A clinical audit of changes in suicide ideas with internet treatment for depression

Sarah Watts, Jill M Newby, Louise Mewton, Gavin Andrews

ABSTRACT

Objectives: To examine reductions in suicidal ideation among a sample of patients who were prescribed an internet cognitive behavior therapy (iCBT) course for depression.

Design: Effectiveness study within a quality assurance framework.

Setting: Primary care.

Participants: 299 patients who were prescribed an iCBT course for depression by primary care clinicians.

Intervention: Six lesson, fully automated cognitive behaviour therapy course delivered over the internet. Primary outcome: suicidal ideation as measured by question 9 on the Patient Health Questionnaire (PHQ-9).

Results: Suicidal ideation was common (54%) among primary care patients prescribed iCBT treatment for depression but dropped to 30% post-treatment despite minimal clinician contact and the absence of an intervention focused on suicidal ideation. This reduction in suicidal ideation was evident regardless of sex and age.

Conclusions: The findings do not support the exclusion of patients with significant suicidal ideation.

METHOD

Sample

Primary care physicians prescribed the internet depression course for patients they deemed suitable.1 They were advised to...
exclude people who were ‘actively suicidal’. As part of a routine quality assurance exercise we analysed the progress of the 299 primary care patients who completed the six-lesson iCBT depression course between April 2009 and May 2011. Data gathered were confined to measures used as a routine to inform practitioners about the progress of their patients. All patients agreed that their pooled data could be used for quality assurance purposes. This paper was written as part of the Quality Assurance activities of St Vincent’s Hospital with whom the draft of the paper was lodged prior to submission.

**Intervention**

The iCBT depression course consists of six lessons covering psycho-education, behavioural activation, cognitive restructuring, problem-solving, graded exposure and relapse prevention. Content is presented in the form of an illustrated story in which the character gains mastery over their depressive symptoms. At the end of each illustrated lesson the patient downloads ‘homework,’ comprising a summary of the lesson content, and activities to be completed that translate the skills learnt in the lesson to their own lives. Automatic emails are also sent congratulating patients when they complete lessons. Clinicians are advised to contact patients at least twice during the course.

**Outcome measures**

The Patient Health Questionnaire (PHQ-9) is a brief nine-item measure of depression severity. The nine-items assess Diagnostic and Statistical Manual-IV Criterion A for major depressive disorder (MDD). Patients rate each item in terms of the frequency of symptoms over the past 2 weeks, on a four-point scale (0=not at all, 1=several days, 2=more than half of the days and 3=nearly everyday). Scores can range from 0 to 27, with higher levels representing higher symptom severity. Cut points for MDD have been established as follows: 0–9=well or subthreshold, 10–14=mild, 15–19=moderate and 20–27=severe depression. Suicidal ideation was measured by question 9 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 2 weeks using the above four-point scale. The PHQ-9 has been shown to demonstrate adequate reliability, convergent/discriminant validity and responsiveness to change in previous studies of iCBT, with a Cronbach’s α of 0.89 in the current sample.

**Statistical analysis**

Changes in participants’ PHQ-9 scores from pretreatment to post-treatment were analysed using a paired samples t test. Multivariate linear regression controlling for baseline PHQ-9 scores was used to investigate the effect of sex and age on post-treatment PHQ-9 scores. A Wilcoxon signed-rank test was used to analyse differences in suicidal ideation in response to treatment. Multinomial logistic regression controlling for baseline suicidality investigated the effect of sex and age on post-treatment suicidal ideation. An α of 0.05 was used to test statistical significance.

**RESULTS**

**Baseline characteristics**

The mean age of the 299 patients who completed the six lesson course was 43 years, 56% female. The mean baseline PHQ-9 score was 14.3 with 83 patients scoring 0–9 (well or subthreshold MDD), and 216 scoring 10–27 and likely to meet criteria for MDD (n=72 mild, n=70 moderate and n=74 severe MDD). Prior to the start of lesson 1, 54% of the patients (162/299) reported some level of suicidal ideation on question 9 of the PHQ-9: 30% (91/299) had thought about it for several days in the past 2 weeks, 15% (45/299) thought about it more than half the days and 9% (26/299) indicated that they thought about suicide nearly everyday.

