WEB APPENDIX

Mobile Phone Intervention and Weight Loss Among Overweight and Obese Adults: A Protocol for Meta-Analysis of Randomized Controlled Trials

Background and significance

Obesity has become more and more widespread over the last twenty to thirty years, increasingly recognized as one of the biggest global health problems (1–3). It is estimated that the global prevalence of obesity nearly doubled from 6.4% in 1980 to 12.0% in 2008, while the prevalence of overweight increased from 24.6% to 34.4% during the same period (4). A global analysis of data estimated that more than 1.4 billion adults were overweight, and of these over 205 million men and 297 million women were obese (5).

To date studies have indicated that excess body weight is an important risk factor for mortality and morbidity from cardiovascular diseases, diabetes mellitus, cancers, fatty liver disease, endocrine and musculoskeletal disorders (6–10). According to the World Health Organization (WHO) report, overweight and obesity were ranked in the top fifth of leading global risks for mortality in the world (11). Studies have shown that modest levels of sustained weight loss (weight loss of 5 to 10%) yield substantial health benefits, such as significant risk reduction for diabetes and cardiovascular diseases and increase in quality of life (12–15).

Health behavior changes are of utmost importance to reduce health risks in overweight and obese individuals. Although long-lasting health behavior changes regarding physical activity and diet are required (16), intervention effects are often short-lived (17). Since obesity rates continue to rise,

more effective interventions are needed. The use of mobile phone technology (short message service [SMS]) has shown promise for many health interventions including diabetes (18), physical activity (19), and smoking cessation (20). Recently, there is some evidence for the use of mobile phone SMS in supporting weight management interventions. Patrick and colleagues conducted a randomized controlled trial (RCT) found that text messages were a useful communication method to promote weight loss in overweight adults (21). Another one year RCT found significantly greater weight loss in an SMS group versus controls (22). However, most of these studies were relatively small and the findings from clinical trials have been inconclusive (23, 24).

Given these conflicting findings, a meta-analysis evaluating the impact of mobile phone intervention on body weight control will allow for the estimation of a more precise measure of the intervention effect and exploration of the heterogeneity of results.

Objectives and specific aims

The primary objective of this meta-analysis of RCTs is to examine the effects of mobile phone intervention on weight control among overweight and obese adult humans. We will compare the effects of mobile phone intervention on body weight, body mass index (BMI), waist circumference (WC), waist to hip ratio (WHR), and body fat among overweight and obese adults versus control group. Secondary analyses will examine whether the relationship between mobile phone intervention and weight loss differs by subgroups, including intervention duration and intervention mode.

Eligibility criteria

We selected studies for this review based on the following criteria:

1. The study should be a randomized controlled trial.
2. Conducted among adults (≥18 years old) with at least 80% of participants are overweight (25≤BMI < 30) or obesity (BMI≥30).
3. The application of mobile phone is part of the intervention.
4. The only difference between intervention and control groups was the mobile phone intervention.
5. Mobile phone intervention included delivery of information on healthy eating, physical activity, or other information related to weight loss.
6. The study should report changes in body weight, BMI, WC, WHR, or body fat or information to calculate the changes in these measures were provided.
7. A measure of variance, confidence interval, or *P*-value is provided.

Information sources

Studies will be retrieved by systematically searching Medline, Embase, the Cochrane Central Register of Controlled Trials (CENTRAL) and Web of Science. A manual search of references from all articles that met eligibility criteria as well as relevant review articles, systematic reviews, and meta-analyses will be conducted. Study authors will be contacted to identify additional information.

Search strategy

Two investigators will independently search the searching MEDLINE, EMBASE, the Cochrane Central Register of Controlled Trials (CENTRAL) and Web of Science databases with the duration of from the default start date of each database to March 27th, 2014. Key words include “mobile

phone", "cell phone", "cellular phone", "smart phone", "text message", "text messaging" and "short message service". Detailed information has been shown in **Appendix A**. Briefly, our literature search strategy combined all synonyms for the intervention 'cellular phone' with all synonyms for the outcomes 'weight loss', 'body mass index', 'waist circumference', 'waist to hip ratio', and 'body fat'. We will also restrict the search to include only studies conducted among humans.

