

Weight Management

RESEARCH NEWS

The Efficacy of Meal Replacements in Weight Intervention

Obesity is a chronic, relapsing disease with serious health consequences. Weight loss of 5-10% of initial weight may reduce the risk factors that lead to chronic diseases or improve obesity related health conditions.¹ Numerous studies have chronicled strategies for weight loss and maintenance. The National Weight Control Registry, established in 1994 by Drs. Rena Wing and James O. Hill, is tracking over 5000 people who have successfully maintained a significant weight loss. Their research has found key strategies used by successful weight maintainers. They include consuming a low-fat, low calorie diet, eating breakfast, weighing weekly, high levels of physical activity, and watching less than 10 hours of television weekly.² Other studies looking at long term weight management suggest enhancing motivation, teaching behavioral skills, extending the length of treatment, and frequent contact with a support group or person are important for keeping off lost weight.

Many strategies have been identified that can help people avoid weight regain or prevent additional weight gain. One strategy that can assist people with eating less fat and calories is the use of meal replacements (MR). There have been numerous studies on this subject conducted over the past several years; this monograph will examine the use of MR in improving the outcomes of weight intervention.

Meal replacements have been used as a tool for weight management for over thirty years. The American Dietetic Association's Evidence Library recommends meal replacements for "people who have difficulty with self-selection and/or portion control" and cites no risk or harm of implementing this recommendation.³ Although there is no standard definition for meal replacements, they are usually recognized as portion and calorie controlled beverages, shelf stable or frozen entrees, and nutrition bars. They are often fortified with vitamins and minerals and may be used to replace conventional grocery store food or as replacements for one to three meals/snacks per day. They have wide acceptance because they are convenient, easy to store, require little or no preparation, and reduce the number of decisions people need to make about what to eat.

Several studies have shown the effectiveness of MR in long term weight loss. These include:

Cheskin et al. conducted a study to compare the effectiveness of a MR diet (50-60% of calorie needs were met with meal replacements) to a standard diet for obese participants with type 2 diabetes. The study followed 119 participants for 34 weeks of weight loss and 1 year of maintenance. About 40% of those using meal replacements lost $\geq 5\%$ of their initial weight compared to 12% of those on a standard diet. After the weight loss phase, of those on blood glucose control medications, 24% of those using the MR were able to reduce their medications compared to 0% on the standard diet. In addition, the retention rate and self-reported ease of following the plan in the MR group was significantly higher throughout the study.⁴

LeCheminant et al. compared the use of meal replacements or medication

(Orlistat) during weight maintenance after weight loss using a very low calorie diet. Ninety subjects were followed for 1 year. At the end of the study period the participants in both groups were approximately 18% below baseline body weight. However, 41% of those using the medication reported GI distress including diarrhea, oily spotting, and abdominal pain. No adverse events were reported in the meal replacement group. The authors concluded that the use of meal replacements was as effective as Orlistat but without the negative side effects or cost of the medication.⁵

Blackburn and Rothacker followed 158 subjects for 10 years to evaluate body changes of those who had been using a MR diet plan. Those on the MR plan were instructed to replace two regular meals and one of three snacks to lose weight and to replace one meal and one snack daily to maintain weight or take off regained weight. After 10 years, the meal replacement group had maintained a 2.8 kg loss and the matched controls had gained an average of 12 kg. This study highlights the significance of using meal replacements to reduce weight regain by displacing higher calorie food choices.⁶

In 2002 Heymsfield performed the first systematic review of controlled trials using meal replacements. All methods of analysis indicated a significantly greater weight loss in subjects receiving the MR compared to those using the conventional reduced calorie diets. The meal replacement group's loss averaged 7-8 % of body weight compared to a loss of 3-7% body weight for the conventional diet plans. Risk factors improved with both groups but the drop-out was significantly lower at 1 year for those using the MR.⁷

Rothacker et al. compared the effects on body weight and body composition

of two diet plans. One plan incorporated liquid meal replacements into the program and the other used a traditional low-fat, low-calorie plan without meal replacements. Both plans provided about 1200 calories. Subjects were followed for 1 year; at 3 months subjects from both groups had significant losses in body weight and body fat (~6 kg for the meal replacement group and ~4 kg for the traditional diet). However, at 1 year the meal replacement group maintained their initial weight and fat loss, whereas the traditional food group regained most of their weight and fat loss.⁸ MR use was considered an effective tool in controlling food choices and eating habits.

