


Exploring Sex Differences in the Effectiveness of Telehealth-Based Health Coaching in Weight Management in an Employee Population

American Journal of Health Promotion
1-4
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DOI: 10.1177/0890117120943363
journals.sagepub.com/home/ahp


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Abstract

Purpose: To explore a telehealth-based lifestyle therapeutics (THBC) program on weight loss (WL) and program satisfaction in an employer population.

Design: This study was a collaboration between inHealth Lifestyle Therapeutics and a large national employer group including 685 participants (296 women [64% obese] and 389 men [62% obese]).

Measures: Percent WL and subjective rating (Perceived Program Value measured by a questionnaire) were assessed.

Intervention: Average number of visits was 3.1 ± 0.4 ; each visit ranged between 20 and 45 minutes.

Analysis: This study utilized a 2×2 block design using analysis of variance techniques based on sex (male and female) and initial body mass index (BMI) category (overweight and obese) tested at $P \leq .05$.

Results: There was no statistical difference in %WL between by sex ($F_{1,681} = 0.398, P = .528$) nor an interaction between sex and BMI ($F_{1,681} = 0.809, P = .369$). There was a statistically significant difference in %WL from pre to post program across initial BMI category ($F_{1,681} = 13.707, P \leq .001$) with obese participants losing an average of 1.1% (0.5%-1.6%) more than overweight participants (overweight 2.5% [2.1%-3.0%] vs obese 3.6% [3.2%-3.9%]). Obese participants were 1.15 (1.07-1.25) times more likely to lose weight compared to overweight participants. Analysis of variance power analysis indicated sufficient power on minimum factor combination $n = 106$ (Effect Size = 0.282).

Conclusion: Results support the efficacy THBC in supporting WL with no reported differences between men and women, while having a high perceived value for employee participants.

Keywords

weight loss, telehealth, health coaching, employee health

Purpose

Obesity is a public health issue and is associated with other chronic conditions such as heart disease and type II diabetes.¹ With the heightened escalation in health care costs, employers are trying to find effective ways to improve the health of their employees, while also reducing employee health care costs.^{2,3} Currently, employers are leveraging health coaches to provide lifestyle support for employees.⁴ Lifestyle therapeutic programs (LTPs) provide support of positive lifestyle changes for nutrition, fitness, behavior modification, and holistic support. There is compelling evidence that integrating lifestyle therapeutics by health coaches in employee wellness programs can lead to improvements in blood pressure, and body weight however differences between men and women have yet to be explored.⁵ The utilization of telehealth-based health coaching

(THBC) to deliver lifestyle therapeutics by video conferencing has shown to be an effective approach for weight loss (WL), improving cardiovascular, and metabolic markers in overweight and obese individuals.^{2,3,6-9} Currently, there is limited

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Table 1. Lifestyle Therapeutics Program (LTP).

| Required sessions | Coaching methods | Health coaching education | |
|-------------------|---|--|---|
| Coaching sessions | <ul style="list-style-type: none"> • 3 × 25 60-minute health coaching sessions (baseline, 13 weeks, 26 weeks) (average time 30 minutes per session) • Health coaching sessions used motivational interviewing and coactive coaching methods to support the participants toward goal setting and lifestyle change. • Build rapport with member • Help member problem solve lifestyle modifications • Uncover the participants motivation behind lifestyle habits • Set 30-day and 6-month goal • Selected and complete 1 coaching education topic applicable to the conversation, member's lifestyle habits, and questions • Complete nutritional review • Complete physical activity review • Provide accountability remotely • Provide in-between visit messaging on demand with participant. | <ul style="list-style-type: none"> • Breakfast tips • Dining out tips • Foods that fight inflammation • Good and bad fats • Grocery shopping tips • Healthy eating on the go • Holiday tips • Healthy lunch tips • Label reading • Low sodium • Hunger scale • Maintaining your weight loss • Staying motivated | <ul style="list-style-type: none"> • Meal planning • Mindful eating tips • My daily food journal • Pantry list • The balanced plate • Tips to improve blood sugar • Exercise tips • Tips to improve cholesterol • DASH diet • Sit and get fit • Staying active while working from home • Goal setting |

evidence investigating how a fully online THBC program improves WL between men and women. Therefore, the purpose of this study was to evaluate the effect of a THBC program on WL between overweight or obese men and women in a large employee population using synchronous health coaching.

