

Factors Influencing Weight Loss Attempts and Long Term Weight Loss Maintenance

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ABSTRACT

Background: A cross-sectional study aimed to determine the factors association with repeated weight loss attempts, and weight loss maintenance.

Methods: The study was conducted in the main public hospitals in Benghazi, Libya. A total sample of 300 participants who suffered from weight gain or/ obesity and had a history of trying of weight loss. The data were collected by using a questionnaire that include all the factors that may affect the weight loss process such as social, psychological, health, factors related to diet, and daily behavior factors.

Results: The majority of participants 78% were found at age group between 15-35 years, 81.7% of them were female and 18.3% were male. More than half of participants 56% had less than four times of weight loss attempts, while 43.6% of them had more than four attempts. The repetition of weight loss attempts was associated with genetic, binge eating, tension, anxiety, negative body image, duration of weight loss maintenance, watching TV or online hours, and eating rate. Around half of participant 55.6% had less than one of successful attempts, while 44.3% had more than one attempts. The factors associated with the successful attempt of weight loss were using weight loss medications, the rate of weight loss, aware food serving, eating breakfast, and exercise. The higher number of attempts of weight lose was associated with higher successful attempt (more than one attempt) $P=(0.031)$.

Conclusions: Psychological factors were the most factors affected on repeating weight loss attempts followed by behavior related factors. Practices related to self-control, mental control, stress reduction, and behavior modification should be considered at any weight loss management program. Body weight loss programs need strike follow up by dietician in order to avoid the fluctuations in body weight.

Keywords: The factors weight loss, weight loss attempts, successful weight loss attempts, weight loss maintenance.

INTRODUCTION

In the recent years, obesity is considered as a chronic disease being also as a severe individual health condition and an important public health issue. Obesity results from accumulation of body fat which leads to severe complications and a significant increase of mortality rate.¹ In 2017-2018 the prevalence of obesity in

United States was increased among all the age group of adult people that include , adults aged 20-39, adults aged 40-59, and adults aged 60 and over, about 40% 44.8%, 42.8%, respectively. The prevalence of obesity was also high among the childhood period, in 2009 about 38 million of children under the age of 5 years in the United States were overweight or obese.²

Globally, The prevalence of overweight and obesity as a public health concern is well established and reflects the overall lack of success in the ability to achieve and maintain a healthy body weight. There are many factors affect the ability of obese patients to lose weight and maintain a healthy body weight.²

First of all social factors, Most of the previous studies that focused on weight loss indicated that there are variation between weight loss and body composition, age, occupation , and socioeconomic status of patients. American studies showed that there was significant difference between age group and the percentage of excess BMI loss, the better results of weight loss and reducing of complications were observed among younger patients.^{3,4} A number of characteristics of men and women that also contribute to the difference in weight loss success. According to the National Health and nutrition Examination survey III (NHANES III) showed that female aged between 12to 80 years had higher percentage of Fat Mass (FM) than male , the estimated of total body weight and Free Fat Mass increased in all racial_ ethnic groups and in all age group of female.⁵ A cohort study found that there was effect of exercise on the body weight and body composition of both male and female, the men who did the exercises lost 5.2 kg of weight, equivalent to 6% of the basic weight. As for the women, the exercises did not lead to weight loss but prevented an increase weight about 3kg for the control group.⁶ Another American study was conducted to assess the relationship between dieting and weight change and race /ethnicity adolescence and young adulthood reported that dieting to lose weight was ineffective, and it is actually associated with greater weight gain, particularly among female adolescent. There was variation also among participants in the number of attempts times of weight lose, Hispanics (58.0%) were more likely than whites (55.2%) to be trying to lose weight .⁷

