Exploring the Effectiveness of Mindfulness Based Cognitive Therapy Courses for People with Physical Health Conditions

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Introduction

The Clinical Health Psychology Service at St. Luke’s Hospital within Bradford Teaching Hospitals NHS Foundation Trust has been providing Mindfulness Based Cognitive Therapy (MBCT) courses to clients with a range of physical health conditions since year 2013. Outcome data has been routinely collected to monitor the impact of these courses on participants’ emotional well-being. This service evaluation was commissioned to evaluate the effectiveness of the MBCT course on levels of anxiety, depression, perceived stress, and self-compassion.

Literature Review

What is mindfulness?

Mindfulness has been defined as the awareness that arises from “paying attention in a particular way: on purpose, in the present moment, and non-judgementally” (Kabat-Zinn, 1994, p. 4). Secular mindfulness teaching combines contemplative practices, psychological teaching and neuroscience to cultivate this awareness, and has origins in Buddhist teachings which date back to approximately two thousand years ago (Weare, 2013). The intention of learning mindfulness is to reduce suffering and distress which is believed to stem from reactive and habitual ways that people respond to their life experiences (Weare, 2013). Although several different terms are used to describe the mechanism of change, they essentially describe very similar concepts; one of these is called “shift in perspective” (O’Toole et al., 2017, p. 3). This concept refers to a person ‘shifting’ in their unhelpful and habitual ways of responding by taking on mindfulness teachings through, for example, being in the present moment and accepting one’s thoughts and feelings as they are, non-judgementally. Through practice, this ‘shift in perspective’ is believed to be the mechanism which abates negative mental states (Shlonsky et al., 2016).

What is MBCT?

MBCT is a mindfulness based intervention that is provided as an 8-week group programme. Drawing on the work of Jon Kabat-Zinn who developed the Mindfulness
Based Stress Reduction (MBSR) for the relief of pain and distress in individuals with physical health conditions (Kabat-Zinn, 1990), Mark Williams and colleagues at Oxford University incorporated cognitive theory into the programme, developing MBCT. MBCT builds emotional resources through learning to develop: a.) awareness of thoughts, feelings, and body sensations; b.) awareness of our natural tendency to judge or ‘problem solve’ experience, and subsequently to cultivate attitudes of letting go and not judging and; c.) the ability to identify present, past, and future thinking, and cultivate a present moment focus (Segal et al., 2002).

**What are the experiences of people with physical health difficulties?**

People who experience physical health difficulties often describe their physical health journey as an emotional roller coaster. Their experience of physical health difficulties is often associated with feelings of threat and loss and these feelings can often lead them to experience a variety of other difficult emotions such as sadness, anger, anxiety, worry, and fear. Others may also experience feelings of guilt, shame, and self-blame (Carlson, 2012). The experience of physical health difficulties can change people’s perception of themselves and the world, and challenge their beliefs about control and certainty (Carlson, 2012).

**How can MBCT be helpful for people with physical health difficulties?**

Meta-analytic evidence shows that mindfulness can reduce depression, anxiety, and stress (Khoury et al., 2013). There is also growing evidence for MBCT in physical health, suggesting that it can lead to reductions in anxiety, depression, and fatigue in conditions such as diabetes (van Son et al., 2014), cancer (van der Lee & Garssen, 2012), and heart disease (O’Doherty et al., 2015). MBCT can help people view their thoughts and emotions associated with their physical health difficulty in a new light. It can help people build their emotional resources by teaching them how to respond to their life experiences with self-compassion and acceptance, which through practice can lead to the breaking of their dysfunctional and habitual ways of responding to life’s experiences (Kuyken et al., 2010).
What are the aims of this service evaluation?

The aim of this service evaluation is to examine the effects of the MBCT course on anxiety, depression, perceived stress and self-compassion.