Study selection criteria and procedures

Two investigators will independently review articles which were generated by the established literature search strategy. First, we will review all the title and abstract of all identified articles and those deemed ineligible will be excluded. Second, all the full texts of the potential articles will be retrieved and reviewed further to determine eligibility. Then, we will compare the retrieved articles after full-text review and any discrepancies between the two reviews will be discussed by our team group. For the results of a study that are published more than once, only those with the most complete and up-to-date information will be included in the analysis.

Data abstraction

Standardized data abstraction form (**Appendix B**) will be used to obtain the information from selected papers. Data abstraction form will be rehearsed, discussed and approved by all the investigators. Data will be extracted by at least two investigators independently. Discrepancies in the duplicate collected data will be compared and resolved by discussion and consensus.

Data regarding the characteristics of the trial and the participants will be extracted as followed: general study information (including title, authors, name of the trial, and year of publication), study

characteristics (including study design, primary outcome of study, randomization, blinding, outcome measurement, and statistical analysis methods), participants characteristics (including age, gender, race/ethnicity, and co-morbid condition), information about the intervention (including intervention type, duration, frequency, and feedback requirements), and study outcomes (including body weight, BMI, WC, WHR or body fat). For outcome, body weight related traits before and after intervention, absolute body weight related traits loss after intervention, as well as difference of body weight loss between groups, and their corresponding standard deviations, confidence intervals and *P* values were recorded. Abstraction results were compared and discrepancies were resolved by discussion and consensus. Authors were contacted for missing or incomplete data.

Assessment of study quality

A standardized 5-point Jadad scale was used to examine the quality of selected studies, which included assessment of the following items: randomization, blinding, description of drop-out and withdrawal, and evaluation of randomization and blinding (25). Two investigators assessed the articles independently and discrepancies were resolved by discussion and consensus.

Summary measures

We will examine the relationship between mobile phone intervention and weight loss by calculating the net effect size. We will calculate the net effect size of the intervention on weight reduction as the difference (between treatment and control) of differences (between trial termination and baseline): $(X_{TT} - X_{TB}) - (X_{CT} - X_{CB})$. For studies without variance data, we calculated variance from CIs or test statistics. If the variance for change between baseline and end of

intervention (σ_{Δ}) was not reported, it was calculated from the following equation (26): $\sigma_{\Delta}^2 = \sigma_{pre}^2 + \sigma_{post}^2 - 2\rho\sigma_{pre}\sigma_{post}$, where σ_{pre} corresponds to the variance at baseline, σ_{post} corresponds to the variance at the end of intervention, and ρ is the correlation coefficient between measurements at baseline and the end of intervention. If the variance for the net effect size is not reported, we will calculate the variance from confidence intervals, *P*-values, or test statistics.

Synthesis of results

We will pool the effect estimates using either fixed effects or random effects models according to the significance of heterogeneity. We will assess heterogeneity of effect size across studies with the *Q* statistic and I^2 statistic. Heterogeneity will be explored further with influence analysis, sensitivity analysis, and subgroup analysis. We will further conduct subgroup analysis by intervention duration and intervention mode. To further assess the robustness of our findings, several sensitivity analyses will be performed by restricting based on quality parameters, for example, restricting the analyses to high-quality trials (Jadad score ≥ 3),trials with weight control as the primary outcome, trials using ITT analysis, trials whose intervention frequency ≥ 1/day, trials with outcome being measured by physician, trials requiring feedback, trials whose sample size ≥40 and excluding trials with normal weight participants or clustered RCTs.

The possibility of publication bias was assessed using Egger's test and the visual inspection of funnel plots in which the standard errors are plotted against the effect size for each study.[27] A two-sided $P< 0.05$ was defined as statistically significance. All analyzes were conducted using STATA version 12.0 (Stata Corp LP, College Station, TX).