The second factors that affect weight loss are heath factors, the obese people with other diseases such as diabetes mallets, cancers or breast cancer, and ovarian cysts thyroid diseases are needed to weight loss to improve clinical results, reduce complications, and accelerate treatment effect.⁸ American study indicated that increased BMI $>40\text{kg/m}^2$ was associated with increased death rates for all cancer types.⁹ Spanish study also found that the weight of hypothyroid patients decreased from 70.93 ± 10.06 kg to 68.68 ± 10.14 ($p=0.000$), while the weight of hyperthyroid patients increased from 65.45 ± 11.64 kg to 68.37 ± 12.80 ($p=0.000$).¹⁰ The results of this study showed that there was an association between obesity and BMI ($>30\text{ kg/m}^2$) and slightly elevated serum TSH levels ($p 0.001$).¹⁰ Another previous study suggest that use of pharmacological treatment could be benefit to loss of body weight. American studies describe use of pharmacotherapy like (Fluoxetine, orlistat, and sibutramine) in weight loss for diabetic patients and use orlistat for ovarian cysts patients. These drugs achieved statistically significant weight loss for 26 to 52 weeks, Fluoxetine (5.8 kg at 52 weeks), orlistat (2.6 kg at 52 weeks).^{11,12}

Psychological factors are considered as important effective factors on weight lose and maintenance. A previous study was conducted in United States indicated that weight gain was associated with increasing levels of psychosocial stress related to job-related demands ($P < 0.001$), that include lack of skill discretion, lack of decision authority and difficulty paying bills among male while Among women were strain in relations with family.¹³ Furthermore, Tunisian study was conducted to determine the satisfaction rate of female on their body shape, this study found that almost two-thirds of all women were dissatisfied with their current body size. A normal body size (BMI 20–24 kg/m) was seen in the most positive light by Tunisian women.¹⁴ The other psychological factors is increases the desire to eat, especially among those follow

restricted diet compared with non-dieters..¹⁵ According to experiment study found that (71%) of participants are restrained eaters (i.e., dieters) report increasing food consumption when stressed than are people who under eat or who do not change the amount they eat when stressed (35%).¹⁶

The last factors are dietary and behavioral factors, there are a large number of dietary programs that are available in different websites. Many of these dietary programs are based on scientific evidence of weight loss. However, qualitative research suggests that successful dieters depend on their understandings about dietary intake (quality and quantity), emotional challenges, and surrounding environment.¹⁷ A previous study found that long-term diet attempts were not functional in the general population, as BMI and WC showed an increase in dieters than non-dieters.¹⁸ Another study was conducted in America that showed that only 31% of the people reported successful weight loss attempts, and this study recommended that self-monitoring strategies such as weighing oneself, choosing an appropriate meals, exercising 30 or more minutes daily, may be important in successful weight loss maintenance.¹⁹ European study showed that increase of protein content in diet and decreasing high glycemic index led to an improvement in maintenance of weight loss. The weight regain was 0.93 kg less in the groups followed a high-protein diet than in those followed a low-protein diet (P=0.003).²⁰

Life style behavior such as watching TV contributes to affecting on weight loss or maintaining weight loss. Raynor and et.al found that that the number of hours of sitting on TV associated with weight loss, increases in TV watching hours were significant predictors for regain weight of one year.²¹ furthermore, skipping breakfast led to increase prevalence of obesity. According to previous study found that around half of participants who are breakfast skipper suffered from obesity.²² Clinical studies confirmed that regular

consumption of meals reduced the risk of obesity and chronic diseases.²³ In addition, number of previous studies concluded that obesity is associated with a self-reported short sleep duration and sleep disturbances. The short sleep duration is caused by emotional stress as reported by obese people.^{24,25}

Because obesity is a chronic disease, maintenance of weight loss is included as a standard of success, and the response to obesity treatment varies according to different factors. There are few studies targeting the factors that defined weight loss successful, therefore, this study aimed to determine factors influencing weight loss success and long term weight loss maintenance, and to

1. study the personal and social aspect and its effect on the number of weight loss attempt.
2. know the effect of health conditions and diseases (chronic diseases) on the number of weight loss attempt.
3. study of the psychological factors and its effect on the weight loss attempt.

