ARTICLE / INVESTIGACIÓN

Efficacy of an educational program based on health belief model to enhancing weight control behaviors among employees in University of Mosul: a randomized controlled trial

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Abstract: Weight management is complex for most individuals, as indicated by the high numbers of obesity worldwide. Obesity has increased dramatically over the past decades. The study aims to determine the efficacy of an educational program based on the health belief model to improve weight control behaviors among overweight and obese employees at the University of Mosul. The study design is genuinely experimental, using the randomized controlled trial approach to enhance weight control behaviors among employees at the University of Mosul from January 10, 2021, to March 15, 2022. A probability simple random sample of 576 employees from faculties of different specializations was selected. The sample was chosen from a homogeneous group of 280 employees. Random selection and random assignment are used to create the experimental (40) and control group (40). The study results showed that in the pre-test, there was no significant difference between the experimental group and the control group in employee behaviors related to weight to control at a P-value (0.378). It showed an improvement in the behaviors of the study group toward weight control at (0.000) in the first and second post-tests. Also, the body mass index improved after three months for the experimental group at a P-value of 0.01. The researchers concluded that the intervention through the health beliefs model positively affected many health behaviors that affect weight maintenance.

Key words: Efficacy, Health Belief Model, Weight, Behaviors.

Introduction

Weight management is complex for most individuals, as indicated by the high numbers of obesity worldwide. Obesity has increased dramatically over the past decades. Unfortunately, this epidemic is not limited to adults but also to children globally. Developing a weight management plan is essential for everyone. Body Mass Index (BMI), a simple screening technique dependent on weight and height, is frequently related to a person's body fat percentage. Adults with a BMI of 25 to 29.9 are termed overweight, while those with a BMI of 30 or more are classified as obese. Whereas a BMI of over 30 is not the only sign of obesity, it is a straightforward, low-cost diagnostic that offers healthcare professionals information about a patient's general health. All the patients and third-party insurance providers save money by maintaining a healthy weight[4,5,8-10]. People cannot take preventive and curative steps toward obesity unless they have knowledge and motivation and believe that they are exposed to severe life-threatening diseases due to obesity., according to the Health Belief Model (HBM). Individuals must also feel that a weight-control intervention is desirable and that there are minimal obstacles to its implementation[11,12]. The study aims to determine the efficacy of an educational program based on the health belief model to improve weight control behaviors among overweight and obese employees at the University of Mosul.

Materials and methods

The proper experimental design using the randomized controlled trial approach is conducted to determine the efficacy of an educational program based on the health belief model to enhance weight control behaviors among employees in the University of Mosul from January 10, 2021, to March 15, 2022. A probability simple random sample of 576 employees from faculties of different specializations was selected. The sample was selected from a homogeneous group of 280 employees. Random selection and random assignment are used to create the experimental (40) and control group (40). An intervention program has been developed, in line with the findings of the assessment needs of employees related to weight control, on the Health Beliefs Model in enhancing employee's behavior about bodyweight control. The program consists of four main sessions. The study tool is (Behavioral Strategies for weight management in overweight adults) This questionnaire consists of 5 parts, including Physical activity (6 items), Dietary impulse control (7 items), Social support (4 items), Advanced dietary planning (5 items), and weight loss planning and monitoring (5 items). Responses to these items range from (1) Never to (2) Sometimes, and (3) Always with a higher score indicating higher agreement with the behaviors. Data is analyzed using the "Statistical Package for Social Science" (SPSS) software for Windows (Version 24)[13-15].