Appendix A: Search Terms

Medline

The following search terms were used to identify relevant articles in Medline.

Search details for intervention

1. “cellular phone”[MeSH Terms] OR (“cellular”[All Fields] AND “phone”[All Fields]) OR “cellular phone”[All Fields]

2. “cellular phone”[MeSH Terms] OR (“cellular”[All Fields] AND “phone”[All Fields]) OR “cellular phone”[All Fields] OR (“mobile”[All Fields] AND “phone”[All Fields]) OR “mobile phone”[All Fields]

3. “cellular phone”[MeSH Terms] OR (“cellular”[All Fields] AND “phone”[All Fields]) OR “cellular phone”[All Fields] OR (“cell”[All Fields] AND “phone”[All Fields]) OR “cell phone”[All Fields]

4. “text messaging”[MeSH Terms] OR (“text”[All Fields] AND “messaging”[All Fields]) OR “text messaging”[All Fields] OR (“text”[All Fields] AND “message”[All Fields]) OR “text message”[All Fields]

5.”text messaging”[MeSH Terms] OR (“text”[All Fields] AND “messaging”[All Fields]) OR “text messaging”[All Fields] OR (“short”[All Fields] AND “message”[All Fields] AND “service”[All Fields]) OR “short message service”[All Fields]

6. smart[All Fields] AND phone[All Fields]

7. “text messaging”[MeSH Terms] OR (“text”[All Fields] AND “messaging”[All Fields]) OR “text messaging”[All Fields]

Search details for outcome

1. “weight loss”[MeSH Terms] OR (“weight”[All Fields] AND “loss”[All Fields]) OR “weight loss”[All Fields] OR (“weight”[All Fields] AND “reduction”[All Fields]) OR “weight reduction”[All Fields]

2. “weight loss”[MeSH Terms] OR (“weight”[All Fields] AND “loss”[All Fields]) OR “weight loss”[All Fields]

3. (“weights and measures”[MeSH Terms] OR (“weights”[All Fields] AND “measures”[All Fields]) OR “weights and measures”[All Fields] OR “weight”[All Fields] OR “body weight”[MeSH Terms] OR (“body”[All Fields] AND “weight”[All Fields]) OR “body weight”[All Fields]) AND (“prevention and control”[Subheading] OR (“prevention”[All Fields] AND “control”[All Fields]) OR “prevention and control”[All Fields] OR “control”[All Fields] OR “control groups”[MeSH Terms] OR (“control”[All Fields] AND “groups”[All Fields]) OR “control groups”[All Fields])

4. (“weights and measures”[MeSH Terms] OR (“weights”[All Fields] AND “measures”[All Fields]) OR “weights and measures”[All Fields] OR “weight”[All Fields] OR “body weight”[MeSH Terms] OR (“body”[All Fields] AND “weight”[All Fields]) OR “body weight”[All Fields]) AND (“organization and administration”[MeSH Terms] OR (“organization”[All Fields] AND “administration”[All Fields]) OR “organization and administration”[All Fields] OR “management”[All Fields] OR “disease management”[MeSH Terms] OR (“disease”[All Fields] AND “management”[All Fields]) OR “disease management”[All Fields])

5. “obesity”[MeSH Terms] OR “obesity”[All Fields]

6. “obesity”[MeSH Terms] OR “obesity”[All Fields] OR “obese”[All Fields]

7. “overweight”[MeSH Terms] OR “overweight”[All Fields]

8. “body mass index”[MeSH Terms] OR (“body”[All Fields] AND “mass”[All Fields] AND “index”[All Fields]) OR “body mass index”[All Fields]

9. “body weight”[MeSH Terms] OR (“body”[All Fields] AND “weight”[All Fields]) OR “body weight”[All Fields]

10. “waist circumference”[MeSH Terms] OR (“waist”[All Fields] AND “circumference”[All Fields]) OR “waist circumference”[All Fields]