METHOD AND MATERIAL

Study Population: A cross-sectional study was conducted in Benghazi, Libya in 2020 to determine the factors affecting weight loss process for a specific age group from 15 to 65years. The total numbers of participants were 300 participants, including 51 men and 249 women.

Data collection methods: questionnaire that was prepared and distributed to the participants in some public hospitals as well as over the Internet. This questionnaire contains 34 questions covering all aspects related to the process of weight loss, 4 elements were about personal information such as (age, gender, educational level, profession, working hours). In addition, other questions asked about the health condition that include presence of diseases, type of medication, and duration of intake. Other questions asked about aspects related to the situation (social, psychological, genetic) and its impact on repeated weight

loss attempts and the number of successful weight loss attempts. The next questions asked about dietary history that include: (source of diet, duration of follow-up, diet sources, weight loss per week, duration of maintains weight loss). The questionnaire also contains information about the daily behaviors such as hours on TV or online, water consumption, regularity in breakfast, exercise, place of eating, sharing eating, eating duration, and hours of sleep.

Measurement:

Weight and height were measured by the researchers after completion of the questionnaires. Height was measured to the nearest 0.1cm using standard calibrated scale attached to the balance against wall. Weight was measured to the nearest 0.2kg using weighting machine. During measuring body weight, participants were wearing light clothes and thin socks or bare feet, BMI was computed as body weight in (Kg) divided by body height in (m) squared and the body mass index was calculated and classified according to WHO classification.

Statistical analysis:

The Statistical Package for the Social Sciences (SPSS) version 21.0 was used to analyze the data. Descriptive statistical tests were conducted to make comparison including frequencies and Chi square test with (95%) confidence intervals. Chi-squared analysis was used to compare different factors with number of weight loss attempt and number of successful weight loss attempt. All p values <0.05 were considered statistically significant.

Ethical statement:

This study was approved by university of Benghazi and all questionnaires were anonymous and unidentified to ensure the confidentiality of collected information.

RESULT

Demographical characteristics of participants:

Total participants in this study were N=300 persons, 81.7 % of them were females and 18.3% were males with ages

range from 15 to 55 years. The majority of participants 78% were with age 15-35 year while only 2% of them were with an age group more than 55 years. The most of participants 87% were with high educated level (university degree), while 1% of them were uneducated. less than half of participants 47% were officers, and 51% of them worked for period range from 4-6hours. More than half of participants 57% were with income 500-1000, and more than half of them also 56.3% were unmarried. See **table 1**

Characteristics	Frequency	Percent
Age		
15 – 35	243	78%
35 – 55	60	20%
> 55	6	2%
Sex		
Female	245	81.70%
Male	55	18.30%
Education level		
Uneducated	4	1.3%
primary	2	7%
Secondary	33	11%
University	261	87%
Occupation		
Unemployed	4	1.3%
Student	58	19.3%
Officer	141	47%
house wife	78	26%
free business	19	6.3%
Work hours		
1 – 3	85	28.3%
4 – 6	154	51.3%
7 – 9	50	16.7%
10 – 12	11	3.7%
Income level		
500	57	19%
500 – 1000	171	57%
> 1000	72	24%
Social status		
Single	169	56.3%
Married	131	43.7%
Total	300	100%

In regarding to BMI, female presented the highest numbers of over weight than male 26.90% vs. 5.90% respectively. Obese grade I was higher than other grads among female participants and also female still shown highest percentages 24.90% vs. 5.60%, 11.90% vs. 3% and 3.50% vs. 1.40% for obese I , grade II and grade III respectively. There was clear relation between working hours, marital status, and number of children, p. value= 0.000, 0.008, and 0.017 respectively. There was also relationship

between BMI level with weight loss attempts $p=(0.003)$.

