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Research report

Economic evaluation of audio based resilience training for depression in primary care

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ABSTRACT

Background: Although there is some evidence on the effectiveness and cost-effectiveness of computerised cognitive behavioural therapy (CCBT) for treating anxiety and depression in primary care, alternative low-cost psychosocial interventions have not been investigated.
Methods: The cost-effectiveness of an audio based resilience training (Positive Mental Training, PosMT) was examined using a decision model. Patient level cost and effectiveness data from a trial comparing a CCBT treatment and usual care and effectiveness data from a study on PosMT were used to inform this.
Results: Net benefits of CCBT and PosMT were approximately equal in individuals with 'moderate' depression at baseline and markedly in favour of PosMT for the 'severe' depression subgroup. With only four observations in the 'mild' depression category for PosMT, the existing evidence base remains unaltered.
Limitations: Efficacy data for the PosMT arm was derived from a study using a partially randomised preference design and the model structure contains simplifications due to lack of data availability.
Conclusion: PosMT may represent good value for money in treatment of depression for certain groups of patients. More research in this area may be warranted.

1. Introduction

The prevalence, burden and financial impact of depression are well documented (Sobocki et al., 2006; Wittchen and Jacobi, 2005). However, its management in primary care, the principal locus of treatment in the UK, has been described as suboptimal (Barley et al., 2011). Non-economic barriers to superior depression care exist (Barley et al., 2011). Moreover, the lack of resources for delivering effective psychological treatment options such as cognitive behavioural therapy (CBT) is a key problem. This has increased the interest in low-cost, low intensity psychosocial interventions including computerised versions of cognitive behavioural therapy (CCBT). The existence of (albeit limited) evidence supporting its clinical and cost-effectiveness (Foroushani et al., 2011; Gerhards et al., 2010; Kaltenthaler et al., 2006) has led to recommendations of CCBT as a treatment option for mild to moderate depression by the National Institute for Health and Clinical Excellence (NICE, 2010).

Alternative therapies remain relatively underexplored from a health economic perspective (Solomon et al., 2013; Spinks and Hollingsworth, 2009). Although these may be purchased out of pocket, from a public healthcare perspective failure of rigorous evaluation may mean that cost-effective treatment options are not utilised. This paper aims to assess the cost-effectiveness of an alternative psychosocial therapy for depression in primary care, i.e. an audio based resilience training, in comparison with treatment as usual (TAU) and one of the most commonly used CCBT programmes in the UK.

2. Methods

2.1. Interventions

A self-help audio-based psychosocial therapy, Positive Mental Training (PosMT) as detailed by Dobbin et al. (2009) was assessed. At first contact, participants were shown a 10 min introductory video, followed by an 18 min audio recording. This was the first of a modular 12 week CD based series during which individuals were advised to listen to one 18 minute track at home every day for a week (12 tracks in total). Tracks covered relaxation, positive suggestion, visualisation and mindfulness techniques which promote distance from negative thoughts similar to CBT, fostering well being and emotional resilience. Standard GP and nurse supervision and monitoring were maintained during this period but antidepressants were not allowed in this study arm.

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PosMT was compared to Beating the Blues (BtB), a CCBT programme. This involved an introductory video (15 min) along with 8 weekly CBT sessions delivered by an interactive computer program as well as 'homework' projects both of which were responsive to the person's needs. Progress reports were made available at the end of each session and, at the general practitioner's discretion, the patients in this treatment arm were also allowed to receive pharmacotherapy, physical investigations, general support or advice but no face-to-face psychological interventions (Proudfoot et al., 2004). The above services were also part of TAU in the NHS which in addition included referrals to a practice nurse, counsellor or other mental health professionals as appropriate who were also allowed to provide psychological interventions.

2.2. Decision-analytic model

In absence of head-to-head trials of these interventions, it was necessary to use a decision analytic model to synthesise current evidence on the potential cost-effectiveness of PosMT. This framework compares the expected or average impact of interventions. To do so, pay-offs, such as healthcare costs and health-related quality of life are assigned to all possible treatment outcomes. Subsequently, the probability of these pathways (and hence expected costs and outcomes) by treatment option is determined based on current evidence (Petrou and Gray, 2011). A decision tree was used to model pathways for treatment of depression in primary care.

The structure of an existing model (Kaltenthaler et al., 2006) was adapted as illustrated in Fig. 1 and, where appropriate, the same parameter assumptions were adopted. In each treatment arm, patients were assumed to be distributed among four health states following treatment. These were defined according to commonly used severity thresholds on the Beck Depression Inventory (BDI). Scores ≤ 9 represented minimal depression symptoms, 10–18 mild symptoms, 19–29 moderate symptoms and 30–63 severe symptoms.

