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The impact of Mindfulness-based Cognitive Therapy (MBCT) on mental health and quality of life in a sub-clinically depressed population

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Summary

Aim. Employing an experimental, randomized-controlled design, we examined the impact of mindfulness-based cognitive therapy (MBCT) on mental health and quality of life in a sub-clinically depressed population.

Method/Material. The participants were randomly assigned either to receive MBCT or remain in a waiting list control group. A series of two-way ANOVA with repeated measures detected if MBCT training would result in a decline in anxiety/depression levels, cognitive distortions, and also enhance quality life over five assessment points, namely, pre-test, session 4, session 8, first follow-up (1 month) and second follow-up (6 months).

Results. The findings showed that MBCT was influential to help sub-clinical participants to deal with their anxiety and depressive feelings, and experience improved quality of life before in MBCT group, during and after stressful circumstances. Negative automatic thoughts and dysfunctional attitudes were also systematically reduced.

Discussion. This study provides empirical evidence for the effectiveness of MBCT in a new cultural setting, and extends our knowledge about the effectiveness and generalizability of the MBCT in real-life stressful situations.

Conclusion. The findings provide the first evidence that MBCT might be a useful intervention for enhancing quality of life in sub-clinical populations.

mindfulness / quality of life / cognitive behaviour therapy / automatic thought / dysfunctional attitude

INTRODUCTION

In a previous study [1], non-clinical participants showed to benefit from mindfulness-based cognitive therapy (MBCT) in order to combat depression and anxiety, normally induced by a real stressful setting. Following this study, we employed an experimental, randomized-controlled design in a real field among sub-clinically depressed students, to examine whether MBCT is effective to enhance quality of life and also to reduce anxiety and depression naturally experienced before, during and after exam (a real stressful situation).

Traditionally rooted in Eastern culture, mindfulness proved to be effective in stress reduction programs [2] placing emphasis on non-judgmental attention in a certain way; namely, on purpose and in the present moment. Mindfulness-based cognitive therapy (MBCT) integrates elements of cognitive– behavioral therapy (CBT) for

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depression [3] into the mindfulness-based stress reduction (MBSR) training program developed by Kabat-Zinn [2]. As a manualized group-skills training program, MBCT is conducted in 8 weekly sessions of approximately 2.5 hours duration [4]. People undergoing such training program learn to see thoughts, feelings and bodily sensations as passing events in the mind rather than self-evident truths or aspects of the self. In this way the skills learned from MBCT help people recognize and disengage themselves from habitual dysfunctional cognitive routines, which in turn protect them against future risk of experiencing anxiety and depression.

Teasdale and colleagues [5] compared a group of recovered patients with recurrent depression, receiving treatment as usual (TAU), with a group receiving TAU plus MBCT in a randomized design. They demonstrated that MBCT would significantly reduce the risk of relapse. Ma and Teasdale [6] replicated previous findings. They showed that MBCT training halved relapse rate (from 78% to 36%) in patients with 3 or more previous episodes. Cognitively speaking, the vicious cycle between depressed mood and patterns of negative, self-defeating, automatic thinking may result in a vulnerability to relapse of depression. In a recent study [7], MBCT proved to be an effective maintenance therapy with antidepressants in reducing relapse over a 15-months follow-up.

There are also studies showing that MBCT reduces excessive worry or anxiety symptoms [8], relieves insomnia symptoms by reducing worry associated with sleep problems in patients with anxiety disorder [9] and improves quality of life in the physical and psychological domains [7].

There are studies showing that university students are prone to experience anxiety and depressive symptoms mostly related to exam [10, 11]. This, in turn, has been regarded as a serious factor which results in lower test scores and under-achievement [12]. Anxiety management programs [13, 14] and cognitive behaviour techniques [15] have been successfully conducted to relieving exam anxiety.

We will report the results of a study conducted in a sub-clinically depressed population, in a new cultural setting. The study was designed to investigate the impact of mindfulness-based cognitive therapy (MBCT) on depression and anxiety levels (naturally induced by exam as a stressful setting in real life), and also on quality of life. It was hypothesized that participants in the MBCT group would show significant decreases in depression and anxiety levels, while no such changes were expected in the control waiting list group. The current research may add to the knowledge about the effectiveness and generalizability of MBCT to real-life settings.