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Results and discussion

According to the results, the mean age and standard deviation for the study and the control groups were (41.17 ± 0.82) and (38.82 ± 0.87), respectively. The majority of the participants in the study group are 60% males. Most of them were married (85%), while the control group (67.5%) males and (80%) were married. The results within the same table showed that the majority of employees are engaged in office work that does not require physical activity, (87.5%) of the study group and (85%) of the control group, and the majority of them have a bachelor's degree, (75%) of the experiment group, (67.5%) of the control group. The study's findings were comparable to many studies showing that overweight and obesity affect middle-aged adults. A study in India showed that the average age of 47 is the majority who try to control their weight to avoid diseases[16,17]. The other survey in Iraq by (18) demonstrates that overweight obesity may increase in the middle age of 40. Adults have a relatively low level of physical activity, which tends to decline as they age. The lack of physical activity and unhealthy food is one of the most important causes of weight gain, as the level of adult physical activity is very low and tends to decline with age 8. The pre-test results showed that most of the study participants for both groups were obese stage 1 BMI (30-34.9), (57.5%) of the study group, and 52.5% of the control group. The average weight of the two groups is 33.60, with a standard deviation of 3.93, and there was no significant difference in weight between the two groups, according to the results. In another survey by the World Health Organization in Iraq, 26% of Iraqi men and 38% of Iraqi women aged 25-65 years were obese[19]. The study results from interpretation show that the participants were homogeneous within themselves because one of the prerequisites of (randomized controlled trials (RCTs) is pool homogeneity, and RCTs are preparing the best way to determine the efficacy to resolve a specific problem through the implementation of (HBM), so the results of both groups (control and study) appeared homogeneous. Adult weight reduction programs have been proven to help people reduce weight and, more importantly, improve their health.

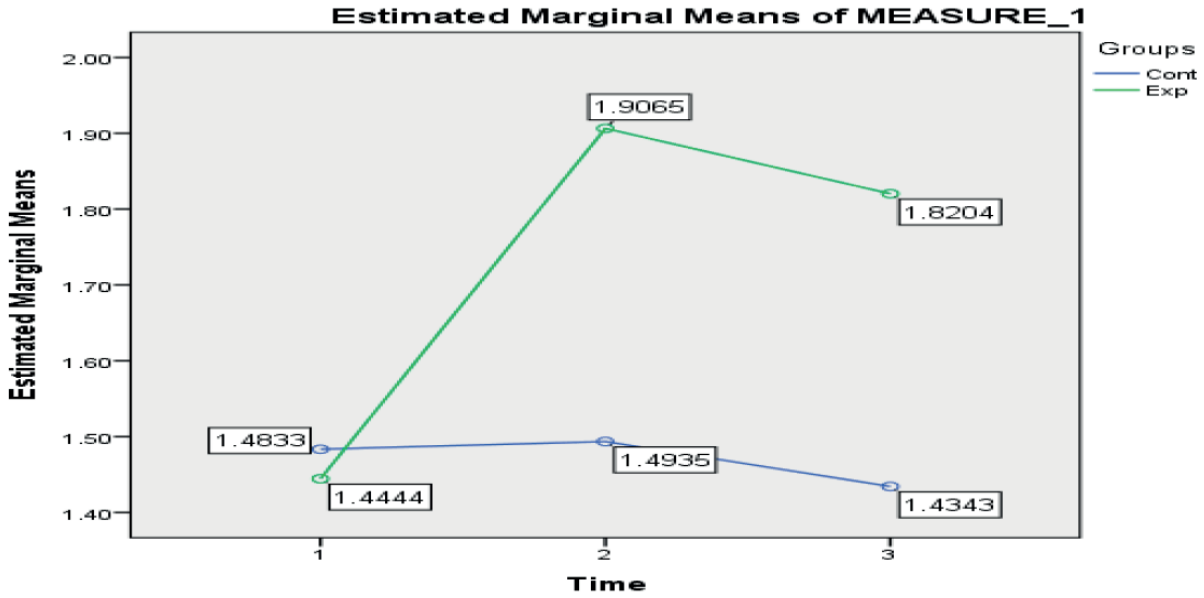

Figure 1. Changes in behaviors related to weight control among employees in the University of Mosul for the study and control groups throughout the three times.

