

Published: August, 31, 2022

Citation: Celik S, Çallı I, et al., 2022. Evaluation of The Efficiency of the Module System Recommended by Turkish National Health Policy in Combating Obesity, Medical Research Archives, [online] 10(9).
<https://doi.org/10.18103/mra.v10i9.3095>

Copyright: © 2022 European Society of Medicine. This is an open- access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

DOI
<https://doi.org/10.18103/mra.v10i9.3095>

ISSN: 2375-1924

RESEARCH ARTICLE

Evaluation of The Efficiency of the Module System Recommended by Turkish National Health Policy in Combating Obesity

Sebahattin Celik^{1*}, Iskan Çallı¹ Serpil Sevimli Deniz², M. Kadir Bartın³, Öztekin Çıkman¹, Muharrem Duran⁴, Serhat Binici¹

¹Department of General Surgery, Van Yuzuncu Yıl university, Faculty of Medicine.

²Department of Computer Technologies, Gevaş Vocational School, Van Yuzuncu Yıl university

³General Surgery Clinic, Van Training and Research Hospital

⁴General practitioner in Emergency Department, Van Training and Research Hospital

* scelik@yyu.edu.tr

ABSTRACT

AIM: To investigate the effects of obesity prevention programs on Epworth scale, night eating syndrome scale, eating attitudes scale and body mass index.

METHOD: Designed as a prospective-observational study in a tertiary hospital. All adult patients with a body mass index above 30 who applied to the obesity center established according to the circular of the Ministry of Health of the Republic of Turkey were included in the study. Patients who had surgical intervention, could not continue the program and required emergency treatment were excluded from the study. Epworth scale, Night eating scale and eating attitudes scale were administered to the participants before and 1 year after starting the module.

RESULTS: 62 patients were included in the study. 87,1% was woman while 12,9% was male. The modules had a full attendance rate of 39%. After the module, significant improvement was observed in Epworth scale, night eating syndrome and eating attitudes ($p < 0.001$). An improvement of 5,6% was observed in the body mass index.

CONCLUSION: We can say that the module system, which is implemented as Turkey's health policy in the fight against obesity, is insufficient for the participation of citizens, but it works for people who attend regularly. Awareness studies are necessary for social participation and continuity.

Keywords: obesity, cognitive-behavior therapy, prevention programs

INTRODUCTION

World Health Organization defines obesity as “excessive fat accumulation at a level that may impair health”. Obesity is also officially defined as a “disease” by many surgical and endocrine societies^{1,2} and also accepted as a risk factor for some cancers, cardiovascular diseases, chronic kidney disease, diabetes, metabolic syndrome, non-alcoholic fatty liver disease, as well as many chronic diseases². Although the degree of accuracy is debated, obesity is still defined as a body mass index (BMI) above 30¹.

Obesity, which was alarming in western countries in the past, is currently a public health problem that concerns the whole world, except for a few southern African and Asian countries¹. Preventive measures are important in tackling the public health problem. In this context, an active life and low-calorie nutrition are accepted as basic preventive practices.

Since obesity was recognized as a pandemic, many different ways have been tried to combat this pandemic. In Turkey, this fight has become a national health policy and procedures have been determined by the Ministry of Health for the opening and operation of obesity centers³. It is recommended that the volunteers who register to obesity centers continue to 6 modules lasting 12 months in total.

Anyone with a BMI of 30 and above can apply to this program. After the modules are completed, the treatment of the patients is planned according to their new health status. The definition of modules is as follows:

Module-1: Registration to the program and pre-scan. It takes a week. The aim is for the patient to get to know the center as well as for the staff of the center to get to know the patient with very detailed anamnesis and evaluations.

Module-2: Health screening of patients. It takes a week. A meeting is held with at least one permanent consultant physician (Internal Medicine, Cardiology, Physical Medicine and Rehabilitation, General Surgery, Psychiatry) every day.

Module-3: Education and consciousness change of patients. It takes two weeks. Patients are given training on obesity and life, image (body) perception, healthy nutrition, medical information in obesity, health and life skills.

