Mark A. Lau, PhD, R.Psych, Sophy Davis, MPH

Evaluation of a cognitive behavior therapy program for BC primary care patients with mild to moderate depression with or without anxiety: Bounce Back, 2008–2014

A telephone-supported self-help mental health program was found to be clinically effective after data were analyzed from the first 6 years of operation.

ABSTRACT
Background: Family physicians have an important role to play in accessing and coordinating community mental health services and supports for patients affected by mood disorders such as depression and anxiety. Bounce Back is a program introduced in British Columbia in 2008 to help physicians meet the mental health needs of their patients while lessening the demand on the health care system. The program offers cognitive behavior therapy to patients with mild to moderate depression with or without anxiety who might benefit from a low-intensity intervention. Clinical measures such as the Patient Health Questionnaire are used to determine patient eligibility and for ongoing assessment of mental health status. Patients are ineligible if they require more intensive mental health services (e.g., they have bipolar disorder or cognitive impairment) and may become ineligible while in the program if their clinical presentation changes. Workbooks for the program include carefully sequenced questions designed to bring about change in how participants think and in what they do to improve how they feel. Coaches trained by registered psychologists provide motivational support by telephone and communicate with the referring health professional to provide updates on the status of the patient. In 2017 a study was undertaken to evaluate the clinical effectiveness of this program using data from the first 6 years of operation.

Methods: Data were collected for 25 338 patients with closed cases who were referred to Bounce Back from 1 July 2008 to 31 March 2014. Clinical outcomes were explored in terms of improvement, remission, and recovery from depression and anxiety over time. Recovery was defined using criteria from the UK National Health Services program, Improving Access to Psychological Therapies, and presented as a percentage of patients who had scored in the subclinical range at completion after scoring in the clinical range at assessment. Means and standard deviations were calculated for patient age and clinical measure scores.

Results: More women than men were referred to Bounce Back (74% vs 26%) and the mean age at referral was 44.5 years. Four groups of patients were identified: declined (patients who did not receive further assessment or coaching), inappropriate (patients deemed ineligible for the program), incomplete

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Dr Lau is a clinical associate professor in the Department of Psychiatry at the University of British Columbia. Ms Davis is a quality analyst for Child and Youth Mental Health and Reproductive Mental Health at BC Children’s Hospital. At the time this article was written she was the program administrative coordinator for Bounce Back at the Canadian Mental Health Association, BC Division.
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Background

The impairment caused by depression and anxiety cannot be underestimated. Data from the Canadian Community Health Survey revealed a 1-year prevalence of 5.4% for mood disorders and a lifetime prevalence rate of 12.6%. Of those affected, 50% report some degree of impact on their ability to work and 35% report significant interruptions to employment in the past. The negative impact of depression on job performance has been estimated to exceed that caused by chronic conditions such as arthritis, hypertension, back problems, and diabetes. Further, mood and anxiety disorders are strongly associated with chronic health conditions, showing a bi-directional relationship in which these disorders both contribute to and result from physical illness and pain. Despite the collective efforts of national, provincial, and local governments, timely and appropriate access to high-quality mental health services remains a critical issue in Canada and a treatment gap exists.

Primary care is the cornerstone of the health care system and the access point for the majority of Canadians with mental health challenges. In a study examining the records of over 300,000 Canadian patients who had at least one encounter with a primary care provider, 14% had a diagnosis of depression. In another Canadian study, 20% of all general practitioner visits were found to involve mental disorders. Individuals with mild to moderate depression with or without anxiety identified in a primary care setting may not obtain a referral to specialized mental health services because their symptoms are not severe enough, leaving the primary care provider with limited options. Given the need to improve the detection of mental health and substance use problems and the prevalence of mild to moderate depression, family physicians have an important role to play in accessing and coordinating community mental health services and supports, a critical issue recognized by the British Columbia Practice Support Program (www.gpscbc.ca/what-we-do/longitudinal-care/incentive-program/mental-health-initiative/) and addressed to some extent by programs such as Bounce Back.

Bounce Back program

Bounce Back was launched in 2008 by the Canadian Mental Health Association (CMHA) BC Division using a $6-million grant from the BC Ministry of Health. The objective was to develop community-based infrastructure for improving access to cognitive behavior therapy (CBT) interventions that would help family physicians meet the mental health needs of their patients while lessening the demand on the health care system. With a brief format that is well suited to primary care, CBT is known to be an efficacious intervention for depression and anxiety, and many CBT-based programs around the world have demonstrated effectiveness in non-randomized studies.

The Bounce Back program operating in BC today is free to patients referred by a general practitioner, nurse practitioner, or psychiatrist. As of January 2017, over 40,000 referrals to Bounce Back had been received from more than 2000 physicians and clinics across the province. Since 2015, Bounce Back has also been implemented in several health regions in Manitoba and Ontario.

