al., 2018). This term is used to convey concepts such as affective relief, spiritual sensations, automatic spiritual and mental experiences, and purposeful cerebration. All schools, religions, and systems of psychotherapy have devoted an important part of their training to the practice of meditation and quasi-meditation. Depending on the culture and the needs of the time and place, different styles of special remembrances or symbolic drawings are created, which are usually oriental. Despite apparent differences in the description of meditation, all explanations have the same roots in the inner world. If we want to give a general definition of meditation, we can say that this concept has a transcendental process and is a set of internal exercises that cause spiritual growth and the ability to be present in time, along with a fundamental change in the whole spiritual, mental, and spiritual life (Roykulcharoen & Good, 2014). Thought meditation is associated with increased attention to the senses. In this method without needing to think, the data received by the five senses and other disturbing thoughts march across the individual's mind, and the individual,

sitting calmly without doing any special activity, witnesses this march and relieves the pressure on the five senses. In another type of meditation, based on an image, breathing is synchronized with the audio (Murphy, 2017).

Due to the above mentioned, Alzheimer’s disease and its mortality is increasing and aging is the most important risk factor for Alzheimer’s. Today, one person gets Alzheimer’s every 67 seconds, and by 2050, a person will get Alzheimer’s every 33 seconds (Alzheimer’s, 2015). Alzheimer’s is a disorder that has attracted the attention of many physicians and neurologists, and the common medicinal treatments prescribed by neurologists to treat Alzheimer’s, due to the unwanted side effects of the medicines, have forced the patients and their families to seek alternative measures (Davis et al., 2011). Despite its psychological side effects for the sufferers, non-pharmacological treatments are rarely used for it and despite the many side effects of drugs, most pharmacological interventions are chosen as the preferred method. But in addition to drug therapies, psychologists working in the field of Alzheimer’s patients have suggested various interventions for the treatment and prevention of Alzheimer’s patients’ problems, but little research has been done in this field. Therefore, to fill this research gap and address non-drug therapies for Alzheimer’s patients, the main problem of this study is to investigate the effectiveness of the body-centered meditation on reducing insomnia and agitation in Alzheimer’s patients.

Motamedy and Tangestani (2019) have studied the prediction of cognitive failures in the senile people based on two factors of personality and lifestyle. The results of their study showed that these features can significantly predict emotions and cognitive failures. Rovshan (2016) has compared the discourse of SDAT patients with NE participants and showed that they use significantly different verbal items consisting of false concepts, endless utterances, and false conjunctions. The results of her study

indicated that the discourse of SDAT participants was impaired in terms of structure and content. She has stated increasing endless utterances, false concepts, and false conjunctions, with the decline of true conjunctions, which have resulted in clinical discourse-impairing and agitation in Alzheimer’s patients.

#### **Ethical statement**

To comply with the ethical issues of the research, a consent form was prepared in which the purpose of the research was explained in general. Participants, first, read the consent form and participated in the research if they wished. The subjects were also given the necessary explanations about the confidentiality of the answers given to the questionnaires and their results. Finally, to observe the research ethics, after the completion of the research, research interventions were applied for the control group.

## **Method**

### **Participants**

The research method is semi-experimental with a pretest-posttest design and a control group. The statistical population of the present study consisted of people with mild to moderate Alzheimer’s disease who referred to clinics and the Alzheimer’s Association of Tehran province. Then, 20 patients were selected through convenience sampling and were randomly assigned into two experimental and control groups, subsequently.

The inclusion criteria of the research were: being an Alzheimer’s patient, having minimum ability to read and write, having a sense of cooperation, and satisfaction to participate in treatment courses. The exclusion criteria were not being responsible for attending the course, having more than two sessions absence in the intervention, and having a severe vision, hearing, and disability problems.

### **Procedure**

At first the pretest of insomnia and agitation was carried out on both groups (experimental and control), then body-centered meditation was administered for

the experimental group, but no intervention was given to the control group. For observing moral considerations, body-centered meditation was administered for the control group after finishing the study. Immediately after the intervention for the experimental group, the post-test of insomnia and agitation was carried out for both groups, and finally, the data were analyzed using multivariate covariance analysis through SPSS software 23 version.