11. “obesity, abdominal”[MeSH Terms] OR (“obesity”[All Fields] AND “abdominal”[All Fields]) OR “abdominal obesity”[All Fields] OR (“abdominal”[All Fields] AND “obesity”[All Fields])

12. “waist-hip ratio”[MeSH Terms] OR (“waist-hip”[All Fields] AND “ratio”[All Fields]) OR “waist-hip ratio”[All Fields] OR (“waist”[All Fields] AND “hip”[All Fields] AND “ratio”[All Fields]) OR “waist hip ratio”[All Fields]

13. “fat body”[MeSH Terms] OR (“fat”[All Fields] AND “body”[All Fields]) OR “fat body”[All Fields] OR (“body”[All Fields] AND “fat”[All Fields]) OR “body fat”[All Fields] OR “adipose tissue”[MeSH Terms] OR (“adipose”[All Fields] AND “tissue”[All Fields]) OR “adipose tissue”[All Fields] OR (“body”[All Fields] AND “fat”[All Fields])

14. BMI[All Fields]

15. WC[All Fields]

16. WHR[All Fields]

Limitations

1. “humans”[MeSH Terms]

2. systematic[sb] OR Clinical Trial[ptyp] OR Meta-Analysis[ptyp] OR Review[ptyp]

Final expression

Intervention (1 OR 2 OR 3 OR 4 OR 5 OR 6OR 7) AND Outcome (1 OR 2 OR 3 OR 4 OR 5 OR 6OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14OR 15 OR 16) AND Limitations (1 AND 2)

Embase

The following search terms were used to identify relevant articles in Embase.

Search details for intervention

1. cellular AND phone

2. mobile AND phone

3. ‘cell’/exp OR cell AND phone

4. smart AND phone

5. text AND message

6. text AND messaging

7. short AND message AND service

Search details for outcome

1. ‘weight’/exp OR weight AND (‘reduction’/exp OR reduction)

2. ‘weight’/exp OR weight AND loss

3. ‘weight’/exp OR weight AND (‘control’/exp OR control)

4. ‘weight’/exp OR weight AND (‘management’/exp OR management)

5. ‘obesity’/exp OR obesity

6. obese

7. ‘overweight’/exp OR overweight

8. body AND (‘mass’/exp OR mass) AND index

9. body AND (‘weight’/exp OR weight)

10. waist AND circumference

11. abdominal AND (‘obesity’/exp OR obesity)

12. waist AND (‘hip’/exp OR hip) AND ratio

13. body AND (‘fat’/exp OR fat)

14. bmi

15. wc

16. whr

Limitations

1. [humans]/lim

2. [embase]/lim

3. [cochrane review]/lim OR [controlled clinical trial]/lim OR [meta analysis]/lim OR [randomized controlled trial]/lim OR [systematic review]/lim

Final expression

Intervention (1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7) AND Outcome (1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16) AND Limitations (1 AND 2 AND 3)

CENTRAL

The following search terms were used to identify relevant articles in CENTRAL.

Search details for intervention

1. mobile phone:ti,ab,kw

2. cell phone:ti,ab,kw

3. cellular phone:ti,ab,kw

4. smart phone:ti,ab,kw

5. text message:ti,ab,kw

6. text messaging:ti,ab,kw

7. short message service:ti,ab,kw

Search details for outcome

1. weight reduction:ti,ab,kw

2. weight loss:ti,ab,kw

3. weight control:ti,ab,kw

4. weight management:ti,ab,kw

5. obesity:ti,ab,kw

6. obese:ti,ab,kw

7. overweight:ti,ab,kw

8. body mass index:ti,ab,kw

9. waist circumference:ti,ab,kw

10. abdominal obesity:ti,ab,kw

11. waist hip ratio:ti,ab,kw

12. body fat:ti,ab,kw

13. body weight:ti,ab,kw

14. WC:ti,ab,kw

15. BMI:ti,ab,kw

16. WHR:ti,ab,kw

Limitations

1. Cochrane Reviews (reviews and protocols)

2. Other reviews

3. Trials

Final expression

Intervention (1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7) AND Outcome (1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16) AND Limitations (1 OR 2 OR 3)

Web of Science

The following search terms were used to identify relevant articles in Web of Science.

