

The Effectiveness of Mindfulness-Based Compassion-Therapy on Sleep Quality and Satisfaction with Life in Elderly Women

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Abstract

Introduction: The aging process is an important phenomenon in global health. In fact, the psychological and physical well-being of elderly women must be taken into consideration. This study was conducted in order to determine the effect of Mindfulness-Based Compassion-Therapy (MBCT) on sleep quality and satisfaction with life in elderly women.

Method: This study was a quasi-experimental investigation with a pre-test, post-test, and follow-up along with a control group. For this purpose, 15 elderly women were randomly assigned to the intervention or the control group. The intervention group received mindfulness-based compassion-therapy over eight weeks, one session per week, while the control group did not receive any intervention. Pittsburgh Sleep Quality Index (PSQI; 1989) and Satisfaction with Life Scale (SWLS; 1985) were completed by elderly women to evaluate the research variables during the intervention's pre-test, post-test, and follow-up periods. Descriptive statistics, Levene's test, Box's M Test, Bonferroni, and repeated measures ANOVA using SPSS-22 were used for data analysis. In the control group, no therapy was applied. After the intervention, both groups were tested.

Results: Findings showed that the intervention group's mean sleep quality and satisfaction with life improved after mindfulness training. In addition, the study revealed that the mean sleep quality and satisfaction with life levels between the intervention and control groups were significantly different ($p < 0.01$).

Conclusion: According to the results of the present study, mindfulness-based compassion-therapy improved sleep quality and satisfaction with the life of elderly women. This intervention represents new horizons in psychological interventions and can improve the mental health and well-being of elderly women.

Keywords: Elderly, Compassion, Mindfulness, Sleep Quality

Introduction

Old age is one of the stages of human life evolution where person's last evolutionary changes occur. The rhythm of growth and transformation in this stage, like other life stages, has complex biological and psychological changes and developments. These changes affect one's thoughts, feelings, beliefs, values, and, in general, one's personality, behavior, and way of acting in front of others [1]. As a progressive and irreversible phenomenon in the life of every human being, aging is the gradual degradation of bodily functions and organisms, prevented by time and structure [2]. Aging is associated with decreased

functioning and various disabilities, including mental, cognitive, physical, social, and economic limitations [3]. One of the factors that has a significant impact on the health of the elderly is the quality of sleep [4].

According to previous research, low quality of sleep ranks third among the problems of the elderly, after headaches and digestive disorders [5]. It includes difficulty falling asleep (10-39%), waking up during the night (18-60%), waking up early in the morning (12-33%), and needing daily naps (18-36%) [6]. The quality of sleep consists of subjective indicators related to how the sleep experience, such as the degree of satisfaction with sleep and the feeling that occurs after waking up [7]. The quality and quantity of sleep affect learning, memory, and many cognitive abilities, primarily actions related to the storage of new information and skills in educational environments and satisfaction with life [8]. Chronic health conditions and increasing medical costs may burden elderly when they do not have support from their children and subsequently lower their satisfaction with life [9].

In the elderly period, people are excluded from social and economic activities, and their physical and mental health gradually faces problems and challenges. Therefore, the elderly are a socially vulnerable group, and satisfaction with life in them is crucial due to the reduction of physical and mental abilities [10]. Satisfaction with life is the most critical aspect of well-being and healthy and prosperous aging. The elderly with higher life satisfaction have a high level of health-promoting behaviors and will have a successful and active old age. On the other hand, low levels of life satisfaction in the elderly are associated with problematic situations such as unhealthy lifestyles and passive and inactive aging [11]. Based on this, what social policy is looking for today is not only prolonging the life span but achieving a satisfying life, especially in the last years of life. Some research showed that many health status indicators positively correlate with the elderly's satisfaction with life [12]. In addition, family, social, and economic indices, marital status, individual independence, and physical health level are significantly related to the life satisfaction of the elderly [13,14].

Satisfaction with life is a cognitive judgment or subjective feeling and attitude toward one's life [15]. Satisfaction with life among the elderly is an important concept as it gives us an overall view of the adjustment as well as the adaptive coping ability of the individual. The level of satisfaction among the aged affects not only their psychological adjustment but also their physical, emotional, and social well-being. Satisfaction with life of elders can be precisely defined as the degree of coherence between the life they had dreamed of and the life they have actually lived [16]. Previous studies reported that satisfaction with life of elders was also associated with successful aging [17,18].

