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Effect of Motivational Interviewing on Eating Habits and Weight Losing among Obese and Overweight Women

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Abstract

Obesity and overweight is a major health problem in many developing countries. The prevalence of obesity is higher in women and hypertension, Hyperlipidemia, diabetes, cancer, gallstones and hormonal disorders are more common in obese people. Preventive interventions such as motivational interviewing (MI) that focusing on lifestyle modification and maintain proper weight is more cost effective than surgery or medications. The present research aimed to determine the impact of MI on dietary habits and BMI among obese or overweight women. In a quasi-experimental study, 120 obese and overweight women using multistage sampling were selected to participate randomly in control and experimental groups. The intervention consisted of five sessions of MI in small group which was presented to experimental group. Data were collected before and three months after MI. Dietary intake was evaluated using 24 hour dietary frequency for 2 days and food frequency questionnaire (FFQ) for 3 months. Also, Stadiometer and weight gauge were used to measure height and weight. Finally, data was entered into SPSS 17.0. Descriptive statistics (mean and standard deviation) were used for continuous variables and number and percentage were applied for categorical variables. Also, Chi-square tests, paired and independent t-test was used for data analysis. The results indicate a significant increase in the consumption of bread and Cereals, milk and dairy products, fruits and vegetables and beans in the experimental group after MI interviewing ($P < 0.001$). Also, the consumption of meat and its substitutes, oils and fats and sugar significantly reduced in the experimental group after MI ($P < 0.001$). Additionally, results indicated a significant reduction in body weight ($P < 0.001$) and BMI ($P < 0.05$) in the experimental group after MI. The results suggest that MI is added to healthy lifestyle training programs in order to avoid the risks of overweight and obesity.

Keywords: Hyperlipidemia; Hypertension; Quasi-experimental study

Introduction

Obesity is a prevalent healthy problem in many developed and developing countries [1]. Obesity is a multifactorial chronic disease and due to the high prevalence of obesity, public health professionals have paid much attention to it [2]. However, high prevalence of obesity in women has been identified as a risk factor for cardiovascular disease [3]. In addition, the relationship between high blood pressure, hyperlipidemia, diabetes, cancer, gallstones and hormonal disorders with overweight and obesity has been reported in previous studies [4].

Many epidemiologic studies have been done about obesity and overweight in different regions of the world. In these studies, the prevalence of obesity has been changed from 15 to 60 percent [5]. In Iran, prevalence of overweight, obesity and morbid obesity (BMI≥40) has been reported about 28.6%, 10.8% and 3.4%, respectively [6]. Scattered studies in various parts of Iran have shown that the prevalence of obesity among women has been reported two times more than men in all age groups over 15 years [7,8]. However, cardiovascular disease known as the major cause of disability and death worldwide and 17.3 million people lose their lives due to cardiovascular disease around the world every year. Moreover, 80% of these deaths occur in developing countries with unfavorable economic situation. It is estimated that 23.6 million people die from the disease by 2030 [9]. Studies have found that cardiovascular diseases are the most common cause of death in Iran as a developing country [10].

Medical care costs associated with treatment and cardiovascular disease is very high, so that more than half of healthcare costs in Great Britain are related to casts of cardiovascular disease [11].

In recent years, many medical professionals focus on reducing risk factors to prevent cardiovascular disease [12]. Small changes in diet and physical activity such as reducing fat intake and increasing fruit and vegetable consumption can reduce almost 50 percent the risk of obesity-related diseases [13-15]. Therefore, a preventive intervention that focusing on lifestyle modification and energy balance and helps to maintain healthy weight compared with surgery and medications is highly cost-effective [16]. Traditional advice giving can cause resistance to change, especially when the client has little or no willingness to change [17]. Using motivational interviewing (MI) as client centered approach makes to overcome this weakness. MI enables patients to explore their own health beliefs. It also will help patients to positive change regarding health behaviors. Moreover, patients are encouraged to create self generation solutions in order to positive changes in health behaviors [18,19]. Research has shown that clients prefer counseling Patient-centered approach to direct advice giving [20]. Interventions based on motivational interviewing have been effective in behavior change and also risk factors for coronary artery disease have reduced [18,21,22]. MI is a directive and client-centered approach and is based on patient participation, respect for client autonomy and enhance intrinsic motivation. MI principles that are emphasized include sympathy expression, increasing internal conflict, resistance tolerance, supporting of client self efficacy perception. In MI, counseling techniques such as open-ended questions, reflective listening, approval, and summarization of conversations related to changes are used to stimulate intrinsic motivation. In this motivational approach, an interactive process associated with stimulate intrinsic motivation and strengthening commitment to change instead of an argument,