METHOD

Participants

150 female students were randomly selected from a list of university dormitories, in a simple randomized manner. At the end, 139 who met the inclusion criteria, agreed to participate. They were asked to fill in BDI. Of those who scored more than 15 (n=35, mean age=21.7), 15 individuals (mean age=21.5) and 15 individuals (mean age=21.1) were randomly allocated either to receive MBCT or to remain in waiting list. The score 15 as cut-off point in Iranian population has been proposed in one previous study [16]. Only 1 person in MBCT group (BDI=19 and BAI=18) failed to take part in the last 3 assessment points. Analysis was conducted for the individuals who completed all assessments. As self-reported, none of the participants had a history of neurological or mental disorders including depression and anxiety. This project was approved by Tehran University of Medical Sciences, ethical committee, to be carried out in the target population. All participants signed informed consent form after being provided with a full description of the study.

Measurements

Beck Depression Inventory (BDI)

BDI is a 21-item self-report measure of severity of depressive symptoms with higher scores indicating greater severity ranging from 0 to 63. BDI proved to have high internal consistency, validity, and test–retest reliability in psychiatric and nonpsychiatric samples [17]. The Farsi version of this measure proved to have significant reliabili-

ty (0.77), validity (0.70) and high internal consistency (0.91) in an Iranian population [16].

Beck Anxiety Inventory (BAI)

BAI [18] is a self-report instrument with a 21 items, each rated on a 4-point scale ranging from 0 ("not at all") to 3 ("severely, I could barely stand it"). The scores on the BAI range from 0– 63 with higher scores indicative of more severe anxiety. The Farsi version of BAI proved to be a significantly reliable (0.83) and valid (0.72) instrument with high internal consistency (0.93) [19].

Dysfunctional Attitudes Scale (DAS)

DAS is a suitable measure to tap therapy outcome [20]. This 40-item measure allows assessing so-called depressogenic schemata [3, 21]. Psychometric properties of DAS have been outstanding [22]. Researchers conducted a pilot study on Farsi version of DAS prior to the main experiment. Sixty five participants completed DAS, ATQ and BDI. The correlations between DAS and BDI (0.65) and between DAS and ATQ (0.78) were regarded as indices of convergent validity. They were r-tested one month apart; a significant test-retest reliability was observed (0.76) for DAS.

Automatic Thoughts Questionnaire–Negative (ATQ)

Psychometric properties of the ATQ-N [23] are satisfactory. It is a 30-item measure which assesses the frequency of negative automatic thoughts. As described in the previous sub-section, correlations between ATQ and DAS (0.78) and between ATQ and BDI (0.68) were regarded as convergent validity quotients. With one month time interval between test and retest, significant test-retest reliability for ATQ was observed (0.76).

WHOQOL-BREF

To evaluate the quality of life, we used the 26-item, self-report, short version of the World Health Organization Quality of Life instrument [24]. This instrument provides us with subjective quality of life assessment in four domains: physical (e.g., "How satisfied are you with your sleep?"), psychological (e.g., "How much do you enjoy life?"), social (e.g., "How satisfied are you with your personal relationships?"), and environment (e.g., "How satisfied are you with your access to health services?"). Data are reported on only total scores of the first three domains, as they are more relevant to the aims of present study. WHO [24] asserts that WHOQOL-BREF can be regarded and used as a cross-cultural measure. Farsi version of WHOQOL-BREF was employed in the present study. A previous study [25], carried out in an Iranian population, showed a good construct validity and internal consistency for Farsi version of WHOQOL-BREF.

GROUP-BASED MBCT INTERVENTIONS

Eight weekly 2.5 hour group sessions were delivered by a psychologist who was trained in MBCT program. We followed the MBCT group-based instructions [4] designed to help patients to learn skills that prevent depressive relapse/recurrence. To repeat assessment of dependent variables, two follow-up sessions were scheduled at intervals of 1 and 6 months afterwards. To monitor treatment integrity and therapist competence, the sessions were audio-taped and reviewed with participants' permission. Extracted from Segal and colleagues [4], the therapeutic tasks consisted of: guided mindfulness practices (i.e., body scan, sitting meditation, walking meditation, mindful breathing and yoga); encouraging participants to share their experience of these practices; review of weekly homework (i.e., 40 min of mindfulness practice per day and generalization of session learning in meetings intervals); and teaching cognitive–behavioral skills (for more details see [4]. The Farsi versions of homework CDs (i.e., body scan, meditations and Yoga) [26] were used.