### Measures

*Morin's insomnia intensity questionnaire (1993):* The Insomnia Intensity Index, developed by Maureen in 1993, is a concise self-assessment tool that measures a patient's perception of insomnia. The questionnaire consists of seven items: difficulty in starting sleep and problems with sleep continuity (both waking up at night and waking up early in the morning), satisfaction with the current sleep pattern, interference with daily functioning, and significant damage attributed to sleep problems, and assesses the degree of disturbance or anxiety caused by the sleep problem (Morin et al., 2011). Bastin et al. (2001) evaluated the psychometric properties of this questionnaire in two samples of patients with insomnia. In the first study, the internal consistency of the questionnaire was 74% for clinical patients presented at a sleep disorder center with a complaint of insomnia. Correlations of each substance with the whole scale varied from a low value of 36% (initial insomnia) to a high value of 67% (interference with function) with an average of 54%. In this study, the reliability of the instrument using Cronbach's alpha was 0.91.

*Cohen-Mansfield agitation questionnaire:* The Cohen-Mansfield Restlessness Questionnaire (Cohen-Mansfield & Billing, 1986) was initially developed as a research tool for conducting research projects in nursing homes, and its items were selected based on nurses' observations and patients' perceptions of status as well as review studies, and then and during the review, specific features related

to the target population (Alzheimer's patients) were added to the previous ones. The current form of the Cohen-Mansfield Agitation Questionnaire consists of 29 items being scored based on seven Likert scale rating based on the incidence frequency from 1 (never) to (several times in an hour) and based on observations from the last two weeks. Content validity and retest reliability in 200 subjects (100 Alzheimer's patients and 100 normal elderly) in Iran was 0.98 (Afkham Ebrahimi et al., 1398). In this study, the reliability of the instrument using Cronbach's alpha was 0.84.

Table 1: summary of Body-Centered Meditation sessions (Kabat-Zinn et al., 1992)

#### First session, pre-test

Setting the general approach with taking into account the confidentiality and private lives of the individuals, inviting the individuals to introduce themselves to each other, practicing body inspection, home assignments, discussing and determining weekly sessions, and distributing cassettes and notes.

#### Second session

Teaching body relaxation techniques for 14 different muscle groups including forearm, biceps, triceps, calves, laps, abdomen, chest, shoulders, neck, lips, eyes, and forehead.

#### Third session

Teaching body relaxation techniques for 6 groups of muscles including hands and arms, legs and laps, abdomen and chest, and forehead and lips, home assignment based on body relaxation.

#### Fourth session

Familiarization with mindful awareness of breathing, teaching inhalation and exhalation techniques with composure without thinking of anything else, teaching the technique to observe the breathing, home assignments regarding mindful awareness of breathing before sleep.

#### Fifth session

Teaching the technique of paying attention to how the body moves while breathing, concentration on the limbs and their movements, searching for

physical senses, home assignments regarding mindful awareness of eating.

#### Sixth session

Teaching paying attention to the mind, positive and negative thoughts, pleasantness or unpleasantness of the thoughts, letting the positive and negative thoughts into the mind and then letting them out of the mind easily without judging these thoughts or reflecting upon them too deeply.

in two experimental and control groups, of which 10 were female and 10 were male. The average age and standard deviation of the experimental group were 73.87 and 7.90, respectively, and for control group were 71.16 and 6.11 for the control group. In the control group, 30% of participants were single and 70% were married, while in the experimental group, 20% were single and 80% were married. The descriptive results of the research are discussed in

**Table 2.** Descriptive analysis findings for research groups

Variable	Group	Test	Number	Mean	Sd
<b>Insomnia</b>	Control	Pretest	10	18.20	3.34
		Post-test	10	18.00	3.98
	Treatment	Pretest	10	18.30	3.12
		Post-test	10	15.90	4.10
<b>Agitation</b>	Control	Pretest	10	149.70	19.75
		Post-test	10	146.70	18.32
	Treatment	Pretest	10	141.90	25.65
		Post-test	10	125.70	22.10

#### Seventh session

40 minutes seated meditation, reviewing the home assignments, practicing the observation of the connection between the activity and mood.

the following section.

