Mindfulness-based cognitive therapy: an efficacious community-based group intervention for depression and anxiety in a sample of cancer patients

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Objective: To assess the impact of an 8-week structured mindfulness-based cognitive therapy (MBCT) program on individuals experiencing distress as a consequence of cancer.

Design, setting and participants: Prospective study of 16 participants with a history of cancer and five carers of people with cancer recruited from August 2008 to February 2009 through calls to the Cancer Council South Australia Helpline. Participants were assessed for anxiety and depression before and after undergoing a course in MBCT between 30 September and 18 November 2008 and 20 February and 10 April 2009.

Main outcome measures: Depression, anxiety and mindfulness as measured by the Beck Depression Inventory-II (BDI-II), State–Trait Anxiety Inventory (STAI), and Freiburg Mindfulness Inventory (FMI), respectively, and a consumer-centred evaluation.

Results: There were significant reductions in depression ($F[1,24]=6.37; P=0.012$), partial-$\eta^2=0.27$) and anxiety ($F[2,34]=9.43; P=0.001$, partial-$\eta^2=0.36$) and mindfulness ($F[2,32]=8.36; P=0.001$; partial-$\eta^2=0.34$) following the intervention, and these effects were sustained at the 3-month follow-up. Reliable change indices further support these findings. Participants’ scores on measures of depression and anxiety decreased as a function of increased mindfulness, as reflected by significant ($P<0.05$) negative correlations between FMI scores and BDI-II scores (ranging from $r=-0.46$ to $r=-0.79$) and STAI scores (ranging from $r=-0.46$ to $r=-0.50$) scores at all time points.

Conclusion: The MBCT program appears to be an efficacious intervention for use among people affected by cancer who also experience symptoms of depression and anxiety.

METHODS

Participants were recruited for the study from 20 June 2008 to 12 February 2009 through calls to the CCXA Helpline. Participants were: (i) informed of the program after contacting the CCXA Helpline for information and/or support; and (ii) referred to the CCXA Helpline for further information by means of flyers placed in primary care facilities or distributed through cancer support group leaders in the Adelaide metropolitan region. Participation was open to people with a history of cancer and carers of people with cancer.

The MBCT program facilitator completed a screening interview by telephone to exclude people with severe psychiatric disorders and substance misuse — potential participants were asked if they were currently receiving treatment for a psychological disorder and further questions probed for information concerning the use of substances. Participants were sent an information sheet, consent form and questionnaire, which they submitted in person before commencing the first MBCT session.

Ethics approval was granted by Cancer Council South Australia’s Human Research Ethics Committee.

Demographic characteristics recorded included age, sex, highest level of education, marital status, type of cancer and time since diagnosis (where applicable).

Depression and state anxiety (a transitory emotional state that is characterised by subjective, consciously perceived feelings of tension and apprehension and heightened autonomic nervous system activity) levels were assessed using the Beck Depression Inventory — second edition (BDI-II) and Form Y-1 of the State–Trait Anxiety Inven-
A pretreatment questionnaire, comprising all key study variables, was posted to participants and had to be completed and handed to the facilitator before commencement of the first session. At two time points after completion of the intervention (1 week and 3 months), participants were sent a questionnaire that covered (i) all key study variables and (ii) consumer-centred evaluation. To maximise response rate, the MBCT facilitator followed up with participants who had not yet returned their questionnaire.

**Statistical analysis**

Repeated measures analyses of variance were used to assess whether depression, anxiety and mindfulness levels were significantly affected by the MBCT intervention over time.

For those measures with minimal missing data, values were calculated based on the recommendations of the respective test manual. Data were analysed using SPSS, Version 17.0 (SPSS Inc, Chicago, Ill, USA).