Module-4: Planning and subconscious change. It takes eight weeks (2 months). Individuals are included in three group meetings (dietician-psychologist-nurse-physiotherapist) every week for two months. With practical demonstrations and repetitions of all the subjects discussed as a consciousness change in this module, the

transformation into a behavioral change in patients and the onset of weight loss are achieved through group meetings.

Module-5: Behavior change and reaching target weight. It takes twenty weeks (5 months). Patients who reach the target of the fourth module and switch to this module can continue directly to the module, patients who are sent to additional treatments or surgery can continue in a suitable group after the convalescence period and surgical care requirements are completed.

Module-6: Maintaining target weight and environmental change. It takes sixteen weeks (4 months). Individuals are included in three group meetings once a month for four months. In this module, it should be ensured that people who have achieved the target weight maintain their healthy living skills and weight, change their environmental and social habits, and maintain their permanent weight.

It is not well known whether such programs make any changes in the behavior and attitudes of patients. Therefore, in our current study, the effectiveness of the above-described modules in the fight against obesity was evaluated based on 3 separate scale (eating attitudes test-26, Ebworth scale and night eating syndrome scale) and BMI change criteria.

MATERIALS-METHODS

The study was carried out in a 3rd Stage Training and Research Hospital, which established the obesity center in accordance with the standards determined by the Turkish Ministry of Health. Van Training and Research Hospital Obesity Center was officially opened in November 2019 and started to accept patients. In the current study, patients who applied to the Obesity Center of Van Training and Research Hospital on January 1, 2020 were included in the study. Ethical approval was obtained from the ethics committee of the center where the study was conducted, with the date 2020.01.20 and the decision number 2020/4.

It was designed as a prospective cross-sectional clinical study. Patient admission was terminated on August 1, 2020. On August 1, 2021, the study was terminated.

Inclusion criteria for the study were: BMI over 30, agreeing to participate in the modules regularly, and being over 16 years old.

Exclusion criteria: not completing the module, the emergence of a pathology that required emergency intervention or hospitalization and the incomplete data collection.

Investigated parameters; In addition to the demographic data of the patients, the pre- and

post-module values of the patients were documented by using the Epworth scale, the scales evaluating the eating attitudes and night eating habits, which are defined in *Appendix-1*. In addition, weight-height, additional disease, and family history were also evaluated when starting the module.

Evaluation on the Epworth scale is made over 8 questions and the tendency to sleep during the day is measured. According to Murray WJ, who developed the Epworth scale, a score above 16 is considered as a serious tendency to sleepiness⁴. According to İzci B. et al⁹, who conducted the study in Turkey, the mean Epworth score in healthy individuals is 3.6.

The Eating Attitudes Test is a screening test used for possible eating disorders that evaluates the eating habits of the person over 26 questions. According to this scale, a total score above 20 is a warning in terms of eating disorder⁵. A score of 20 was accepted as the threshold value in the validity-safety analysis of Ergüney Okumuş FE. et al in Turkey¹⁰

The night eating questionnaire was first studied in obese patients who were resistant to weight loss, and validity-reliability studies were conducted and it is a widely accepted questionnaire^{6,7}. According to this questionnaire, if the total score is over 18, night eating syndrome can be mentioned⁷.

As the patients regularly participated in the program, questionnaires and scales were made and filled face-to-face. All measurements were made under the guidance of a dietitian and with calibrated devices.

STATISTICAL ANALYSIS

All data were recorded in the SPSS package program (SPSS package program V21, IBM® Armonk, New York 10504-1722 United States). Conformity of continuous variables (age, weight, height, BMI, scale values) with normality criteria was performed by Kolmogorov-Smirnov test. While the mean and standard deviation were given for the normally distributed variables, the median and interquartile range were given for those that did

not normally distributed. Paired Student's t test was used for comparisons in continuous variables. Percentages and frequencies were given for categorical variables. Wilcoxon test was used for before-after comparisons and McNammar test was used for relationship analysis. Statistical significance level was accepted as 0.05 for type-1 error.