BMI	experimental group (40)		Control group (40)		Total	
	F	%	F	%	F	%
Overweight BMI= (25-29.9)	8	20	8	20	16	20
Obese class I BMI= (30-34.9)	23	57.5	21	52.5	44	55
Obese class II BMI= (35-39.9)	7	17.5	9	22.5	16	20
Obese class III BMI= (40 Or more)	2	5	2	5	4	5
M (SD)	33.62 (3.17)		33.59 (3.4)		33.60 (3.93)	

Table 1. Body mass index and homogeneity between control and experimental groups.

Weight control Behaviors	Repeated Measures ANOVA Test			
	F	P	(η2)	OP.
Main time effect	52.04	0.000	0.40	1.000
Between groups effects	180.70	0.000	0.698	1.000
Groups interaction overtime	155.79	0.000	0.666	1.000

η2: Partial Eta Squared (size effect). O.P. Observed Power.

Table 2. Repeated measures ANOVA tests for changing the health behaviors related to weight control among employees.

Dependent Variable	Mean difference between groups	Std. Error	Sig.b	95% Confidence Interval for Difference	
				Lower Bound	Upper Bound
Pre-test	-0.039	.044	0.378	-0.126	0.048
Posttest 1	0.364*	.033	0.000	0.297	0.430
Posttest 2	0.328*	0.032	0.000	0.264	0.392

Table 3. Binary comparisons between the experimental and control groups over time.

Paired test		No.	Mean	SD	t	Df	P
Experimental	BMI Pre-test	40	33.64	3.07	6.29	39	0.01
	BMI Posttest 2	40	33.14	2.98			
Control	BMI Pre-test	40	33.58	3.63	1.83	39	0.074
	BMI Posttest	40	33.62	3.59			

Table 4. Efficacy of health beliefs intervention in controlling body weight for the experimental and control groups.

Diet, exercise, and behavior change instruction are the most well-known weight loss methods; as such, studies like the one conducted by (20) among overweight and moderately obese participants, a weight loss program focused on behavior modification or intervention improved health-related quality of life[21].The Behavioral Risk Factor Surveillance System reported an increase in the rates of overweight and obesity among adults under 30 years old with low educational levels. The increase results from a combination of factors, including food behaviors and the constant eating of fast food in restaurants. They were eating light snacks between main meals, excessive intake of fatty foods, low physical activity, watching television and video games, and finally, unhealthy sleep behaviors. Then, two months later, both groups were given a post-test 2 to determine the efficacy of the education program. The primary goal of this stage was to determine whether the educational program was effective in helping study group participants maintain a healthy weight. According to the studies, there was an increase in the value of (Physical activity, dietary impulse control, dietary planning, monitoring weight, and family and friend Support) over time. The result showed no significant difference in the mean of employees' behaviors before the study intervention and control groups. However, the difference was significant after the intervention at a P-value (0.05), indicating that health education positively affected changing participants' weight control behaviors. After completing the intervention, a post-test-2 calculated the BMI for both groups. The study outcomes revealed a significant difference between the study group's baseline test and post-test 2 of body mass index. This means that the intervention has had a positive impact on the BMI. However, there were no statistically significant differences in BMI for employees in the control group between pre-test and post-test 2. Several previous studies have shown that the health belief model can change behaviors related to weight control, including a study conducted on adolescents in Iran, which showed an improvement in body mass index after 3 months of the program. A previous experiment conducted by 26 revealed significant differences between the groups after three months of follow-up in waist circumference, weight loss, BMI, resting heart rate, blood pressure, physical activity, sweetened beverage consumption, and dietary beliefs.

Conclusions

The researchers concluded that the intervention through the health beliefs model positively affected many health behaviors that affect weight maintenance, including physical activity, controlling food impulses, dietary planning, monitoring body weight, and supporting family and friends to control weight. All of these behaviors led to a clear improvement in weight control of the study group approximately three months after the start of the intervention.

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Conflicts of Interest

The author declares that there is no conflict of interest in this study.

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