Methods

Design

Interested participants were enrolled in an LTP delivered by inHealth Lifestyle Therapeutics where participants were provided health coaching by certified health coaches who have been certified by a nationally accrediting agency. All enrolled participants consented to be a part of the program in exchange for a \$200 insurance premium reduction. Lifestyle therapeutic program leveraged nutrition, fitness, support, and behavior modification strategies to induce WL.¹⁰ The intervention is described in Table 1 below. Participants were required to attend a minimum of 3 health coaching visits within 6 months in order to receive the insurance premium incentive. To enroll, participants were screened at their usual worksite for body mass index (BMI) ≥ 25 kg/m². The LTP program utilized a Change HIPPA to Health Insurance Portability and Accountability Act (HIPPA) secure telehealth platform to perform either phone and/or video conferencing. Participants could connect with their health coach via a smart phone application, computer, or on-site kiosk. Participants recorded their weight using an on-site scale or provided a self-reported weight prior to each health coaching visit. Upon completion of their final visit, participants were asked their subjective rating (0-10) of Perceived Program Value (PPV). This question was scripted as

“On a scale of 1 (no value at all) – 10 (extremely valuable) how valuable did you think the program was to enhance your health and lifestyle.” This study received institutional review board approval from the Coastal Carolina University, Conway, South Carolina.

Sample

This study was a collaboration between inHealth Lifestyle Therapeutics and a large national employer group that included employees ranging from line cooks and janitors to corporate executives. Descriptive Statistics by sex and BMI are described in Table 2.

Measures

Outcome variables measured for this study were percent WL and subjective rating (PPV measured by a questionnaire).

Analysis

This study employed a 2 × 2 block design using analysis of variance (ANOVA) techniques. This design included 2 between group factors, sex (male and female), and initial BMI category (overweight and obese). The response variable, percent of WL (%WL) was measured as percent difference between pre and postprogram weight. The assumptions of the ANOVA procedure that were tested included homogeneity of variances via Levene test and response variable normality via Pearson Skewness between ± 2 . Statistical significance was set at $\alpha \leq .05$ for all tests. Means were accompanied with 95% CIs.

Table 2. Descriptive Statistics by Sex and BMI.

| Variable | Female (n = 296) | | Male (n = 387) | |
|-------------------------|----------------------|-----------------|----------------------|-----------------|
| | Overweight (n = 106) | Obese (n = 190) | Overweight (n = 147) | Obese (n = 242) |
| | M ± SD | M ± SD | M ± SD | M ± SD |
| Number of visits | 3.1 ± 0.4 | 3.1 ± 0.4 | 3.1 ± 0.3 | 3.1 ± 0.5 |
| Height (in) | 64.0 ± 2.3 | 64.3 ± 3.3 | 69.6 ± 3.0 | 69.6 ± 3.3 |
| BMI (pre) | 27.6 ± 1.4 | 36.1 ± 5.1 | 27.6 ± 1.5 | 36.2 ± 5.6 |
| Weight (pre) | 160.6 ± 14.3 | 212.5 ± 37.7 | 191.0 ± 21.0 | 250.0 ± 44.1 |
| BMI (post) | 26.8 ± 1.6 | 34.9 ± 5.2 | 27.0 ± 1.5 | 34.9 ± 5.3 |
| Weight (post) | 156.2 ± 14.4 | 205.1 ± 37.7 | 186.5 ± 20.2 | 240.7 ± 41.9 |
| Weight (difference) | 4.4 ± 5.2 | 7.4 ± 7.6 | 4.5 ± 6.6 | 9.2 ± 10.4 |
| WL% | 2.7 ± 3.2 | 3.5 ± 3.6 | 2.3 ± 3.2 | 3.6 ± 3.7 |
| Perceived Program Value | 8.5 ± 1.8 | 8.3 ± 1.8 | 8.5 ± 1.5 | 8.4 ± 1.9 |

Abbreviations: BMI, body mass index; SD, standard deviation; WL, weight loss.

Results

Sample Characteristics

A total of 813 employees were included in the original sample with 685 participants providing complete information to be included for analysis in the ANOVA procedure (84% response rate). The final sample included 296 (64% obese) women and 389 (62% obese) men. There was no statistical difference in preliminary BMI between men and women, $t(683) = 0.178$, $P = .859$. The overall average WL was 3.0% (2.8%-3.3%). Of the total sample, 78% reported $\leq 5\%$ WL and 26% reported WL greater than 5%. Of those who lost weight, 66% had a WL% up to 5% and the remaining 33% lost more than 5% (21.3% had a WL% for 5%-10%, 6.2% had WL% great than 10%). The average PPV was 8.4 ± 1.8 and the average number of participant engagements was 3.1 ± 0.4 visits. Descriptive statistics are displayed in Table 2 below.

