

Effect of Motivational Interviewing on Weight Efficacy Lifestyle among Women with Overweight and Obesity: A Randomized Controlled Trial

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What's Known

- Motivational interviewing (MI) has been used in the field of health systems, health promotion, mental disorders, and recently in the areas of training and rehabilitation. Despite worldwide use of MI and its penetration into different areas of health, it is yet to be widely utilized in Iran.

What's New

- Motivational interviewing appeared to be effective in increasing weight efficacy lifestyle among women with overweight and obesity. Moreover, the efficacy and continuity of weight loss program would likely be achieved by the MI technique, particularly in health houses as well as urban and rural health centers.

Abstract

Obesity and overweight have become increasingly a major public health problem across the world. This study aimed at exploring the effects of motivational interviewing on weight efficacy lifestyle among women with obesity and overweight. A single-blind randomized clinical trial study was conducted on 100 overweight and obese women who attended a nutrition clinic. The samples were selected based on the clinical records and assigned into two groups, namely motivational interviewing arm (50 samples) and nutrition education arm (50 samples). Data were collected using a standard validated questionnaire entitled "weight efficacy lifestyle". The intervention was designed according to five motivation sessions and four nutrition education programs, such that the participants of the nutrition education arm were also provided with the nutrition pamphlets related to weight control. Data were finally analyzed using the SPSS statistical software by performing the independent t-test, chi-square, LSD and repeated measures ANOVA tests. $P < 0.05$ were considered statistically significant. The mean age of women was 39.9 ± 9.1 and 36.3 ± 8.9 years in the control and motivational interviewing arms, respectively. Compared with the control group, the score of the motivational interviewing group was statistically significant in terms of weight efficacy lifestyle ($P = 0.0001$) and all subscales including social pressure ($P = 0.0001$), physical discomfort ($P = 0.005$), food accessibility ($P = 0.0001$), positive and entertainment activities ($P = 0.0001$), as well as negative emotions ($P = 0.003$). Motivational interviewing appeared to be effective in increasing weight efficacy lifestyle among women with overweight and obesity.

Trial Registration Number: IRCT2014051817736N1

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Keywords • Motivational interviewing • Life style • Motivation • Overweight • Obesity

Introduction

Recently, obesity has significantly increased around the world and industrialization has shaped a new pandemic.¹ According to the World Health Organization reports, over 300 million people around the world are obese.¹ Obesity continues to be a major

health problem in the United States with over 60% prevalence.² Iran, with obesity prevalence at 22.3%, could also be at risk of such global health problem.³ Obesity complications include blood hypertension during pregnancy, diabetes, thromboembolism, breast, colon and cervical cancers.⁴ Self-efficacy plays a vital role in social cognitive learning theory and has a large predictive impact on individuals' motivation and capability regarding sustained behavioral change.⁵ Self-efficacy is recently conducted on bariatric patients to lose weight and maintenance.⁶

Motivational interviewing (MI) is a client-based technique that results in increased intrinsic motivation to change. It uses a process that includes detection, identifying, resolving doubts and ambivalence.⁴ This technique has been used in the field of health systems, health promotion, and mental disorders, and recently in areas of training and rehabilitation.⁷ MI is considered as a beneficial option in clinical surveys to augment the response rate to treatments.⁸ It challenges traditional treatments by suggesting that volunteers are aware of what is useful to them and that experts should only help them to select additional applicable methods.⁴

Despite the current dramatic use of MI and its spread in different areas of health, it is not widely utilized in Iran. Therefore, the purpose of this study was to investigate the effect of MI on a weight loss program in order to improve the weight efficacy lifestyle.

Participants and Methods

Study Design

A single-blind randomized clinical trial study was conducted from September 2013 to April 2014 in Gorgan, Iran. This survey is registered in the Iranian Registry of Clinical Trial under the registration number: IRCT2014051817736N1.

Initially, samples were selected through clinical records using convenient sampling. Then, to avoid selection bias, simple randomized allocation method was used. This method was utilized to allocate two groups, namely MI (n=50) and nutrition education (n=50). The participants were selected among those who attended a nutrition clinic (a private clinic managed by Dr. Eshghinia) for the first time and were unaware of their study group. MI is based on five-session motivational interviewing group intervention.⁹ Miller and Rollnick suggested that MI can be clinically justified in a group situation,¹⁰ based on which a manual to direct group intervention was designed and developed for clinical situations.¹¹

Group of Motivational Interviewing

This group received five MI sessions (2 hours per session during two weeks) by a psychologist. Between 7 to 10 women participated in each session. The participants were given a pamphlet that described the importance of overweight and obesity, its cause and implications, healthy dietary patterns, and beneficial effects of behavioral change on the control and prevention (including dietary treatment and increase physical activity). All participants were followed up 2- and 6-month after the intervention. The same intervention as in the nutrition education was conducted in the MI group.