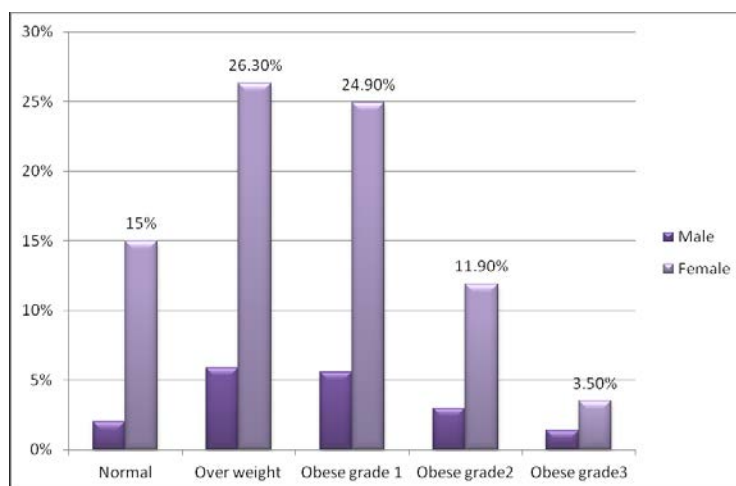


Figure 2: Distribution of BMI level among participants

Medical history of participants: -

In regarding to medical history of participants, **table 2** showed that more than half of participants 68.6% did not have any health problems, and 31% of them had some health problems that include (30.8% ovarian polycystic, 12.7% thyroid disease, and 7%

diabetes). Half of the participants 50% were taking treatment that include (25% weight loss drugs, 9.7% contraindications drugs, and 47.2% other drugs). Also more than half of participants 67.6% had obesity in their family history.

Table 2: Description of Health history among participants

Health factors	weight loss attempts <4	weight loss attempts >4	Total	P value
Health problems				
Yes	46 (27.2%)	48 (36.6%)	94 (31.3%)	0.053
No	123 (72.7%)	83 (63%)	206 (68.6%)	
Diseases				
Diabetes mellitus	3 (6.5%)	4 (8.3%)	7 (7.4%)	0.299
Thyroid diseases	8 (17.3%)	4 (8.3%)	12 (12.7%)	
ovarian polycystic	14 (30.4%)	15 (31.2%)	29 (30.8%)	
other diseases	21 (45.6%)	25 (52.0%)	46 (48.9%)	
Treatment				
Yes	78 (46.1%)	72 (54.9%)	150 (50%)	0.081
No	91 (53.8%)	59 (45.0%)	150 (50%)	
Type of treatments				
Contraindications	16 (20.5%)	7 (9.7%)	23 (15.3%)	0.309
Diabetes drugs	4 (5.1%)	5 (6.94%)	9 (6%)	
Cortisol	3 (3.8%)	4 (5.5%)	7 (4.6%)	
Thyroid drugs	7 (8.9%)	4 (5.5%)	11 (7.3%)	
weight loss drugs	12 (15.3%)	18 (25%)	30 (20%)	
other drugs	36 (46.1%)	34 (47.2%)	70 (46.6%)	
Heredity*				
Yes	104 (61.5%)	99 (98.5%)	203 (67.6%)	0.007
No	65 (38.4%)	32 (18.9%)	97 (32.3%)	
Total	169	131	300	

*Statistical differences p .value <0.05 by Chi. Square test.

This study was based on studying some factors that include medical history to determine the extent of their influence on the frequency of weight loss attempts. From the total of participants $n= 300$ who had repeated experiences of weight loss, 56.3% of them had less than 4 times of weight loss attempts , and 43.6% of them had more than

4 times of weight loss attempts. **Table 2** indicted that there was no significant relationship between weight loss attempts times and medical history that include health problems, taking medicine and types of treatment with exception with hereditary factors. There was a significant relationship between weight loss attempts and hereditary

factor p.value < 0.05. The number of weight loss attempts ‘times were more among participants who had obesity in their family

history than who did not have hereditary obesity, (67.6% vs. 32.3%, p.value=0.007). **See table**

Table 3: The relation between psychological factors and number of attempts to weight loss among participants.