Weight Loss % by Sex and BMI

The assumption of homogeneity of variance was met $F_{(3,681)} = 0.975$, $P = .404$. Normality was supported with a Pearson Skewness of 0.093. There was no statistical difference in %WL between men and women ($F_{1,681} = 0.398$, $P = .528$) nor an interaction between sex and BMI ($F_{1,681} = 0.809$, $P = .369$). There was a statistically significant difference in %WL from pre to post program across Initial BMI category ($F_{1,681} = 13.707$, $P \leq .001$) with obese participants losing an average of 1.1% (0.5%-1.6%) more than overweight participants (overweight 2.5% [2.1%-3.0%] vs obese 3.6% [3.2%-3.9%]). A post hoc power analysis was performed for a 2 factor ANOVA with 2 levels for each factor based on the following parameters: $\sigma = 3.06$, $\alpha = .05$, power = 0.90. The resulting minimum sample to achieve the set power was $n = 20$ for each combination of sex and BMI class.

Discussion

Summary

This study examined the effects of an employee THBC program using LTP on WL in an employer group. We found that,

on average, both male and female employees combined lost 3.0% (2.8%-3.3%) of total preliminary weight, and those who had higher initial BMI (obese) lost 1.1% more weight than overweight. There was no statistical difference in WL between men and women. These findings support the body of literature that details the efficacy of THBC in improving weight management outcomes and an effective medium to encourage sustainable behavioral and lifestyle changes. The findings of the investigation provide evidence that WL is not statistically different by sex but is more profound based on preliminary weight status. Furthermore, this investigation found that employees reported high levels of satisfaction with the THBC intervention given their high rating of PPV. This demonstrates the potential positive outcomes of integrating a THBC program for employees. Several strengths of the present study exist. First, we utilized a large employer group (685 participants). Furthermore, the health coaching program was fully remote, which is a strength this study, as many health coaching programs include face-to-face counseling visits.

Limitations

There were several limitations in this study including (1) a lack of a true control group, and (2) At times body weight recordings were self-reported to health coaches due to system malfunction or participant error. (3) Participants of all BMI risk categories were required to complete 3 health coaching visits regardless of starting BMI, and (4) Although a large sample size is reported, generalization of the findings should be used with caution as the sample was derived from one employee group.

Significance

This study demonstrated that both men and women employees participating in a THBC program achieved an average of 3.0% WL over a 6-month period with 78% of employees reporting WL. One-third of those who lost weight, lost 5% or more of their body weight. This finding is important as evidence indicates that losses of 5% and greater can reduce risk factors for

heart disease and diabetes.¹¹ Telehealth-based coaching is an innovative approach as it can reduce employee barriers, such as geographical distance, lack of time, inconvenience, that prevent possible employees from attending face-to-face health coaching sessions to improve their health. Recent evidence has shown that employees with multiple comorbid conditions account for the large percentage of employer health care costs.^{9,12} Therefore, future research is needed to examine how a risk-stratified THBC program can improve the health of employees with multiple comorbid conditions.

SO WHAT? (Implications for Health Promotion Practitioners and Researchers)

What is already known about this topic?

Research has demonstrated telephone and in-person health coaching can improve lifestyle behaviors in employees with type II diabetes and heart disease. However, less is known about how telehealth-based health coaching program using video conferencing can be effectively integrated to improve the body weight of employees.

What does this article add?

This study adds evidence of the effectiveness to induce body weight loss of a telehealth-based health coaching program for both men and women. In addition, this study utilized a scalable solution that is covered by health plans which hold strong implications for future employer groups trying to improve the health of their employees.

What are the implications for health promotion or practice or research?

In summary, we found that our telehealth-based health coaching was effective in improving weight loss in overweight and obese employees. Since chronic diseases influence employee health care expenditures, ongoing research should investigate how telehealth-based health coaching impacts employer health care costs including an outcomes-based return on investment strategy.


Declaration of Conflicting Interests

The authors declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: Dr Michelle Alencar owns stock ownership Inhealth Lifestyle Therapeutics.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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