Procedure

Of 150 female students randomly selected by a statistician, who was blind to research interven-

tions and groups, from a list of female students living in university dormitories, 139 individuals agreed to participate. They were then given an informed consent form (similar to the previous study) to read and sign. Using the score 15 on BDI as a cut-off point, the sample (n=30) was randomly allocated to experimental and control groups; 15 individuals in each. The experimental group received 8 weekly 2.5-hour group sessions delivered by a psychologist, who was trained and expert in MBCT program, whilst the control group remained in waiting list.

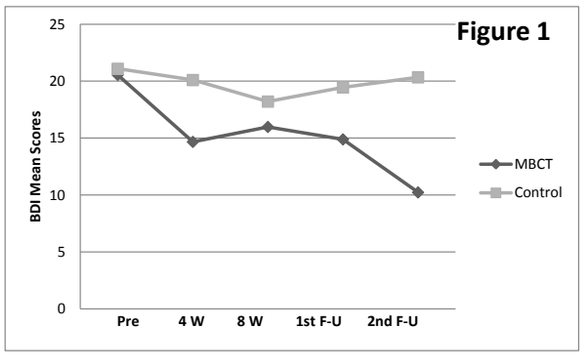
All assessments were conducted at the beginning of the first, forth, and eighth sessions, and also one month (first follow-up) and six months (second follow-up) after the last session. The same assessment points as set for experimental group were regarded for control group. Again, the first follow-up assessment was collected during the year final exam. Assessments of control group were collected at the same time points.

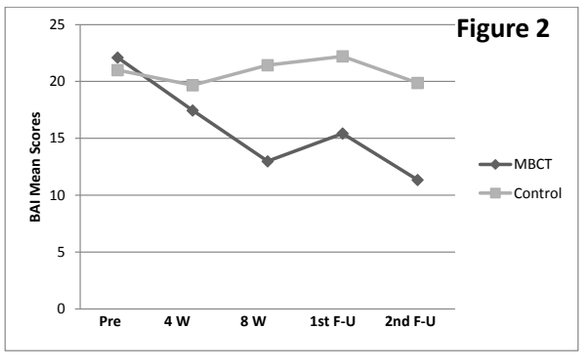
DATA ANALYSIS

A series of two-way [2 (Group: control and experimental) × 5 (Session:1st, 4th, 8th, 1st follow-up and 2nd follow-up)] ANOVA with repeated measures was conducted on dependent variables (Scores: BDI, BAI, DAS, ATQ and WHOQOL-BREF) separately, with Group as a between-subject and Session as a within-subject variables. If there was any interaction effect, we would exclude the group factor and run the analysis for each group alone followed by polynomial test to detect possible linear trend. All analyses were undertaken using SPSS version 15.

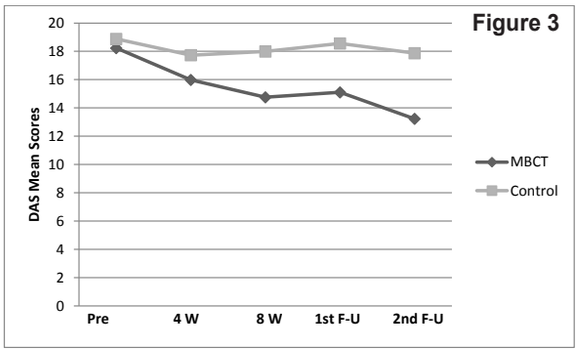
RESULTS

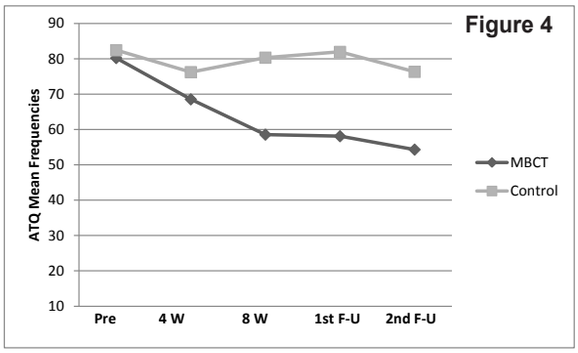
The use of ANOVA with repeated measures on BDI and BAI separately showed interaction effect between Group and Session variables for both measures (BDI: F (4, 108)=4.25, p<0.01), BAI: F (4, 108)=3.97, p<0.01) and for BAI a significant main effect for Session (BAI: F (4, 108)=5.40, p< 0.01). Owing to the interaction effects and in order to detect further the changes in each group separately, the group variable was excluded from analyses. The re-analysis, followed by polynomial test, showed a statistically significant differences over sessions only in the experimental group (BDI: F (4, 52)=6.56, p<0.01), BAI: F (4, 52)=7.52, p<0.01) showing linear trends (BDI: F (1, 13) =10.20, p<0.01, BAI: F (1, 13) =13.51, p< 0.01). This proves the reduction in both depression and anxiety levels during treatment and follow-up sessions (Fig. 1 and Fig. 2).