Methods

The data reported in this service evaluation were routinely collected as part of service evaluation/audit purposes from years 2013-2017. Approval to access the anonymised dataset was granted by the University of Leeds, School of Medicine Research Ethics Committee, and by the Head of Clinical Health Psychology at Bradford Teaching Hospitals NHS Foundation Trust. As this data was collected for service evaluation/audit purposes, approval was not required from the Trust’s Research & Development Department.

Overview of the referral process into the MBCT course

This service evaluation examined the impact of the MBCT course offered to clients in a Clinical Health Psychology Department within Bradford Teaching Hospitals NHS Foundation Trust. Clients were offered the course either as an addition to their 1:1 therapy or as a stand-alone intervention depending on clinical need; this was therefore an opt-in method. Clients were referred to the course via two routes: a.) internally within the psychology department by a clinical psychologist or another therapist (e.g. counsellor, health psychologist); or b.) externally following a healthcare Multi-Disciplinary Team (MDT) meeting, for example through the Living with Pain team, which included a clinical psychologist who assessed their suitability for a referral into the course. Occasionally other skilled clinicians from other health care teams made a referral, such as a nurse specialist.

All clients who were referred externally and who did not have a clinician in the Clinical Health Psychology Department met with Dr Kate Ryder and/or Dr Emma Bishop for a screening and orientation session. The screening session, sometimes carried out over the telephone, was used to determine whether the course would meet the client’s needs, and to provide the client with space to make an informed decision whether they wanted to join the course. The clinical psychologist, who was a trained mindfulness teacher (KR or
EB) shared details of the MBCT course with the client, explored why the client was interested in the course, what they knew about MBCT, and whether they had any concerns. Time was also taken to explore whether the course was feasible for the client, and whether in addition to the weekly group session they would be able to commit to weekly assignments to practice mindfulness in their daily life.

The screening session was also used to explore whether the client had a learning disability or cognitive impairment that would make the course less accessible to them. Current and historical mental health difficulties (e.g. severe depression, psychosis, alcohol or drug dependency, suicidality), and significant life events and traumas were also considered to determine whether the course was appropriate to the client at the time. Plans of major life changes which could impact on participating in the full length of the course were also explored (e.g. house move, change of job, marriage, divorce). The implications of additional physical health issues (e.g. breathing difficulties) and medications, which could impact on the client’s ability to participate were also considered. Finally, the therapist discussed the client’s strategies and support systems. In cases where the client’s support systems were limited the therapist noted a course of action that would be taken in case any difficulties did arise from the course (e.g. contact GP, CPN or psychologist).

Following the screening session, an orientation session was offered to all the clients who were planning to take part in the course; attendance at this session was strongly encouraged to support the group forming. The orientation session was used for clients to ask any additional questions about the MBCT course, and for the clients to make a final decision whether they wanted to attend the course.

Programme Description

The MBCT course was facilitated by Dr Kate Ryder and Dr Emma Bishop, two clinical psychologists who work within the Clinical Health Psychology Service within Bradford Teaching Hospitals NHS Foundation Trust, and who have trained to teach mindfulness in line with UK Good Practice Guidance for Mindfulness teachers. The course was delivered in a group setting over 8, 2 hour long sessions using the Mindfulness-Based Cognitive Therapy for Depression Manual (Segal, Williams, &
Teasdale, 2012). The sessions included meditation practices (e.g. mindful movement, 
body scan, sitting meditation), enquiry and group discussions. In addition to these 
sessions, weekly home practice was given to clients to encourage both formal and 
informal mindfulness practice at home; this was supported by hand-outs and CDs.

During the course, clients were asked to provide weekly feedback on the sessions. 
They were asked, for example, whether they understood the aims of the course, whether 
they were able to practice mindfulness at home over the past week, and whether they had 
any concerns about the course. Any concerns were addressed in a group format.
Following the end of the 8 sessions, participants were invited to attend follow-up 
mindfulness practice sessions to support their ongoing mindfulness practice, 
approximately four times a year.

