Cost-effectiveness of a family-based GP-mediated intervention targeting overweight and moderately obese children

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Record Status
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.

CRD summary
The objective was to assess the cost-effectiveness of a family-based general practitioner-mediated intervention for overweight and moderately obese children. The authors concluded that the intervention was cost-effective, but the uncertainty intervals were wide. The methodology was appropriate and adequately reported, but more details of the cost analysis, such as the future costs or savings related to the intervention, should have been reported. The authors’ conclusions appear to be appropriate for the scope of their analysis.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to assess the cost-effectiveness of a family-based general practitioner (GP)-mediated intervention for overweight and moderately obese children.

Interventions
The intervention was family-based and GP-mediated, with the aim of reducing weight in overweight and moderately obese children. It consisted of training sessions for GPs by a psychiatrist; systematic case identification by routine weighing and measuring of all children; four consultations per patient with the GP; and the use of brief solution-focused techniques aimed at identifying and modifying the behavioural determinants of the child's activity and eating. This was compared with the usual practice with no intervention.

Location/setting
Australia/primary care.

Methods
Analytical approach:
A Markov model was used to assess the future costs and outcomes associated with the intervention. The time horizon was the lifetime of the patient. The authors reported that a societal perspective was adopted.

Effectiveness data:
The clinical and effectiveness data were derived from published studies. The effectiveness of the intervention was measured by body mass index (BMI) changes throughout the nine months of intervention and was derived from a level II trial. This trial was called the Live, Eat And Play (LEAP) trial and it included 34 GPs, with 73 children in the intervention group and 80 in the control group. The primary outcome of the trial was the BMI at nine months adjusted for baseline BMI. Other clinical data, such as the GP and patient participation rates, were also derived from the LEAP trial.

Monetary benefit and utility valuations:
The effect of the intervention in BMI changes was converted to disability-adjusted life-years (DALYs) using data from a published Markov model (Haby, et al. 2006, see 'Other Publications of Related Interest’ below for bibliographic details).

Measure of benefit:
DALYs were the summary measure of benefit and, as they could be gained over the lifetime of the patient, future DALYs were discounted at an annual rate of 3%.

Cost data:
The direct and indirect costs associated with the intervention were: project coordination; GP attendance and recruitment; GP training (including travel time, instructor’s time, and use of actors); patient recruitment; medical receptionist; practice equipment; GP time measuring children; delivery of the intervention; materials; parent time; and family travel to and from consultations. The authors reported that the resource use information was derived from a pathway analysis used to identify the component activities of the intervention. The unit costs were from the LEAP trial, Medicare Australia, private sector health care providers, and the Australian Public Service. Travel times were from the Royal Automobile Club, and parent time costs were valued using average Australian weekly earnings. All costs were adjusted to 2001 prices, using the relevant component of the Consumer Price Index. As they could be incurred over the lifetime of the patient, future costs were discounted at an annual rate of 3%. All costs were reported in Australian dollars (AUD).

Analysis of uncertainty:
A probabilistic sensitivity analysis, in which each model parameter was given a probability distribution, was used to derive the median values and 95% uncertainty intervals (UIs), using 4,000 Monte Carlo iterations. Sensitivity analyses were undertaken by: excluding the effect of outliers on the LEAP trial results; and introducing the effect of incentive payments to encourage GP participation.

Results
If the intervention was introduced across Australia, a median of 511 DALYs (95% UI -90 to 1,156) would be saved. The total cost of the intervention would be AUD 6.3 million (95% UI 5.3 million to 7.4 million), but it would result in future savings of AUD 3.3 million (95% UI -7.5 million to 0.6 million; where a negative value is a cost saving).

The costs and benefits were combined in an incremental cost-utility ratio. The net cost (additional cost minus future savings) per DALY saved was AUD 4,670 (95% UI dominated to 0.1 million). To be dominated means that the intervention was more costly and less effective.

The results of the sensitivity analysis showed that, by excluding outliers or introducing incentive payments, the intervention became more cost-effective.

Authors' conclusions
The authors concluded that the intervention was cost-effective under the current assumptions, but the uncertainty intervals were wide.

CRD commentary
Interventions:
The intervention was reported clearly and in detail. An explicit justification was given for using no intervention as the comparator, namely that it represented the current practice in Australia.

Effectiveness/benefits:
The clinical and effectiveness data were derived primarily from a small Australian trial. Appropriate details of the LEAP trial were provided, including the main effectiveness estimate used, the follow-up period, and details of the study sample. Due to the small sample, the effectiveness results were insignificant, but, after removing outliers, the intervention tended towards significance (p=0.08). The sources used to inform the other model parameters, such as converting BMI changes into DALYs, were adequately reported, and the main one appears to have been a published Australian model.

Costs:
All the costs associated with the running of the intervention appear to have been included. These included the travel and time costs both for parents and GPs, which was in line with the societal perspective adopted. The sources from which the resource use data and unit costs were derived were also reported. The future costs associated with the intervention
were included, but the details of which costs and cost categories these applied to were not. For example, it was not clear if the future costs of hospitalisations due to obesity-related complications were included. The price year, discount rate, and currency were all adequately reported.

Analysis and results:
Very few details of the Markov model were reported and readers were referred to Haby, et al. 2006. A probabilistic sensitivity analysis was undertaken to evaluate the overall model uncertainty. In the UK, this type of sensitivity analysis is considered to be the gold standard. The authors reported that the main limitation to their study was their reliance on one small trial and the lack of definitive data on the effectiveness of the intervention.

Concluding remarks:
The methodology was appropriate and adequately reported, but more details of the cost analysis, such as the future costs or savings related to the intervention, should have been reported. The authors’ conclusions appear to be appropriate for the scope of their analysis.

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