One of the new therapeutic interventions that can be effective in the elderly is MBCT [19]. Self-compassion has been defined as a three-component instrument: kindness to oneself versus self-judgment, human sharing versus isolation, and mindfulness versus extreme assimilation [20]. The combination of these three related components

is considered to be the characteristic of self-compassionate people. The basic principles of MBCT point out that external soothing thoughts, factors, images, and behaviors must be internalized. In this case, the human mind reacts to external factors as well as to external ones. In exercises focused on compassion, relaxation, mindfulness, self-compassion, and mindfulness are emphasized, which play an important role in calming the mind, and reducing stress and negative spontaneous thoughts [21]. Mindfulness creates its effects through four mechanisms: attention regulation, body awareness, emotion regulation, and changes in a person's view of himself. It is thought that engaging in conscious attention and developing a more receptive relationship with the experience of the moment is beneficial because it can enable people to let go of unhelpful habits and reactions to the recent experience and instead choose more valuable ways to be answered [22]. In MBCT, people learn not to avoid or suppress their painful feelings, so they can first recognize their experience and feel compassion for it [23]. In this training, instead of blaming, condemning, or self-criticizing, clients are helped by creating or enhancing a client's inner compassionate relationship with themselves. This training includes the importance of well-being, understanding, empathy, nonjudgmental and not blaming others, and tolerating or enduring turmoil and suffering through attention, thinking, behavior, imagery, feeling, and compassion. Previous research have shown the effect of mindfulness on satisfaction with life [24, 25], and sleep quality [26, 27]. MBCT has content that involves paying attention in a specific way along with long-term changes and empowering people to engage with and eliminate suffering.

Various studies have reported the impact of mindfulness in improving psychological mental health. The number of research publications in Iran is also limited due to the increase in elderly populations. Considering that the elderly population in Iran is increasing, it is necessary to have short-term training and treatment programs that significantly affect the well-being of the elderly and improve their life satisfaction. To formulate these programs, the existence of more research is inevitable. Therefore, according to the importance of the old age period, the care for their well-being, and the content of compassion therapy based on mindfulness, this study aimed to investigate MBCT on sleep quality and satisfaction with life in elderly women.

Method

The current research is a semi-experimental study with pre-test, post-test, follow-up and control group carried out in 2020. The statistical population included all the elderly women between 60 and 75 years old in Tehran (mean age: 67.74 years). Among the statistical population, 36 elderly women using convenience sampling, who met the criteria, were invited to participate in this study. Of those recruited, 34 agreed to participate and were randomly and equally replaced in the experimental and control groups. Finally, 30 elderly women participated in the study until

the end.

Willingness to participate in the study, ability to speak Persian (concerning being multi-language), non-addiction to drugs, cigarettes, etc., lack of psychological disorders (amnesia, dementia, Alzheimer's), relative motor and speech ability, and not having sensory-motor diseases were considered to be the inclusion criteria of the study. The exclusion criteria were a lack of cooperation to answer questions, experiencing undesirable conditions during therapy or hospitalization, and being absent for more than one week.

The tools used in this study were as follows:

Pittsburgh Sleep Quality Index (PSQI): Buysse et al. developed PSQI in 1989 to assess subjective sleep quality during the previous month [28]. It is a widely used self-reported questionnaire measuring sleep. The PSQI is practical and brief, returning a single score representing overall sleep quality, incorporating qualitative and quantitative aspects of sleep; scores above five are suggested to indicate a potential sleep problem, and higher scores represent poorer subjective sleep quality. Previous studies confirmed the psychometric properties of the PSQI [29]. Its Cronbach's alpha was reported at 0.79 In Iran [30].

Satisfaction with Life Scale (SWLS): This scale was developed by Diener et al. in 1985 [31]. This self-report scale consists of five items that measure subjective well-being's cognitive component. The scale is short and easy to apply in questionnaires, requiring only one minute of the respondent's time. Participants state, for example, how satisfied they are with their lives or how close their lives are to their ideal ones and could be used for all age groups. Each item has been scored on a Likert scale from

one to seven, ranging from one (strongly disagree) to seven (strongly agree). Scale scores range from five to 35, with higher scores indicating greater satisfaction with life. The validity and reliability of SWLS have been confirmed, and a Cronbach alpha coefficient was reported at 0.84 [32]. The reliability of this scale among Iranian women was found to be at 0.87 on Cronbach's alpha [33].