Psychological factors	weight loss attempts <4	weight loss attempts > 4	Total	P value
psychosocial problems*				
Yes	38 (22.4%)	51 (38.9%)	89 (29.6%)	0.002
No	131 (77.5%)	80 (61.0%)	211 (70.3%)	
desire to eat during diet				
increase	65 (38.4%)	68 (51.9%)	133 (44.3%)	0.057
decrease	46 (27.2%)	25 (19.0%)	71 (23.6%)	
no change	58 (34.3%)	38 (29.0%)	96 (32%)	
increase eating rate during stress*				
Yes	97 (57.3%)	100 (76.3%)	197 (65.6%)	0.000
No	72 (42.6%)	31 (23.6%)	103 (34.3%)	
does weight loss require?*				
Yes	154 (91.1%)	130 (99.2%)	284 (94.6%)	0.001
No	15 (8.8%)	1 (0.7%)	16 (5.3%)	
successful attempts in weight loss*				
<1	121 (71.5%)	46 (35.1%)	167 (55.6%)	0.000
>1	48 (28.4%)	85 (64.8%)	133 (44.3%)	
Total	169	131	300	

*Statistical differences p. value <0.05 by Chi. Square test.

As shown in **Table (3)**, there was significant relation between psychological factors and number of weight loss attempts. First of all, there was a relationship between the number of trying to lose weight and psychological problems, (22.4% of participants had fewer than 4 attempts of weight loss vs.38.9% had more than 4 attempts of weight loss, P =0.002. Approximately half of participant 44.3% had increase desire to eat during following specific diet, 51.9%of them had more than 4 attempts of weight loss, while 38.4% of them had less than 4 attempts of weight loss. Additionally, more than half of participants 65.6% were eating more during stress. There was a significant correlation between participants’ psychological status and number of attempts to weight loss, 76.3% of participants had more than 4 attempt and 57.3% of them had less than 4 attempts P = (0.000). More fore, the majority of participants 94.6% believed that weight loss is needed, there was a relationship between their need to lose weight and attempts to lose weight. Participants who believed weight loss is required had more attempts (> 4 times) of weight loss than those did not believe that, (99.2% vs. 0.7%, P =0.001). There was also association between successful weight loss

and number of attempts of weight loss, more than half of participants 64.8% who had increase number of successful weight loss had more number of weight loss attempts than who had less number of successful weight loss (64.8% vs. 35.1%, p=0.000).

See Table 3

Dietary pattern and behavior of participants:-

In regarding to dietary factors, the minority of participants 7% were followed diet that is described by nutritionists and 18% of them by their self, while the majority of participants 75% were followed described diet by both nutritionist and by theirself. The majority of participants 82% also had diet from different sources of foods (an integrated diet), 83.4% of them had less than 4 attempts, and 80.1% had more than 4 attempts. Less than half of participants 39% followed a diet for less than a year, and 48.6% of them lose weight from 0.5 -1kg in a week. There was significant association between number of attempts weight loss and weight loss maintenance. Most of participants 50.8% who have weight loss maintained for less than one years had increase number of weight loss attempts (more than 4 times) than those maintained

their weight loss more than one years. (50.8% vs. 24.3%, p=0.002).See Table 4

Table 4: The relation between dietary factors and number of attempts to weight loss among participants.