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information providing, advice giving, persuasion and coercion is used to facilitate behavioral changes [22-25]. A review of interventions with motivational interviewing has confirmed the preference and usefulness of this technique in a wide range of disease and health issues [26]. Hardcastle et al. [27] study demonstrates a significant effect of MI on physical activity, weight loss, blood pressure control and cholesterol [27]. Finding of Navidian et al. [28] showed weight loss and BMI reduction after the motivational interviewing in overweight and obese workers [28]. However, another study among patients with hypertension found that average consumption of polyunsaturated oils, meat, vegetables, dairy products, salt, and physical activity levels and body weight showed a significant change after MI [29]. Considering the changes in lifestyle and healthy diet as an important risk factor for cardiovascular disease and the use of MI in various health setting, current study was to determine the impact of motivational interviewing on changing diet habits and weight loss in overweight and obese women.

Methods

The present study was a quasi-experimental study that was done in 2012. The study population included all overweight and obese women were referred to health care centers in order to get the health and medical services from 15 May to 15 June. Of the eight postal zones in the Tonekabon City, 4 regions were randomly selected based on multi-stage random sampling method. Then, two centers were assigned to control and experimental groups, equally. Based on previous studies [28], with 95% confidential interval, possibility of sample loss 10%, power of test equal to 90%, and 60 patients for each group was estimated. Inclusion criteria were being female, $25 \leq BMI \leq 35$, $18 \leq age \leq 60$ years, lack of participation in weight loss programs and obesity treatment, absence of underlying conditions leading to obesity, willingness to participate in a weight loss program, literacy to complete a questionnaire. In addition, women with cardiovascular disease or movement disorders, high blood pressure, psychological disorders, using weight loss pills, $BMI \geq 35$, with an absence of more than one session in a treatment plan were excluded from the study. Stadiometer and weight gauge were used to measure height and weight. Weight were measured by digital electronic scales Seca 707 model with a minimum 0.1 to a maximum 150 kg and error equal to 100 g, without shoes, with a minimum coverage, in the morning. Weight gauge was set by the standard sinker. Height was measured by stadiometer with an accuracy of 0.1 while the person standing next to the wall, normal position of shoulders, hips and heel tangent with the wall, the head was smooth and looking forward, with bare feet. BMI were obtained by dividing weight (kg) by height (m^2). The $BMI \geq 30$ and $25 \leq BMI \leq 29.9$ were considered as Obese and overweight, respectively [30]. Also, dietary intake was evaluated using 24 hour dietary frequency for 2 days and food frequency questionnaire (FFQ) for 3 months. The women were asked to write all food and beverage items that have been eaten over the past 24 hours. In order to facilitate and assist in recalling the exact amount of food consumed by samples, containers and modules such as cups, plates and spoons were used. Despite a record of food frequency for three months, their frequencies were asked on a daily basis (such as bread), weekly (like chicken and rice) or monthly (e.g. fish) regarding the type of consumed food. Accordance with the principles of epidemiology, measurement and evaluation of food intake in the long term is more important than a few days. Usually the best way to assess the long-term diet is food frequency questionnaire that its validity has been confirmed in studies. FFQ is easy to use, relatively low cost and relatively accurate estimates [31]. After the initial data collection, motivational interviewing sessions was conducted for the experimental group. The overall structure of motivational interviewing sessions was obtained according to literature associated with the implementation of the five-session MI group intervention and according to previous studies was designed in small groups of 8-12 people [19,27-29]. The structure and content of the sessions was designed based on the study of the Navidian et al. [28]. Each session includes the following content: The first session; Introduction (*Introduction of members, Group norms and processes, Philosophy of facilitating, workout of freedom, workouts regarding aspects of behavior outcome, workouts relating stage of change, the commitment and confidence evaluation),* Second session*; the emotions (workouts associated with identifying feelings and recognizing emotions, workout regarding the dimensions of the emotional aspects, homework),* The third session*; positive and negative aspects of behavior change (Brainstorming workout with Short-term and long-term gains and losses, Completing positive and negative aspects table, Description and Practice improvement and replacement options),* Fourth session*; values (defining values, identify and prioritize first class values, workouts regarding defining values, matching values and behaviors),* Fifth session*; Perspective and final assessment (Summary and concluding workouts of previous session for getting ready to start changing behavior).*