The post-treatment distribution of patients among these depression states for each treatment arm was derived from the samples of two studies. These were the available cases from a randomised trial by McCrone et al. (2004) examining TAU ($n=75$) and BtB ($n=89$) and a study of PosMT (Dobbin et al., 2009) using a partially randomised preference design ($n=43$). Both investigations were carried out in a primary-care setting. The studies adopted different follow-up periods and so for consistency we derived transition probabilities from baseline depression levels to 3 month follow-up states in this model. Patients were assumed to stay in these health states for 5 months. The analysis focused on two subgroups, i.e. those presenting moderate or severe depression at baseline because of the small participant numbers with mild depression in the PosMT study ($n=4$).

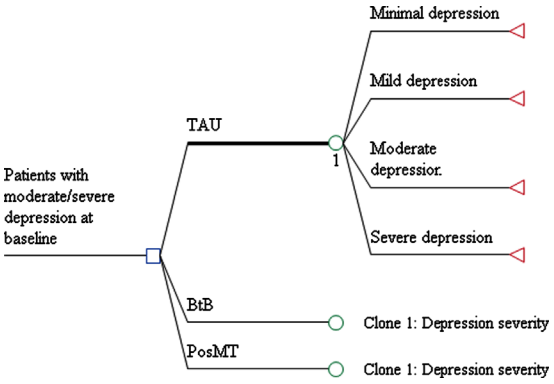

Fig. 1. Decision tree structure.

2.3. Model parameters

The benefits of the interventions were measured using quality-adjusted life years (QALYs). These are preference-based metrics combining quality of life and length of time spent in the respective depression states. To derive the quality weights, in base case analysis of the model, health-related quality of life data based on the EQ-5D for the moderate and severe depression states were obtained from Kaltenthaler et al. (2006) (p. 40).

Service use costs were assessed from the perspective of the healthcare sector and included costs of the interventions and service use associated with the respective health states. These were derived for TAU and BtB from existing patient level data using updated unit costs (Curtis, 2010; Department of Health, 2010; McCrone et al., 2004). Service use costs in the 6 months following treatment according to the BDI category at 3 months follow-up were adjusted for baseline costs, baseline severity and treatment arm using a generalised linear model (van Asselt et al., 2009). This models the error structure in cost data more closely than ordinary least squares regression (Moran et al., 2007). Service use costs for the PosMT branch were assumed to be the same as in TAU.

It was necessary to make a number of assumptions to determine the cost of the interventions. Assuming an average practice size of 6000 patients, the current NHS price for use of BtB amounts to a £720 annual licence fee plus a setup cost of £1500 payable in year one only. The use of the software over 3 years was assumed with an average throughput of 37.5 patients per year with costs annuitised over this period using an interest rate of 3.5%. Based on the assumption of a computer costing £700 with half the time available for other purposes and capital overhead costs as noted in Curtis (2010), the cost of hardware and overheads for the BtB treatment arm were annuitised in the same way. The cost of one hour of practice nurse contact was added for supporting a course of BtB (Kaltenthaler et al., 2006).

With PosMT, patients were loaned copies of the training DVD and CDs. In the base case, the full set cost to healthcare staff for low volume orders (1–50 units) was utilised assuming that each set would be passed on three times before getting lost, resulting in a cost of the intervention of £9 per user. To implement BtB and PosMT in a primary care practice, a half-day and two-half day training sessions were required respectively according to the manufacturers. The opportunity cost of a GP and a clinical support worker was accounted for, and a half-day training session was assumed to last 4 h. A cost of £85 per person per half-day session was incurred for PosMT. No information on training fees was available in the case of BtB, therefore, the same figure was applied. All training costs were also annuitised over 3 years. It was assumed that individuals already had access to a CD/DVD player. Twenty-five minutes of practice nurse time was assumed to be necessary to screen individuals suitable for both interventions. Other care and monitoring costs by GPs and practice nurses were assumed to be equal across the three treatment options and so not included. Current unit costs for staff time were derived from Curtis (2010). No discounting was undertaken because of the short time horizon of the decision model.

2.4. Sensitivity analyses

To assess the sensitivity of the results to the intervention costs, deterministic sensitivity analyses were conducted. Specifically, the implications of a high and low treatment cost scenario were considered. Since the licence and training costs per practice are