Improving health and productivity of depressed workers: a pilot randomized controlled trial of telephone cognitive behavioral therapy delivery in workplace settings

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Received 5 December 2009; accepted 5 January 2010

Abstract

**Objective:** To examine the feasibility of telephone-delivered cognitive behavioral therapy (T-CBT) in an occupational context, with reference to participant recruitment, treatment adherence, follow-up and effect.

**Method:** Eligible participants comprised all employees of a large communications company with authorized work absence due to mild/moderate mental health difficulties over a 10-month period. Fifty-three consenting participants were centrally randomized to 12 weeks T-CBT or usual care, with minimization on age, gender and illness severity. Primary (symptom severity) and secondary outcomes (self-rated work performance and productivity) were measured at baseline and 3-months via postal questionnaires. Intention-to-treat analysis comprised multiple regression modeling with adjustment for missing response predictors, minimization variables and baseline values.

**Results:** Twenty-three employees attended one or more T-CBT sessions. T-CBT was associated with medium–large effects sizes on clinical outcomes (0.63–0.77) and work productivity scores (0.75–0.88). Twenty-one patients failed to return 3-month primary outcome data. Non-respondents were more likely to be male and more severely ill.

**Conclusion:** Delivery of T-CBT in an occupational context is feasible with evidence of potential effect. Larger-scale trials are warranted. These studies demand assertive outreach or telephone-based assessment strategies in order to maximize participant recruitment and follow-up.

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Keywords: Telephone; CBT; Depression; Employment; RCT

1. Background

The economic cost of psychological ill-health is substantial due largely to lost productivity [1,2]. For a significant proportion of patients, medication is not indicated; yet, developing evidence suggests that psychological therapies, particularly those based on cognitive behavioral therapy (CBT), are effective, acceptable options [3]. However, few workers have access to psychotherapies and many are inadequately treated.

Current UK initiatives [4] seek to reduce the number of people on sickness benefit by training new therapists and facilitating improved access to psychotherapy. However, one difficulty with this initiative is the location of psychological services within healthcare environments. Helping people to maintain productivity ultimately necessitates effective links between health, employment and occupational health services.

One way to overcome these difficulties is to develop innovative service models that deliver psychotherapies...
directly into the workplace. Limited US evidence reports improved clinical and workplace outcomes with outreach and case management for depressed workers [5]. Growing evidence also supports the effectiveness of remotely communicated psychotherapies [6] yet little is known about the effectiveness or acceptability of these models in non-healthcare settings. Studies examining CBT in an occupational context typically focus on work-related complaints in subclinical samples [7].

This randomized pilot study reports an innovative telephone CBT (T-CBT) service for employed adults off work with mild/moderate mental health problems. In line with the UK Medical Research Council’s (MRC) Complex Interventions Framework [8], this study sought to examine (i) the feasibility of T-CBT in an occupational context, with reference to participant recruitment, treatment adherence and follow-up, and the (ii) preliminary evidence of effect to inform a definitive trial.

2. Method
2.1. Population

Participants comprised employees of a large communications company absent from work with mild/moderate mental health difficulties for 8 to 90 days authorized by general practitioner certificate. Over 10 months, human resources mailed all potential participants a study information pack. Employees returned consent to contact forms directly to the researcher who subsequently undertook telephone eligibility screening. Exclusion criteria were severe or complex disorders (psychosis, comorbid personality disorder), degenerative cognitive disorders, substance misuse or active self-harm. Eligible consenting participants completed postal baseline measures (Fig. 1).

2.2. Intervention/comparison

Consenting participants were allocated to T-CBT or usual care. Randomization was conducted centrally by an independent service, with minimization on age, gender and illness severity. Telephone CBT was delivered over 12 weeks by one of two registered graduate mental health workers. Participants worked with therapists through regular phone calls to identify and challenge negative thoughts, develop self-care skills and complete workbook exercises emphasizing behavioral activation. Therapists received 12 h of didactic instruction and role-play and weekly supervision from a senior CBT therapist. All patients had access to usual care, including primary and

Table 1
Clinical outcomes and work productivity at 3 months

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Mean (S.D.)</th>
<th>Adjusted mean difference (95% CI)</th>
<th>P for group effect</th>
<th>Effect size</th>
<th>Adjusted effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>CORE-OM</td>
<td>6.68 (6.15)</td>
<td>10.83 (7.42)</td>
<td>4.73 (−0.32 to 9.78)</td>
<td>.065</td>
<td>0.63</td>
</tr>
<tr>
<td>HADS</td>
<td>9.74 (8.72)</td>
<td>14.94 (9.48)</td>
<td>5.60 (−1.08 to 12.28)</td>
<td>.097</td>
<td>0.59</td>
</tr>
<tr>
<td>WSAS</td>
<td>6.20 (5.36)</td>
<td>13.00 (11.40)</td>
<td>6.66 (−0.02 to 13.36)</td>
<td>.051</td>
<td>0.77</td>
</tr>
<tr>
<td>Self-perceived job performance</td>
<td>5.40 (3.60)</td>
<td>4.94 (3.54)</td>
<td>1.28 (1.12 to 3.69)</td>
<td>.286</td>
<td>0.13</td>
</tr>
<tr>
<td>Hours worked/week</td>
<td>27.61 (16.58)</td>
<td>13.47 (11.29)</td>
<td>17.58 (5.60 to 29.55)</td>
<td>.006</td>
<td>0.88</td>
</tr>
<tr>
<td>Effective work hours/week</td>
<td>21.33 (19.51)</td>
<td>9.32 (13.39)</td>
<td>17.20 (6.72 to 27.67)</td>
<td>.002</td>
<td>0.75</td>
</tr>
</tbody>
</table>