Eligibility

Patients are screened for eligibility upon referral and then during an initial assessment. Bounce Back is not designed for individuals experiencing severe symptoms, so eligibility criteria are in place to ensure that
to participate because they had a diagnosis of bipolar or personality disorder. Patients were advised to contact their local CMHA office to access。”

Only patients who might benefit from a low-intensity intervention can access the program. Once enrolled, patients continue with the program unless their clinical presentation worsens in a way that means more-intensive mental health services are required.

Patients were excluded from the program if they had:
• A diagnosis of bipolar disorder or psychosis (past or present).
• A diagnosis of personality disorder.
• Any diagnosed cognitive impairment or organic brain syndrome.

Patients were also excluded if they were misusing drugs or alcohol, or if they had active suicidal ideation. (See www.bouncebackbc.ca for current referral form.)

**Workbooks.** The CBT intervention offered by Bounce Back is delivered in a series of workbooks based on a self-help resource developed in Scotland: *Overcoming Depression, Low Mood and Anxiety: A Five Areas Approach.* The workbooks describe CBT strategies using jargon-free text written at a grade 8 reading level, and include carefully sequenced questions designed to bring about change in how participants think and in what they do to improve how they feel.

**Coaching.** The workbooks are complemented by telephone coaching provided by paraprofessionals: individuals trained by registered psychologists employed by CMHA to deliver Bounce Back as a supported self-help intervention. These coaches do not engage directly in psychotherapy with the participants but instead provide motivational support as participants learn from the workbooks. Coaches receive ongoing clinical consultation support from registered psychologists retained by Bounce Back as well as program adherence rating for quality control purposes.

**Clinical measures.** Bounce Back relies on clinical measures to assess mental health: the Patient Health Questionnaire 9 (PHQ-9), the Generalized Anxiety Disorder 7 (GAD-7) questionnaire, and the Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q).

The nine-item PHQ-9 is commonly used to screen for depression in primary care settings. Several studies support the validity and reliability of the PHQ-9 and have found it can be administered over the phone. The PHQ-9 is commonly used to screen for depression in the past 2 weeks.

The seven-item GAD-7 questionnaire screens for anxiety and assesses severity in clinical practice and research. Scores range from 0 to 21, with levels of severity classified as minimal (0 to 4), mild (5 to 9), moderate (10 to 14), moderately severe (15 to 19), and severe (20 to 27). Scores from 5 to 27 may require treatment, depending on the patient’s duration of symptoms and functional impairment. Several studies have demonstrated good reliability and validity for the GAD-7 when used in a general population.

The 16-item Q-LES-Q asks patients to rate aspects of life, including their physical health, mood, work, household activities, and social relationships. Item scoring ranges from 1 (very poor) to 5 (very good) and reflects the degree of enjoyment or satisfaction experienced during the past week. Total scores are indicative of overall quality of life.

In addition to these three clinical measures, Bounce Back patients are assessed using participant self-ratings for mood (1 = very poor, 10 = very good) and physical health (1 = very poor, 5 = very good) in the past 2 weeks.

**Service flow.** Once a referred patient is accepted and a coach is assigned, an initial telephone assessment occurs. The coach administers the PHQ-9, GAD-7, and Q-LES-Q and asks the patient for mood and physical health ratings. Information on suicide risk is collected and, if present, reported to the registered psychologists serving as clinical consultants, who assess risk and confirm eligibility. If Bounce Back is deemed suitable for the patient, two introductory workbooks are provided and the patient continues with the program, eventually receiving additional workbooks and up to four more standard telephone sessions. During these short sessions (15 to 20 minutes each), coaches help the patient understand workbook materials and goal setting. Coaches also identify further areas of need, address questions, and motivate patients to stay on track. The patient may choose to exit the program at any point. The PHQ-9, GAD-7, and Q-LES-Q are administered during the completion session, and mood and physical health ratings are obtained. Within 6 months of completion, the patient is entitled to two “booster” sessions to maintain the gains made in the program. Throughout the program, coaches communicate with the referring health professional to provide updates on the status of the patient and to report any changes in suicide risk that may require further care.

**Need for evaluation**
In 2017 Bounce Back was known to be a well-established part of primary care in BC, but the effectiveness of the program had not been evaluated. To address this research gap, a study...
was undertaken to determine whether participants who completed the Bounce Back program experienced a significant reduction in depression and anxiety symptoms and showed an improvement in overall quality of life.