As can be seen in Table 2, the degree of insomnia and agitation of the experimental group in the post-test has significantly decreased compared to

**Table 3.** Results of covariance analysis to measure the effectiveness of body-centered meditation on insomnia

Source of changes	Total squares	df	mean squares	F Value	Sig. level	Eta coefficient
Pretest	112.165	1	112.165	44.619	.001	.724
Group (Independent variable)	23.873	1	23.873	9.496	.007	.358
Error	42.735	17	2.514			

#### Eighth session:

Reviewing the previous sessions and summing them up

the pre-test, while the degree of agitation in the control group in the pre-test and post-test stages did not differ significantly. To inferentially analyze the findings, the results of the covariance analysis are presented. It should be noted that before the analysis, the assumption of this test was examined

## Results

In this study, 20 people with Alzheimer’s participated



using Leuven and Kolmogorov-Smirnov tests, the results of which showed that the use of analysis of covariance is unobstructed.

Table 3 shows that the sum of the squares of the independent variable is 23.873, which results in the size of the F value of 9.496, which is significant at the level of  $p \leq 0.05$ . Finally, it can be concluded that body-centered meditation treatment is effective in reducing insomnia in Alzheimer's patients.

and confronting them (Keng, Smoski & Robins, 2011). In Alzheimer's patients, insomnia is very common both due to the feature of the disease and the age of the patients (Holth et al., 2017). When a person suffers from insomnia, his constant mental rumination about falling asleep during the day or night leads to physical and emotional arousal in the person. One may even think about these thoughts. Having metacognitive thoughts such as "I should

**Table 4.** Results of covariance analysis to measure the effectiveness of body-based meditation on agitation

Source of changes	Total squares	df.	mean squares	F Value	Sig. level	Eta coefficient
Pretest	7345.259	1	7345.259	81.670	.001	.828
Group (Independent variable)	963.626	1	963.626	10.714	.004	.387
Error	1528.941	17	89.938			

Table 4 shows that the sum of the squares of the independent variable is 963.626, which leads to the F value of 10.714, which is significant at the level of  $p \leq 0.05$ . Finally, it can be concluded that body-centered meditation treatment is effective in reducing agitation in Alzheimer's patients.

### Discussion and conclusion

This study has been carried out with the aim of determining the effectiveness of body-centered meditation in the treatment of insomnia and agitation in Alzheimer's patients. The first result of the study showed that body-centered meditation had a positive and significant effect on decreasing insomnia in these patients. This result was in accordance with the results of related studies of Farahbakhsh and Deghani (1395), Koriti et al, (2005), and Ung et al, (2014).

The basis of body-centered meditation is the presence of the mind at the moment, preventing the rumination, controlling daily events, recognition of automatic behavioral patterns by the means of concentration on breathing, more focus and unity, paying attention to defective cognitions, and accepting one's thoughts

not have these thoughts" can lead to more agitation. Body-centered meditation exercises, including conscious breathing and body scanning, increase the person's awareness of a range of internal stimuli (including thoughts, emotions, physiological senses) and external stimuli. During these exercises, the patients acquire the ability to control their concentration by focusing their attention. These exercises help Alzheimer's patients who also suffer from insomnia to change the way they focus on internal and external sleep-related symptoms by directing attention. During the sessions, patients also learned to change the relationship with their experiences by accepting them rather than avoiding or controlling them.

Attempts to fall asleep and fail in this effort, along with misconceptions about the negative consequences of sleep deprivation, lead to excessive negative cognition in these patients. In this regard, meditation helps patients to prevent the aggravation of this event by not judging the events, thoughts, emotions, and feelings. In fact, changing the relationship with cognitive content (decentralization) and managing thought processes can help patients

with insomnia get out of the ruminant cycle of negative thoughts. In this regard, Gross et al. (2011) in a study on the effectiveness of meditation on insomnia disorder, showed that the intervention of 8 sessions of meditation-based therapy had an effect on increasing sleep quality and reducing delay in falling asleep. Black et al. (2015) conducted another research on the effects of meditation on the elderly's sleep quality and found that meditation has positive effects on their sleep.

The next result of the study showed that body-centered meditation has a positive and significant effect on lowering the agitation of Alzheimer's patients. This result was in line with the results of other related studies such as Farahbakhsh and Dehghani (2017), Coriti et al., (2016), and Mrekel (2006).