Calculation of sample size

In this study, the sample size was calculated based on the eating attitudes test (The eating attitudes) scores, which are normally distributed variables. The standard deviation required for calculating the sample size was taken from the control group in the eating attitudes test study determined by Garner D, et al⁵. In our study, with 80% power and 5% type-1 error, (the expected mean was approximately 10 and the standard deviation was 9.2), the sample size was calculated as 74 to make sense of the 3-unit (effect size) difference⁸. However, since 62 patients were included in the study, the power of the study should be evaluated as approximately 70%.

RESULTS

When the enrollment was stopped on 1 August 2020, only 117 of 300 patients enrolled in the obesity center in 8 months were able to continue with the recommended modules (compliance rate; 39%). A total of 62 people, 8 men and 54 women, who accepted informed consent and filled out the forms completely, participated in the study. Fifty-five patients with incomplete follow-ups (47 people who participated in the modules incompletely, 8 people with missing data) were excluded from the study. Ultimately, 62 patients were included in the final analysis.

87.1% of the analyzed patients were female and 12.9% were male. The median age and the youngest-maximum age were 38 (18-67) years. The mean \pm standard error of the eating attitudes scale (Eating Attitudes) with normal distribution, and the median-(min-max) values for the non-normally distributed (Epworth score, Night eating habits, BMI) are given in **Table-1**.

Table-1: The effect of the MODULE system, which is recommended in the fight against obesity, on the Epworth score, eating attitudes, night eating habits and body mass index of the patients

Scale	Pre-module	Post-module	p
Epworth, median, (min-max)	5.0, (0-24)	3.01,(0-12)	<0,01
Eating attitudes (mean±se)	58.69±14.81	50.55±13.64	<0,01
NightEating median, (min-max)	21.50, (0-59)	14.0, (0-41)	<0,01
BMI, median (min-max)	36, (29.4-63.6)	34, (24.2-58.9)	<0,01

se: standard error, BMI: Body Mass Index

Looking at the results in detail; While the Epworth scale changed positively in 43 people out of 62 participants, it was seen that the change was in the opposite direction in 5 people and no change was observed in 14 people. Eating attitudes of 49 people changed positively after the module, negative changes were observed in 10 people, and no change was observed in 3 people.

It was observed that the night eating score changed positively in 47 people after the module, in the night eating scale between before and after the module, while there was a negative change in 6 people and no difference in 9 people.

BMI could not be calculated since 7 people out of 62 participating in the study did not have height information. Among 55 people whose BMI was calculated, 48 people lost weight before and after the module, while 1 person had weight gain and 6 people's weight remained the same.

DISCUSSION

According to the current data of the World Health Organization¹; It is stated that 1.9 billion people worldwide are overweight and 650 million of them are obese. Again, according to 2017 worldwide burden of disease data, 4 million people die because they are overweight or obese. In children and adolescents (5-19 years), the prevalence of being overweight or obese increased 4 times from 1975 to 2016, from 4% to 18%. Obesity, which was previously considered as a problem of developed countries, is now seen as a problem in developing countries, especially in rural areas.

As such, it is certain that studies investigating the efficiency of investments made by nation-states with the desire to have healthy individuals and to reduce health costs will certainly be guiding. As far as we know, the practical response and effectiveness of the Turkish example of the obesity prevention

program was evaluated for the first time with this study. "Obesity centers", which are recommended to be established by official decision in the fight against obesity, work in a multi-disciplinary manner. Official business and all procedures are carried out in the company of a person (preferably a nurse) who coordinates the center. Other members of obesity center are; psychologist, physiotherapist, dietitian, internist or endocrine specialist, and a general surgery specialist experienced in bariatric surgery. Patients are admitted to the program in groups (10-16 people) and it takes 1 year to complete 6 modules³. The proportion of patients who completed the one-year period was one of the research questions of this study. We observed that approximately 39% of the total compliance was achieved. We think that this low rate is due to the effect of the COVID-19 pandemic we are experiencing. Because we know that it is not possible to continue with the modules, as it is forbidden to go out on the street during the full shutdown periods with the decisions taken at the national level. After June 2021, when the effect of the epidemic decreased, our observation is that the full participation in the modules is around 60%. We can say that the practical equivalent of the module method (The Turkish Health Minister obesity programme) in the fight against obesity is moderate.

