Weight Gain Prevention in Young Adults: A New Frontier for Primary Care?


Study Overview

Objective. To compare several behavioral strategies for weight gain prevention in young adults.

Study design. Randomized clinical trial.

Setting and participants. The study took place at 2 U.S. academic centers between 2010 and 2016. Participants were recruited using email and postal mailings if they were 18–35 years old, had a body mass index (BMI) between 21 and 30.9 (ie, they ranged from normal body weight to class I obesity), spoke English, had internet access, and did not have contraindications to participating in a behavioral weight management intervention (eg, eating disorders). Once recruited, participants were block randomized, stratified by site, sex, and ethnic group, into 1 of 3 study arms. The control arm of the study consisted of a single in-person meeting where behavioral strategies to prevent weight gain were discussed, as well as quarterly newsletters and personalized reports on interim weight data during follow-up.

Intervention. There were 2 intervention arms in the study. Both intervention groups had 10 in-person group-based visits over the initial 4 months of the intervention, at which strategies to prevent weight gain were discussed. Additionally they received annual invitations to participate in online refresher courses and the same newsletter frequency and content as the control group. Advice to the 2 intervention groups differed, however. Those in the “small changes” group were advised to decrease caloric intake by about 100 kcal per day in order to prevent weight gain. Additionally they were given pedometers, with a goal of increasing their daily step counts by about 2000. In the “large changes” group, participants were given lower calorie targets and more aggressive physical activity goals, with a goal of producing weight loss over the first 4 months of follow-up (2.3 kg for those with normal baseline BMI, and 4.5 kg if overweight or obese at baseline). Participants in all groups were encouraged to engage in self-monitoring behaviors such as daily weighing, and to report these weights to study staff by email, text, or on the web. Aside from prespecified study follow-up assessments, most follow-up beyond the initial 4 month “small” or “large” changes phase was done using email or web-based intervention.

Main outcome measures. All participants were scheduled for follow-up assessments at 4 months, 1 year, and
2 years, with some early participants having additional follow-ups at 3 and 4 years. The primary outcome of interest was change in weight from baseline through follow-up, with additional outcome measures including the proportion in each group who gained at least 0.45 kg, or developed obesity. Additionally, the investigators did a thorough evaluation of intervention implementation and delivery. Weight change was modeled using mixed effects linear models, adjusting for clinic site. They corrected for multiple measures using Bonferroni adjustment to minimize the risk of type I error and used multiple imputation to examine the impact of missing data on their results. Pre-specified subgroup comparisons between several groups of patients were conducted—those in the normal weight vs. overweight category at baseline, those younger vs. older than age 25 at baseline, and men vs. women.

Results. 599 participants were randomized to the control (n = 202), small changes (n = 200), or large changes groups (n = 197), with no significant differences between groups in terms of measured baseline characteristics. The majority of participants were women (78%) and non-Hispanic white (73%). Mean (SD) baseline age was 28.2 (4.4) years and BMI was 25.4 (2.6) kg/m². The group as a whole was highly educated—between 77% and 82% had college degrees. The series of 10 intervention sessions in the first 4 months was very well-attended (87% attendance on average for large changes group, 86% for small changes group), and by 4 months of follow-up, a majority of participants in both intervention groups endorsed the behavior of daily self-weighing (75% in large changes, 72% in small changes).

Both intervention groups had statistically significant weight losses compared to control (average weight change in control +0.3 kg, in small change −0.6 kg, and in large change −2.4 kg, over an average of 3 years), with large change participants also having significantly greater average weight loss in follow-up than small change participants. Significantly fewer participants in the intervention groups went on to develop obesity than in the control group (16.9% incidence in control, vs. 7.9% incidence in small changes [P = 0.002] and 8.6% in large changes [P = 0.02]). Importantly, the trajectories of weight gain (or regain) after the initial 4-month intervention differed between the small and large change groups, with small change participants experiencing a more gradual rate of gain throughout follow-up, versus a steeper rate of gain in the large changes group, such that the groups were at very similar weights by the final time point. The investigators did not observe any differences in effect between subgroups according to participant baseline BMI, sex, age, or race.

