

Computer Modelling the Health and Economic Outcomes of the Weight Watchers GP Referral Scheme

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1 BACKGROUND

- By 2050, nearly 60% of the UK population could be obese^[1].
- Without action, obesity related diseases could cost the Government an extra £50 Billion per year^[1].
- Given the health risks associated with being overweight and obese^[2] the NHS needs to take a proactive role in providing access to weight management services^[3] – yet has limited capacity.
- Some Primary Care Trusts are purchasing courses of 12-week Weight Watchers (WW) meetings for their patients (at a cost of £45/head) to broaden service options. This WW intervention is based on group support and behavioural change delivered in weekly meetings in accessible community venues at convenient times.

2 OBJECTIVE

- To examine the future national impact of industrial scale application of a 12-week WW intervention, which is typical of the NHS referral scheme enabling health professionals to refer clinically suitable overweight and obese patients to WW meetings.

3 METHODS

- Computer modelling methodology harnessed forecasting software developed for the Foresight review^[1]. See report for specifications.
- Combined with survey data base of 8,636 patients referred for a 12-week course of WW between April 2005 and April 2008. Data recorded by WW on age, gender, initial BMI, weight change and attendance over the 12-week course
- Micro simulation identified likely candidates from the English population (around 4 million equivalent to 10% of population) from 2010 to 2030 and predicted their likely weight loss together with the resultant economic and health outcomes over their virtual lives projected to 2080.
- Assuming distribution of the effect on obesity observed in WW data base and that any changes in BMI are sustained after the intervention (NB there is no data on the validity of this assumption).
- The model simulates individuals with varying changes in obesity level predicted on interventions to affect those changes. These individuals suffer disease according to their age and sex but also their current obesity level and existence of other conditions such as diabetes and hypertension, whether related to existing obesity or not.

4 RESULTS

Weight Watchers Patient Sample

- BMI, age and gender distribution of over 8,636 patients referred to WW revealed that 80% were women, 50% were between 41 – 60 years and 90% were obese (BMI ≥30).
- Analysis of weight loss distributions in 4,114 patients who had completed the 12-week course suggested an average BMI loss of 1.5 units (equivalent to 4 – 6kg).

Micro Simulation

When the above distributions were applied to the English population and assuming the distribution of BMI loss (average 1.5 units) was sustained over the participants lifetime the micro simulation estimated:

- savings in NHS costs of £1,860 per intervention person – equivalent to a total community wide saving of £9,064 million up to 2080;
- measurable decreases in future rates of BMI related diseases including diabetes (figure 1) potentially saving 5,000 cases per year from 2025 onwards;
- a reduction in individual risk of diabetes of 20% and 5% reduction in the likelihood of developing other BMI related diseases amongst intervention participants (figure 2);
- a small but measurable increase in life expectancy (4 – 5 months) for intervention participants.

Figure 1: Impact of 12-week Weight Watchers intervention on diabetes rates

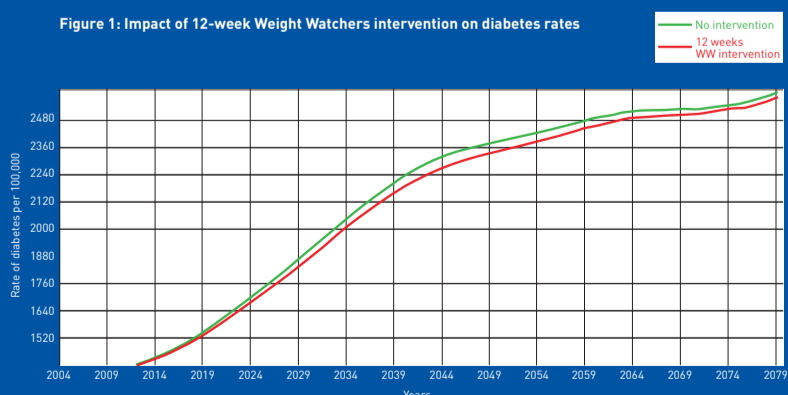
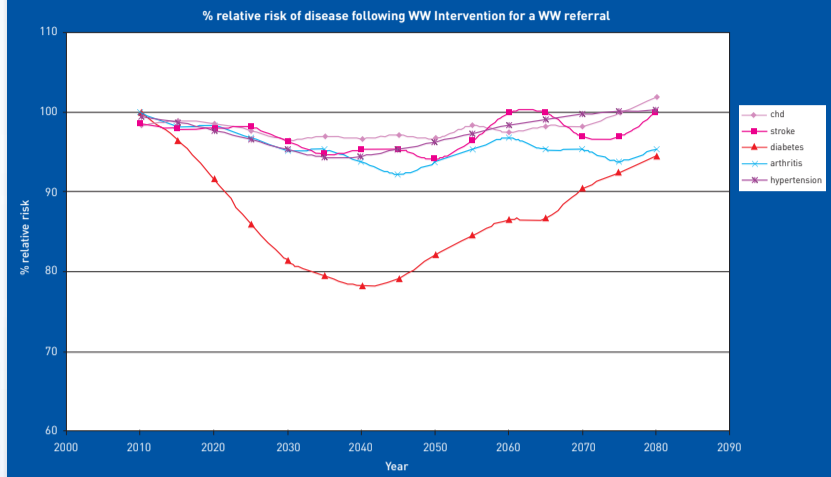


Figure 2: Reduction in risk of BMI related diseases following 12-week Weight Watchers intervention



5 DISCUSSION

This micro simulation provided a conservative appraisal of the potential impact of an intervention which has provided pragmatic data from a real life clinical setting. Whilst there are limitations to this type of theoretical exercise this micro simulation has provided the 'best' picture possible based on a distribution of a large patient population. Data assumptions included:

- Disease rates were based on Health Survey for England 1993 – 2004 data^[4]. Diabetes UK has reported a significant increase in prevalence rates of diabetes over the past 4 years;
- For most projections it was assumed that average 1.5 BMI losses were maintained over lifetime;
- Full economic costs were estimated to be seven times NHS costs^[1].

6 CONCLUSIONS

The results for the Health Service costs from the simulation model suggest that there is a total saving of £9,064M in the period to 2080. In the 50M trials a total of 4,873,727 virtual people were admitted to a 12 week WW intervention. This results in a saving per intervention person of £1,860. In other words if any of the people in England who may be appropriate for referral to WW undertook a 12-week course and completed the course and maintained the weight loss over their lifetime, then they would do so with an average reduction in BMI of 1.5 points per person at an average cost saving to the NHS of £1,860 over their lifetime. If this model is then adjusted to reflect what is likely to happen in real life (i.e. allowing reductions by a factor of 8 for course failures and subsequent weight gain) this is still a saving of £232 per WW intervention person.

If the NHS were to invest in referring overweight/obese people (in the distribution patterns characterised in this trial) for a 12-week course to WW (currently costing £45) it would ultimately save £232 per referral on otherwise incurred lifetime medical costs for that person. The lesson to be drawn from this is that savings to the NHS of encouraging obese and overweight people to lose relatively small amounts of weight, and retain that loss, are highly significant.

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