To explain this result, we can point to the mechanism of agitation in Alzheimer's patients. One of the factors that creates agitation in these patients is rumination (MacGuire et al., 2019). Studies have shown that mental ruminations increase the occurrences of agitation cycles, depression, and anxiety (Robinson & Alloy, 2013). Research has also shown that meditation by using its techniques can modulate this rumination (Ma & Teasdale, 2004). In meditation, patients' awareness and knowledge about their disease grows, which enables them to behave clearly and rationally in the face of mental rumination and to take their minds out of those thoughts. In other words, meditation focuses on cultivating metacognitive awareness and modifying metacognitive functions that support useless reaction and ruminant states. It can also be concluded that meditation techniques can be effective in increasing muscle relaxation and reducing anxiety and, consequently, in reducing anxiety and stress (Cabatzin, 2003). This also seems to have been helpful in reducing agitation in Alzheimer's patients.

In order to sum up the results of the study, it can be said that meditation through mechanisms such as reducing mind rumination, conscious breathing, and

reducing anxiety and worry is effective in reducing insomnia and agitation in Alzheimer's patients. The use of a non-random sampling method in the first stage of sampling, failure to follow the results by the follow-up test, and also the mere use of a questionnaire to assess the status of Alzheimer's patients were the limitations of this study. It is suggested that random sampling methods be used in future research in order to better generalize the results, and also, using the follow-up test can determine the durability of the results. Considering the effect of naturopathy on the variables of insomnia and agitation, it is recommended that this treatment be tested on variables such as quality of life and cognitive functions of Alzheimer's patients.

It is suggested that this variable be measured in combination with the theory of Polyvagal Punks or the somatic experience of Peter Levine in further studies. It is also recommended that the effectiveness of meditation in reducing the clinical signs of mental disorders in Alzheimer's patients be measured in the future studies.

## References

- Afkham Ebrahimi, A., Zare, M., Birashk, B. (2019): Analyzing the effects of music therapy on the reduction of restlessness in Alzheimer's patients residing at Shahryar city nursing home. *New findings in cognitive sciences*. 65-55: (2)11
- Alzheimer's, A. (2015). 2015 Alzheimer's disease facts and figures: Alzheimer's & dementia, *the journal of the Alzheimer's Association*, 11(3), 332.
- Antunes, H. K., De Mello, M. T., Santos-Galduróz, R. F., Galduróz, J. C. F., Lemos, V. A., Tufik, S., & Bueno, O. F. A. (2015): Effects of a physical fitness program on memory and blood viscosity in sedentary elderly men. *Brazilian Journal of Medical and Biological Research*, 48(9), 805-812.
- Barnes, J. N. (2015). Exercise, cognitive function, and aging: *Advances in physiology education*, 39(2), 55-62.
- Bastien CH, Vallières A, Morin CM. (2001). Validation of the Insomnia Severity Index as an outcome measure for

insomnia research: *Sleep medicine*. 2(4), 297-307.

Black, D. S., O'Reilly, G. A., Olmstead, R., Breen, E. C., & Irwin, M. R. (2015). Mindfulness meditation and improvement in sleep quality and daytime impairment among older adults with sleep disturbances a randomized clinical trial. *JAMA internal medicine*, 175(4), 494-501.

Farahbakhsk, A., Dehghani, F. (2016). Effectiveness of mental awareness treatment on sleep quality and psychological health of women affected by sleep disorders. *Medical sciences faculty of Torbat Heidarieh University magazine*, (3) 4, 8-15.

Moosavi, V., Farahi, R., Zebardast, O., Esmail Zadelang, J. (2018). Comparison between the effectiveness of meditation and metacognitive treatment on lowering stress in pregnant women at the final three months of pregnancy. *Medical sciences faculty of Gilan University magazine*, (106) 27, 23-43.

Moatamedy, A. & Tangestani, Y. (2019). A Prediction Model of Cognitive Failures Based on Personality Dimensions and Lifestyle in the Elderly: *Iranian Journal of Health Psychology*; 1(2), 45-54.

Rovshan, B. (2016). The Comparison of Descriptive Discourse among Elderlies with Alzheimer's disease and Healthy Elderlies of Tehran: *Journal of Health Psychology*, 5(2), 19:19-32. [Persian]

Zare, H., Hossein Jani, L. (2018). Effectiveness of cognitive rehabilitation on the mental state and memory function of the elderly affected by minor Alzheimer's disease: *New finding in cognitive sciences*, 66-51: 20 (3), 51-66.