Conclusion. The authors conclude that these scalable small- and large-change interventions reduced longer-term weight gain and even promoted weight loss in a group of young adults, with the large-change intervention having a greater impact on weight than the small-change intervention.

Commentary

Treatment of obesity is difficult, leading to frustration for many patients and clinicians. Although it is often possible to help patients lose weight with tools such as low-calorie diets and increased physical activity, the long-term maintenance of weight loss is quite challenging. There is a growing awareness that the difficulty in maintaining weight loss has strong physiologic underpinnings. The human body has complex energy regulatory systems that may oppose weight loss by lowering metabolic rate, increasing hunger cues, and limiting satiety cues, when faced with energy restriction or weight loss [1,2].

In order to decrease the number of patients who ultimately require treatment for obesity, an alternative approach may be to try to prevent weight gain in the first place. Young adults in the U.S. tend to gain weight steadily over time, yet this insidious pattern is unlikely to be addressed by physicians [3]. Given that gradual weight gain seems to be the norm for most young adults, it may be beneficial for primary care providers to advice all young adult patients to make small behavioral changes in order to prevent the onset of overweight or obesity. Preventing weight gain is an attractive approach for broad application because it may require lower intensity programs, and less behavioral commitment from patients, compared to what is required for weight loss [4].

In this randomized trial, Wing et al investigated several relatively low-intensity approaches for weight gain prevention. Strengths of the study include aspects of the design and analysis, including its randomized nature, the relatively long follow-up period, the use of multiple imputation to address missing data, and the use of statistical methods to account for the large number of comparisons made between groups over time (Bonferroni correc-
More importantly, however, this study represents an important innovation in how physicians might think about obesity, with a shift toward prevention rather than treatment. Historically, many obesity prevention efforts have fallen in the domain of public health or population-level interventions, and it may be the case that physicians have felt they did not really have a role in prevention. On the other hand, doctors who have engaged in obesity treatment—trying to help patients lose weight—may have felt that they lacked the resources or training needed to implement successful programs to promote long-term weight loss. By testing several lower-intensity strategies for weight gain prevention, this study sheds light on what could possibly be a new role for primary care providers or health care systems who care for otherwise healthy young adults. As the authors point out, the methods they employed could also be easily scaled or disseminated using public health approaches and community organizations.

In addition to addressing an important topic, this study relied on intervention methods that would be relatively easy to replicate in clinical practice or in community settings. Aside from the initial 4-month intervention, which involved 10 face-to-face group sessions (which were very well attended by participants), the remainder of the ~3 year follow-up consisted mostly of contact that took place electronically using email and/or text messaging. These modes of communication align well with the move toward electronic health records (eg, e-visits) and are probably ideally suited for young adults, who as a group rely heavily on these methods of communication.

The study has several limitations, most of which are addressed by the authors in the discussion section of the paper. As with most studies of behavioral weight interventions, the majority of participants in this study were women, with relatively few racial and ethnic minorities. Furthermore this was a highly educated group of participants and it is unclear whether these results would generalize to a more diverse clinical population with fewer resources or lower health literacy. Given that the control arm of the study experienced less weight gain over time than would be expected based on population averages, it could be that the participants in this study were a select group of individuals who were more motivated around preventing long-term health problems than a general clinical population. One additional point of possible concern is that, while participants in the “large changes” group did, as per the design, lose weight at the beginning of the trial, they also went on to regain much of that weight and experienced a steeper trajectory of overall gain during follow-up compared to the “small changes” group, so that the 2 intervention groups were not statistically different from each other in terms of overall weight change from baseline by 2 years. Therefore, whether the “large changes” approach is truly more beneficial for long-term obesity prevention than the more modest “small changes” approach is not entirely clear from this study.

**Applications for Clinical Practice**

The identification of young adults who are gaining weight, but who are not yet obese, represents an opportunity for providers and health care systems. Efforts to promote modest dietary and physical activity changes in this population may prevent obesity, and may be achievable even in busy clinical practice settings. Whether weight-gain prevention programs should include an attempt to first foster a small amount of weight loss as a “buffer” against later gains is still not entirely clear.

—Kristina Lewis, MD, MPH

**References**


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