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Original Article

The Effect of Integrating Online Social Networks into Routine Diet Therapy on Session Follow-Up in Overweight and Obese Adults: A Randomized Controlled Trial

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Abstract

Introduction: One of the major challenges of weight loss diet therapy is following the counseling sessions until achieving the desired outcome. It has been shown that social support can improve the session attendance and while online social networks are among the cost-effective tools that can provide social support, their effect on follow-up rates has not been examined. The purpose of this study was to examine the effect of using online social networks as a supplementary tool for a weight loss program on the follow-up rate.

Methods: This was a parallel three-armed randomized controlled trial. In this study, 113 overweight and obese females, who attended a clinic to receive the usual care for weight loss, were recruited and randomly assigned to one of three study groups: The Control group which only received the usual care, the Interactive group that joined an online group on the WhatsApp platform, and the Non-interactive group that received daily messages via the WhatsApp platform. Chi-square test was used to test the difference of follow-up rate between the study groups.

Results: After one month, 31.1-35.3% of the participants attended their second session, with Interactive group having the highest rates. After two months, the interactive group had the highest follow-up rate (26.5%) which was significantly higher compared to the control group (8.9%) (P=0.037).

Conclusion: Providing an interactive online community, besides the routine diet therapy, may have a positive effect on the session follow-up rate. However, more studies are needed to investigate this effect in the long term.

Trial Registration: The original protocol of this study is registered at the Iranian Registry of Clinical Trials (irct.ir, identifier IRCT20181017041368N1).

Keywords: Social networks, Diet therapy, Overweight and obese, Randomized controlled trial, Session follow-up

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Introduction

Obesity, which is defined as having excessive body fat, is estimated by a body mass index (BMI) greater than 30 kg/m^2. Obesity results from various factors including calorie intake, physical activity, genetics, and environmental and social stimuli (1). According to a 2016 WHO report, about 39% and 13% of the world's population were overweight and obese, respectively (2, 3). These ratios in Iran were about 60% and 26%, respectively (4). The standard treatment of obesity and overweight includes face-to-face nutrition counseling sessions with a focus on modifications of diet, physical activity, and health-related behaviors (5). However, diet therapy frequently leads to failure and obese people often return to their previous lifestyle patterns and weight (6).

Dropping out from the treatment remains as a main challenge of weight loss programs, and it has been reported to be between 10 to 80% (7, 8). Reasons for these unsuccessful attempts and non-adherence to a weight loss program can be sought in hormonal response, psychological effects of food, stress and depression, and social and environmental factors (9, 10). On the other hand, continuing a weight loss program has been associated with psychosocial factors such as social support (11). Earlier studies that have used different methods like written or in-person interactions, telephone calls, computer-based or mobile-based interactions, or a combination of those

tools, to provide social support, has reported that providing social support can improve the adherence to diet and physical activity (12). While acquiring social support for weight loss can be difficult for some people, online communities nowadays have opened up new ways for this function (13).

Social networks are internet-based platforms that allow its users to share information and interact with each other and access peer-to-peer support through online communications (14-16). Social networks have become widely used in everyday life and 49% percent of the world's population use these networks (17), with an average time of two and a half hours a day, as reported by 2018, with the most in Latin America (3:30) and then Middle East and Africa (3:08) (18). Moreover, weight loss is one of the most popular topics on social media, and people are seeking information and social support for weight loss on social network platforms (19). Therefore, dietetic practitioners can use social networks as a cost-effective and accessible tool to enhance the patients' engagement and adherence to the treatment (20, 21).

The top social networking platforms with the most active accounts are Facebook, YouTube, WhatsApp, and Instagram (22). WhatsApp is an instant messaging application that is owned by Facebook incorporation and has been reported to have 2000 million active users all over the world (22). Since it was the most accessible by our participants and it had the key requisites for our means, we opted the WhatsApp platform for this study.

Several studies have investigated social networks' capacity in improving the weight loss results and weight-related behaviors, and it has been shown that using online social networks has had a significant effect on weight loss (16). However, there are a few reports on their effect on the attrition from weight loss programs. Therefore, in this trial we examined the effect of using a social network on the attrition rate of weight loss diet therapy sessions.