**RESULTS**

The two MBCT programs were attended by 25 participants (13 in the first program and 12 in the second). Six participants attending the first program and eight attending the second also attended the optional 3-hour follow-up session 6 weeks later. Of the 25 participants who commenced the program, 22 were women and three were men, and their ages ranged from 34 to 69 years (mean age, 51.36 years; SD, 10.26). Three of these withdrew before completion, and one did not complete the postintervention and 3-month follow-up questionnaires. Thus, the following analyses include data for 21 participants (18 women, three men), aged 34 to 69 years (mean age, 52.0 years; SD, 10.2). These participants included 16 with a history of cancer and five carers. Eight of those with cancer had breast cancer. Other participants with cancer reported the following cancer types: glioblastoma multiforme; adenoid cystic carcinoma; acute myeloid leukaemia; lymphoma; liver cancer; bladder cancer; ovarian cancer; and prostate cancer. Time since diagnosis ranged from approximately 3 months to 120 months (mean, 30.88 months; SD, 32.09).

Of our 21 participants, 11 had completed secondary school and 10 had completed some form of tertiary education. Seventeen participants were currently married or in a de-facto relationship, two participants were single and two were either separated or divorced. One participant self-identified as having depression and was currently seeing a psychiatrist.

Preliminary analyses revealed no significant differences between the baseline scores of patients and carers on our outcome measures ($t < 1$ for the BDI, STAI and FMI), so data from both MBCT programs were combined for further analyses.

Three participants had extensive missing data at only one time point (one at postintervention and two at 3-month follow-up).
Impact of the MBCT program

Repeated measures analyses of variance showed that there were significant improvements in participants’ depression, anxiety and mindfulness levels from preintervention to postintervention (Box 1). This corresponded to a clinical change in mean depression levels from mild (mean, 15.02; SD, 9.07) to minimal (mean, 10.37; SD, 5.92) and for anxiety levels from clinical (mean, 43.17; SD, 13.25) to non-clinical (mean, 31.39; SD, 9.61).

These levels were maintained up until the 3-month follow-up assessment for depression (mean, 10.35; SD, 7.35). There was a slight, but non-significant increase in mean anxiety levels at the 3-month follow-up (mean, 35.94; SD, 11.85) compared with the immediate posttreatment levels.

Mindfulness and therapeutic benefit

To evaluate whether mindfulness levels were related to levels of depression and anxiety, FMI scores were correlated against BDI-II and STAI scores at each respective time point (Box 2). There were significant negative correlations at each of the time points, suggesting that increases in mindfulness levels were associated with decreased levels of depression and anxiety.

<table>
<thead>
<tr>
<th>FMI scores</th>
<th>BDI-II scores</th>
<th>STAI scores</th>
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<tbody>
<tr>
<td></td>
<td>Correlation coefficient (r)</td>
<td>P</td>
</tr>
<tr>
<td>Preintervention</td>
<td>−0.63</td>
<td>0.002</td>
</tr>
<tr>
<td>Postintervention</td>
<td>−0.79</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>3-month follow-up</td>
<td>−0.46</td>
<td>0.048</td>
</tr>
</tbody>
</table>

Reliable and clinically significant changes in depression and anxiety

Reliable change indices were used to assess changes in scores for individual participants.21 Box 3 suggests that MBCT was effective in reducing anxiety for participants irrespective of the clinical classification of their anxiety (ie, clinical versus non-clinical). MBCT was more effective in reducing depression in participants who had scores indicative of moderate or severe depression. STAI levels for two participants had increased at the 3-month follow-up, suggesting that MBCT may not have a sustained effect on state anxiety.

Consumer-centred evaluation

Nineteen participants noted that the peer group setting was very important for establishing a relaxed, non-judgemental and open-communication environment. However, there were exceptions, however, with some participants indicating a lack of willingness to disclose personal information (two participants) and/or feeling that others disclosed too much (two participants). One participant noted a lack of connectedness with the course emphasis on “depression”.

Particular MBCT principles that were reported by participants to have been easily incorporated into their everyday lives were: living in the moment (six participants), changing destructive thought patterns (five participants), the ability to let go (five participants), and acceptance and trust (three participants).