It should be noted that before starting the research, all the elderly women were asked to complete and sign a written consent form of informed and voluntary participation in the study. During the sessions, 15 to 20 minutes were reserved for the elderly to rest and welcome them, and the sessions were arranged so as not to interfere with the rest time of the participants. Eight 90-minute group sessions were assigned to the experimental group. In addition, before the therapeutic sessions, the elderly were reminded that if they were absent for more than two sessions or refused to complete the questionnaires, they would not be included in the analysis process. Participants responded to the study questionnaires three times during the study period, (a) Time 1: Pre-test, (b) Time 2: Post-test, and (c) Time 3: Follow-up. The pre-test was conducted when the intervention had started. The post-test was completed eight weeks after the pre-test, and the follow-up was conducted 1.5 months after the post-test. The control group did not receive any intervention. After the completion of the training sessions and the post-test of the two groups, to comply with the ethics of the two training sessions, the topics of the experimental group were given to the subjects of the control group. The MBCT includes a compassion-focused therapy book [34] along with mindfulness exercises [35]:

Table 1. Content of MBCT

First and Second Sessions	Discussion about the purpose of the meetings and their overall structure, review of expectations from training plan, and familiarization with the general principles of compassion-focused therapy and meditation practice focused on breathing. Respiration and physical examination exercises, familiarity with sleep quality and satisfaction with life, and coping with them and running the pre-test.
Third and Forth Sessions	Compassion toward others, growing warm feelings, understanding that others also have problems and deficiencies, being mindful of the effect of mindfulness on breathing, examining one's personality as a person with or without compassion, forgiveness training, and the importance of living in the moment.
Fifth and Sixth Sessions	Eating apples as a mindfulness exercise, strengthening breathing, describing habitual reactions and attention and acceptance, sensitivity, sympathy, and non-judgment. Practices for compassionate mind development, problem acceptance training, and methods to express compassion and apply the strategies in daily life.
Seventh and Eighth Sessions	Self-compassionate imagination, acting techniques, expanding the circle of compassion, solving and equalizing at the moment. Writing compassionate letters for oneself and others, daily recording, considering a compassionate-based natural setting, training and exercising skills and then running the post-test.

Therapeutic sessions were held in the researcher's presence and were accompanied by a master of counseling and psychology trained in mindfulness exercises. Descriptive statistics, Levene's test, Box's M Test, Bonferroni, and repeated measures ANOVA using SPSS-22 were used for data analysis. No therapy was applied to the control group. Both groups were tested after the intervention.

Results

Participants included 30 control group (n=15) and

experimental group (n=15). The mean age of all the participants was 67.74 years ($S.D=3.34$). Chi-squares and independent t-tests were performed to identify differences in demographic variables between the MBCT group and control groups. No significant between-group differences were found in the demographic variables, including education, job status, marital status, and disease status (Table 2).

The total number of questionnaires that could be analyzed in this research was 30. The mean and standard deviation of the age of the participants in this survey were

67.74 and 3.34. The descriptive statistics of the research variables (sleep quality disturbance and satisfaction with life) separately for both groups in pre-test, post-test and follow-up phases have been presented in Table 3. The results show that the mean scores of the two groups in the pre-test are close to each other.

Repeated measures ANOVA were conducted to test differences between the MBCT and control groups on sleep disturbance and satisfaction with life. We tested Groups (MBCT vs. control) as between-subject and assessment time (pre-test, post-test, follow-up) as within-

subject. Similarities were found between the two groups (Table 4). There was a significant relationship within-subject interaction effect (TIME*GROUP). Consequently, a within-subject effect (TIME) repeated measure ANOVA was run in both MBCT and control groups, with post-hoc pairwise comparisons of pre-test, post-test, and follow-up scores (Table 4). Independent *t*-tests were then done for baseline, post-intervention, follow-up comparisons between MBCT and control groups to assess differences in sleep disturbance and life satisfaction before and after the intervention.