Search details for intervention

1. Topic=(mobile phone)

2. Topic=(cell phone)

3. Topic=(cellular phone)

4. Topic=(smart phone)

5. Topic=(text message)

6. Topic=(text messaging)

7. Topic=(short message service)

Search details for outcome

1. Topic=(weight reduction)

2. Topic=(weight loss)

3. Topic=(weight control)

4. Topic=(weight management)

5. Topic=(overweight)

6. Topic=(obesity)

7. Topic=(obese)

8. Topic=(body weight)

9. Topic=(body mass index)

10. Topic=(waist circumference)

11. Topic=(abdominal obesity)

12. Topic=(body fat)

13. Topic=(waist hip ratio)

14. Topic=(BMI)

15. Topic=(WC)

16. Topic=(WHR)

Final expression

Intervention (1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7) AND Outcome (1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16)

Appendix B: Data Abstraction Form

Mobile Phone Intervention and Weight Loss Among Overweight and Obese Adults: A Protocol for Meta-Analysis of Randomized Controlled Trials

Study ID:

Date of Abstraction: ____/____/____

Initials of Data Abstractor: _____

General Information

1. **Article title:**_____
2. **First author (last name, first initial):**_____
3. **Publication year:**_____
4. **Journal title:**_____
5. **Trial name:** _____
6. **Study country:**_____

Study Characteristics

6. Study goal:

a. Lose weight

b. Lower blood glucose

c. Lower blood pressure

d. Other (specify:)

7. Blinding:

a. Open

b. Single (participant)

c. Double (participant, investigator)

d. Triple (participant, investigator, analyst)

8. Intention-to-treat (ITT) analysis performed (based on data analysis):

a. Yes

b. No

9. Appropriate allocation concealment:

a. Yes

b. No

c. Not reported

10. Intervention administration:

a. Phone call

b. Text message /SMS

c. SMS + phone call

d. SMS + internet /online software

e. SMS + MMS

f. Other

11. Are there other interventions besides mobile phone intervention?

a. Yes

b. No

c. Not reported

12. The text message including body weight control related contents:

a. Yes

b. No

c. Not reported

13. Is intensive and maintenance phases preformed?

a. Yes (*skip question 13, 14*)

b. No (*skip question 15, 16, 17, 18*)

14. Length of intervention:

a. _____ days

b. _____ weeks

c. _____ months

d. _____ Years

15. Intervention frequencies:

a. _____ per day

b. _____ per week

c. _____ per month

d. _____ per year

16. Length of intensive phase:

a. _____ days

b. _____ weeks

c. _____ months

d. _____ Years

17. Intensive intervention frequencies:

a. _____ per day

b. _____ per week

c. _____ per month

d. _____ per year

18. Length of maintenance phase:

a. _____ days

b. _____ weeks

c. _____ months

d. _____ Years

19. Maintenance intervention frequencies:

a. _____ per day

b. _____ per week

c. _____ per month

d. _____ per year

20. If phone call was used, length of each phone calls: min.

21. Is feedback required?

a. Yes

b. No

22. Type of comparison group:

Please write down the sentence describe control administration and then classify it.

a. Standard intervention (usual care)

b. Without intervention

c. Single baseline and post-intervention measurement

d. Other

Participant Characteristics

23. Study population:

a. Overweight /Obesity

b. Diabetes

c. Hypertension

d. Other (specify:_____)

24. Other baseline characteristics:

Baseline	Intervention	Control	Comments
N at start			
Sex			
Male (n/%)			

Female (n/%)			
Average age			
Mean/Median			
SD/interquartile			
Race/ethnicity			
White (n/%)			
Black (n/%)			
East Asian (n/%)			
South Asian (n/%)			
Hispanic or Latino (n/%)			
Other (n/%)			
Average body weight (kg)			
Mean/Median			
SD/interquartile			
Average BMI (kg/m^2)			
Mean/Median			
SD/interquartile			
Average WC (cm)			
Mean/Median			
SD/interquartile			
Average WHR			
Mean/Median			
SD/interquartile			
Average body fat (%)			
Mean/Median			
SD/interquartile			