Nutrition Education Group

The participants in this arm followed a program of nutrition education that consisted of four sessions (2 hours per session during two weeks). The sessions, covering the subject of diet, were coached by a nutritionist and a health education specialist. The same pamphlet was also presented to the participants of this arm. All participants were followed up 2- and 6-month after the intervention.

Inclusion and Exclusion Criteria

The inclusion criteria were BMI range from 25 to 35, literacy to fill out the self-administered questionnaire, lack of diseases such as cardiovascular, thyroid, diabetes, and consumption of drugs that may interfere with appetite and weight. The exclusion criteria were pregnancy, nonattendance for more than one session, diet disruptive diseases during the intervention, mild psychological problems, and disability to exercise.

Participants

Originally, 125 individuals were considered eligible for the study, from which 25 participants did not meet the inclusion criteria. Eventually, 100 women were selected and assigned into two groups, each containing 50 participants. During the 2- and 6-month follow-up, 8 women were omitted from the list of participants in the control and MI groups as they inclined involvement due to various reasons (figure 1).

Sample Size

The sample size was calculated based on a similar study¹² and 43 was considered as an appropriate number (based on 2 units changes of mean and standard deviation as 2.4 and 2.34, 90% test power, 95% confidence interval (CI) and 25% attrition of samples). Eventually, it was decided to select and study 50 participants for each group (100 women in total).