The view that obesity only results from overeating and a sedentary life is no longer widely accepted. It is generally accepted that (multi-factorial), psychological, genetic, socio-cultural and behavioral causes are also an important factor^{1,2}. Therefore, we believe that in the fight against obesity, psychological, cultural and behavioral outputs/changes are at least as important as changes in BMI. Because it is known that only anthropometric measurements cannot fully define

obesity. It will not be enough to take measurements that are insufficient in the explanation as outcome variables in scientific research. For these reasons, the current study evaluated eating attitudes, night eating habits, and daytime sleepiness scales. It was revealed how the "module method" given as a treatment, affects the mentioned behavioral conditions. When we look at the criteria of the changes detected before and after this method; according to the eating attitudes test, the average value is much higher than expected; Before the Module (BM) 59 and After the Module 51 were found. Although there is a positive improvement in eating attitudes after the Module (AM), it is still seen that it did not improve as much as the average value. Since eating habits and table culture are generally directly related to the social situation, we see that individual efforts are useless.

It has been reported that night eating syndrome is common in obese patients⁶. In the current study, the median score was 21 in our obese patients before the module (which is pathological because it is greater than 20) and 14 in the same patient population after the module. In this study, it can be said with 70% strength that fully participating in the modules significantly reduces night eating habits. We attribute this positive change to the fact that night eating is an individual act rather than a collective act, unlike in eating attitudes. This shows that the night eating behavior of the individual can be changed by modules.

According to İzci B, et al, who performed the validity-reliability analysis in Turkey, the mean value of the Epworth scale was found to be 3.6 ± 3 in the healthy control group in the Turkish population⁹. The median values of the participants' total scores before and after the Module on the daytime sleepiness scale (Epworth scale) were calculated as 5 and 3, respectively. Accordingly, we can say that participating in the modules provides a significant improvement in napping.

BMI, while the median value was 36 kg/m² before the Module, this value became 34 kg/m² after the Module. The patient population, which was class-2 obese before the module, entered the class-1 obese class after the module. However, we saw that the body mass index that we wanted to reduce below 30 could not be reached in the fight against obesity. Considering the failure of different methods of losing weight, including surgical treatment, it is stated that the psychology of obesity should be

better understood and behavioral, cultural and attitudinal methods should be developed according to this psychology¹¹. As we observed in our own study; There was a serious eating disorder and eating behavior disorder in the obese patient population. As it is constantly emphasized in the literature, obese patients cannot be considered apart from psychological support and treatment programs. According to Castelnuovo et al¹², in the fight against obesity, psychosocial and psychopathological variables are important factors to be considered because of the relevant correlations between obesity and psychological factors such as self-esteem, quality of life, stressful life events^{13,14}.

The constraints of the study; First of all, the sample size could not reach the number calculated before the study, which reduced the power of the study from 80% to 70%. Although validity/reliability analyzes of the tests have been made, its validity for individuals from eastern cultures like us is controversial, as it is designed according to the living habits and cultures of western society. The absence of a control group in the study may create weakness in the interpretation of cut-off values.

Conclusion

We can state that the "module system" used in the fight against obesity in Turkey for more than 3 years remains at a moderate level in terms of the continuity/compliance of the patients, but it also provides improvement in many parameters. Evaluating and increasing the motivation, compliance and participation of patients and the successful treatment of obesity and its comorbidities is a strategic issue of public interest. Campaigns/works can be organized to increase social participation and awareness in order to increase compliance and to evaluate the scales in a healthy way.