25. Study Outcomes:

Outcome	Intervention	Control	Comments
Compliance (%)			
Drop-out rate (%)			
Missing (%)			
Loss to follow-up (%)			
Body weight measurement approach			
Self-report			
Physician measurement			
Concordance (*if both of above were applied*)			
Frequency of measurement			
Body weight:			
Average pre-intervention body weight (kg)			
Mean/Median			
SD/interquartile			
P value between groups (*specify statistic approach*)			
Average post-intervention body weight (kg)			
Mean/Median			
SD/interquartile			
P value between groups (*specify statistic approach*)			
Average body weight loss: post - pre (kg)			
Mean/Median			
SD/interquartile			
P value between pre- and post-intervention in each			

group (*specify statistic approach*)			
Difference of body weight loss between intervention and control groups (kg)			
Mean/Median			
SD/interquartile			
P value between groups (*specify statistic approach*)			
BMI:			
Average pre-intervention BMI (kg/m^2)			
Mean/Median			
SD/interquartile			
P value between groups (*specify statistic approach*)			
Average post-intervention BMI (kg/m^2)			
Mean/Median			
SD/interquartile			
P value between groups (*specify statistic approach*)			
Average BMI loss: post − pre (kg/m^2)			
Mean/Median			
SD/interquartile			
P value between pre- and post-intervention in each group (*specify statistic approach*)			
Difference of BMI loss between intervention and control groups (kg/m^2)			
Mean/Median			

SD/interquartile			
P value between groups (*specify statistic approach*)			
WC:			
Average pre-intervention WC (cm)			
Mean/Median			
SD/interquartile			
P value between groups (*specify statistic approach*)			
Average post-intervention WC (cm)			
Mean/Median			
SD/interquartile			
P value between groups (*specify statistic approach*)			
Average WC loss: post − pre (cm)			
Mean/Median			
SD/interquartile			
P value between pre- and post-intervention in each group (*specify statistic approach*)			
Difference of WC loss between intervention and control groups (cm)			
Mean/Median			
SD/interquartile			
P value between groups (*specify statistic approach*)			
WHR:			
Average pre-intervention WHR			
Mean/Median			

SD/interquartile			
P value between groups (*specify statistic approach*)			
Average post-intervention WHR			
Mean/Median			
SD/interquartile			
P value between groups (*specify statistic approach*)			
Average WHR loss: post − pre			
Mean/Median			
SD/interquartile			
P value between pre- and post-intervention in each group (*specify statistic approach*)			
Difference of WHR loss between intervention and control groups			
Mean/Median			
SD/interquartile			
P value between groups (*specify statistic approach*)			
Body fat:			
Average pre-intervention body fat (%)			
Mean/Median			
SD/interquartile			
P value between groups (*specify statistic approach*)			
Average post-intervention body fat (%)			
Mean/Median			
SD/interquartile			
P value between groups			

(*specify statistic approach*)			
Average body fat loss: post − pre (%)			
Mean/Median			
SD/interquartile			
P value between pre- and post-intervention in each group (*specify statistic approach*)			
Difference of body fat loss between intervention and control groups (%)			
Mean/Median			
SD/interquartile			
P value between groups (*specify statistic approach*)			

Web Table 1. Jadad Scale for Quality Assessment of Trials Examining the Effect of Mobile Phone Intervention on Net Change in Weight-Related Measures Among Overweight and Obese Adults, 2004–2013