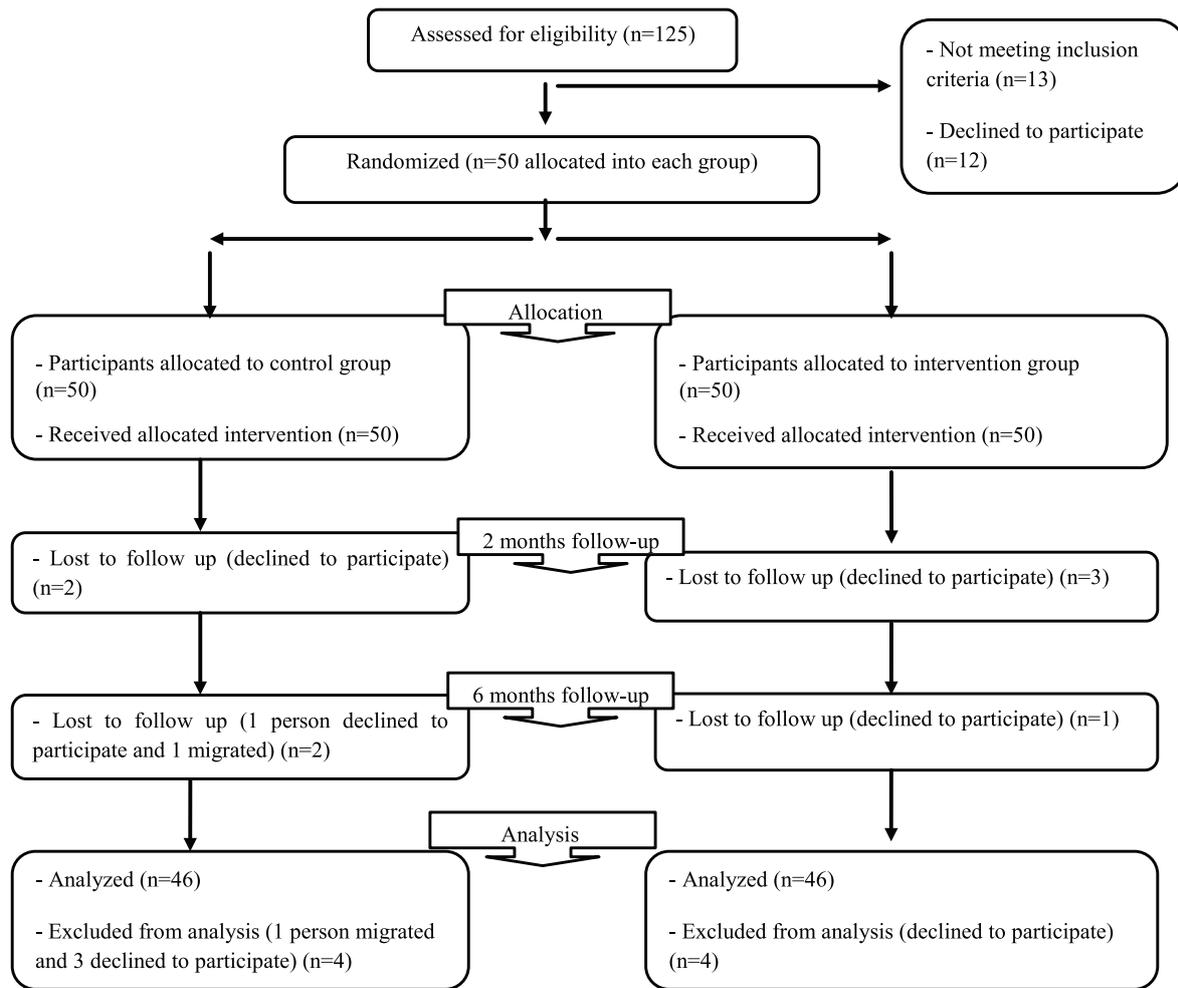


Figure 1: Show the CONSORT diagram of the study.

Measures

To investigate self-efficacy, the “weight efficacy lifestyle” questionnaire was conducted before the 2- and 6-month follow-up. This questionnaire is designed by Clark, comprising 20 questions regarding self-efficacy of regime behavior. It allows people to present their confidence to control and prevent their behavior in an attractive situation based on the 5-point Likert scale (ranged 0 to 4, from lack of confidence to complete confidence). All questions scored from 0 to 80. This questionnaire consisted of five subscales with four items in each subscale. The subscales describe a situation that eating behavior is more likely to be increased, and the resistance of an overweight and obese person is more likely difficult to be prevented. The subscales encompass negative emotions (eating during sadness, anxiety and failure), food availability (a situation where food is readily available such as during travel, accessibility of sweets and fatty foods), social pressures (encouraging people to eat at parties), physical discomfort (eating when suffering from pain, disease and fatigue), and

entertainment activities (eating while studying, watching TV, and in a state of happiness).¹³

Psychometric properties of the questionnaire have also been verified in the Iranian society by Navidian et al.¹⁴ The validity of the instrument was tested and confirmed using confirmatory factor analysis, convergent and divergent validity. To test the reliability of the questionnaire, a sample of 20 women filled out the questionnaire for the first time and then repeatedly after 2 weeks. Internal homogeneity and Cronbach’s alpha were utilized to assess the reliability, and the values of these coefficients were calculated for every subscale of the questionnaire. Internal consistency coefficients for social pressure, food availability, positive emotions, negative emotions, physical discomfort, and the total were 0.65, 0.73, 0.66, 0.72, 0.60, and 0.88, respectively.

Analysis

To assess group characteristics, descriptive methods were used. To test variables at the baseline, independent *t* test (subscales of weight efficacy lifestyle, age, and BMI) and chi-square

test (education, job, and marital status) were used. The within group comparison was done using the LSD test. All data were finally analyzed using the SPSS (version 18) statistical software. $P < 0.05$ were considered statistically significant.

Results

The status characteristics are described in table 1. Our findings did not show any difference between the two groups in terms of demographic characteristics, except for the age at the baseline. All demographic characteristics are reported in table 1.

Chi-square test (education, job, and marital status) and independent t test (subscales of weight-efficacy lifestyle, age, and BMI) showed no differences between the two groups at the baseline. There was a meaningful difference between the two groups regarding self-efficacy lifestyle, negative emotions, food availability, social pressure, physical discomfort, and positive activities. LSD test also reported that the score of subscales increased significantly after 2- and 6-month follow-up. Moreover, as shown in table 2, social pressure decreased significantly in both the control and intervention arms after 6 months compared to 2 months follow-up.

In the MI arm, BMI was decreased significantly between the two groups in 2- and 6-month follow-up. Such significant decrease was also found after 6 months while the control arm was not changed by increasing the time-span (table 2).

Discussion

Currently, MI increases weight efficacy lifestyle with more durable effects among the overweight

and obese women compared to the nutrition education program in the control group. In terms of the subscales of weight efficacy lifestyle, we found that MI was more effective in promoting self-efficacy of negative emotions, food availability, social pressure, physical discomfort, and entertainment activities compared to the usual nutrition education. It also resulted in more durable and long-term changes of the aforementioned subscales. Navidian et al.¹⁴ investigated the relationship between the weight-efficacy of lifestyle and overweight and obesity. They showed that the subscales of weight efficacy lifestyle were significantly in-line with obesity, except for the negative emotions and physical discomfort, which is in agreement with part of our results. A full comparison between the two studies was impracticable due to different designs and interventions.

A survey by Walpole et al.¹⁵ revealed a positive effect of MI on self-efficacy and weight loss in the treatment group compared with the control group. This was correlated with the improvement in psychological and physiological health associated with our findings. Although the aforementioned study only examined self-efficacy and not its subscales; however, similar results can be expected since the subscales of weight-efficacy lifestyle may fundamentally change by self-efficacy.