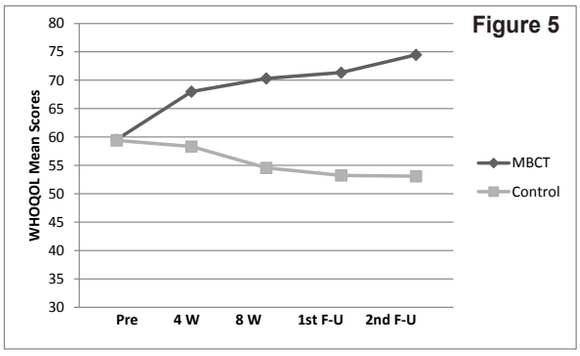


The same statistical analysis showed that mean changes on ATQ and DAS scores in two groups during five assessment points are depicted in Fig. 3 and Fig. 4. Significant Group × Session interaction (DAS: (F (4, 108)=7.76, p<0.01), ATQ: (F (4, 108)=9.45, p<0.01)) and main Session (DAS: F (4, 108)=4.43, p<0.01), ATQ: (F (4, 108)=3.90, p<0.01)) effects were obtained for the data on both ATQ and DAS. Excluding the group variable, again, supplementary analysis showed ATQ and DAS scores reduce systematically in the experimental group (DAS: F (4, 52)=4.14, p<0.01), ATQ: F (4, 52)=4.59, p<0.01) with linear trends (DAS: F (1, 13) =10.45, p<0.01, ATQ: F (1, 13)=11.25, p<0.01. No such effects were found for the control group. These findings suggest that both dysfunctional attitudes and automatic thoughts in experimental group have been reduced over the treatment and follow-up sessions.





Furthermore, the same analysis on WHOQOL-BREF (quality of life) revealed an interaction effect ($F(4, 108)=6.56$, $p<0.01$), but no main effect appeared. Supplementary analysis for each group showed an increment in quality of life over time only in the experimental group ($F(4, 52)=3.87$, $p<0.01$) showing a linear trend ($F(1, 13)=7.37$, $p<0.01$) (see Fig. 5).



DISCUSSION

The essential aim of this trial was to examine whether the group-based MBCT affects anxiety and depression levels, and also quality of life in a sub-clinically depressed population. For this, we ran an experimental, randomized-controlled study similar to study 1, employing techniques and exercises pointed out by Segal and colleagues [4]. Overall results indicated that MBCT was effective at helping participants to deal with their anxiety and depression, and experience an improved quality of life before, during and after stressful circumstances. In addition to that, the reductions in negative automatic thoughts and dysfunctional attitudes in people who received MBCT were substantial. These results suggest that MBCT decreases anxiety, depression, negative automatic thoughts and dysfunctional attitudes in a non-clinical sample. As a result of MBCT trainings, the participants presumably acquired skills to disengage themselves from ruminative thoughts and images that, in turn, confer some protection against future stressful situations and subsequent anxiety and depression.

Apart from the studies [5, 6, 7] that showed relapse preventing effect of MBCT in previously depressed patients, there are now a number of reports demonstrating that MBCT can successfully reduce symptoms in currently depressed patients [27, 28]. In line with these studies, the present report emphasises the applicability of MBCT to reduce depression as well as anxiety levels in a non-clinically depressed population.

Furthermore, the results showed an enhancement in quality of life among people who underwent MBCT training. One of the essential aspects of our outcome assessment was quality of life. In fact, MBCT seems to have produced incremental benefits in quality of life. Thus far, a number of studies showed that mindfulness trainings enhance psychological and health-related quality of life in heterogeneous patient population [29] and patients with medical and mental health problems [30].

The results depict a picture showing that MBCT can be effective at relieving anxiety and depression, and enhancing quality of life in sub-clinically depressed individuals who may be susceptible to emotional disorders. To make this very picture more meaningfuly, we need further research to be planned in the future to investigate the underlying change mechanisms and potential moderators of the effect of MBCT on quality of life.