Methods

Data were collected for 25,338 patients with closed cases who were referred to Bounce Back from 1 July 2008 to 31 March 2014. These patients had been screened for Bounce Back using the eligibility criteria that applied at that time: they were age 19 or older, they were experiencing mild to moderately severe symptoms of depression as defined by a score of 19 or lower on the PHQ-9, and they were able to use the self-help materials and take part in telephone coaching (i.e., they could read English, had a telephone, and could communicate using it). Clinical outcomes were explored in terms of improvement, remission, and recovery from depression and anxiety over time. Improvement was defined as reduction of symptoms and increases in general health calculated using the difference between preintervention and postintervention scores on clinical measures and the effect size of the difference. PHQ-9, GAD-7, and secondary outcome score differences were calculated as preintervention scores subtracted from postintervention scores for each individual. Paired sample t tests were used to calculate a mean difference and 95% confidence interval. Effect size (Cohen’s d) was calculated by dividing mean difference scores by the paired sample standard deviation.

Recovery was defined using criteria from the UK National Health Services program, Improving Access to Psychological Therapies (IAPT). Participants were considered clinically depressed if they had a PHQ-9 score of 10 or higher, and were considered to have anxiety if their GAD-7 score was 8 or higher. Participants diagnosed at assessment with clinical depression, anxiety, or both were considered recovered at completion if they scored below the clinical cutoff on both the PHQ-9 and GAD-7. Recovery was presented as a percentage of patients who had scored in the clinical range at assessment and then scored in the subclinical range at completion.

No identifying patient data are stored in the database other than initials. When a date of birth is entered, the database automatically converts it to age, and the actual date of birth is not stored in the database. No ethics approval was obtained for this study.

Data were analyzed using GNU PSPP software. Means and standard deviations were calculated for patient age and clinical measure scores. One-way analysis of variance (ANOVA) was used to determine differences between groups at baseline, with Scheffé’s method as a post hoc test for multiple comparisons.

Results

Four groups of patients were identified based on the services they received and how their cases were closed (Figure 1). These groups were designated as declined, inappropriate, incomplete, or completed.

The declined group (n = 8100) included eligible patients who did not receive any further assessment or coaching after explicitly or implicitly communicating a wish not to proceed or after contact with the patient was lost.

The inappropriate group (n = 1931) included patients deemed ineligible for the program based on referral form criteria (n = 1233) or coach assessment (n = 637), and patients who...
became ineligible during the program (n = 61).

The incomplete group (n = 8104) included patients who received some service but did not formally conclude the program with a coach; they either explicitly left the program or were assumed to have worked independently on the intervention materials.

The completed group (n = 7203) included patients with preintervention and postintervention scores for all clinical measures.

**Patient characteristics**

An analysis of patient characteristics found that the average age of referral to Bounce Back was 44.5 years, and that more women (74%) than men (26%) were referred (Table 1). ANOVA results for both age and sex showed there were significant differences among groups at alpha level .05. Specifically, Scheffé’s post hoc criterion for significance indicates that patients in the completed group were older than those in other groups by 4.6 to 6.7 years (group mean differences), and patients in the inappropriate group were significantly younger by 1.0 to 6.7 years. A smaller proportion of patients in the completed group were on medication compared with those in the incomplete group, but there was no significant pairwise difference in medication use between patients in the completed and declined groups.

**Baseline scores**

Clinical measure scores for all patients at referral and assessment differed (Table 2). PHQ-9 referral scores had 64% missing data overall due to incomplete referral forms. For other measures, data were over 94% complete for patients in the incomplete and completed groups. At referral, the mean PHQ-9 score for the entire sample was 12.96 (SD 5.07) on a 27-point scale, with the inappropriate group having a higher mean than the other groups (mean 16.4, SD 6.0, P < .001).

For clinical measures taken at the assessment session by the coach, there were statistically significant pairwise differences among all groups for all measures except for GAD-7. Overall at baseline, patients in the completed group showed lower PHQ-9 scores and better ratings for mood, physical health, and life satisfaction than those in the incomplete group. Of note is the
relatively large difference between patients in the completed group and the inappropriate group on all measures. For anxiety, however, patients in the incomplete group showed the highest mean scores compared with other groups (group mean differences between 0.4 and 0.7 points).

**Preintervention and postintervention scores**

The preintervention and postintervention scores of patients who completed the program with a coach indicate significant improvements in symptoms of depression and anxiety, as well as quality of life and mood ([Table 3](#)). All paired mean differences were found to be statistically significant at \( P < .001 \) and clinically important with Cohen’s \( d > 1 \). Fewer clinical cases of depression were identified in participants completing the program: 17% (1231/7203) at postintervention assessment compared with 62% (4470/7203) at preintervention assessment. Similarly, fewer clinical cases of anxiety were identified: 20% (1422/7181) at postintervention assessment compared with 64% (4604/7181) at preintervention assessment. Of 5537 participants who were either depressed or anxious or both initially, 3794 no longer showed clinical symptoms after the program, meaning an IAPT recovery rate of 68.5%. At an individual patient level, the mean difference between preintervention and postintervention PHQ-9 and GAD-7 scores showed a 5-point decrease or the equivalent of a one-category reduction in symptoms. Other clinical measures also showed improvement.