Techniques such as decisional balance, cycle of readiness for change, increasing conflict between values and nutritional behavior, control of eating behavior in the tempting opportunities and imagine perspective were used in MI. During those sessions, the interviewer asked the samples to express the reasons for their presence at sessions, to describe the pros and cons behavior change. Then, these points were summarized by the researcher and using reflective listening was expressed to the samples (*Allow me summarize what you said… Could you just explain to me …).* Also, the researcher would ask about the next step in the change process. The experimental samples were divided into groups of 7 to 12 people and participated in 5 sessions. The duration of each session was approximately 90 minutes and sessions were held at 72 hour intervals in the health care services center. During the meetings, research assistant (dietitian) was present in order to help subjects for completing workouts. Finally, data were collected before and 3 months after Mi in each group and was entered into SPSS 17.0. In order to analyze the data, descriptive statistics (mean and standard deviation) were used for continuous variables and number and percentage were applied for categorical variables. Also, Chi-square tests, paired and independent t-test was used for data analysis. Significance level was considered 0.95.

For ethical considerations in the study, ethics permission for the study was obtained from the Tonekabon Azad University and Health Care services center of Tonekabon city. Then, the goals, the importance and necessity of the research were explained to the subjects and all subjects signed a written consent form. All participants were assured that the information will remain strictly confidential.

Results

The mean age of the women in the study was 32.40 ± 12.7 years. 94 samples (78.33%) were married and 103 samples (85.8%) were housewives. In terms of education, 15 participants (12.5%), 48 samples (40%) had a university education and high school or diploma, respectively and other of samples had middle and elementary school levels. there was no significant difference between the two groups in terms of the demographic variables and outcome measures. The results indicate a significant increase in the consumption of bread and Cereals, milk and dairy products, fruits and vegetables and beans in the experimental group after MI interviewing ($p_{value}<0.001$). Also, the consumption of meat and its substitutes, oils and fats and sugar significantly reduced in the experimental group after MI ($p_{value}<0.001$) (Table 1).

There weren't significant differences between the experimental and control groups before MI in terms of weight and BMI. But the findings contained in table 2 indicate a significant reduction in body weight (p_{value}<0.001) and BMI (p_{value}<0.05) in the experimental group after MI) (Table 2).

Discussion

The aim of this study was to determine the effect of motivational interviewing on dietary habit and weight losing among obese and overweight women. Finally, results showed significant change in weight (decreasing from 81.4 ± 12.64 to 76.3 ± 11.86, p_{value}<0.001) and body mass index (decreasing from 32.4 ± 4.63 to 30.2 ± 4.57, P_{value} < 0.05) and dietary habits (p_{value}<0.001) of women in the experimental group after motivational interviewing. In terms of weight losing and BMI decreasing in experimental groups were similar to findings of Hardcastle et al. [27] and Navidian et al. [28] studies [28,29]. Navidian et al. [28] showed that weight losing in the group that had received the motivational interviewing were more than control group [28]. Yet, other studies emphasize that one of the solutions to for successful weight loss in people who have experienced repeated defeats and failures is the use of motivational interviewing.

So that four 60-45 minute motivational interviewing session increased participation in physical activity and people were more successful in losing weight [32]. Moreover, other studies have confirmed that people who participated in MI process showed more behavior change without discussion and argument about the individual value of behavior change and ultimately gave more weight loss [33]. A review of the literature regarding the effectiveness of motivational interviewing for increasing behaviors associated with weight loss (Dietary changes and increased physical activity) has focused on the inclusion of motivational interviewing in the treatment process of obesity [34]. Moreover, the efficacy of motivational interviewing to increase

