Cost-effectiveness of Weight Watchers and the Lighten Up to a Healthy Lifestyle program  
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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 study evaluated the cost-effectiveness of a government provided diet and exercise counselling programme (Lighten Up) or vouchers for people to attend a commercial weight loss programme (Weight Watchers). The authors concluded Lighten Up and Weight Watchers were not cost-effective strategies. The study was generally well reported with clear and appropriate methods, analysis of uncertainty, and discussion of limitations, including the quality of the clinical evidence. The authors’ conclusions appear appropriate.

Type of economic evaluation
Cost-utility analysis

Study objective
The study evaluated the cost-effectiveness of a government provided diet and exercise counselling programme or vouchers for people to attend a commercial weight-loss programme.

Interventions
Two weight-loss programmes were compared with no weight-loss programme. The programmes were a government provided weight-loss programme ‘Lighten Up to a Healthy Lifestyle’ (Lighten Up), and government distributed vouchers for people to attend a commercial programme ‘Weight Watchers’. Lighten Up was a two-month programme that included six group workshops, facilitated by trained nurses or allied health professionals, and three individual appointments for measurement and personal goal setting. Weight Watchers aimed to achieve weight loss through a low-calorie diet and advice on physical activity.

Location/setting
Australia/public health.

Methods
Analytical approach:
The analysis was based on one clinical study for each intervention to determine the intermediate clinical effect. The intermediate clinical effect was linked to the incidence of several diseases through risk equations. The DisMod II model was used to estimate outcomes, over a lifetime, using differential equations, without accounting for the time dependence of variables. The authors stated that the perspective was that of the health service.

Effectiveness data:
The main clinical data were the treatment effect on body mass index (BMI) for both interventions and on physical activity and fruit and vegetable consumption for the Lighten Up intervention. Weight loss, physical activity, plus fruit and vegetable consumption were used as variables to modify the relative risk of ischaemic heart disease, ischaemic stroke, type 2 diabetes, breast cancer, and colon cancer. For the Lighten Up intervention, the clinical data came from the Lighten Up programme, which was implemented in 20 Health Districts across Queensland, Australia. There was no control group, so a background trend in BMI during the intervention and follow-up period was estimated from national surveys. A survey of study participants was conducted at two months and 12 months. At two months, 238 participants were surveyed; at 12 months, 23 participants were surveyed. The effectiveness of the Weight Watchers intervention came from the only independently sponsored randomised controlled trial (RCT) of Weight Watchers. This was conducted in the UK and was a six-month programme. The six-month data were assumed to apply to 12 months. A published meta-regression study of 46 dietary and dietary and exercise counselling trials indicated that weight loss was
regained after five and a half years, so the intervention effect was modelled to have an exponential pattern of decay so that it was virtually absent at five and a half years. The risk equations for diseases based on the intermediate outcomes were based on Australia’s burden of disease and injury, and various published studies.

Monetary benefit and utility valuations:
Disability weights for the calculation of disability-adjusted life-years (DALYs) were obtained for the different diseases included in the model.

Measure of benefit:
The measure of benefit was the number of DALYs averted. Future benefits were discounted at 3% annually.

Cost data:
The costs included those for providing the weight loss programmes and treating the different diseases included in the model. The costs of Lighten Up included project coordination, delivering the intervention, and the cost to each patient for time and travel in attendance. The cost of Weight Watchers included the cost of primary care referral and attendance vouchers. The costs for diseases averted were evaluated using data from the Australian Institute of Health and Welfare Disease Costs and Impacts Study 2001. Costs were adjusted to year 2003 using the Australian Health Price Index. Future costs were discounted at 3% annually. The currency was Australian dollars (AUD).

Analysis of uncertainty:
A probabilistic sensitivity analysis was conducted where each parameter was assigned probability distributions and values sampled simultaneously thousands of times. Sensitivity analyses were conducted modifying decay rates (a potential loss of effect up to 12 months), intervention delivery costs, and increasing Lighten Up recruitment. Probabilistic sensitivity analyses were presented on cost-effectiveness plane scatter plots, and with cost-effectiveness acceptability curves.

Results
The median incremental cost-effectiveness ratio (ICER) for Lighten Up compared with no weight loss programme was AUD 130,000 per DALY (95% CI 22,000 to dominated). A programme was considered dominated if it was more costly and less effective than an alternative programme. Weight Watchers had a median ICER of AUD 140,000 per DALY (95% CI 41,000 to dominated).

For a cost-effectiveness threshold of AUD 50,000 per DALY, the likelihood of Lighten Up being cost-effective was 17% and the likelihood of Weight Watchers being cost-effective was 5%.

The results were sensitive to the treatment effect decay rate. The likelihood that Lighten Up was cost-effective with a zero decay rate was 75%, 42% at 25% decay rate, and 17% at a 50% decay rate. Increasing Lighten Up recruitment slightly decreased cost-effectiveness of the Lighten Up programme.

Authors’ conclusions
The authors concluded that, based on available evidence, neither the Lighten Up nor Weight Watchers programmes were cost-effective strategies.

CRD commentary
Interventions:
Both interventions were adequately described. It was not clear whether the public health service current practice was included. Lighten Up may have been a pilot study in several locations.

Effectiveness/benefits:
There was no control group in Lighten Up clinical study. It was unclear if the background population change in outcomes appropriately reflected the change that may occur in an alternative health service control group. The study was based in the setting of the study, which was more useful for a study with behaviour-related outcomes. The Weight Watchers study was based in the UK, so there was potentially an issue with generalisability to the Australian setting, but this was unknown. There was significant uncertainty in the long-term treatment effect. Good evidence was obtained from a review of the literature to determine long-term treatment effect, and the treatment effect decay rate was...
appropriately varied in sensitivity analysis. The long-term outcomes of the interventions were adequately captured. The disability weights and their sources were not reported, so it was unclear whether appropriate weights have been used in the model.

Costs:
All the resources relevant to the decision problem appear to have been included. The resource use estimates for the Lighten Up programme should be appropriate. The same was true for the Weight Watchers programme if it was the same in Australia as in the UK study. The unit costs were referenced but were not always stated, so it was unclear from the text if they were all appropriate.

Analysis and results:
The analysis was adequately reported. Discounting was appropriately conducted for costs and effects. The mean costs and effects for each intervention and no intervention were not reported; only the median ICER was reported. The mean ICERs would also have been useful as health is maximised by comparing mean ICERs. No full incremental cost-effectiveness analysis was conducted comparing Lighten Up with Weight Watchers and no intervention, but it was clear that neither intervention was highly cost-effective. It appeared that the authors wanted to compare ICERs with no intervention to allow comparison with other public health interventions compared with no intervention. Uncertainty in the ICER was appropriately evaluated through probabilistic sensitivity analysis. A key assumption of treatment effect decay rate was appropriately varied in sensitivity analysis. The authors conducted a thorough discussion of the limitations of their study and potential reasons for variance in results compared to other studies.

Concluding remarks:
The study was generally well reported with appropriate methods and discussion of limitations, including the quality of the clinical evidence. The authors’ conclusions appear appropriate.

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