Burke et al. showed that elevated self-efficacy during treatment (not before intervention) is associated with more weight loss. Thus, self-efficacy plays an important role in weight loss interventions and treatments that aim to increase self-efficacy. In general, it can predict beneficial treatment

Table 1: Demographic and anthropometric characteristics of participants

Variables	Mean±SD N (%)		P value
	Motivational interviewing group (n=50)	Control group (n=50)	
Education			0.36
Elementary school	4 (8)	2 (4)	
Middle school	5 (10)	5 (10)	
High school	15 (30)	21 (42)	
Academic	26 (52)	22 (44)	
Job			0.73
Housewife	31 (62)	29 (58)	
Retired	2 (4)	2 (4)	
Unemployed	11 (22)	9 (18)	
Other	6 (12)	10 (20)	
Marital status			0.75
Single	11 (22)	12 (24)	
Married	39 (78)	38 (76)	
Age	36.3 (8.9)	39.9 (9.1)	0.62
BMI	28.25±2.21	28.84±1.59	0.28

Table 2: The mean and standard deviation of weight efficacy lifestyle and its fivefold subscale in MI and nutrition education group

Variable	Group	Pre-test	2 months follow-up	6 months follow-up	P value between groups
Lifestyle self-efficacy	Intervention	44.98±10.04*	55.89±7.12	54.89±7.11	0.001
	Control	41.25±9.22	43.76±7.02	42.76±8.19	
	Total	43.11±9.63	49.82±7.07	48.82±15.3	
Social pressure	Intervention	9.43±2.13*	11.87±2.12**	10.37±1.92	0.001
	Control	8.43±2.31*	8.78±2.01**	7.68±1.81	
	Total	8.93±2.22	10.32±2.06	9.02±1.86	
Food availability	Intervention	7.89±3.43*	10.81±2.02	10.11±1.62	0.001
	Control	7.12±2.61	7.34±2.34	6.91±2.04	
	Total	7.50±3.02	9.07±2.18	8.51±1.83	
Physical discomfort	Intervention	10.43±2.67*	12.32±1.95	11.36±1.24	0.001
	Control	10.08±2.02	10.24±1.87	9.76±1.17	
	Total	10.25±2.34	11.28±1.91	10.56±1.20	
Negative emotions	Intervention	9.21±2.91*	11.65±2.24	11.12±1.89	0.001
	Control	8.31±3.02	9.21±1.88	8.87±1.78	
	Total	8.76±2.96	10.43±2.06	9.99±1.83	
Positive activities	Intervention	9.32±2.29*	11.31±1.97	10.58±1.36	0.03
	Control	8.43±2.31	9.32±1.98	8.97±1.58	
	Total	8.87±2.3	10.31±1.97	9.77±1.47	
BMI	Intervention	28.25±2.21*	27.29±2.29**	26.53±2.17	0.001
	Control	28.84±1.59	28.41±2.60	28.68±2.53	
	Total	28.56±1.76	27.61±2.32	27.49±2.32	

*P<0.05, difference after 2- and 6-month with baseline; **P<0.05, difference between 2- and 6-month

results.¹⁶ Wamsteker et al. also reported that investigating self-efficacy before weight loss intervention can diagnose individuals with possible exposure to the risk of weight loss in response to dietary intervention. Since weight loss is less related to low self-efficacy beliefs, overweight and obesity cannot be controlled by behavior.¹⁷ Consequently, nowadays, there is a dramatic emphasize on programs to increase self-efficacy in people to cope with weight loss barriers.

Brodie et al. investigated the effect of MI on self-efficacy and showed an increased self-efficacy and motivation score of cardiovascular disease patients 5 months after intervention.¹⁸ A survey entitled self-efficacy and nutrition behavior by Liou et al. reported that self-efficacy is strongly associated with the consumption of fatty food. They concluded that self-efficacy must be noticed by nutrition educators as a vital criterion of dietary behaviors.¹⁹ Di Marco et al. reported that MI not only increases perceived support, but it also elevates behavior commitment using increase self-efficacy and control eating behavior in persuasive situation and reduces treatment program cessation as well.²⁰

In the present study, we followed up the participants for 6 months after receiving MI

as a new technique. This could be considered as the strength of our survey. However, the investigated age group was limited to adults. It is beneficial to investigate other at-risk groups such as children and teenagers. Moreover, only women were studied in this survey, which in turn prevents generalizability of the findings beyond this sample group. Further investigations should be conducted to confirm the likely long-term effects of MI in different conditions.

Conclusion

Motivational interviewing appeared to be effective in increasing weight efficacy lifestyle among women with overweight and obesity. The efficacy and continuity of weight loss program might be achieved using the MI technique, especially in health houses as well as urban and rural health centers.

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Conflict of Interest: None declared.

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