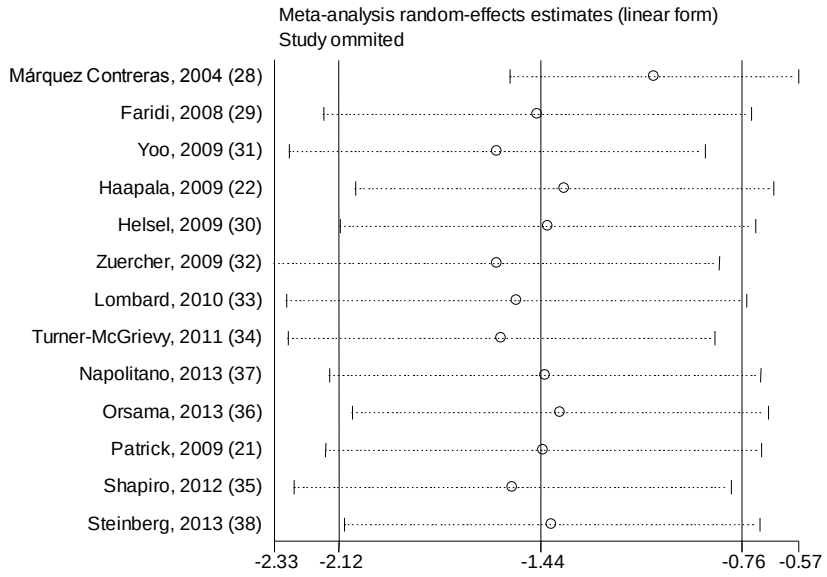
First Author, Year (Reference No.)	Was the study described as randomized?	Was the study described as double blind?	Was there a description of withdrawals and dropouts?	The method of randomization was described in the paper, and that method was appropriate.	The method of blinding was described, and it was appropriate.	Total
Márquez Contreras, 2004 (28)	1	0	1	1	0	3
Hurling, 2007 (19)	1	0	1	1	0	3
Faridi, 2008 (29)	1	0	1	1	0	3
Helsel, 2009 (30)	1	0	1	0	0	2
Haapala, 2009 (22)	1	0	1	1	0	3
Patrick, 2009 (21)	1	0	1	1	0	3
Yoo, 2009 (31)	1	0	1	1	0	3
Zuercher, 2009 (32)	1	0	1	1	0	3
Lombard, 2010 (33)	1	1	1	1	1	5
Turner-McGrievy, 2011 (34)	1	0	1	1	0	3
Shapiro, 2012 (35)	1	0	1	1	0	3
Orsama, 2013 (36)	1	0	1	1	0	3
Napolitano, 2013 (37)	1	0	1	1	0	3
Steinberg, 2013 (38)	1	0	1	1	0	3

Web Table 2. Types of Mobile Phone Interventions on Weight Loss Among Overweight and Obese Adults, 2004–2013