When outcomes were stratified by baseline severity, effectiveness was shown to be more prominent in participants with more severe initial symptoms ([Figure 2](#Figure2)). For PHQ-9 ratings, mean score reduction ranged from 0.51 (\( d = 0.19 \)) in the minimal depression group to 12.35 (\( d = 2.13 \)) in the severe depression group. Similarly, for GAD-7 ratings, mean score reduction ranged from 0.76 (\( d = 0.34 \)) in the minimal anxiety group to 9.54 (\( d = 1.89 \)) in the severe anxiety group. However, as baseline severity increased, the variability in effectiveness increased as well.

**Conclusions**

In analyzing the first 6 years of administrative data from Bounce Back, we found that patients who completed the program demonstrated significant improvement in secondary outcomes, including overall quality of life, and significant improvement in the primary mental health outcomes of depression and anxiety measured by PHQ-9 and GAD-7, with a recovery rate of nearly 69%. This is higher than the 46% to 56% recovery rates reported for some stepped-care initiatives in the UK.\(^{19,16}\) The Bounce Back effect sizes were also signifi-
cant. Hans and Hiller\textsuperscript{9} found that for patients completing face-to-face CBT interventions for depression, effect size was $d = 1.13$ (95% CI, 1.02-1.24), the same as our result based on PHQ-9 score changes. Other studies cited by Hunsley and colleagues\textsuperscript{8} found that for generalized anxiety disorder, treatment effect sizes were $d = 0.92$ and $d = 0.89$, less than the Bounce Back result of $d = 1.08$.

The higher anxiety mean scores among patients in the incomplete group could be due to a lack of anxiety-specific materials or due to levels of anxiety among participants that impeded continuing with the program. (In 2016 more workbooks for the core anxiety module were introduced in an attempt to improve outcomes for participants diagnosed with anxiety.)

Overall, the amount of improvement increased relative to baseline severity, a finding that is consistent with the stepwise increase in effectiveness observed in meta-analyses by Driessen and colleagues\textsuperscript{21} and by Bower and colleagues.\textsuperscript{22} There are likely other factors contributing to these improvements as well, including regression-to-the-mean effects, as pointed out by Hunsley and colleagues.\textsuperscript{8} However, as with other effectiveness studies using within-group analyses for preintervention and postintervention patients, it was not possible for our study to quantify the influence of other factors the way randomized controlled trials can.

**Study limitations**

This study had some limitations.

The administrative data for Bounce Back were collected for service delivery rather than research and were subject to changing definitions. The four groups used for this evaluation (declined, inappropriate, incomplete, and completed) did not permit identification of specific, clinical reasons for patients disengaging with the intervention. Other groupings are possible that may affect baseline characteristics and attrition patterns. However, only patients completing the program had both preintervention and postintervention data and the results would therefore not be affected by other grouping methods, suggesting the outcome data for the completed group would remain unchanged. Additionally, because this was not a randomized controlled trial, other reasons may account for the observed improvements.

The materials used in the Bounce Back program during the study may also have been a limiting factor. The mean age of participants completing the study was older than in other studies (age 48 versus age 38\textsuperscript{8}), and while this may indicate that diagnosis is late in BC, it may also indicate that program materials were better suited to older participants. Adapted program materials for youth were introduced after younger patients became eligible for Bounce Back in December 2016.

Our results also show that while the intervention can be effective for individuals experiencing severe symptoms, the variability in improvement is larger as well. The inability of patients to engage with program materials while dealing with concurrent disorders or active suicidal ideation supports excluding them from low-intensity intervention such as Bounce Back, and should prompt the primary care physician to seek more appropriate treatment.

Like large-scale initiatives being implemented elsewhere\textsuperscript{23,24} to expand the delivery of low-intensity mental health services within stepped-care models, Bounce Back is allowing for earlier and easier access and better

**Positive impact**

Bounce Back has had a positive impact on the lives of BC residents with mild to moderate depression with or without anxiety by improving their symptoms and quality of life. Our study results showing the clinical effectiveness of Bounce Back are in line with results from other CBT effectiveness studies.

**Patients who completed the Bounce Back program demonstrated significant improvement in secondary outcomes, including overall quality of life, and significant improvement in the primary mental health outcomes of depression and anxiety.**
matching of service intensity to need, and thus reducing the mental health treatment gap. [84]

**Competing interests**

Dr Lau received consultancy fees and financial support from the Canadian Mental Health Association, BC Division, for serving as a scientific and clinical advisor and conference presenter for the Bounce Back program. Ms Davis was employed as program administrative coordinator for the Bounce Back program during the writing of this article.

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