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Short report

Cost utility of behavioural activation delivered by the non-specialist

David Ekers, Christine Godfrey, Simon Gilbody, Steve Parrott, David A. Richards, Danielle Hammond and Adele Hayes

Summary
Behavioural activation by non-specialists appears effective in the treatment of depression. We examined incremental cost-effectiveness of behavioural activation ($n = 24$) *v.* treatment as usual ($n = 23$) in a randomised controlled trial. Intention-to-treat analyses indicated a quality-adjusted life-year (QALY) difference in favour of behavioural activation of 0.20 (95% CI 0.01–0.39, $P = 0.042$), incremental cost-effectiveness ratio of £5756 per QALY and a 97% probability that behavioural activation is more cost-effective at a threshold value of £20 000. Results are promising for dissemination of behavioural activation but require replication in a larger study.

Declaration of interest
None.

Behavioural activation appears as effective as cognitive–behavioural therapy (CBT)[1] for depression. It provides a simple, effective treatment possibly suitable for wide dissemination;[2] however, this has not been tested.[1] We present the first economic evaluation of behavioural activation delivered by non-specialists using generic health outcome measures as recommended.[3–5]

Method

A pragmatic randomised controlled trial of behavioural activation by non-specialists *v.* usual care (ISRCTN27045243) examining costs and health state, adopting a health service perspective set down by the National Institute of Health and Clinical Excellence (NICE).[6] The Northumberland local research ethics committee approved this study. Details of methods and clinical effectiveness have been published in detail elsewhere.[7]

We recruited adults with depression on stable or no antidepressant medication for 6 weeks from general practice or primary care mental health services. We confirmed ICD-10 diagnosis of depression with the revised Clinical Interview Schedule (CIS-R).[8]

Behavioural activation was delivered over 12 1-hour sessions by two mental health nurses on post-qualification pay bands with no previous formal therapy training. They received 5-day training in behavioural activation and 1 hour clinical supervision fortnightly from the principal investigator (D.E.).[7]

Participants assigned to usual care were followed up by their GP or primary care mental health worker.

Referrers continued to treat all participants as they deemed fit over the 3 months of the study knowing they were receiving or due to receive behavioural activation within the next 3 months.

As recommended by NICE,[6] we assessed health state utility using the EQ-5D,[9] appropriate for use in major depression in primary care,[4] assigning health state using standard UK values[10] for quality-adjusted life-years (QALYs; 0 = death and 1 = full health).

We used the Beck Depression Inventory (BDI-II) for assessment of depression symptom level.[11]

We calculated behavioural activation costs from therapists' hourly pay rates plus 30% National Health Service (NHS) employer's overhead costs. One-hour sessions included direct treatment time of 40–50 minutes and administration. We included costs for all sessions regardless of attendance.

Training costs were calculated by facilitators' hourly rate for the duration of the training (35 hours) divided by the number of participants attending ($n = 10$, considered an appropriate training group size). Supervision costs were based on 1-hour fortnightly contact. We adapted training costs to reflect activity in NHS settings with competences maintained over 3 years outside of the trial. We adopted two estimates of workload based on local Improving Access to Psychological Therapy (IAPT) service specifications: 65 treatments per year in a depression-specific role (scenario A) or 33 treatments per year treating depression and anxiety (scenario B). We distributed training and supervision costs over anticipated completed treatments for 3 years and added to direct behavioural activation treatment costs, preventing training unduly biasing estimates of behavioural activation costs because of the relatively small sample size in this study.

We measured resource use from a health and personal social service perspective using total service use from participants' primary care records as our primary data source augmented by self-completed questionnaires adapted from a previous study.[12] Research assistants masked to allocation collected data retrospectively for 6 months prior to trial entry and for the 3-month follow-up period. We multiplied each resource use by its relative cost in British pounds at 2009 rates.[13,14]

We calculated mean cost and health state differences between behavioural activation and usual care for the intervention phase using analysis of covariance with baseline values as covariates, including only immediate realisable health gains over the 3-month study. We analysed on an intention-to-treat basis for missing health state data using 100 imputations incorporating baseline health state, age, gender, problem duration and allocation in modelling.[15,16]

We calculated and expressed cost differences between behavioural activation and usual care as the ratio of incremental cost per difference in health state and multiplied by four to provide the cost of a full QALY.

