



Research report

Cognitive behaviour therapy via the internet for depression: A useful strategy to reduce suicidal ideation



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ABSTRACT

Background: Depression is a major risk factor for suicide. Given the strong association between depression and suicide, treatment for depression should be a fundamental component of suicide prevention. Currently it is not. This study aims to demonstrate the usefulness of internet-delivered cognitive behavioural therapy (iCBT) for depression as a means of reducing suicide ideation.

Methods: The sample comprised 484 patients who were prescribed iCBT for depression by their primary care physician. The outcomes of interest were major depression, as indexed by the PHQ-8, and suicidal ideation as measured by question 9 of the PHQ-9. Marginal models were used to appropriately analyse available data without biasing parameter estimates.

Results: Following iCBT for depression, suicidal ideation and depression decreased in parallel over time. The prevalence of suicidal ideation reduced from 50% at baseline to 27% after treatment, whilst the prevalence of major depression reduced from 70% to 30%. Depression scores and suicidal ideation decreased after treatment regardless of demographic or clinical variables of interest.

Limitations: This is a naturalistic study; randomisation and scientific control were not possible.

Conclusions: The current study demonstrates the usefulness of iCBT for depression as a means of reducing suicidal ideation which can be implemented on a large scale without enacting major structural change at the societal level. These findings need to be replicated in randomised controlled trials.

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1. Introduction

Depression is a major risk factor for suicide and related behaviours (Nock et al., 2008; Oquendo et al., 2004). Depression is implicated in 59–87% of suicides (Rihmer, 2001), and is associated with a 20-fold increase in the risk of suicide (Osby et al., 2001). Population attributable risk estimates indicate that if depression was eliminated, there would be 50–80% reduction in serious suicide attempts (Beautrais et al., 1996), similar to population attributable risk estimates between smoking and lung cancer (Goldney et al., 2003; Lilienfeld and Stolley, 1994). Whilst such a high attributable risk of depression for suicide has only been established in industrialised societies, and differs by the outcome in question (suicidal ideation, suicide attempts or completed suicide) (Pitman et al., 2012; Goldney et al., 2003), it remains clear that depression is the major risk factor for suicide and related behaviours. Given the strong association between depression and

suicide, treatment for depression should be a fundamental component of suicide prevention (Mann et al., 2005). However, recent reviews of suicide prevention strategies have not focused on treatment for depression as a practical solution for suicide reduction (Yip et al., 2012; Hawton et al., 2012; Pitman et al., 2012).

National public awareness campaigns targeting depression, as well as suicide specifically, have not demonstrated any detectable effect on the rates of suicidal acts (Mann et al., 2005). The question remains as to whether treatment for depression could be more successful. Internet cognitive behavioural therapy (iCBT) for depression has been shown to be efficacious, acceptable, scalable and cost effective (Andrews et al., 2010), and is therefore a candidate for suicide prevention at national level. Clinical trials of iCBT for depression frequently exclude, for methodological and ethical reasons, those who are actively suicidal (Zimmerman et al., 2005; Van der Lem et al., 2011). As a result, it has been difficult to investigate the effects of iCBT for depression on suicidality under these restrictions. Previous studies have shown that iCBT for depression reduces suicidal ideation in individuals reporting high levels of psychological distress (Christensen et al., 2013), and that iCBT programs focusing specifically on suicidal ideation are also effective in reducing thoughts of suicide (van Spijker et al., 2014).

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We recently conducted a clinical audit of 299 patients which, unlike previous studies, focused on those who were depressed and therefore completed an iCBT course for depression. Depression and suicidal ideation decreased significantly (Watts et al., 2012). We concluded that the continued exclusion of people from trials on the grounds of suicidal ideation was no longer defensible. The current study aims to replicate these findings in a larger sample of depressed individuals commencing iCBT for depression in primary care. In order to reduce the risk of suicidal ideation, systemic change at the societal level has often been advocated (Pitman et al., 2012; Pitman and Caine, 2012; Yip et al., 2012; Hawton et al., 2012). This study investigates iCBT in primary care as an alternative.

2. Methods

2.1. Participants

The sample comprised 484 consecutive patients who were prescribed iCBT for depression (<http://www.thiswayup.org.au/clinic>) between October 2010 and September 2012. Patients with depression were prescribed the iCBT course by a range of primary care clinicians including general practitioners, psychologists, psychiatrists, nurses and social workers. Prescribing clinicians were advised that patients were unlikely to benefit if they were: 1) actively suicidal; 2) presenting comorbid drug or alcohol dependence, schizophrenia, or bipolar disorder; or 3) using atypical antipsychotics or benzodiazepines. Clinicians were free to ignore this advice and formal exclusion criteria were not implemented at any stage. Data were confined to the limited number of measures taken to inform practitioners about the progress of their patients. As such, limited data was collected regarding suicidality, whilst medication use and comorbid disorders and were not assessed. The depression course was prescribed by clinicians, and all clinicians were encouraged to maintain contact with their patient for the duration of the course.