Dietary factors	weight loss attempts <4	weight loss attempts >4	Total	P value
Source of diet				
dietitian	10 (5.9%)	11 (8.39%)	21 (7%)	0.218
yourself	37 (21.8%)	19 (14.5%)	56 (18.6%)	
both	122 (72.1%)	101 (77.0%)	223 (74.3%)	
Diet sources				
protein	14 (8.28%)	9 (6.8%)	23 (7.6%)	0.586
fat	3 (1.7%)	3 (2.29%)	6 (2%)	
protein and CHO	11 (6.5%)	14 (10.6%)	25 (8.3%)	
integrated diet	141 (83.4%)	105 (80.1%)	246 (82%)	
follow up diet				
less than a month	27 (15.9%)	26 (19.8%)	53 (17.6%)	0.168
a month	42 (24.8%)	36 (27.4%)	78 (26%)	
less than one year	70 (41.4%)	47 (35.8%)	117 (39%)	
year	19 (11.2%)	7 (5.3%)	26 (8.6%)	
more than one year	11 (6.5%)	15 (11.4%)	26 (8.6%)	
weight loss per week				
0.5 - 1 kg	85 (50.2%)	61 (46.5%)	146 (48.6%)	0.421
2 - 4 kg	66 (39.0%)	60 (45.8%)	126 (42%)	
> 4 kg	18 (10.6%)	10 (7.6%)	28 (9.3%)	
Maintenance weight loss*				
less than one year	86 (50.8%)	91 (69.4%)	177 (59%)	0.002
one year	30 (17.7%)	20 (15.2%)	50 (16.6%)	
more than one year	53 (31.3%)	20 (15.2%)	73 (24.3%)	
Total	169	131	300	

*Statistical differences p.value <0.05 by Chi. Square test.

Table 5 focuses on behavioral factors, showed that there is association between participants' behavior and the number of weight loss attempts. The participants who were watching TV for long period of time had more number of weight loss' attempts than those watching TV for 1-2 hrs (43.5% vs. 21.3%, p.value =0.01). Approximately, half of participants 50.6% were eating food on the ground compared to those eating food in a chair, and more than half of participants 56.3% were sharing food

with their family. Additionally, the majority of participants 74% were drinking enough water, and more than half of participants 62% were eating Breakfast regularly. The most of participants 62.3% were practicing sports, and 41.3% of people slept less than 8 hours. There was no relation between eating pattern, sleeping hours, and exercise with number of weight loss attempts. On other hand, there was a clear relationship between weight loss attempts and duration of eating, P=(0.023).

Table 5 Description the relation between participants' behavior and weight loss attempts .

Behavior factors	weight loss attempts <4	weight loss attempts >4	Total	P value
hours on TV or internet*				
1 -2 hours	53 (31.3%)	28 (21.3%)	81 (27%)	0.01
2 - 5 hours	70 (41.4%)	46 (35.1%)	116 (38.6%)	
more than 5	46 (27.2%)	57 (43.5%)	103 (78.6%)	
Water Consumption				
Yes	127 (75.1%)	95 (72.5%)	222 (74%)	0.35
No	42 (24.8%)	36 (27.4%)	78 (26%)	
Breakfast				
Yes	103 (60.9%)	83 (63.3%)	186 (62%)	0.38
No	66 (39.0%)	48 (36.6%)	114 (38%)	
Exercise				
Yes	100 (59.17%)	87 (66.4%)	187 (62.3%)	0.122
No	69 (40.8%)	44 (33.5%)	113 (37.6%)	
place of eating				
Chair	82 (48.5%)	66 (50.3%)	148 (49.3%)	0.419
Ground	87 (51.4%)	65 (49.6%)	152 (50.6%)	
Sharing eating				
Family	101 (59.7%)	68 (51.9%)	169 (56.3%)	0.107
Alone	68 (40.3%)	63 (48.0%)	131 (43.6%)	
Eating duration*				
10 min	68 (40.2%)	69 (52.6%)	137 (45.6%)	0.023

15 min	72 (42.6%)	36 (27.4%)	108 (36%)	
20 min	20 (11.8%)	13 (9.9%)	33 (11%)	
More	9 (5.3%)	13 (9.9%)	22 (7.3%)	
Hours of sleep				
less than 8 hours	68 (40.2%)	56 (42.7%)	124 (41.3%)	0.54
8 hours	59 (34.9%)	38 (29.0%)	97 (32.3%)	
more than 8 hours	42 (24.8%)	37 (28.2%)	79 (26.3%)	
Total	169	131	300	

* Statistical differences p.value <0.05 by Chi. Square test

Relation between successful weight loss and other factors:

Table 6 : Relationship between the study factors with successful weight loss attempts.