**Design**

A pre-post design was utilised which examined client ratings pre and post the 
MBCT course. All questionnaires were therefore completed by clients at sessions one and 
eight. The measures used, the justification for their use, and times of administration are 
summarised in Table 1.

**Table 1. A list of measures used**

<table>
<thead>
<tr>
<th>Measure Used</th>
<th>Reason</th>
<th>Session Administered</th>
</tr>
</thead>
<tbody>
<tr>
<td>HADS</td>
<td>To examine levels of anxiety and depression</td>
<td>1 and 8</td>
</tr>
<tr>
<td>PSS</td>
<td>To examine levels of perceived stress</td>
<td>1 and 8</td>
</tr>
<tr>
<td>SCS-SF</td>
<td>To examine levels of self-compassion</td>
<td>1 and 8</td>
</tr>
</tbody>
</table>

**Measures**

The measures described in this section were used to collect data for service 
evaluation/audit purposes. To obtain estimates of reliability and to calculate cut off scores 
required to determine the Reliable Change Index (RCI) and Clinically Significant Change 
(CSC), a search of the literature was carried out to find the normative means, standard 
deviations, and reliability statistics. These are included in the scale descriptions below.
Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983). This is a 14-item measure that assesses severity of anxiety and depression. The measure comprises of 7 items assessing anxiety and 7 items assessing depression that are rated on a scale from 0-3. Scores between 0-7 reflect a ‘normal’ level, 8-10 a ‘mild’ level, 11-14 a ‘moderate’ level, and 15-21 a ‘severe’ level of difficulties. The non-clinical norms used for the clinical significance analyses were taken from Crawford et al. (2001). For anxiety, $M = 6.14$, $SD = 3.76$, and for depression, $M = 3.68$, $SD = 3.07$. Cronbach’s $\alpha = .82$, and .77, respectively.

Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983). This is a 10-item measure that assesses severity of perceived stress. The questions are rated on a scale of 0-4, with 0 reflecting ‘never’ and 4 reflecting ‘very often’. Scores between 0-13 reflect ‘low’ perceived stress, 14-26 reflect ‘moderate’ perceived stress, and 27-40 reflect ‘high’ perceived stress. The non-clinical norms used for the clinical significance analyses were taken from Cohen et al. (1983): $M = 23.1$, $SD = 7.31$, and Cronbach’s $\alpha = .84$.

Self-Compassion Scale-Short Form (SCS-SF; Raes, Pommier, Neff, & Gucht, 2011). This is a 12-item measure that assesses how people typically act towards themselves in difficult times. The questions are rated on a scale from 1-5, where 1 reflects ‘almost never’ and 5 reflects ‘almost always’. The average score for self-compassion is 36, and higher scores reflect more self-compassion. The non-clinical norms used for the clinical significance analyses were taken from Neff, Whittaker, and Karl (2017): $M = 3.00$, $SD = .76$, and Cronbach’s $\alpha = .94$.

The scales listed above were administered to all clients for all the courses that were delivered between the years of 2013-2017, except for the Perceived Stress Scale and the Self-Compassion Scale-Short Form which were not administered during the first course that was delivered in year 2013.
Results

Descriptive statistics

A total of 11 groups were delivered between years 2013 and 2017. One hundred thirty-five clients opted-in to the course, and from these, 105 (78%) completed the course, and 30 (22%) dropped out of the course. Group sizes varied from a range of 6-19 with an average group size being approximately 12. Forty-six (34%) of the clients were males, and 89 (66%) were females. Thirty-six (27%) clients attended 5 or less sessions, 16 (12%) attended 6 sessions, 37 (28%) attended 7 sessions, and 45 (33%) attended 8 sessions. In terms of therapy status, 58 (43%) clients were receiving 1:1 therapy at the time of the MBCT course, 48 (36%) clients received 1:1 therapy in the past, 7 (5%) were due to start 1:1 therapy, and 21 (16%) were receiving the MBCT as a stand-alone intervention and never received 1:1 therapy within the service. In terms of speciality, 59 (44%) clients came from pain pathway, 24 (18%) from diabetes, 10 (7%) from cardiac, 10 (7%) were relatives, and 32 (24%) were from other specialities (eg. oncology, neuro, heart failure, stroke). These descriptive statistics are shown in Table 2.

