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Brief Report

Telehealth-Based Health Coaching Produces Significant Weight Loss over 12 Months in a Usual Care Setting

Kelly Johnson ^{1,2,*}, Elizabeth Gutierrez ³, Patricia Dionicio ³, Jeremy McConnell ^{2,4}, Rachel Sauls ^{2,5} and Michelle Alencar ^{2,3}

- Department of Kinesiology, Coastal Carolina University, Conway, SC 29526, USA
- inHealth Medical Services, Inc., Los Angeles, CA 91604, USA
- Department of Kinesiology, California State University Long Beach, Long Beach, CA 90840, USA
- Sleep Manatee, Bradenton, FL 34209, USA
- ⁵ College of Public Health, University of South Florida, Tampa, FL 33620, USA
- * Correspondence: kjohns10@coastal.edu; Tel.: +1-5053225715

Abstract: Background: Telehealth-based health coaching in a usual care setting has yet to be examined. The purpose of this study was to incorporate the inHealth Lifestyle Therapeutics, Inc.'s Telehealth Enabled Approach to Multidisciplinary Care (TEAM) method within a real-world routine clinical care setting to reduce body weight in obese participants. Materials and Methods: n = 70 participants were recruited for this intervention (Age: 58.1 ± 14.6 yrs, BMI: 35.5 ± 7.8 kg/m², 32 males and 38 females). All participants self-selected participation in either the virtual health coaching (VHC) group or usual care (UC) group. VHC participants met with a medical doctor monthly and a certified health coach weekly for the first 12 weeks of the study, bi-weekly for the following 12 weeks, and monthly for the remaining 6 months. Data were analyzed using a two-sample student's t-test to assess any changes from baseline for both VHC and UC groups. Results: A significant difference for weight-loss between VHC and UC groups (8.24 \pm 9.8 vs. 0.16 \pm 10.6 kg, respectively, p < 0.05) was observed. In addition, there was a significant change in the mean percentage of body weight loss (6.5 \pm 0.1% vs. 0.53 \pm 1.45%, respectively, p < 0.05) between groups. Conclusions: Incorporating innovative deliveries that are scalable, such as telehealth-based interventions, may help stem the tide of patient obesity related care. Furthermore, using a TEAM method in a usual care setting may be effective for inducing sustained weight loss at 12 months.

Keywords: obesity; telemedicine; weight loss



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1. Introduction

Targeting adults with obesity is vital, as it has become the most prevalent chronic disease in the USA, with 37.9% of adult men and 41.1% of women having a body mass index (BMI) of 30 kg/m² or higher [1,2]. In the United States, obesity puts a financial strain on the health care system since adults with obesity spend 63% more on direct costs compared to individuals with a normal BMI [3]. Given the extensive economic burden of obesity in the US, it is critical to identify potential scalable delivered lifestyle interventions in the usual care setting that can treat obesity [1,4]. Since most patients see their provider on average 3.9 times a year, it offers a familiar clinical venue for patients affected by obesity during routine usual care [1,5]. However, multiple barriers preclude most primary care providers (PCPs) to provide obesity counseling due to a lack of training, time, education, and incentive to do so [6]. Evidence has shown that, in practice, about one-third of obese adults are given an obesity diagnosis, less than one-half are advised to lose weight, and approximately one-fifth receive counseling for weight reduction [7]. In-clinic lifestyle interventions have demonstrated minimal clinical weight losses, have limited scalability, and are not widely accessible [1,8,9].

