Abstract

Obese children have attended weight loss camps and residential programs for more than 40 years. For this review, 22 studies met inclusion criteria (targeted and assessed change in weight status; minimal stay of 10 days and nights). Compared to results in a recent meta-analysis of outpatient treatments, these immersion programs produced an average of 197% greater reductions in percent-overweight at posttreatment and 130% greater reduction at follow-up. Furthermore, mean attrition rates were much lower when compared to standard outpatient treatment. Inclusion of a cognitive–behavior therapy (CBT) component seem especially promising; follow-up evaluations showed decreased percent-overweight at follow-up by an average of 30% for CBT immersion programs versus 9% for programs without CBT. Explanations for the potentially greater impact of immersion relative to outpatient treatments are presented, including possibly differential effects on self-efficacy for both children and their parents.

Introduction

The Seven Steps Model for the treatment of childhood and adolescent obesity\(^1\) asserts that parents will have the best chance of producing favorable outcomes as long as they advance through the steps, from 1 to 7 if necessary. Those seven steps are:
1. Immersion treatments often produce substantial weight changes in overweight children and adolescents—and have been showing largely unrecognized promise as an alternative to outpatient treatment over the past 50 years.

2. Immersion treatment may produce better long-term results when it includes a cognitive–behavioral therapy component.

Two other recent reviews seemed to agree with this perspective, but both provided cursory mention of immersion as an alternative treatment for childhood and adolescent obesity. The purpose of this article is to present the results and implications for healthcare practitioners from this review.

Method

We reviewed studies published 1958–2008. Inclusion criteria were: (1) focus on an immersion environment designed to produce weight reduction; i.e., a residential summer camp, inpatient, or school setting; (2) controlled environment of 24-hour care for at least 10 continuous days. This criterion was concluded based on experience and previous research; and (3) evaluation of weight loss or change in body composition. We used Goldfield et al.’s definition of active treatment to determine when follow-up began; that is, treatment was considered active (or continuing) if participants interacted in person with therapeutic staff within 6 weeks of the end of their immersion experience.

The original literature search concluded in November 2008 and included MEDLINE, EBSCO, OCLC/FirstSearch, and PubMed, using terms such as “immersion,” “residential,” and “summer camp” in conjunction with “obesity” and “treatment.” A total of 260 citations were found, with 22 articles meeting inclusion criteria. (For full references to all of these studies see Kelly and Kirschenbaum or contact the first author for a copy of the article). We excluded non-English articles, dissertations, program descriptions, and treatment reviews. A recent update for this review in October 2009 found one new publication meeting criteria.

Similar elements across treatment settings included: structured diet; physical activity requirements or opportunities; nutrition and cooking education; and some type of therapy, support and/or education regarding behavior change. Some studies also offered family workshops or weekends.

Results

Weight change

Participants lost substantial amounts of weight in all studies, as measured by reductions in weight, BMI and/or percent-overweight. Participants averaged a reduction in percent-overweight of 24% from preimmersion to postimmersion and 20.6% from preimmersion to follow-up.

Attrition

Attrition rates for the studies reviewed here ranged from 0% to 42%, with an average of 6.8%.

Psychosocial changes

Psychosocial changes included decreased anxiety about physical abilities and body issues after camp, and significant increases in positive body image, quality of life, self-esteem, and self-efficacy postimmersion. Furthermore, Braet et al. found that participants maintained significant decreases in general psychopathology and eating disorder symptoms, as well as increases in global self-worth, over 3.6 years.

Inclusion of cognitive–behavioral therapy

Eleven programs (47.6%) offered a cognitive–behavioral therapy (CBT) intervention. Eleven programs either did not offer CBT, or offered a different intervention (psychodynamic/analytic, general educational support).

Five CBT and five non-CBT programs performed follow-up analyses. The CBT programs that included follow-up seemed to outperform non-CBT follow-up programs on average during intervention (−40.32% versus −25.3%), between intervention and follow-up (+10.37% v. +18.44%), and from pretreatment to follow-up (−29.95% versus −9.44%) Figure 1 compares these pre-
treatment to follow-up outcomes with the average effects for outpatient CBT programs at follow-up, based on a recent meta-analysis.9

Additional correlates of success

Duration of stay was the element most consistently correlated with outcomes, with five studies indicating better outcomes with longer stays.

Discussion

The promise of immersion seems clear from this review, including significant weight change in the short- and long-term, improvements in psychosocial outcomes, and relatively low attrition. Perhaps most hopeful among these findings is the notably lower rates of attrition (averaging 6.8%) versus those typically reported for outpatient treatment (e.g., 19.7%). Prior research makes it clear that poorer performance during treatment increases attrition,10 and that those who discontinue treatment often fare much more poorly than those who remain in treatment.11 If immersion treatment reduces attrition, it could prove beneficial for that reason alone.

Participants may benefit from immersion approaches in part because such programs promote increases in self-efficacy. When participants and parents experience substantial change over a short period of time, they may react very favorably to that dramatic success. This may improve positive expectations for long-term success and increase positive moods and attitudes. In turn, these favorable reactions could translate into sustained commitment and effort toward maintaining the lifestyle change they experienced during immersion. According to Bandura’s social-cognitive theory,12 such positive self-reactions should result directly from successful weight loss, and should also help promote sustained reductions in overweight over time.

There are limitations to the conclusions that can be drawn from this review. Treatments varied substantially across potentially key dimensions as diet, frequency of CBT sessions, family involvement, and follow-up protocols. Most importantly, the existing literature includes largely uncontrolled quasi-experiments, with standard care (e.g., education or outpatient treatment) as comparison groups.

In accord with the expert recommendations published in Pediatrics in 20074 and Obesity and Weight Management (formerly Obesity Management) in 2009,1 the evidence described in this review suggests that immersion treatments that include CBT deserve consideration as potentially important treatment options by healthcare providers and families. Further studies will help determine if the promise suggested in the present review remains as compelling after closer, more rigorous experimental scrutiny.

Author Disclosure Statement

Both authors are current employees of Wellspring, a Division of CRC Health Group, a leading provider of immersion treatment for children and adolescents.
References