Methods

Design and Participants

This was a three-arm parallel randomized controlled trial to compare the effect of using social networks in adjunct to the routine diet therapy of obese and overweight women. The Ethics Committee of Ahvaz University of Medical Sciences approved the study protocol with the reference number of IR.AJUMS.REC.1397.502. We followed the CONSORT guidelines for reporting the results.

Considering 95% CI and a power of 80%, and based on the findings of previous studies (23, 24), we estimated a minimum sample size of 34 for each group using the following formula:

$$N= (Z_1-\alpha/2 + Z_1-\beta)^2 [P_1(1-P_1) + P_2(1-P_2)] / (P_1 - P_2)^2$$

Participants were recruited from a licensed diet therapy clinic in Ahvaz, Iran. Among the clients who attended the clinic for weight loss, females who had the following conditions at the first encounter were recruited: age between 18 and 55 years, BMI greater than 25, ability to read and write, access to the Internet, using the WhatsApp platform, and willingness to participate in the study. Exclusion criteria included lactation, pregnancy or planning for pregnancy. Steps of the intervention were clearly explained to all participants and written informed consent to participate in the study was obtained.

Before randomization, the participants filled out a general questionnaire and their weight and height were measured. By drawing lots, participants were allocated to one of the three study groups. Due to the intervention features, blinding of participants and research coordinator was not possible. However, the dietitian who provided the diet therapy counseling was blinded to the group allocation.

Intervention

Each participant attended the first counseling session for weight loss where they received lifestyle recommendations and were given a prescribed diet to follow based on their calorie needs. Then, an appointment was scheduled for the next month. The study groups included:

- Standard (control) group: participants received the weight loss counseling session as mentioned (n=45).
- Non-interactive group: in addition to the counseling session, participants received messages five times a week, posted by the coordinator researcher through WhatsApp (n=34). The participants did not have any interaction with each other.
- Interactive group: in addition to the counseling session, participants joined a WhatsApp group where they could share information, ask questions, reply each other's questions, and talk about their challenges and experiences. They also received messages about weight loss five times a week. No specific rules were set for the online group (n=34).

The content of messages delivered to both intervention groups included, for instance, weight loss challenges and solutions, weight loss tips, definition of food groups and exchange lists, lifestyle and behavior guidelines, motivational messages, etc. The recruitment and intervention were made between September 2018 and February 2019.

Outcomes

All participants filled out a general questionnaire that included age, education level, job, and marital status, and WhatsApp number. Height was measured at the first visit. In addition to the first visit, weight was measured in every monthly visit, using a digital scale in light clothing. The data on weight and height were recorded in the participant's file. After 8 weeks of intervention, the participants' files were checked to assess their attendance to follow-up sessions (as the primary outcome measure) and weight loss (as the secondary outcome measure).

Mean and standard deviation were used to describe numeral variables such as age, weight, height, and BMI. Qualitative variables such as marital status, employment status, and educational level are reported using frequency distribution tables. To compare the frequency of follow-up sessions between the groups, the chi-square test was used. Moreover, one-way ANOVA was applied to show the difference between the mean weight loss in the groups. SPSS (version 22; IBM Corp., Armonk, NY, USA) was used to analyze the data. Statistical significance level was set at 0.05.

Results

One hundred and thirteen women participated in the present study, including the standard (control) group=45, interactive group=34, and non-interactive group=34 (Figure 1). Baseline characteristics of the participants are shown in Table 1. More than 70% of the participants were married. The interactive group had the least frequency of employed people. More than 50% of the participants had an academic education. The mean baseline weight was 92.16 for the interactive group, 83.28 for the non-interactive group, and 83.24 for the standard group. The mean baseline BMI was 35.48, 32.11, and 32.48 for interactive, non-interactive, and standard groups, respectively.

The non-interactive group had a higher follow-up rate in each session compared to the control group; however, it was not statistically significant (Table 2).