Variables	successful attempts <1	successful attempts >1	Total	P value
Type of drug*				
Contraindications	19 (23.4%)	4 (5.7%)	23(15.3%)	0.030
Diabetes drugs	7 (8.6%)	4 (5.7%)	11 (7.3%)	
Cortisol	2 (2.4%)	3 (4.3%)	5 (3.3%)	
Thyroid drugs	4 (4.9%)	7 (10.1%)	11 (7.3%)	
weight loss drugs	12 (14.8%)	18 (26.0%)	30 (20%)	
other drugs	37 (45.6%)	33 (47.8%)	70 (46.6%)	
weight loss per week*				
0.5 - 1 kg	97 (58%)	49 (36%)	146 (48.6%)	0.001
2 - 4 kg	56 (33.5%)	70 (52.6%)	126 (42%)	
> 4 kg	14 (8.3%)	14 (10.5%)	28(9.3%)	
diet successful by dietitian*				
Yes	44 (26.3%)	53 (39.8%)	97(32.3%)	0.031
No	93(55.6%)	56 (42.1%)	149 (49.6%)	
food serving*				
Yes	72 (43.11%)	76 (57.1%)	148 (49.3%)	0.047
No	83 (49.7%)	48 (36.0%)	131 (43.6%)	
Breakfast*				
Yes	95(56.8%)	91 (68.4%)	186 (62%)	0.027
No	72 (43.11%)	42 (31.5%)	114 (38%)	
Exercise*				
Yes	96 (57.4%)	91 (30.3%)	187 (62.3%)	>0.034
No	71 (42.5 %)	42 (14%)	113(37.6%)	
Total	167	133	300	

According to successful weight loss, there were a number of relationship between the number of successful weight loss attempts and other factors. The first relation was between successful weight loss attempts and type of treatment among participants. participants who were taking special medications for weight loss had more successful weight loss attempts than other types of treatments (26% vs. 5.7% p=0.03) the second relation was between the number of weight loss by kilogram and number of weight loss attempts P=(0.001). The number of successful weight loss attempts was increase among patients who loss more than 1 kilogram (from 2-4 kg/week) of their weight (52.6% vs.36%). The third relation was number of successful weight loss attempts and described diet by dietitians. (26.3 % of participants had a success attempts less than one times and 39.8% of them had successful attempts

more than one, p=0.031. The next relationship was between awareness of participant about food serving and number of successful weight loss. (57% vs. 36% had more than one successful weight loss attempts, p= 0.047). The another relation was between number of successful weight loss and breakfast consumption, (30% vs. 14%, p= 0.027) There the last relationship was between exercise and the number of successful weight loss attempts,(30.3 % vs. 14% had more than one successful weight loss attempts P=(0.034).

DISCUSSION

The factors that lead to obesity differ according to the condition of people and the environment around them. The sex and age distribution of the participants in the current study was similar to the criteria for previous studies⁽²⁶⁻²⁸⁾. The proportion of females was about 1: 5 more than males, with ages

ranging from 15 to 35 years. There was a significant correlation between body mass index and body weight with many social factors that were addressed in the current study such as gender, hours of work, marital status, and number of children. These results have been proven by previous studies^(5-6,26,29-30) Despite these correlations, there was no relationship between these factors and the frequency of weight loss attempts. The health problems of chronic diseases and taking special medicines are one of the reasons that effect the process of losing weight in many previous studies¹¹⁻¹³, but the results of this study showed only a association between the presence of health problems, especially ovarian cysts, and BMI ($p=0.000$) . Regarding medications, unlike other studies, the current study did not record any association between consumption of contraceptives or endocrine medications with body weight or body mass index, or even with repeated weight loss. However, all patients with thyroid dysfunction particularly if they are overweight, they should receive dietary advice.³¹