a UC, usual care; T-CBT, telephone cognitive behavioral therapy.
b Based on output from analysis of covariance, adjusting for baseline value of the relevant outcome, minimization variables and variables predicted as loss to follow-up.
c Based on difference in raw means divided by pooled posttest S.D.
d Based on difference in adjusted means divided by root mean square error from the regression equation.
e Ten-point scale, higher score representing higher performance.
f Hours worked weighted by self-perceived job performance.
occupational health services. Approximately three quarters were receiving antidepressant medication.

2.3. Outcomes

Outcomes were measured at baseline and 3-months via postal questionnaires. The primary outcome was symptom severity via the 34-item Clinical Outcomes in Routine Evaluation outcome measure (CORE-OM). Secondary outcomes comprised the 14-item Hospital Anxiety & Depression Scale (HADS), the Work and Social Adjustment Scale (WSAS) and self-reported actual and effective working hours quantified by the World Health Organization Health and Work Performance Questionnaire [9].

2.4. Analysis

Primary analysis was by intention-to-treat. Missing data were not imputed. Logistic regression identified potential predictors of loss to follow-up.

Treatment effects were examined by multiple linear regression adjusting for missing response predictors, minimization variables and baseline values. Effect sizes were estimated alongside tests of significance to inform power calculations for a future trial. Effective work hours represented a composite measure of actual hours weighted by self-perceived job performance. A dichotomous measure of working status at 3-months was examined by logistic regression.

3. Results

Seventy workers consented to contact. Fifty-three were randomized, 26 to T-CBT [mean (S.D.) age: 45.0 (8.9) years; 51% male; 96% Caucasian; 55% university/college education].

3.1. Feasibility: treatment delivery

Twenty-three (88%) individuals had ≥1 T-CBT session, 19 (73%) attended all appointments. Mean (S.D.) session number was 4.5 (3.2) and mean (S.D.) session length was 28.32 (18.24) min.

3.2. Feasibility: loss to follow-up

Twenty-one patients (40%) failed to return 3-month primary outcome data. Nonrespondents were more likely male [adjusted odds ratio (OR)=5.4, 95% confidence interval (CI)=1.4–21.6] and more severely ill (adjusted OR=1.1, 95% CI=1.02–1.2).

3.3. Effectiveness

Although clinical outcomes were not statistically significant (Table 1) the direction of effect favored T-CBT. Telephone CBT was associated with medium–large effects sizes on clinical outcomes (0.63–0.77) and work productivity (0.75–0.88).

4. Discussion

This study sought to explore T-CBT for individuals with diagnosed mental health problems in an occupational setting. Delivery proved feasible, although recruitment rates and loss to follow-up were of concern.

Recruitment difficulties are common within community-based mental health research [10], but the reason for poor uptake is unclear. The requirement that patients “opt in” to studies on the basis of a postal invitation may have compounded difficulties of recruiting from a depressed population. Recruitment problems may also reflect the perceived acceptability of occupational T-CBT. A nested qualitative study undertaken in accordance with the MRC Framework [8] demonstrated satisfaction with the model among those receiving treatment.

Loss to follow-up (40%) was high but remained comparable to other studies of non-face-to-face psychotherapy. Although internal validity was heightened through allocation concealment via central randomization, confidence intervals around effectiveness estimates were wide. The relatively high loss to follow-up means that bias may be present. Nevertheless, this feasibility study has provided evidence of potential effect for workplace T-CBT and estimated effect sizes remain in line with a metaanalysis of remote psychotherapy in nonoccupational settings [6].

Treatment effects on working hours were not reflected by comparable improvements in self-rated job performance. Performance may partially reflect organizational constraints outside the scope of an intervention targeting mental health symptoms. A large-scale randomized controlled trial of CBT in a volunteer sample [7] also reports no mediating effect of improved psychological health on job performance. Partial work resumption may represent an important step toward fuller recovery, and definitive trials could usefully incorporate mediation analyses to further explore these causal pathways. Future trials demand longer-term follow-up to examine issues of relapse and should consider fully the cost-effectiveness of innovative methods of treatment delivery. These studies should implement proactive recruitment and follow-up strategies, including assertive outreach and telephone-based assessment procedures used successfully in larger trials [5].

References


