

A Meta-Analysis of Psycho-Behavioral Obesity Interventions among US Minority Adults

Dong-Chul Seo, Ph.D.

Jaesin Sa, Ph.D. (c)

Indiana University, Bloomington

Introduction

- The prevalence of obesity (BMI \geq 30) has more than doubled among adults in the last two decades
 - Affects minority populations more than Whites
 - Obesity prevalence **among adults \geq 20 years old**, NHANES 2003-04
 - **45.0%** of non-Hispanic **Blacks**
 - **36.8%** of **Mexican Americans**
 - **30.6%** of non-Hispanic Whites
 - Affirmed by others
 - Flegal et al., 2002; Mokdad et al., 2003; Seo & Torabi, 2006

Rationale for Study

- Few review studies focused on obesity interventions among minority adults
 - Bronner & Boyington (2002): among Black women
- Lack of studies that compared 2-component interventions with **3-component** interventions regarding their efficacy of interventions
- Few studies compared **lifestyle interventions** with non-lifestyle interventions
- Few studies compared interventions **conducted in individual sessions** with group interventions

Purpose

- To systematically examine efficacy of psycho-behavioral obesity intervention programs among US minority adults
 - Q: 3-component interventions would be more effective than 1- or 2-component interventions?
 - Q: Lifestyle interventions would be more effective than non-lifestyle interventions?
 - Q: Interventions conducted in individual sessions would be more effective than group interventions?
 - Q: The programs where interventionists were of the same race/ethnicity as that of the participants would be more effective than those where such match was not reported?

Methods

■ Data sources

- MEDLINE, Academic Search Premier, Educational Resource Information Center (ERIC), Health Source Nursing/Academic Edition, PsycARTICLES, SPORTDiscus, and CINAHL Plus with Full Text

■ Study selection criteria

- an intervention with a control group
- at least 50% of the sample were minorities
- outcome measures: weight, BMI or % body fat
- interventions involved psycho-behavioral component
- published between 1980 and 2006 in peer-reviewed j
- conducted in the US

→ 24 interventions (13,326 adults)

Data Analysis

- Cohen's d and its noncentral 90% confidence intervals were computed for each effect of the included intervention studies (Smithson, 2003)
 - Cohen's d , like multiple R^2 , is based on noncentral distributions that reflect effects of independent variables when the null hypothesis is false
 - From test statistic (e.g., t), noncentrality parameters were searched using a computer (upper and lower limits of noncentrality parameters). Then, CI limits were computed (e.g., dividing the upper and lower limits by square root of the sample size for the noncentral t distributions)

Results 1

- 3-component interventions

($n = 6$, $d = 0.52$, 90% CI = 0.39, 0.65)

- Used three out of four approaches (energy consumption, energy expenditure, counseling, or medication)

- 1-component interventions

($n = 5$, $d = 0.08$, 90% CI = -0.04, 0.35)

- 2-component interventions

($n = 13$, $d = 0.22$, 90% CI = 0.05, 0.40)

Results 2

■ Lifestyle interventions

($n = 19$, $d = 0.35$, 90% CI = 0.19, 0.51)

- With a focus on lifestyle changes such as modifications of eating and exercise habits incorporated into daily routines
- Conducted while completing everyday tasks (e.g., take stairs, take short walks during breaks, reduce portion sizes)

■ Non-lifestyle interventions

($n = 5$, $d = 0.09$, 90% CI = -0.03, 0.35)

- Programmed activities which do not incorporate lifestyle changes to the participants' daily routines (conducted in a discrete period of time at a relatively high-intensity level)

Results 3

- Interventions conducted in individual sessions
($n = 15$, $d = 0.40$, 90% CI = 0.24, 0.56)
- Group interventions
($n = 9$, $d = 0.08$, 90% CI = -0.04, 0.30)

Results 4

- **Interventionists of the same race/ethnicity**
($n = 3$, $d = 0.32$, 90% CI = 0.13, 0.50)
- Without such a component
($n = 21$, $d = 0.28$, 90% CI = 0.14, 0.47)

- **Family involvement**
($n = 2$, $d = 0.34$, 90% CI = 0.18, 0.50)
- Without family involvement
($n = 22$, $d = 0.28$, 90% CI = 0.13, 0.46)

Limitations

- 2/3 of the reviewed studies included non-minority participants
 - Might not have captured all the racial/ethnic differences in terms of efficacy of obesity interventions among minority adults
 - Lack of differentiation between different minority pop'l
- Inequality of intervention periods of different studies
 - Might have confounded the findings of this review study although it is almost unavoidable in review studies

Contribution

- This study contributes to the literature
- by providing **an insight into** the defining factors of **successful psycho-behavioral obesity interventions among US multiethnic and minority adults** that can help a long-term weight loss maintenance