The results showed that after one month and in the second session, the follow-up rate in the interactive group was greater than the standard group (35.3% versus 31.1%); the difference was not statistically significant. After two months and in the third session, there was a statistically significant difference between the follow-up rate of the interactive group

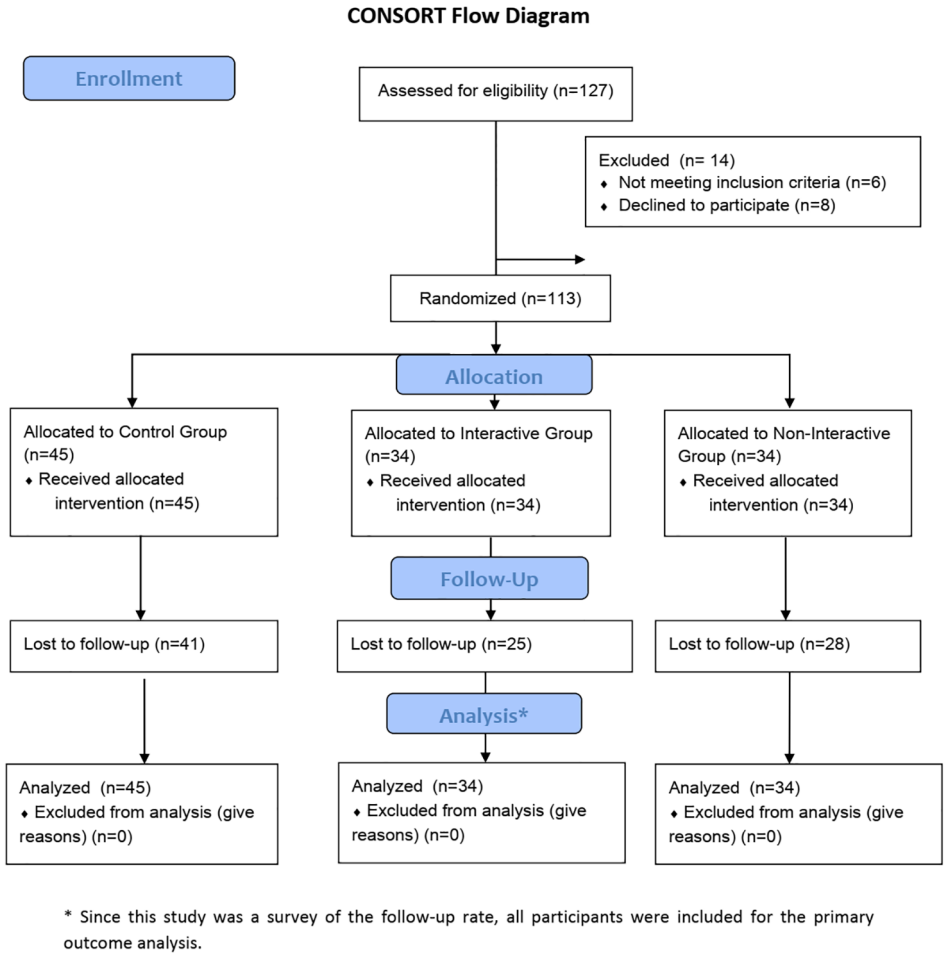

Figure 1: CONSORT Flow Diagram

Table 1: Baseline characteristics of the participants [means (S.D.) and frequency (%)]

Characteristic	Interactive Group (n=34)	Non-interactive Group (n=34)	Standard Group (n=45)
Mean (standard deviation)			
Age (y)	32.03 (8.58)	35.47 (7.59)	34.13 (9.64)
Body weight (kg)	92.16 (20.00)	83.28 (10.52)	83.24 (12.85)
Height (cm)	161.23 (5.50)	161.25 (5.61)	160.03 (5.76)
Body mass index (calculated as kg/m^2)	35.48 (7.88)	32.11 (4.45)	32.48 (4.48)
n (%)			
Married	26 (76.5)	24 (70.6)	32 (71.1)
Employed	11 (32.4%)	17 (50%)	18 (40%)
Academic Education	17 (50%)	20 (58.9%)	26 (57.7)

Table 2: Comparison of the session follow-up rate in each session between the intervention and standard groups

Attendance Rate	Non-Interactive Group	Control Group	P value
2nd session	11 (32.4%)	14 (31.1%)	0.906
3rd session	6 (17.6%)	4 (8.9%)	0.246
	Interactive Group	**Control Group**	**P value**
2nd session	12 (35.3%)	14 (31.1%)	0.695
3rd session	9 (26.5%)	4 (8.9%)	0.037

and the standard group (26.5% versus 8.9%, P=0.037) (Table 2).