Food Groups		Before MI	After MI	$p_{value\ before\ and\ after}$
Bread and cereals	*Experimental group*	483 ± 165	683 ± 182	p<0.001
	Control group	479 ± 173	482 ± 166	0.412
	$p_{value\ between\ two\ group}$	0.340	p< 0.001	
Milk and dairy products	*Experimental group*	148 ± 49.2	262 ± 116	p<0.001
	Control group	154 ± 55.8	163 ± 61.1	0.195
	$p_{value\ before\ and\ after}$	0.227	p<0.001	
Meat and its substitutes	*Experimental group*	142 ± 70.6	116 ± 59.3	p<0.001
	Control group	138 ± 74.8	142 ± 76.6	0.231
	$p_{value\ before\ and\ after}$	0.182	p<0.001	
Fruits	*Experimental group*	162 ± 91	204 ± 119	p<0.001
	Control group	171 ± 83	176 ± 79	0.210
	$p_{value\ before\ and\ after}$	0.105	p<0.001	
Vegetables	*Experimental group*	93 ± 53	138 ± 66	p<0.001
	Control group	89 ± 50	90 ± 54	0.644
	$p_{value\ before\ and\ after}$	0.314	p<0.001	
Cereal	*Experimental group*	19.8 ± 12.3	26.4 ± 14.0	p<0.001
	Control group	20.4 ± 11.7	19.8 ± 10.3	0.752
	$p_{value\ before\ and\ after}$	0.723	p<0.001	
Oils and fats	*Experimental group*	29.6 ± 16.5	20.7 ± 14.8	p<0.001
	Control group	30.0 ± 15.9	28.9 ± 15.5	0.173
	$p_{value\ before\ and\ after}$	0.511	p<0.001	
Sugar	*Experimental group*	58.0 ± 25.3	43 ± 20.2	p<0.001
	Control group	59.11 ± 23.9	60.0 ± 25.1	0.190
	$p_{value\ before\ and\ after}$	0.228	p<0.001	

Table 1: Mean and standard deviation of daily intake values (grams) in the experimental and control groups before and after motivational interviewing

Food group		Before MI	After MI	$p_{alue\ before\ and\ after}$
Weight	*Experimental group*	81.4 ± 12.64	76.3 ± 11.86	p<0.001
	Control group	80.3 ± 13.1	79.9 ± 14.32	0.281
	$p_{value\ before\ and\ after}$	0.342	p<0.001	
BMI	*Experimental group*	32.4 ± 4.63	30.2 ± 4.57	p<0.05
	Control group	32.7 ± 4.49	32.5 ± 4.51	0.192
	$p_{value\ before\ and\ after}$	0.429	p<0.05	

Table 2: Mean and standard deviation of weight and body mass index in the experimental and control groups before and after motivational interviewing.

fruit and vegetable consumption has also proven [35]. Motivational interviewing is also able to control other risk factors for health. For example, research has shown that elderly women who had non-insulin dependent diabetes showed better control over their glucose levels after MI [36]. Also, Smith and colleagues showed that combining MI with behavioral programs for adults is more effective than a behavioral weight control program alone [37]. Other researchers believe that a set of MI techniques and drug treatments and behavioral strategies is more effective to achieve the goal of sustainable weight loss [38].

Efficacy of MI is mainly high in a First few months, but over time its effects are reduced. Usually this reduction of the therapeutic effect isn't due to decreased efficacy of motivational interviewing. It is believed when the MI is added to the other treatment options causes a significant effect on the duration and continuity of treatment [39].

Based on previous studies, we can conclude that following characteristics make weight-loss and diet control programs are more effective: increase intrinsic motivation and readiness to change, Increase active participation and greater adherence to treatment plan, Reinforce positive behaviors, Increasing concern about unhealthy eating behavior indirectly and without pressure or compulsion, Participation in planning work activities, assessing the pros and cons of the behavior change, Determining the major value in life, Increasing conflicts between values and nutritional behaviors, Providing information, Evaluating and enhancing self efficacy toward changes specially increasing weight losing and lifestyle related self efficacy, Emphasizing on autonomy and freedom of action [40-42].

The features such as ability to reduce resistance, strengthening attributions, stimulate intrinsic motivation, ability to increase capacity and susceptibility to change and improving treatment outcomes caused researchers to use motivational interviewing in the treatment of obesity and overweight problems. So we can conclude that motivational interviewing will increase the participation rates and success of their pragmatic treatment methods. Implementation of MI as a small group interviewing, no exit from the study in the intervening phase, stable research environment and relatively suitable number of sessions were the strengths of current research. On the other hand, short follow-up period, not possible to compare the results with a group of men and not comparing the results with traditional interventions were the most important shortcomings of the present study.

Conclusion

Despite the increasing weight loss methods, products and programs, prevalence of overweight and obesity is still rising. Certainly, clinical intervention for weight loss will not be enough to overcome obesity and overweight crisis. The results of current study showed that interventions using MI techniques can lead to weight loss and behavior change in women efficiently. However, more research needs to be done in this area.

Competing interests

The authors declare that they have no competing interests.

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