Table 2. Comparisons of Demographic Characteristics across Groups

	Intervention (percent)	Control (percent)	Statistical Analyses
Education Status	Elementary	6 (37.5%)	4(25%)
	Middle school certificate	4(25%)	6(37.5%)
	Diploma	4(25%)	5(31.25%)
	>Diploma	2(12.5%)	1(6.25%)
Marital status	Single (widowed/divorced)	12(75%)	10(62.5%)
	Married	4(25%)	6(36.5%)
Job Status	Without job (housewife)	10(62.5%)	11(68.75%)
	Retired	6(37.5%)	5(31.25%)
Disease	Yes	13(81.25%)	11(68.75%)
	No	3(18.75%)	5(31.25%)

Table 3. Descriptive Indices of Research Variables

Variable	Group	Pre-test	Post-test	Follow-up
Disorders of sleep quality	Control	15.37(4.71)	19.19(4.38)	15.69(4.45)
	Experimental	16.19(4.76)	12.75(3.94)	12.69(3.53)
Satisfaction with life	Control	18.44(6.39)	17.31(5.52)	19.18(7.01)
	Experimental	18.06(6.07)	21.01(5.25)	21.31(5.03)

Table 4. Linear ANOVA Repeated Measure for Sleep Disturbance and Satisfaction with Life Intervention

	TIME	TIME*GROUP	within-subject [†]	Post Hoc ^{††}	
Sleep disturbance	MBCT	F (2, 60) = 33.87, $p \leq 0.001$, $\eta^2=0.49$	F (2, 60) = 26.17, $p \leq 0.001$, $\eta^2=0.45$	F (2, 29) = 28.25, $p \leq .001$, $\eta^2= 0.66$	PR>PO** PO= FO ₁ PR> FO**
	Control			F (2, 29) = 2.11, $p = 0.12$, $\eta^2= 0.11$	PR=PO PO= FO ₁ PR= FO ₁
Satisfaction with life	MBCT	F (2, 60) = 26.18, $p \leq 0.001$, $\eta^2=0.22$	F (2, 60) = 44.17, $p \leq 0.001$, $\eta^2=0.37$	F (2, 29) = 9.18, $p \leq 0.001$, $\eta^2= .39$	PR<PO** PO= FO ₁ PR< FO**
	Control			F(2, 29)= 1.60, $p = 0.62$, $\eta^2= 0.08$	PR=PO PO= FO ₁ PR= FO ₁

Note: PR= pre-test; PO= post-test; FO= follow-up; Intervention (n=15); Control (n=15), **< .01.

[†] = following the significant interaction effect (TIME*GROUP), within-subject ANOVA reappeared measure as the simple effect, separately was done in both groups.

^{††}= pairwise comparison for three assessment times, Bonferroni was used as the post-hoc test; significant pairwise showed by ">" and non-significant ones by "=".

Note: for comparison of MBCT and control groups by independent *t*-test, the significant level was considered as **< .01.

Group means of sleep disturbance and satisfaction with life for MBCT and control groups at three assessment times were compared using independent *t*-tests.

The results of Box's M Test indicated that the assumption of homogeneity of variances and covariances variance-covariance was confirmed ($F_{(21,3504.4)}=1.26$, $P=0.19$). Levene's test showed homogeneity of variance for sleep quality ($F= (2, 29) = 2.71$, $P=0.11$) and satisfaction with life ($F= (2, 29) = 0.66$, $P=0.42$).

Following the significant interaction effect (TIME*GROUP), the results of within-subject effect (TIME) in repeated measures ANOVA confirmed the decreasing trend from time-1 to time-3 assessment in sleep disturbance, respectively for MBCT [$F_{(2, 29)} = 28.25$, $p \leq 0.001$, partial $\eta^2 =$

0.66], and control [$F_{(2, 2)} = 2.11$, $p = 0.12$, partial $\eta^2 = 0.11$] groups. One group, independent *t*-test of MBCT and control groups at pretest [$t_{(30)} = 0.49$, $p = 0.63$ (two-tailed), post-intervention [$t_{(30)}=4.41$, $p \leq 0.001$ (two-tailed) and follow-up [$t_{(30)}=2.11$, $P \leq 0.05$ (two-tailed), yielded significant decrease in sleep disturbance in the MBCT group with an acceptable effect size.