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Shortcomings associated with these interventions may be mitigated through remotebased delivery [10–12]. Evidence-based intervention approaches indicate that remotely delivered lifestyle interventions offer providers greater access to these interventions, as recommended by the United States Preventive Services Task Force (USPSTF) [1]. More recently, PCPs have been integrating provider extenders, such as health coaches, dietitians, and behavior counselors who are trained in obesity management to provide lifestyle counseling [13]. For example, the utilization of remote health coaching (e.g., phone calls) in the primary care setting has shown promise for reducing body weight in patients with obesity [14,15]. In a recent remotely delivered intensive coaching intervention, it was found that when participant engagement rates are high (93% weekly self-monitoring records), more weight is lost. The intervention group lost about 4 kg at the 1-year mark, while the usual care group lost 0.1 kg [7]. Bennett et al. indicated the success was achieved by personal feedback and access to digital tools, including a smart scale and application, and provided 18 visits with a clinician that helped participants create attainable health-related goals [7]. More recently, Brown et al. [16] utilized a multidisciplinary team including dietitians, exercise physiologists, and clinical psychologists within a primary care setting. Following four bi-weekly video conferencing group-based health education sessions, researchers reported a percent body weight loss of 3.5%. Current evidence suggests that regular health coaching (HC) sessions for lifestyle support do lead to weight loss in obese participants [17–20]. Unfortunately, the majority of health coaching studies in the usual care setting have been group based, in-person, or by phone [7,15,16,21], with only two utilizing video conferencing [16,22]. In our studies using a Lifestyle Therapeutics program within a randomized controlled setting, we demonstrated 7% of initial body weight loss in 12 weeks [17,19]. Currently, there is uncertainty as to how these results translate to free-living usual care participants for weight loss in a 12-month program. To the best of our knowledge, no studies have investigated the application of remote coaches using video conferencing within a usual care setting combined with direct physician in-person counseling. To the best of our knowledge, only one study has investigated the application of remote coaches within a primary or usual care setting with direct physician oversight [16]. The study team utilized a multidisciplinary team of dietitians, exercise physiologists, and clinical psychologists in the primary care setting and reported a percent body weight loss of 3.5% following eight group-based bi-weekly sessions via video conference. Thus, the use of a team including physicians and health coaches for a weight-loss intervention could provide lower overhead costs, and lower healthcare costs, representing overall costeffectiveness in patients with obesity. There is uncertainty as to how these results translate to free-living usual care participants for weight loss at 12 months. Therefore, the purpose of this study was to assess the percent of body weight loss in a usual care setting using a TEAMTM method over a 12-month period.

2. Materials and Methods

Seventy participants with obesity (Age 58.1 ± 14.6 years, BMI = 35.5 ± 7.8 kg/m², 32 males, 38 females) were recruited from a primary care setting with a board-certified obesity medicine physician via inHealth Lifestyle Therapeutics, Inc. (Los Angeles, CA, USA); see Table 1. Participants self-selected to undergo virtual health coaching (VHC) for 12 months or to not undergo health coaching, or usual care (UC). Inclusion criteria were the following: body mass index (BMI) > 30 kg/m^2 , reporting weight stability, and owning a smart phone. Exclusion criteria included the following: using tobacco products, being diagnosed with type I diabetes mellitus, receiving treatment for a serious medical condition (i.e., cancer), or currently participating in a weight loss program. Each participant signed an informed consent form, and approval was obtained from Coastal Carolina University's Institutional Review Board.

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Variables	Total Group $(n = 70)$		Video Health Group (VHC) $(n = 38)$		Usual Care Group (UC) $(n = 32)$	
	Baseline	12 Months	Baseline	12 Months	Baseline	12 Months
Age (yrs)	58.1 ± 14.6	-	57.0 ± 17.6	-	60.6 ± 9.8	-
Body Weight (kg)	109.9 ± 32.9	-	106.0 ± 27.5	98.9 ± 25.2	111.9 ± 38.3	111.7 ± 45.5
Height (cm)	169.8 ± 10.6	-	170.3 ± 11.7	-	169.3 ± 10.7	-
Weight loss (kg)	-	-		8.24 ± 9.8 *		0.16 ± 10.64
BMI (kg/m ²)	35.5 ± 7.80	-	36.9 ± 10.07	34.4 ± 9.13	38.4 ± 10.40	38.2 ± 12.53
Weight loss (%)	-	-		6.5 ± 0.1 *		0.53 ± 1.45
Gender	Male = 32 Female = 38	-	Male = 17 Female = 21	-	Male = 14 Female = 18	-

Table 1. Subject characteristics (mean \pm SD).

yrs = years, kg = kilograms, % = percentage, WL = weight loss, n = sample that obtained respective % weight loss, cm = centimeters, BMI = body mass index, kg/m² = kilograms per meters squared, * indicates a significant difference for the VHC group ($p \le 0.05$).