Moreover, as determined by one-way ANOVA, there were no significant differences in the mean weight loss of the study groups in the second (P=0.97) and third sessions (P=0.734). Mean weight loss was calculated among those who attended their follow-up sessions.

Discussion

Withdrawal from weight loss diet therapy is usually high and while failure to follow up the sessions can reduce the chances of a successful weight loss, regular attendance is associated with more success in weight loss and weight maintenance (25, 26). In this study, after one month of intervention, a remarkable proportion of participants in each group (ranged between 65-69%) did not follow up their counseling sessions; although this ratio was not the same in all groups, their differences were not statistically significant. However, over a longer period, there was a significant difference between the attrition rate of groups, especially between the interactive and control groups.

Providing information in the non-interactive group had no significant effects on the follow-up rate. In the same line with our results, Dumas et al. (27) that provided health-related information for their participants using a blog suggested that providing information might affect the awareness or intention, but because of the intention-behavior gap, it will not always lead to measurable changes in behavior. On the other hand, while providing weight loss related information via social networks increased the follow-up rate non-significantly (in the non-interactive group vs. standard group), once it was combined with social interaction and peer support (the interactive group), it generated a statistically significant difference in the follow-up rate (interactive group vs. standard group).

Continuing the diet therapy sessions is affected by psychosocial factors such as social support (11). Social support has been associated with better health, in contrast to social isolation that has been associated with negative impacts on wellbeing, and it has been shown that social support has a significant role in health-related changes (28). Social support has also been associated with less withdrawal from weight loss diet therapy programs (12). On the other hand, social networks and online communities can function as a source of social support (29, 30), sometimes, even more than family and friends who are not trying to lose weight and thus do not experience the same problems (13, 31). Online communities have also been reported to be influential on an individual's weight loss efforts (13). Therefore, the highest follow-up rate in the interactive group could be attributed to the social support that was provided for this group.

At the society level, social support is what a person receives from people like family, partners, and peers, and it can be informational support, material help, and motivational support; however, an online community for weight loss offers motivational and informational support as the major types of social support (13). In addition to the support that can also be received from face-to-face relationships, online communities offer the advantages of convenient access to many peers,

who are sympathetic and non-judgmental toward each other, while being anonymous if they want to (13, 32).

In one study on cardiac patients (33), it was stated that receiving more reminders about prescriptions and health behaviors, as a part of practical support, might be one of the reasons leading to enhanced adherence and attendance. Besides, a review on patients with mental health problems conducted in 2006 showed that supporting methods such as reminder letters and phone calls could help the patients to resolve their barriers for attending and improve follow-up treatment sessions (34). Therefore, social networks can be used as a cost-effective method for sending reminders. Although such studies have shown promising results in decreasing non-attendance in different health problems (35, 36), in this study, the effect of using social networks as a reminder was not investigated.

Studies that have examined the effect of social networks on weight loss have used different social network platforms in various ways, e.g. as a standalone intervention or in combination with other interventions, and with different purposes like disseminating information, replacing in-person counseling, or linking individuals with professional or peer support (16). While these studies have reported different results, overall, they have shown a trivial positive effect on weight loss (16, 37, 38). In this study, regardless of the intervention received, there were no significant differences in the mean weight loss the participants who followed their diet-therapy session. However, since it was not possible to assess the weight of those who withdrew from the treatment, our findings on weight loss might have been affected by the high attrition rate.

Strengths and Limitations

In this RCT, we studied the effect of social networks on the follow-up rate of diet therapy sessions. We utilized a social network platform in two different approaches (interactive and non-interactive) to compare different functions of social networks. Due to our small sample size, the generalization of the study was limited; and due to high attrition rate, the study could not be continued for more than 8 weeks to show the impact of social networks on session follow-up in a longer period.

Conclusion

The results of this study showed that using online social networks besides the diet therapy of overweight and obese adults can have a positive effect on their follow-up rate. It also showed that in addition to providing weight loss-related information via online social networks, engagement in an online community might lead to a higher increase in the session follow-up. We observed no significant differences between the weight loss of those who followed their sessions, regardless of the intervention they received. To confirm these findings, further studies with larger sample size and over longer periods of time are recommended.

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Conflict of Interest: None declared.

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