Ditschuneit et al. conducted a study to examine risk factors after 51 months of reduced energy intake. One hundred participants were randomly assigned to one of two groups: one, an energy restricted diet of 1200-1500 kcal using all traditional foods or the other replacing two meals with a liquid meal replacement. They followed these plans for 3 months. After 3 months, the traditional food group lost ~1.5% body weight and the MR group lost ~8% body weight. Only in the MR group were risk factors (fasting glucose, insulin, triglycerides, cholesterol, systolic blood pressure) significantly improved. After this period, both groups were instructed to replace one meal and one snack daily with MRs. Both groups continued to lose weight over the second phase, although the MR group maintained 5.4% more of their weight loss than the traditional foods group. Blood pressure, cholesterol, and triglycerides continued to improve in both groups. After 51 months, body weight in the traditional foods group was reduced by ~3.3% and by ~8.4% in the MR group. The authors concluded that with a structured meal plan, obese individuals can successfully lose weight and use meal replacements to maintain that loss long-term along with improvements in disease risks.¹

Ashley et al. studied the effectiveness of meal replacements for weight loss and maintenance in 113 pre-menopausal women over a two year period. The women, ages 30-50, were randomized into three groups: a dietitian led intervention (DL), a dietitian led intervention using meal replacements (DMR), and a clinical office-based intervention using meal replacements (CMR). At the end of the first year, the CMR group was as effective as the DL group (~4.3% and ~4.1%) but the DMR group maintained a significantly greater weight loss (~9% loss). At the end of the second year, the DMR and CMR groups had significantly greater weight loss: ~8.5% loss and ~3% loss respectively compared with ~1.5% for the DL group.⁹

Another landmark study on meal replacements and weight intervention was reported by Fletchner-Mors et al. One hundred patients were assigned to one of two groups: one using a low calorie diet of 1200-1500 calories (group A) and the other using a diet of similar calories but using 2 meal and 2 snack replacements (group B). After 3 months all patients were prescribed the same diet of 1200-1500 calories with the use of 1 meal and 1 snack replacement for an additional 4 years. At the end of 3 months, weight loss for group A was ~1.5% vs. ~7.8% for group B. Risk factors (systolic blood pressure, triglycerides, glucose, and insulin) were significantly reduced in group B whereas no changes were observed in group A. At the end of the 4 year study, weight loss for group A was ~3.2% and ~8.4% in group B. Both groups had marked improvements in glucose and insulin but only group B had significant improvement in triglycerides and systolic blood pressure compared to baseline values. The authors concluded that a structured meal plan using meal replacements is an effective tool for weight management and their long term use can assist in the reduction of biomarkers for disease risk.¹⁰

Winick et al. found that the use of a meal replacement plan was an effective tool for employees working in high stress jobs (police, hospital employees, flight crew members, and firefighters). After 12 months of treatment, the study participants had lost

~8.4% of their initial weight. One year later two-thirds of the firefighters and flight crew members had retained 80% of their weight loss and half of these weighed less than they had at week 12.¹¹

With two-thirds of Americans now overweight or obese, healthcare professionals are seeing an increasing number of patients facing serious health conditions as a result of their weight status. Patients look to their physician and healthcare professional for guidance and suggestions about weight loss strategies. The use of meal replacements is a viable, affordable, and safe strategy to assist with long term weight management. Patients should not attempt to use them as a sole source of nutrition without medical supervision. Encourage patients to seek credible weight intervention programs which include nutrition and exercise plans, and are directed by physicians and health care professionals. It is crucial to educate patients about the strategies that can assist them in their efforts to reach and maintain a healthy weight for a lifetime.

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