Following the significant interaction effect (TIME*GROUP), the results of the within-subject effect (TIME) in repeated measures ANOVA confirmed the increasing trend from time-1 to time-3 assessment point in sleep disturbance, respectively for MBCT [$F_{(2, 29)} = 9.18$, $p \leq 0.001$, partial $\eta^2=0.39$], and control groups [$F_{(2,2)} = 1.60$, $p=0.62$, partial $\eta^2=0.08$]. One group, independent *t*-test of MBCT and

control groups at pretest [$t_{(30)}=0.17$, $p=0.86$ (two-tailed), post-intervention [$t_{(30)}=1.94$, $p\leq 0.05$ (one-tailed) and follow-up [$t_{(30)}=0.98$, $P=0.33$ (two-tailed), yielded a significant increase in satisfaction with life in the MBCT group.

Discussion

Since the elderly and conditions of this period of life increase the costs of the healthcare system, the present study was conducted to determine the effectiveness of MBCT on sleep quality and satisfaction with life in elderly women. The results showed that MBCT could effectively improve sleep quality and satisfaction with the life of elderly women.

The results showed that MBCT could effectively enhance the sleep quality of elderly women, and this stability continued during the follow-up period. These results are indirectly consistent with previous studies [36-39] which revealed that mindfulness treatment affects sleep quality of patients.

In explaining these findings, it can be said that the mindfulness technique focuses on the positive or negative evaluation of thoughts, sleep-related beliefs, and selective awareness of sleep signs to detect and accept them when poor sleep quality symptoms appear [40]. Subjects with sleep disorders are characterized by high obsessive rumination, an internal and external bias about sleep problems, and negative thoughts, which lead to worse sleep quality [41]. Mindfulness provides awareness abilities and attention [42], minimizing the difficulties. Thus, it can readjust cognitive processes that interfere with sleep, decreasing obsessive rumination, pre-sleep arousal, stress, and sleep latency [43]. Despite these theoretical proposals, there is no complete explanation for how mindfulness reduces sleep disorders [44]. However, it has been recognized that the success of mindfulness is due to emotional regulation [45]. Getting subjects to focus on the present decreases arousal, thus reducing poor sleep quality symptoms.

More importantly, we found that mindfulness could affect life satisfaction in the experimental group and this stability continued in the follow-up period. This finding was consistent with the previous research [24, 25, 46]. This study showed that mindfulness was related to greater savoring of positive experiences, i.e., an ability to up-regulate positive emotions. Individuals with a high level of mindfulness are more willing to accept themselves and the events that happen to them actively, so they are more prone to accepting things that they cannot change, such as appearance and thoughts, than individuals with low mindfulness [47]. The higher the degree of self-acceptance of individuals, the more likely they are to form a positive self-evaluation. Indeed, previous studies have also found that core self-evaluation is a predictor of life satisfaction (48), whose mechanism lies in that individuals with a high core self-evaluation are convinced that they are fully capable of controlling their own lives and thus have a higher degree of satisfaction with life. These findings add to the growing evidence of the mechanisms between mindfulness and psychological adjustment. However, this study faced some limitations. First, the

study adopted a self-reported method to explore the conclusion. Although showing good reliability and validity of the measurement, there may be social desirability bias, so alternative approaches are needed to expand the topic in the future. This research was conducted on the elderly women of Tehran city, which should be generalized to other elderly with more caution. In addition, this research investigated the short-term effects of mindfulness-based compassion training, so the generalization of its results in the long term is limited, and it is necessary to conduct longer training in mindfulness exercises. It is suggested that this study be performed on the elderly of other cities, and its results be compared with the results of this study.

Conclusion

Our study suggests that mindfulness-based compassion - therapy may be introduced to older adults as a short-term solution to remediate their sleep quality and satisfaction with life. However, research is needed to determine any possible longer-term effects on them. Given that standardized mindfulness programs are readily delivered in many communities, dissemination efforts do not serve as a barrier in this instance. Therefore, older adults often have immediate access to these programs, which are offered at low cost.

Conflict of Interest

The authors declare that they have no competing interests.

Ethical Approval

All the research procedures involving humans were consistent with the National Research Committee's ethical standards, the Helsinki Declaration of 1964, subsequent revisions, or equivalent ethical norms.

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