Analyses

Analyses were carried out in two stages, first exploring statistical significance and then clinical significance. In terms of statistical significance, the data met all the assumptions for a paired samples t-test: the data were interval, and the distribution in the difference between pre and post scores was normal for all variables.

Statistical Significance

In terms of statistical significance, the first goal was to examine whether there were differences between pre and post outcomes on anxiety, depression, perceived stress, and self-compassion. Four paired samples t-tests were carried out using SPSS Version 24 (IBM Corp, 2016).
The findings suggest a significant reduction in *anxiety*, pre ($M = 12.37, SE = 0.44$), post ($M = 10.03, SE = 0.44$), $t(91) = 6.23, p < .001, r = .55$; *depression*, pre ($M = 10.39, SE = 0.47$), post ($M = 7.39, SE = 0.48$), $t(91) = 7.52, p < .001, r = .62$; *perceived stress*, pre ($M = 25.02, SE = 0.67$), post ($M = 18.78, SE = 0.85$), $t(84) = 9.03, p < .001, r = .70$; and a significant increase in *self-compassion*, pre ($M = 2.35, SE = 0.08$), post ($M = 2.97, SE = 0.07$), $t(84) = -7.79, p < .001, r = 0.65$.

It could be argued that relatives should be excluded from the above analysis as this service evaluation is examining the effects of the MBCT on the emotional states of people with physical health conditions. Since a replication of the above analyses,
excluding relatives, showed very similar findings, highly significant with a p-value of < .001, relatives will be included in all subsequent analyses.

The second goal was to carry out additional analyses to examine whether outcomes differed as a function of a.) the number of sessions attended (5 or less, 6, 7, or 8); b.) the therapy status (pre-therapy, during-therapy, post-therapy, MBCT only) and; c.) speciality (pain, diabetes, cardiac, relative, other). Univariate analyses were carried out using the difference in pre-post scores as the dependent variable for anxiety, depression, perceived stress, or self-compassion, and the number of sessions attended, for example, as the independent variable.

**Number of sessions attended**

There was a non-significant main effect of number of sessions attended on the pre-post anxiety difference, \(F(3, 88) = 1.98, p = .123\); on the pre-post depression difference, \(F(3, 88) = 0.37, p = .774\); and on the pre-post self-compassion difference, \(F(3, 81) = 0.54, p = .656\). Since there were a low number of data for those who attended 5 or less sessions (7 people) it is difficult to draw conclusions and these findings are therefore inconclusive. There was a significant main effect of number of sessions attended on the pre-post perceived stress difference, \(F(3, 81) = 2.83, p = .043\). The Bonferroni post-hoc analysis suggest that the main difference lies between sessions 6 and 7, where a change in scores was larger for those who attended 7 sessions compared to those who attended 6 (mean difference = 6.06, \(p = .037\)). This would suggest that the higher number of sessions attended the higher the difference in perceived stress.

**Therapy status**

There was a non-significant main effect of therapy status on the pre-post anxiety difference, \(F(3, 88) = 2.24, p = .089\); on pre-post depression difference, \(F(3, 88) = 1.63, p = .188\); on the pre-post perceived stress difference, \(F(3, 81) = 0.204, p = .893\); and on the pre-post self-compassion difference, \(F(3, 81) = 0.154, p = .927\). Although there were no significant findings, these results need to be interpreted with caution due to the low number of data available for the pre-therapy group (4 people). Additional post-hoc
analyses however did not show any significant differences specifically between those in the during-therapy, post-therapy, or MBCT only groups.

