

## Economic evaluation of a randomised controlled trial for anorexia nervosa in adolescents

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### CRD summary

This study was a cost-effectiveness analysis alongside a clinical trial of three treatment strategies for adolescents aged 12 to 18 years with anorexia nervosa. The strategies were psychiatric in-patient, specialist out-patient, and general out-patient treatment. The authors concluded that specialist out-patient services provided the most cost-effective treatment in the UK. The study was based on valid methodology, which should have ensured the validity of the authors' conclusions.

### Type of economic evaluation

Cost-effectiveness analysis

### Study objective

This study was a cost-effectiveness analysis undertaken alongside a clinical trial, which compared three treatment strategies for adolescents (aged 12 to 18 years) with anorexia nervosa. The strategies were psychiatric in-patient, specialist out-patient, and general out-patient treatment.

### Interventions

The three interventions were psychiatric in-patient, specialist out-patient, and general out-patient treatment.

Psychiatric in-patient treatment was a multidisciplinary service, which lasted for six weeks initially and was extended if necessary, with the aim of restoring healthy weight and normal eating. Specialist out-patient treatment included individual cognitive-behavioural therapy, parental counselling with the patient, dietary therapy, and multi-modal feedback, according to a manual. General out-patient treatment was the usual community Child and Adolescent Mental Health Services treatment, which was a multidisciplinary, individual- and family-based approach, with variable dietary and paediatric liaison.

### Location/setting

UK/primary and secondary care.

### Methods

#### Analytical approach:

This economic evaluation was based on a single study with a two-year time horizon. The authors stated that a broad perspective of the service-provider was adopted, including health, social services, education, voluntary, and private sectors.

#### Effectiveness data:

The clinical evidence came from a multi-centre, randomised controlled trial (RCT); the Treatment Outcome for Child and Adolescent Anorexia Nervosa (TOuCAN) trial. This RCT enrolled 167 young people with 57 in the in-patient group, 55 in the specialist out-patient group, and 55 in the general out-patient group. The length of follow-up was two years and patients' characteristics at baseline were similar among the three groups. The key clinical endpoint was the change in Morgan-Russell Average Outcome Scale (MRAOS) score.

#### Monetary benefit and utility valuations:

Not considered.

#### Measure of benefit:

The summary benefit measure was the change in the MRAOS, which was derived directly from the RCT.

#### Cost data:

The economic evaluation included a wide range of services provided in the primary and secondary care settings, education sector, and other community services. A breakdown of items was reported. The resource use was based on data gathered over the study period using a specific case form. All hospital costs incurred by the National Health Service (NHS) were estimated using NHS reference costs. Those incurred in the private sector were derived from direct personal communications with each facility. The unit costs of community health and social services were derived from prices published by the Personal Social Services Research Unit. The costs of schooling came from various official sources. Medication costs were from the British National Formulary. All costs were in UK pounds sterling (£) for the fiscal year 2003 to 2004. Costs in the second year were discounted at 3.5% per annum. Statistical analyses of costs were carried out to consider the potential impact of baseline factors.

#### Analysis of uncertainty:

The issue of uncertainty was investigated by means of cost-effectiveness acceptability curves based on re-sampling from the costs and effectiveness data (bootstrapping). The authors stated that three one-way sensitivity analyses were carried out to consider the issue of missing data for hospital costs. Full results of the sensitivity analyses are contained in the data supplement to the online version of the paper.

### Results

At two-year follow-up, the MRAOS score was 8.3 for the in-patient group, 8.4 for the specialist out-patient group and 8.3 for the general out-patient group ( $p=0.838$ ). The bootstrapped means were 8.26 for in-patients, 8.35 for specialist out-patients, and 8.26 for general out-patients.

The mean total two-year costs were £34,531 ± 52,439 in the in-patient group, £26,738 ± 46,809 in the specialist out-patient group, and £40,794 ± 63,652 in the general out-patient group. The differences between groups did not reach statistical significance.

The bootstrapped estimates showed that the specialist out-patient treatment was more effective and less expensive than its comparators, which means it was dominant. The cost-effectiveness acceptability curve indicated that, if the decision-maker's willingness to pay was zero for a unit of increase in MRAOS score, there was a 78% chance of specialist out-patient services being the most cost-effective strategy, 16% for in-patient services, and 6% for general out-patient services.

Increasing the levels of willingness to pay decreased the probability of specialist out-patient treatment being the most cost-effective, but it remained the preferred strategy in all circumstances. The authors stated that their findings were robust to changes in assumptions about missing data.

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**Authors' conclusions**

The authors concluded that the specialist out-patient service was the most cost-effective treatment for adolescents with anorexia nervosa in the UK.

**CRD commentary****Interventions:**

The selection of the three treatments was appropriate as they were the available strategies for this patient population.

**Effectiveness/benefits:**

The clinical evidence was based on a RCT and its methodological characteristics, design, and other features were extensively reported in a companion paper. RCTs are usually considered to be a valid source of data due to their design, which minimises selection and assessment biases. The baseline comparability of the groups and the use of the intention-to-treat principle further enhance the internal validity of the RCT. The authors acknowledged that their sample size was relatively small. The benefit measure was disease-specific and cannot easily be compared with the benefits of other health care interventions.

**Costs:**

The economic study adopted a broad perspective, which covered multiple sectors. The categories of costs were reported and the details on resource consumption were given for each group, but the unit costs were not reported. The sources of data were clearly described for each cost category. The price year and the use of discounting were reported. Statistical analyses of costs were appropriately carried out. The authors acknowledged that the cost differences, although substantial, failed to reach statistical significance, perhaps due to the small sample size.

**Analysis and results:**

The superior economic and clinical profile of one strategy meant that cost-effectiveness ratios were not required. The expected costs and benefits were clearly reported. The issue of uncertainty was satisfactorily investigated by means of appropriate instruments. The main limitations of the analysis were the disease-specific outcome measure and the small sample size.

**Concluding remarks:**

The study was based on valid methodology, which should have ensured the validity of the authors' conclusions.

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**Bibliographic details**

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**Other publications of related interest**

Gowers SG. Evidence based research in CBT with adolescent eating disorders. *Child and Adolescent Mental Health* 2006; 11: 9-12.

Striegel-Moore RH, Leslie D, Petrill SA, et al. One-year use and cost of inpatient and outpatient services among female and male patients with an eating disorder: evidence from a national database of health insurance claims. *International Journal of Eating Disorders* 2000; 27: 381-389.

Gowers S, Smyth B. The impact of a Motivational Assessment Interview on initial response to treatment in adolescent anorexia nervosa. *European Eating Disorders Review* 2004; 12: 87-93.

**Indexing Status**

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**MeSH**

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This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.