Acknowledgement: Involved in data collection and follow-up of patients; We thank Doctor Mahir Coşkun, Nurse Hacer Havayasor, Secretary Coşkun Alpat and Van Training and Research Hospital administrators.

Conflict of interest: None to declare.

REFERENCES

- 1- World Health Organization. Obesity and overweight. <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight> (2021).
- 2- Mechanick JI, Apovian C, Brethauer S, et al. Clinical Practice Guidelines for the Perioperative Nutrition, Metabolic, and Nonsurgical Support of Patients Undergoing Bariatric Procedures – 2019 Update: Cosponsored by American Association of Clinical Endocrinologists/American College of Endocrinology, The Obesity Society, American Society for Metabolic and Bariatric Surgery, Obesity Medicine Association, and American Society of Anesthesiologists. *Obesity*, (2020)28(5)1-58. <https://doi.org/10.1002/oby.22719>
- 3- T.C SAĞLIK BAKANLIĞI, Sağlık Hizmetleri Genel Müdürlüğü. Obezite Merkezlerinin açılması, tescil edilmesi, çalışma usul ve esasları hakkında(09.11.2018) <https://shgm.saglik.gov.tr/Eklenti/27905/0/obezite-merkezlerinin-acilmasi-tesciledilmesi-calisma-usul-ve-esaslari-pdf.pdf>
- 4- Murray W. Johns, A New Method for Measuring Daytime Sleepiness: The Epworth Sleepiness Scale, *Sleep*, Volume 14, Issue 6, November 1991, Pages 540–545, <https://doi.org/10.1093/sleep/14.6.540>
- 5- Garner D, Olmsted M, Bohr Y, et al. The Eating Attitudes Test: Psychometric features and clinical correlates. *Psychological Medicine*, 12(4), 871-878. (1982).doi:10.1017/S0033291700049163
- 6- Stunkard AJ, Grace WJ, Wolff HG. The nighteating syndrome: A pattern of food intake among certain obese patients. *Am J Med* 1955; 19:78-86.
- 7- Atasoy, N., Atik,L., Saraçlı Ö., Konuk, N., Ankaralı, H. ve Güriz,O, Akdemir, A.,Sevinçer, G,M. (2014). Gece Yeme Anketi-Türkçe Formunun psikiyatrik ayaktan hasta popülasyonunda geçerlilik ve güvenilirlik çalışması. *Anadolu Psikiyatri Dergisi*, 15(3), 238-247.
- 8- Clinical and translational Science Institute, Sample Size Calculators for designing clinical research. Sample size for before-after study (Paired T-test) (31 October 2021). <https://sample-size.net/sample-size-study-paired-t-test/>
- 9- Izci B, Ardic S, Firat H. et al. Reliability and validity studies of the Turkish version of the Epworth Sleepiness Scale. *Sleep Breath* 12, 161–168 (2008). <https://doi.org/10.1007/s11325-007-0145-Z>
- 10- Ergüney-Okumuş FE, Sertel-Berk HÖ. Yeme Tutum Testi kısa formunun (YTT-26) Üniversite örnekleminde Türkçeye uyarlanması ve psikometrik özelliklerinin değerlendirilmesi. *Psikoloji Çalışmaları*, 40(1), 57-78 (2019).
- 11- Davin SA, Taylor NM. Comprehensive review of obesity and psychological considerations for treatment. *Psychol Health Med*. 2009;14(6):716–725.
- 12- Castelnuovo G, Pietrabissa G, Manzoni GM, et al. Chronic care management of globesity: promoting healthier lifestyles in traditional and mHealth based settings. *Front Psychol*. 2015;6:1557.
- 13- Hudson JI, Hiripi E, Pope HG, Jr, Kessler RC. The prevalence and correlates of eating disorders in the National Comorbidity Survey Replication. *Biol Psychiatry*. 2007;61(3):348–358.
- 14- Scott KM, Bruffaerts R, Simon GE, et al. Obesity and mental disorders in the general population: results from the world mental health surveys. *Int J Obes (Lond)* 2008;32(1):192–200.