Exam-related dysphoria is one of the feelings that students usually experience [10, 11] which in turn activates negative, ruminative thinking [31]. This, then, makes demands on the so-called 'controlled processing attentional resourc-

es' which are limited. In CBT, it is assumed that any intervention to protect individuals against cognitive routines related to depression should make demands on these limited 'resources' in such a way that fewer resources would be available for the establishment and maintenance of depression-related processing configurations, usually activated/reactivated in dysphoric mood. Mindfulness meditations and exercises can be regarded as an appropriate alternative route to help people to free themselves from distorted thoughts and images. Intentional deployment of conscious awareness, which is a defining characteristic of mindfulness, will engage attentional resources and leave no room for the processing of self-defeating negative thoughts and images. This is considered as a 'decentring' effect [32]. In fact, MBCT in-session and out-session trainings encourage trainees to cultivate an open and acceptant mindset and consequently to develop a 'decentered' perspective on thoughts, images and feelings, in which these are seen as passing events in mind [4].

A body of evidence suggests that a number of cognitive processes, including attention, memory, and problem solving, might contribute to the MBCT effectiveness. Using mindfulness meditations, participants are taught to improve their ability to recognize and disengage from ruminations [4]. Rumination is referred to as perseverative and repetitive thinking about and a narrowed attention on self-related themes and material, which in turn exacerbate negative mood such as anxiety and dysphoria [33]. Phenomenologically, rumination would increase overgeneral retrieval in autobiographical memory [34, 35, 36, 37]. Closer scrutiny of the relationship between rumination and overgeneral memory confirms that naturally occurring levels of self-reported rumination are positively correlated with over-general memory recall in both normal participants [38]. It was also observed that experimental manipulations of rumination exacerbate negative mood [40, 33]. In addition, there are research findings showing that such an over-generality in autobiographical memory is associated with poor social problem solving [41, 42, 43, 44, 45, 46]. This may give rise to a vicious cycle leading to an increase in depression (see [37] for a review) and suicide attempt [45, 46]. If this explanation can be regarded as a valid and underpinning cognitive mechanism for the relationship between rumination and negative mood, the training package of mindfulness embedded in MBCT should help trainees break the cycle and free themselves from such ruminations, supposedly leading to more specificity in memory retrieval and more effective problem solving strategies. One may further assume that both maintaining awareness towards the present moment with all its qualities (as mindfulness training) and keeping diaries related to daily life (as a cognitive-behavioural task) may help people to encode specific details and access them easily when needed for problem solving, eventually enhancing well-being [47]. The study of Williams, Segal, Teasdale et al [48] showed that recovered depressed patients who underwent MBCT training including instructions to sustain attention to everyday events were more likely to retrieve specific details from autobiographical memory.

Caution, however, should be observed when interpreting the findings of present study in terms of limitations to the conclusions that may be drawn from the results. The unisex participant (female) may limit the generalizability of our results. We recruited female participants as it was feasible for our female therapists to deliver MBCT trainings inside female student dormitories bearing in mind the cultural restrictions. In order to address this limitation, future research will be able to examine the effectiveness of MBCT across the gender variable. Moreover, lack of another intervention group can be regarded as a limitation which makes it difficult to attribute the therapeutic effects to *specific factors*. Future research by doing so will allow us to distinguish the possible effects of the *non-specific factors*, such as supportive nature of group-gathering, therapeutic rapport and alliance, receiving empathy and sympathy, sharing views, time passing etc. Lack of a scale to measure level of stress in participants at the assessment time points can be seen as anther limitations of the present study, which deserves attention in future research. Despite these shortcomings, we are encouraged that the MBCT intervention improved quality of life and well-being. However, the limitations of the current effectiveness evidence should be used to shape the direction of future research.

We believe that MBCT may provide a useful therapeutic strategy in individuals with clinical problems. Therefore, the next rational step would be using MBCT in various clinical populations within the same cultural setting. We admit that it will take a great deal of precise empirical investigations to pinpoint the specific effects of MBCT in both clinical and normal settings.

In this paper, we reported the results of a randomized, controlled study using 8-session MBCT trainings conducted in sub-clinically depressed who may be seen as susceptible to exam anxiety and depressed mood. The results of this study provide encouraging empirical evidence for the effectiveness of MBCT in a new cultural setting, and extend our knowledge about the effectiveness and generalizability of the MBCT in real-life stressful situations.

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