**Speciality**

There was a non-significant main effect of speciality on the pre-post anxiety difference $F(4, 87) = 0.584, p = .675$; on pre-post depression difference $F(4, 87) = 1.900, p = .118$; on pre-post perceived stress difference $F(4, 80) = 0.740, p = .568$; and on the pre-post self-compassion difference $F(4, 87) = 0.316, p = .866$. These results need to be interpreted with caution due to the low number of data for those in the cardiac (6 people) and relative (8 people) groups.

**Clinical Significance**

In terms of clinical significance, the goal was to examine whether the statistically significant differences observed between pre and post outcomes on anxiety, depression, perceived stress, and self-compassion were reliable and clinically significant. The analyses were carried out using the reliable change calculator (Morley & Dowzer, 2014).

The reliable change calculator produces an RCI value. This value reflects a cut off score which determines whether the difference between the pre and post scores is clinically reliable and therefore unlikely due to measurement unreliability. If the change score is greater than the RCI, a reliable improvement can be observed. The CSC differs from the RCI in that it calculates whether the shift from ‘dysfunctionality’ to ‘functionality’ is large enough to be considered clinically significant. Since normative data for the general population was available but not for the clinical population, Jacobson’s criterion $b$ was used to calculate clinical significance. Criterion $b$ proposes that if the change in score is at least 2 standard deviations from the mean, in the direction of functionality, then clinical significance has been made (Jacobson et al., 1999).

A reliable improvement was found in 23 (25%) clients for anxiety, and in 21 (23%) clients for depression. Of these, 22 (24%) were clinically significant for anxiety, and 19 (21%) for depression. Additional calculations show that a reliable improvement and a shift from above cut-off at pre-course to below cut-off at post-course was found in 32 (35%) clients for anxiety, and 35 (38%) clients for depression.
A reliable improvement and statistical significance was also found for 40 (47%) clients for perceived stress, and 49 (58%) for self-compassion. As there are no clinical cut-offs for these scales additional calculations examining a shift from pre-clinical to post-subclinical cannot be calculated.

A reliable deterioration was found in 3 (3%) clients for anxiety, 1 (1%) of clients for depression, 3 (4%) clients for perceived stress, and 6 (7%) of clients for self-compassion. These results are shown in Table 3.

Table 3. Results from the reliable change calculator

<table>
<thead>
<tr>
<th></th>
<th>RCI</th>
<th>No Change</th>
<th>RD</th>
<th>RI</th>
<th>CSC</th>
<th>RI + SHIFT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td></td>
<td></td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Anxiety</td>
<td>4.96</td>
<td>66 72%</td>
<td>3</td>
<td>3%</td>
<td>23 25%</td>
<td>22 24%</td>
</tr>
<tr>
<td>Depression</td>
<td>5.95</td>
<td>70 76%</td>
<td>1</td>
<td>1%</td>
<td>21 23%</td>
<td>19 21%</td>
</tr>
<tr>
<td>Perceived Stress</td>
<td>6.90</td>
<td>42 49%</td>
<td>3</td>
<td>4%</td>
<td>40 47%</td>
<td>40 47%</td>
</tr>
<tr>
<td>Self-Compassion</td>
<td>0.47</td>
<td>30 35%</td>
<td>6</td>
<td>7%</td>
<td>49 58%</td>
<td>49 58%</td>
</tr>
</tbody>
</table>

Note: RCI - reliable change index; RD - reliable deterioration; RI - reliable improvement; CSC - Clinically Significant Change; SHIFT – shift from above cut-off score at pre-course and below cut-off score at post-course. There are no cut-off scores for the Perceived Stress Scale and Self-Compassion Scale.