**Post-treatment outcomes**

From pre-treatment to post-treatment there was a significant reduction in PHQ-9 scores (t(298)=18.1, p<0.001), with PHQ-9 scores reducing by 6.2 points on average (SD=5.9; d=0.98 (95% CI)). A multivariate linear regression controlling for baseline PHQ-9 scores indicated that age and gender were not statistically significant predictors of post-treatment PHQ-9 scores. The reduction in suicidal ideation was considerable and evident at all frequencies, with only 30% (90/299) reporting suicidal ideation at lesson six (see figure 1). A Wilcoxon signed-rank test showed a statistically significant change in suicidal ideation (Z=−7.9, p<0.001, r=0.5) as measured by question 9 on the PHQ-9 (table 1), with median scores of 1 (‘several days’) preintervention and 0 (‘not at all’) postintervention. A multinomial logistic regression controlling for baseline suicidal ideation scores indicated that age and gender were not statistically significantly predictors of postintervention suicidal thoughts.

**Figure 1** Frequency of suicidal thoughts (number of patients) before and after treatment for depression.

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ideation scores. Patient reported a median of 1 (range 0–2) clinician contacts during the course (table 1).

**DISCUSSION**

Suicidal ideation was common (54%) among primary care patients prescribed treatment for depression but dropped to 30% post-treatment despite minimal clinician contact and the absence of an intervention focused on suicidal ideation. This reduction in suicidal ideation was evident regardless of sex and age. To our knowledge, this is the first study to document an association between iCBT for depression and reductions in suicidal ideation.

The benefits in reducing suicidal ideas are clear. Suicidal behaviour lies on a continuum from thoughts, through intent and planning, to attempt. In the general population it has been shown that 34% of people with ideas develop suicidal plans, and that these plans lead to suicide attempts in 72% of cases. That is, one in four people who report suicidal plans, and that these plans lead to suicide attempts most within the first year of ideation onset. Suicide attempts are significant predictors of subsequent completed suicide. Suicidal ideas are distressing and dangerous, and therefore an important target for treatment.

We have conducted two randomised controlled trials of our iCBT programme for depression. In the first trial, 33% of applicants were excluded due to suicidal ideation. In the second, 23% were excluded due to suicidal ideation. On the basis of the current results it is now difficult to justify excluding patients from clinical trials on the basis of their high suicidal ideation scores when iCBT can reduce them quickly and effectively.

**Limitations**

Although the item from the PHQ-9 assessed the presence and frequency of suicidal ideation, it did not assess the intensity of the ideation, controllability, intention to act on thoughts, nor suicide plans or means. Evidence is also needed to understand whether the changes in suicidal ideation observed in this study are sustained over time. In addition, there was no control sample, meaning that treatment effects could be attributable to regression to the mean, spontaneous remission or placebo effects, rather than the intervention per se. The fact that benefits were observed among patients at different levels of baseline risk indicates that regression to the mean may not underlie treatment effects. However, it is not possible to fully examine the influence of these alternative factors on the outcomes of interest. It was also not possible to establish whether treatment effects were sustained over time due to the lack of follow-up data. Finally, the lack of formal exclusion criteria means that patients may have been using adjunctive treatments which contributed to the magnitude of treatment effects. While the limitations outlined above may be critical within the context of an efficacy trial, they are endemic to effectiveness research.

**Conclusion**

Both suicidal ideation and depressive symptomatology were reduced considerably following completion of a six-lesson iCBT course for depression. This is the first study to demonstrate this association in primary care. At present, it is routine to exclude patients with frequent suicidal ideation from participating in iCBT. This study provides evidence for change.

**Contributors**

SW drafted the initial manuscript, prepared and cleaned the data, and conducted initial data analysis. LM and JN conducted further statistical analysis. GA supervised and took responsibility for the data. All four authors contributed to revised drafts.

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**Competing interests**

None.

**Ethics approval**

Data gathered was confined to measures used as a routine to inform practitioners about the progress of their patients. All patients agreed that their pooled data could be used for quality assurance purposes. This paper was written as part of the Quality Assurance activities of St Vincent's Hospital with whom the draft of the paper was lodged prior to submission.

**Provenance and peer review**

Not commissioned; externally peer reviewed.

**Data sharing statement**

No additional data are available.

**REFERENCES**


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**Table 1** Frequency of suicidal thoughts as measured by Question 9 of the PHQ-9

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preintervention</td>
<td>137 (45.8%)</td>
<td>91 (30.4%)</td>
<td>45 (15.15%)</td>
<td>26 (8.7%)</td>
</tr>
<tr>
<td>Postintervention</td>
<td>209 (69.9%)</td>
<td>66 (22.1%)</td>
<td>14 (4.7%)</td>
<td>10 (3.3%)</td>
</tr>
</tbody>
</table>

*PHQ-9, Patient Health Questionnaire.*

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