Participants’ perceptions of the length of the course were mixed (15 thought it was a suitable length; three thought it was too short; and two thought it was too long); yet attitudes towards the optional 3-hour follow-up session at 6 weeks were affirmative for the 14 who attended; these participants commented that they were able to: consolidate and reinforce what they learned during the intervention (five participants); socialise again with others in the group (seven participants); and receive reassurance that the intervention has a benefit in everyday life (three participants).

DISCUSSION

Our findings indicate that the MBCT program had a positive and sustained effect in reducing self-reported levels of depression and anxiety. Importantly, these benefits were linked with increases in mindfulness across each stage of assessment.

Depression and anxiety levels were significantly lower after the intervention, and these low levels were sustained 3 months after completing the MBCT program. These results are consistent with previous research applying MBCT to depression,22 and support its efficacy in people affected by cancer. Furthermore, reliable change indices indicated that MBCT is effective at reducing all levels of anxiety; however, as an efficacious intervention for depression, it may be more

<table>
<thead>
<tr>
<th>Change</th>
<th>Beck Depression Inventory — second edition</th>
<th>State–Trait Anxiety Inventory</th>
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<tr>
<td></td>
<td>Preintervention to postintervention (n = 20)†</td>
<td>Preintervention to 3-month follow-up (n = 19)†</td>
</tr>
<tr>
<td></td>
<td>Mild</td>
<td>Moderate</td>
</tr>
<tr>
<td>Reliable positive change</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Reliable negative change</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>No reliable change</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

* Values indicate the number of individuals who experienced a reliable positive, reliable negative or no reliable change in postintervention and 3-month follow-up scores based on their baseline scores. Participants grouped by preintervention clinical classification for depression and anxiety.16,17
† Minimal depression for the Beck Depression Inventory — second edition is not included, as all eight participants in this category experienced no reliable change and remained in the minimal range.
valuable for people with moderate to severe levels of depression. Although, feedback from participants indicated that even those with lower levels of distress found participation in the program invaluable.

There was a slight rebound in anxiety levels at the 3-month assessment. Reliable change indices identified two participants whose anxiety levels had increased from baseline; further investigation of demographic data did not reveal a common characteristic between these two participants. Reasons for this adverse outcome are unknown and so may be unrelated to the program. Responses to the consumer-centred evaluation underscored the value of the follow-up session and future applications may include additional or ongoing “booster” sessions.

In line with previous qualitative research,22 participants perceived MBCT as beneficial. Feedback revealed that it was the inclusion of principles of mindfulness in one’s life that provided the most benefit. However, not all components of the course were without criticism (eg, its emphasis on depression), suggesting that some participants do not relate to the term “depression”.

The group setting was considered important. Research suggests that people affected by cancer prefer to discuss issues with peers rather than with a general practitioner or psychologist.23 Therefore, there still remains the challenge of determining whether it is the adoption of mindfulness practice or the peer support gained during the delivery of the MBCT program that contributes most to therapeutic outcome.

Moreover, there is still debate about how best to define and measure the concept of mindfulness.3,10,20 Although research supports the psychometric properties of available scales,19 it is not yet clear to what extent these measures are capturing the cognitive elements proposed in the MBCT program. Thus, the extent to which MBCT is superior to MBSR is as yet unknown.

Our study has a number of limitations. Firstly, it lacked a control group. Nevertheless, the systematic variation in mindfulness scores alongside changes in distress levels suggests that engagement with mindfulness practice leads to improved therapeutic outcome. Secondly, few carers participated in this study so the results may not be generalisable to carers. Similarly, the study sample was recruited essentially by opportunity, and thus results may not be applicable to all cancer types or stages in the cancer journey. Finally, further research should include provision for recording the amount of homework performed by participants, as ongoing practice is featured as a central requirement in the delivery of MBCT interventions.

Overall, this study provides preliminary support for the use of MBCT as an effective psychosocial intervention for people affected by cancer.

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COMPETING INTERESTS

None identified.

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