2.1. Virtual Health Coaching Group (VHC)

Participants first met with their usual care physician (Sleep Manatee Clinic, Bradenton, FL, USA) in which barefoot standing height (cm) was measured using a wall-mounted stadiometer (SECA, Chino, CA, USA), and body weight (kg) was measured on a digital scale (MedWeigh MS-3900; Itin Scale Company, Brooklyn, NY, USA). Participants then met with the physician monthly to monitor changes in medical status and body weight. In between physician visits, participants received telehealth-based health coaching by a certified health coach. These visits were hosted via the inHealthNOW Application (CoachCare, New York, NY, USA) a HIPAA compliant telemedicine platform. Participants in the VHC group were instructed to follow the following structure in a free-living environment: (1) weekly visits with the health coach for Months 1–3; (2) bi-weekly visits with the health coach for Months 4–6; and (3) monthly visits with the health coach for the remaining 6 months of the 12-month study. All participants were provided health coaching by certified health coaches. The structure of the health coaching sessions is presented in Table 2. Health education topics were related to healthy weight loss, including healthy nutrition, calorie reduction, physical activity, and behavior modification. This program is commercially available via in Health Lifestyle Therapeutics, Inc.'s Telehealth Enabled Approach to Multidisciplinary Care (TEAMTM) method. Nutritional and caloric intake recommendations were given to all participants. Participants followed a 1200 or 1500 kcal/day recommendation of a Mediterranean-style, reduced-carbohydrate diet (<45% total energy intake from carbohydrates).

2.2. Usual Care Group

Participants who chose to be in the UC group first met with their usual care physician (Sleep Manatee Clinic, Bradenton, FL, USA) in which barefoot standing height (cm) was measured using a wall-mounted stadiometer (SECA, Chino, CA, USA), and body weight (kg) was measured on a digital scale (MedWeigh MS-3900; Itin Scale Company, Brooklyn, NY, USA). They did not receive any health coaching or education but had a baseline and 12-month visit with their usual care physician. Following 12 months they reported back to the Sleep Manatee Clinic to obtain an ending body weight.

2.3. Statistical Analysis

The primary outcomes were percent body weight (%) and body weight loss (kg). All data were analyzed using a two-sample Student's t-test to assess the difference in average change from baseline between the VHC and UC groups, and were performed via SPSS v25 (IBM Corp. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.) with data displayed as average SD; significance was set to p < 0.05.

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Table 2. Physician and health coach program outline.

VHC Group:

Medical Doctor (MD) Consultations

- History and Physical
- Weight (kg)
- O Height (cm)
- Nutrition plan Rx
- Physical Activity Rx
- Discuss root causes of obesity
- Discuss Hunger management
- Discuss importance of Lifestyle and Behavior change
- Enroll in coaching
- Schedule subsequent MD follow up visits (monthly)

Health Coach (HC) Coaching Sessions

- Weekly sessions (months 1–3), biweekly (months 4–6), monthly (6–12) with coach
- Build and maintain rapport
- Create and monitor progress toward
 12-month wellness vision
- Motivational interviewing to support Generative moments
- Explore strengths and values to health behavior change. Troubleshoot barriers and highlight strengths
- Discuss Nutritional Rx and progress
- O Physical Activity Rx and progress
- Goal Setting (12-month, 6-month, monthly goals)
- Schedule subsequent health coaching visits
- Bi-directional feedback with MD: HC and MD Chart notes viewable for care coordination

3. Results

The VHC group had a significant mean reduction in total body weight loss (8.24 \pm 9.8 kg), in comparison to the UC group (0.16 \pm 10.6 kg) (p < 0.05). Concurrently, mean percent body weight loss was significantly greater in the VHC group (6.5 \pm 0.1%) versus the UC group (0.53 \pm 1.45%) (p < 0.05), (see Figure 1).