Discussion

The aim of this service evaluation was to examine the impact of the MBCT course on anxiety, depression, perceived stress, and self-compassion using tests of statistical and clinical significance. In terms of statistical significance, the findings show that the MBCT course leads to a reduction in anxiety, depression, and perceived stress and to an increase in self-compassion. These findings are highly significant with moderate effect sizes, showing that overall clients shifted quite significantly in their emotional states following the 8 sessions of MBCT. This suggests that the course has clear benefits on psychological functioning. Furthermore, these findings are consistent with research showing that MBCT in physical health can lead to reductions in anxiety and depression (O’Doherty et al.,
2015; van der Lee & Garssen, 2012; van Son et al., 2014), and more broadly that mindfulness-based interventions can reduce stress (Khoury et al., 2013).

Analyses were also carried out to examine whether additional variables (number of sessions attended, therapy status, and speciality) had an impact on these findings. Other than for a difference in session 6 and 7 on perceived stress, suggesting that attending 7 sessions leads to a more significant reduction on perceived stress than 6 sessions, the findings show that these additional variables do not have an impact on the results observed in terms of anxiety, depression, perceived stress, and self-compassion. The main limitation however is the low number of data available for some of the categories within these variables which decreases the power to observe any effects. Consequently, although the conclusions drawn are that the number of session attended, the therapy status, and speciality do not have an impact on any of the positive findings observed (other than for perceived stress on between session 6 and 7), these need to be interpreted with caution.

In terms of reliable change and clinical significance, the findings suggest that the effects of the course were meaningful to a large percentage of clients. A clinically significant change was observed for 24% of clients for anxiety, and 21% of clients for depression. An even larger effect was observed when reliable change and a shift from above cut-off at pre-course to below cut-off at post-course was calculated; 35% for anxiety and 38% for depression. Additionally, a reliable improvement was observed for 47% of clients for perceived stress and for 58% of clients for self-compassion.

One of the goals of MBCT is to teach clients ways of breaking their dysfunctional ways of responding to life’s experiences that leads them to suffering (e.g. anxiety, depression, stress). One of these ways is to respond with acceptance and self-compassion (Kuyken et al., 2010). These findings, showing a meaningful effect to a large percentage of clients, would suggest that the course is helping clients build their resources which in turn is enabling them to tackle their suffering. The findings also show that a few people reliably deteriorated. It is difficult to make sense of this information as there is uncertainty whether this was a result of the course or whether there were other reasons that could have impacted this, such as major life changes or significant life events that occurred during the course.
Limitations

In addition to the one limitation mentioned earlier: the low number of data for certain categories within variables, there are several others to consider. First, there was no control group. This reduces the certainty as to whether the observed effects are a result of the MBCT or other factors. Second, the clients who participated in the MBCT opted in to the course. As a result there may be selection bias and the generalisation of these results may be reduced. Third, it would have been valuable to have data on the amount of time clients spent in mindful practice between sessions. This could have informed whether a higher level of practice is associated with better outcomes. Finally, the outcome measures used were self-report and no additional clinician corroborating reports were available. This would have been helpful with gaining more information especially on those clients who reliably deteriorated.

Future Directions

In terms of future directions, data from future MBCT courses can be added to the growing database to identify in the future whether additional variables (e.g. number of session attended, the therapy status, and speciality) have an impact on outcomes.

Conclusions and Recommendations

Overall the findings from this service evaluation suggest that the MBCT course that is offered by the Clinical Health Psychology Service at St. Luke’s Hospital within Bradford Teaching Hospitals NHS Foundation Trust is effective at reducing anxiety, depression, perceived stress, and at increasing self-compassion. These findings are both statistically significant and clinically meaningful. This suggests that the work that Dr Kate Ryder and Dr Emma Bishop do as part of delivering the MBCT course has a meaningful impact on their clients. As a result of these positive findings the course should continue to be offered within the department.

The findings from this SEP were disseminated at the University of Leeds SEP conference, and will be disseminated to the Head of Clinical Health Psychology at Bradford Teaching Hospitals NHS Foundation Trust, and to the commissioners.
References