Among the factors that are associated with the frequency of weight loss attempts, genetic factor was the most affecting, as more than four weight-loss attempts were reported by participants who are obese and have obesity family history. These findings have confirmed by a number of published studies.^(32,33) It was also found in this study a statistically significant relationship between trying to lose weight and psychological problems. Those who complain with an increased desire to eat during a diet or when feeling stressed or suffer from dissatisfaction and a negative outlook on the body, reported an increase in the number of attempts to lose Weight along with its correlation to BMI $P= (0.000)$. Similar results from the previous evidences.^{5,34} A Dutch study examined whether mindfulness-based strategies can effectively reducing the desire to eating more ,and reduction of automatic relations between urge and reaction.(Participants who

were exposed to a 7-week acceptance-based craving intervention reported significantly lower food desiring compared to participants who did not receive this training.).²⁹

In this study less than half of participants followed diet by themselves and only 7% followed diet is described by dietitian. In fact, this study found a relationship between dietary inquiries during the visit and the success of the diet $P= (0.000)$. The success of the diet linked to the attempts to lose weight and the attempts to succeed the diet, the people who reported the success of the diet, had the lowest rate of attempts to lose weight, and the most in the number of successful attempts. This study indicates that the duration of the most frequent diet was at least a year, followed by a month, and less than a month. The maintenance of losing a period starting from 6 months, as the previous studies reported.³⁵ there is no relationship between the duration of the diet and the number of attempts, but there is a relationship between the period of follow-up and the duration of weight maintenance $P=(0.000)$.

There are a number of diet behavioral factors that linked to an effect on weight loss. As mentioned in previous literature, these factors included TV hours and a fast eating rate have shown to be associated with the frequency of weight loss attempts.^(21,36-37) Therefore, it is important to considered it in weight management additionally to follow diet with appropriate amount and type of food. Study was conducted in Bangladesh found that skipping breakfast is associated with greater chance to gain weight.²³ The current study confirmed this result and found relation also between skipping breakfast and the number of attempts of successful weight loss diet. Exercise is one of the factors that have proven effective in weight loss program. most of previous studies confirmed that exercise has many roles including increase the rate of metabolism, improving digestion and helping to achieve weight loss and maintain it.^{38,39} The current

study indicated that there is a relationship between exercise and the number of successful attempts on the diet . Drinking enough water had great resonance in previous literature to improve digestion and promote weight loss⁴⁰, but this study did not show a correlation between drinking water and the number of weight loss attempts or success. Other factors that have effect on weight loss and gain, short sleep duration and record of sleep disturbances are a feature of obesity^{24,25}. In contrast this study did not find a relationship between short sleep rate and body mass index or number of attempts.

That behavior modification may represent a significant progress in obesity treatment, as the groups who lost weight with the behavior modification reported a greater weight loss than other groups, therefore it is important to consider behavior modification in the treatment of obesity.^{41,42}

CONCLUSION AND RECOMMENDATIONS

This study indicates that female presented the highest numbers of over weight than male, and there was clear relation between working hours, marital status and BMI. There was also significant between weight loss attempts and hereditary factor. Psychological factors were the most influential factors on repeated weight loss attempts followed by behavior related factors, so practices related to self-control, mental control, stress reduction practices, and behavior modification must be considered when starting to manage weight. Further studies are recommended also to assess and determine the factors affecting weight loss. Establish educational program to improve and raise awareness about healthy eating habits and eating practicing.

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