This study was approved as part of the quality assurance activities undertaken by the Patient Safety and Quality Unit at St. Vincent's Hospital, Sydney, with whom a copy of this manuscript has been lodged. The ongoing quality assurance studies have been approved by Dr Brett Gardiner, the Director of Clinical Governance at St Vincent's Hospital and the person to whom the Head of the Human Research Ethics Committee and the Head of the Patient Safety and Quality Unit reports. No data were collected for research purposes. Prior to enrolment in any of the treatment programs, all individuals are informed that data will be collected and used as per the following: 'By participating in This Way Up clinic, you acknowledge that your data will be pooled, analysed and periodically published in scientific articles to enhance scientific knowledge in anxiety and depression. In any publication, information will be provided in such a way that you cannot be identified'. All patients provided electronic informed consent that their pooled data could be used for these purposes. Prior to analysis, all data was de-identified.

2.2. Intervention/procedure

The iCBT course for depression consisted of six fully automated, unassisted online lessons involving components such as psychoeducation, behavioural activation, cognitive restructuring, problem solving, graded exposure, relapse prevention, and assertiveness skills. Content was presented in the form of an illustrated story in which the main character gains mastery over their symptoms of depression with the help of a clinician. The patient followed the character's journey to recovery across the six lessons. At the end of each lesson the patient downloaded "homework" tasks which reinforced the content of the lesson. The efficacy of this iCBT depression course has

been established previously in two registered randomized controlled trials, Cohen's $d=0.73$, 1.20 respectively, mean number needed to treat of two ($NNT=2$) (Perini et al., 2009; Titov et al., 2010).

2.3. Outcome measures

At baseline, limited demographic information (email address, age, gender) was collected for each patient and rurality was imputed from the location of the prescribing clinician. Data was also collected on the profession of the prescribing clinician. Prior to each lesson, the patient completed the Kessler Psychological Distress Scale (K10) (Kessler et al., 2003) as a means of tracking patient progress during the iCBT course. Clinicians were automatically notified if their patient's K10 score increased by half a standard deviation or more.

Before and after treatment, patients also completed the Patient Health Questionnaire (PHQ-9), a brief 9-item measure of depression severity (Kroenke et al., 2001). The nine items assess DSM-IV Criterion A for major depressive disorder (MDD). Patients rate each item in terms of the frequency of symptoms over the past two weeks, on a four point scale (0=not at all, 1=several days, 2=more than half of the days, 3=nearly every day). Suicidal ideation was measured by question nine from the PHQ-9 which asks about the frequency of suicidal ideation ("thoughts that you would be better off dead, or of hurting yourself in some way") in the previous two weeks using the above four point scale. Data for this question were dichotomised into suicidal ideation negative (those with a score of 0) and suicidal ideation positive (scores ranging from 1–3) for use in generalised estimating equations. All questionnaire data and demographic information were collected online.

In order to analyse suicidal ideation and depression independently, depression was indexed by the PHQ-8 (Kroenke et al., 2009). The questions in the PHQ-8 are identical to those asked in the PHQ-9, with the exclusion of question 9, which asks about suicidal ideation. The PHQ-8 is comparable to the PHQ-9 in terms of diagnosing DSM-IV depressive disorders and has been standardised and validated in clinical and epidemiological samples (Kroenke et al., 2009; Kroenke et al., 2001). Scores can range from 0 to 24, with higher levels representing higher symptom severity. A cut off score of ≥ 10 on the PHQ-8 has 70% sensitivity and 98% specificity for major depression (21). PHQ-8 severity cut points for MDD have been established as follows: 0–9=well or sub-threshold, 10–14=mild, 15–19=moderate, and 20–24=severe depression (Kroenke et al., 2009).

2.4. Statistical analysis

The level of adherence to the iCBT programme was good (Hilvert-Bruce et al., 2012), given that levels of adherence in open access research settings are typically very low, ranging from around 1% (Christensen et al., 2004) to 10% (Klein et al., 2011). However, it was necessary to consider analytic methods that appropriately make use of all the available data without biasing parameter estimates.

Univariate analyses were initially conducted to investigate the baseline demographic and clinical variables associated with non-adherence. There were no statistically significant differences between those who did and did not complete the iCBT depression course (results available upon request), indicating that it was reasonable to assume that data was missing according to a missing at random (MAR) mechanism (Kenward et al., 1994). These preliminary analyses provided support for the implementation of marginal multilevel modelling for obtaining regression estimates. Marginal models estimate the regression coefficients in repeated measures studies with unbalanced data using maximum likelihood estimation, making

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