

## Immersion treatment of childhood and adolescent obesity: the first review of a promising intervention

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### CRD summary

The authors appeared to conclude that, compared with a recent meta-analysis of out-patient treatments, immersion treatments produced an average of 191% greater reductions in overweight at post-treatment and 130% greater reduction at follow-up, with lower mean attrition rates. Risk of bias and methodological limitations of this review suggest that these conclusions should be interpreted with caution.

### Authors' objectives

To investigate the effects of immersion treatments on childhood obesity.

### Searching

PubMed, EBSCO and OCLC were searched for studies in English published between 1958 and November 2008. Some search terms were included. Dissertations and theses were excluded.

### Study selection

Studies of interventions in an immersion environment where participants were in a controlled environment during the day and night (such as residential summer camps, in-patient or school settings) for at least 10 continuous days and weight change was assessed (lb or kg lost, change in body mass index or body mass index-standard deviations) were eligible for inclusion.

Most included studies were of children who were overweight or obese and a third of studies indicated that the participants had no co-morbidities other than those attributable to obesity. The mean age of participants ranged from 11.8 to 15.11 years where reported. The interventions were composed of similar elements; a dietary component, physical activity/exercise, education in nutrition/cooking and opportunities for regular therapy and/or psychoeducation towards behaviour change. Family interventions were also available in some studies. The duration of the intervention ranged from 10 days to 10 months. A variety of weight change outcomes were used in the included studies.

The authors did not state the number of reviewers that selected studies for inclusion, or how study selection was performed.

### Assessment of study quality

The authors did not state that quality assessment was performed. Some aspects of study quality were discussed in the text.

### Data extraction

Data were extracted for weight change and psychosocial outcomes. The number of reviewers that performed data extraction was not reported.

### Methods of synthesis

The studies were presented in a narrative synthesis. Correlates of success were also reported. Tables of individual study details were also available.

### Results of the review

Twenty-two studies were included in the review (3,505 participants). Six studies used control or comparison groups; only one reported randomised assignment of participants. One study used intention-to-treat analysis. Follow-up ranged from four months to 3.6 years, where reported (12 studies). Attrition rates ranged from zero to 42% (where reported).

Four studies compared weight changes between intervention and control groups and all showed significantly greater decreases in percentage of fat, fat mass, body mass index-standard deviations or waist-to-hip circumference with immersion treatment compared with control. In 11 pre-/post- studies the average reduction in overweight was 23.9% from pre- to post-immersion, and 20.6% from pre-immersion to follow-up.

At follow-up the results for weight gain/loss were mixed. Weight loss was more substantial in CBT programmes compared with non-CBT programmes during the intervention (-40.32% vs. -25.3%), between intervention and follow-up (+10.37% vs. +15.86) and from pre-treatment to follow-up (-29.9 versus -9.44); number of studies unclear.

Two studies reported decreased anxiety regarding physical abilities and body issues; two reported increases in body/self-image; three increased quality of life; and four reported improved self-esteem and self-efficacy.

Analyses of correlates of success were also reported.

### Authors' conclusions

The authors conclusions appeared to be that, compared with a recent meta-analysis of out-patient treatments, the immersion treatments produced an average of 191% greater reductions in overweight at post-treatment and 130% greater reduction at follow-up, with lower mean attrition rates.

### CRD commentary

The research question was supported by inclusion criteria for participants, intervention and outcomes. A limited number of databases were searched for published studies in English, so publication and language bias could not be ruled out. The authors did not report whether steps had been taken to reduce error and bias in the review process.

Study quality did not appear to have been assessed, but it appeared that the studies were largely study designs at high risk of bias with no control arm. The studies appeared to be heterogeneous in terms of intervention, study designs and outcomes. The conclusions appeared to be based on comparability with the results of another meta-analysis, which may have been inadvisable due to comparisons of different study populations. The considerable risk of bias and the methodological limitations of this review suggest that the authors' conclusions should be interpreted with caution.

Both authors were employees of Wellspring, a division of CRC Health Group, which provides immersion treatment for children and adolescents.

#### **Implications of the review for practice and research**

**Practice:** The authors stated that the weight of the evidence appeared to support the value of incorporating CBT in immersion treatment.

**Research:** The authors stated that further randomised controlled trials and observational studies of immersion treatment were warranted, and could include direct comparisons with outpatient treatments and could control for factors such as inclusion of CBT, type of diet and degree of parental involvement.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.