We generated incremental cost-effectiveness ratios (ICERs)[17] with cost-effectiveness acceptability curves to explore uncertainty around cost utility findings[18] by conducting 1000 non-parametric bootstrap replications.

Results

Overall, 68 participants were referred to the trial: 47 met inclusion criteria, resulting in 23 receiving behavioural activation and 24 usual care. Sixteen participants completed behavioural activation and twenty-two usual care. Participants had long-term severe depression with substantial functional impairment.[7]

Individual therapist 5-day course training costs were £641.55 and for the 12-session behavioural activation protocol £219.96. Training and supervisor costs were £3059. Scenario A costs per participant were £247.00 and scenario B £272.52.

There were no cost differences at baseline (behavioural activation £1050.12 (s.d. = £1907.75), n = 23; usual care £899.31 (s.d. = £1131.33), n = 24) or with behavioural activation added to usual care: scenario A £149.24 more costly than usual care alone (95% CI −£354.82 to £56.34, P = 0.151, n = 47), scenario B £174.74 more costly than usual care alone (95% CI −£380.34 to £30.82, P = 0.094, n = 47). A breakdown of service use and cost is available on request.

Intention-to-treat analyses showed a mean difference on BDI-II scores of −15.78 in favour of behavioural activation (95% CI −24.55 to −7.02, P = 0.001) at 3 months. We found a QALY difference in favour of behavioural activation (mean 0.79 (s.d. = 0.24), n = 16) over usual care (mean 0.58 (s.d. = 0.39), n = 22) of 0.24 (95% CI 0.052 to 0.437, P = 0.01). Using multiple imputation this difference reduced to 0.20 (95% CI 0.01 to 0.39, P = 0.042).

Scenario A provided a cost of £2985 per QALY and £9.45 per BDI-II point reduction and scenario B £3495 per QALY and £11.04 per BDI-II point reduction. Examining uncertainty at a threshold value of £20 000/QALY there was a 97.7% probability that behavioural activation is more cost-effective than usual care for scenario A and a 97.0% probability for scenario B (online Fig. DS1). Results suggest an ICER of £5006 and £5756 per QALY for scenarios A and B respectively, indicating that the additional cost of behavioural activation over usual care per QALY gained is less than the UK accepted value of £20 000.[6]

Discussion

Mental health economic analysis should be conducted within a general decision-making context; NICE suggests that a QALY gain valued below £20 000 provides good value for money. We found non-specialist behavioural activation delivered QALY gains substantially below this threshold using the recommended EQ-5D.[6] Changes reflect the clinical, functioning and satisfaction benefits of behavioural activation reported elsewhere,[7] indicating that behavioural activation may offer lower cost per QALY or point reduction on the BDI-II when compared with usual primary care than brief problem-solving[19] or online CBT,[20,21] interventions also aimed at increasing accessibility. These results focus on observed differences over 3 months making no assumptions regarding maintained improvement.

Owing to the lack of previous economic analyses of behavioural activation we could not power our study on economic models. External validity and precision of estimates of difference are limited by the small numbers of participants and therapists. Results are promising, however a larger trial is required to provide more robust estimates. The short follow-up limits the long-term assessment of QALY gains. Behavioural activation has demonstrated durability for up to 2 years for depression symptoms,[22] however we could only incorporate the realisable gains found during the study.

We were able to train non-specialists to deliver cost-effective behavioural activation using stringent assumptions. Findings require replication in a larger study with follow-up. If results maintain and are translated into routine healthcare, then it is likely that behavioural activation provides good value for money.

David Ekers, RMS, Dip CBT, MSc, PhD, Tees Esk and Wear Valleys NHS Foundation Trust/Mental Health Research Centre, Durham University; **Christine Godfrey**, BA, **Simon Gilbody**, DPhil, FRCPsych, **Steve Parrott**, MSc, Department of Health Sciences and HYMS, University of York; **David A. Richards**, RN, PhD, Mood Disorders Centre, University of Exeter; **Danielle Hammond**, BSc, PG Dip, PG Cert, **Adele Hayes**, MSc, PG Cert, Health Centre, Tees Esk and Wear Valleys NHS Foundation Trust, County Durham, UK

Correspondence: David Ekers, Talking Changes, Bede House, Durham DH1 1TW, UK. Email: david.ekers@tewv.nhs.uk

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