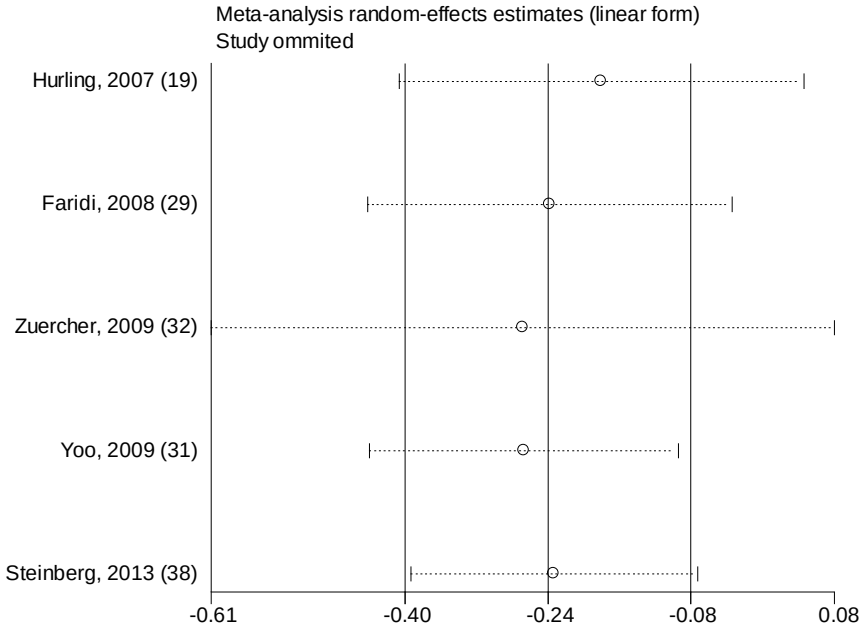
First Author, Year (Reference No.)	Weight Loss-Related Mobile Phone Intervention(s)
Márquez Contreras, 2004 (28)	Good health and dietary habits
Hurling, 2007 (19)	Increasing physical activity
Faridi, 2008 (29)	Physical activity
Helsel, 2009 (30)	Adopting healthy eating and exercise behaviors
Haapala, 2009 (22)	Reducing food intake, increasing daily physical activity
Patrick, 2009 (21)	Behavioral and dietary strategies, as well as physical activity
Yoo, 2009 (31)	Reminders about food intake and physical activity
Zuercher, 2009 (32)	Physical activity and healthy diet
Lombard, 2010 (33)	Behavior change related to diet and physical activity
Turner-McGrievy, 2011 (34)	Nutrition and physical activity information, encouraging weight loss, and other goal-setting activity
Shapiro, 2012 (35)	Healthy diet and physical activity
Orsama, 2013 (36)	Reporting weight and receiving feedback messages concerning initiating and maintaining lifestyle changes
Napolitano, 2013 (37)	Calorie intake, physical activity and weight goals
Steinberg, 2013 (38)	Daily weighing, diet and physical activity behaviors

Web Figure 1. Influence of each trial on pooled estimates of A) body weight (kg), B) body mass index (kg/m^2), and C) waist circumference (cm) by removing each trial sequentially

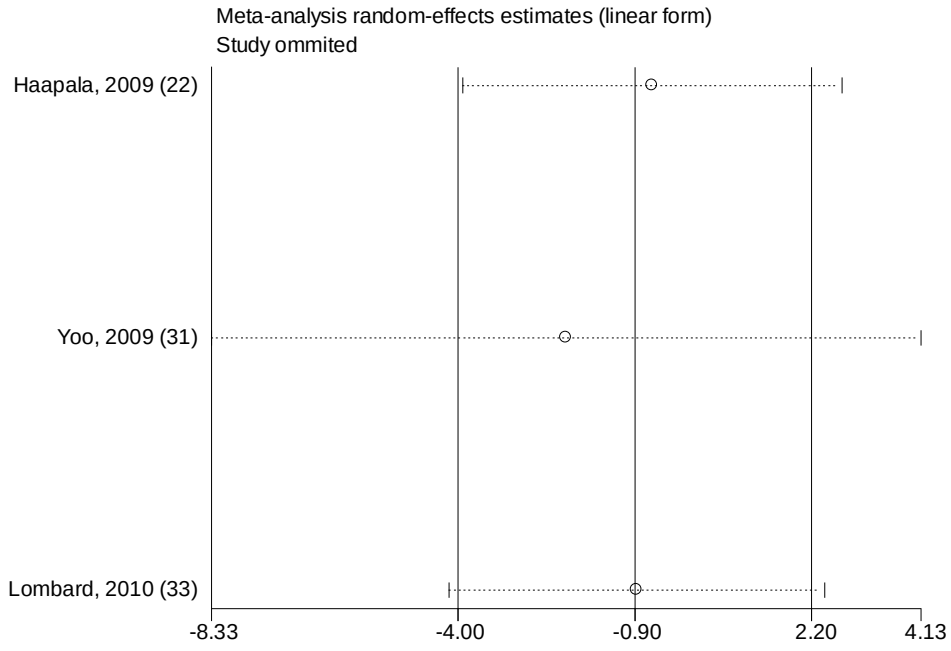
A)



B)



C)


Meta-analysis random-effects estimates (linear form)
Study ommited
Haapala, 2009 (22)
Yoo, 2009 (31)
Lombard, 2010 (33)
-8.33
-4.00
-0.90
2.20
4.13

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