Diet or Exercise Interventions vs Combined Behavioral Weight Management Programs: A Systematic Review and Meta-Analysis of Direct Comparisons

David J. Johns, PhD, RD; Jamie Hartmann-Boyce; Susan A. Jebb, PhD; Paul Aveyard, PhD; for the Behavioural Weight Management Review Group

ABSTRACT

Weight loss can reduce the health risks associated with being overweight or obese. However, the most effective method of weight loss remains unclear. Some programs emphasize physical activity, others diet, but existing evidence is mixed as to whether these are more effective individually or in combination. We aimed to examine the clinical effectiveness of combined behavioral weight management programs (BWMPs) targeting weight loss in comparison to single component programs, using within study comparisons. We included randomized controlled trials of combined BWMPs compared with diet-only or physical activity-only programs with at least 12 months of follow-up, conducted in overweight and obese adults (body mass index ≥25). Systematic searches of nine databases were run and two reviewers extracted data independently. Random effects meta-analyses were conducted for mean difference in weight change at 3 to 6 months and 12 to 18 months using a baseline observation carried forward approach for combined BWMPs vs diet-only BWMPs and combined BWMPs vs physical activity-only BWMPs. In total, eight studies were included, representing 1,022 participants, the majority of whom were women. Six studies met the inclusion criteria for combined BWMP vs diet-only. Pooled results showed no significant difference in weight loss from baseline or at 3 to 6 months between the BWMPs and diet-only arms (−0.62 kg; 95% CI −1.67 to 0.44). However, at 12 months, a significantly greater weight-loss was detected in the combined BWMPs (−1.72 kg; 95% CI −2.80 to −0.64). Five studies met the inclusion criteria for combined BWMP vs physical activity-only. Pooled results showed significantly greater weight loss in the combined BWMPs at 3 to 6 months (−5.33 kg; 95% CI −7.61 to −3.04) and 12 to 18 months (−6.29 kg; 95% CI −7.33 to −5.25). Weight loss is similar in the short-term for diet-only and combined BWMPs but in the longer-term weight loss is increased when diet and physical activity are combined. Programs based on physical activity alone are less effective than combined BWMPs in both the short and long term.


EXCESS WEIGHT IS A GLOBAL PUBLIC HEALTH ISSUE and an important feature in discussions on the strategy for primary and secondary health care. Between 1980 and 2008, age-standardized mean global body mass index (BMI) increased by 0.4 to 0.5 per decade in men and women.1 Globally, in 2008, an estimated 1.46 billion adults were overweight and an estimated 205 million men and 297 million women older than age 20 years were obese.4 Furthermore, by 2030 estimates suggest up to 57.8% of the world’s adult population (3.3 billion people) could be either overweight or obese.5

Substantial epidemiologic evidence suggests raised BMI is a risk factor for mortality and morbidity from a number of chronic diseases, including type 2 diabetes, cardiovascular disease, and several cancers.1-5 This places an economic burden on health systems and the wider economy.5-8 However, improvements in disease risk factors and quality of life have been observed after a modest weight loss.9-11