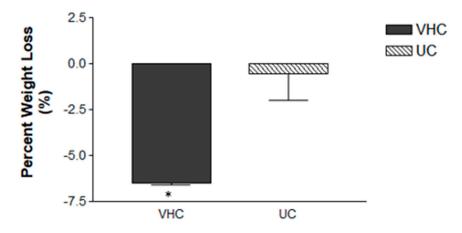


Figure 1. Percent weight loss between virtual health coaching (VHC) and Usual Care group (UG) following a 12-month intervention. * Denotes a significant difference between groups.

4. Discussion

In the present study, the impact of remote health coaching on weight loss in a primary care setting was assessed. Results indicated that patients receiving remote health coaching via the TEAMTM method achieved clinically significant (>5%) body weight losses over 12 months. Tronieri et al. [1] reported that in-person interventions that utilize high intensity behavioral treatment (e.g., \geq 14 face-to-face sessions in the first 6 months) typically produce significant weight loss. For instance, in a recent remotely delivered intensive

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coaching intervention, it was found that, when engagement rates are high throughout the study (93% weekly self-monitoring records), the intervention group lost about 4 kg at the 1-year mark, while the usual care group lost 0.1 kg [21]. Bennett et al. [21] indicated the intervention group received personal feedback, had access to a digital application that prescribed health related goals, and used clinicians for 18 visits with the participants, tools for self-monitoring, and a smart scale. In a similar study, Appel et al. [15] randomized participants to a remote support group (12 sessions), in-person group (nine group-based, three individual sessions), or control group for health coaching for 2 years. Results after 2 years indicated supportive weight losses of -4.6, -5.1, and -0.8 kg respectively. Finally, Brown et al. [16] utilized video conferencing in bi-weekly group-based health education sessions in which theauthors reported weight losses of -3.8 kg [16]. The present study reported an average weight loss of 8.2 ± 9.8 kg at the 1-year mark. The difference in weight loss between the present study and others [7,15,18,21] could be attributed to the intensity of health coaching visits (~24 sessions). Previous studies of usual care have utilized 12–18 visits, whereas the present study utilized 24 sessions. This is because there is substantial evidence to indicate that successful weight loss is best supported by frequent support or contact via human counseling [8,19,23–26].

5. Limitations

To build upon previous studies [17,19] and apply inHealth Lifestyle Therapeutics, Inc.'s Telehealth Enabled Approach to Multidisciplinary Care (TEAM) method in the usual care setting, several limitations should be noted. First, we were unable to examine the periodic weight change at each visit due to only having data at baseline and at 12 months, which limits the study's overall generalizability. In addition, all participants had to own an iPhone[®] or Android[®] smart phone due to compatibility requirements with the in-HealthNOW Application (Coach Care, New York, NY, USA), which is a HIPAA-compliant telemedicine platform. Therefore, our results may be biased toward people of higher socioeconomic status and, arguably, having reduced prevalence of obesity-related disease.

6. Conclusions

Overall, our findings indicate that virtual health coaching through the means of telehealth can provide optimal outcomes on weight loss for patients in a usual care setting. Our results have strong implications for the future delivery of remote interventions that include health coaching. Incorporating innovative deliveries that are feasible in the usual care setting, such as telehealth-based interventions, may help improve outcomes for body weight reduction in patients with obesity.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board of Coastal Carolina University (protocol code IRB 2020.11 on 12 August 2019).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Please direct reprint requests to: Kelly Johnson, Department of Kinesiology, Coastal Carolina University 100 Chanticleer Drive East, Conway, SC, 29528, Email: kjohns10@coastal.edu, Phone: 5053225715.

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Conflicts of Interest: Michelle Alencar owns stock inHealth Medical Services, Inc. inHealth Medical Services, Inc. provided project-related content including subject education content, modules, and technology support only. All other authors declare no conflict of interest.

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