

## Research Article

# Effect of the Educational Intervention “NutrIMSS” for Weight Loss in a Primary Care Center in Tijuana Mexico

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## Abstract

**Background:** Obesity in multifactorial origin increases the risk of developing chronic diseases. Mexico occupies one of the first places of prevalence worldwide.

**Aim:** The purpose of this study is to evaluate the effect of the educational intervention "NutrIMSS" for weight loss at the Family Medicine Unit #27 in Tijuana, Mexico.

**Design and Setting:** Analytic cross-sectional study.

**Methods:** Retrospective cohort study. A database from the Department of Nutrition was used from June to December 2018. Anthropometric measurements such as weight, BMI and waist circumference were collected at the beginning and end of the follow-up. The analysis was done with descriptive statistics using measures of central tendency, dispersion and percentages. In the bivariate analysis, Student T test and Chi square test were used. A  $p < 0.05$  was considered significant.

**Results:** Out of the 196 patients, 79% were women. Weight loss of at least 5% compared to the initial weight was reported in 22% of the participants and it was observed that 33% of the patients gained weight at the end of their follow-up.

**Conclusion:** The treatment of patients with obesity requires a comprehensive approach that includes cognitive behavioral intervention, in order to maintain the motivation to preserve the new lifestyle.

**Keywords:** Obesity; Educational Intervention; Nutrition

## Introduction

Obesity is a chronic disease of multifactorial etiology in which genetic, environmental and lifestyle aspects are involved. It is a positive energy balance, which occurs when the calorie intake exceeds the energy expenditure [1]. It is classified primarily based on the Body Mass Index (BMI) [2]. The waist circumference (WC) is useful to assess the risk associated with obesity, to estimate visceral obesity and cardiometabolic risk [3], a WC >90 centimeters (cm) in men and >80 cm in women is considered to be high [2]. Comprehensive treatment should include medical, nutritional, psychological treatment, physical activity and, if necessary, surgical interventions [4]. The objective of the dietary treatment of obesity is to achieve a significant loss (10% of the initial weight) of weight in the medium term, to maintain this loss at long term, to prevent weight gain, to reduce the cardiovascular and metabolic risk associated with overweight, improve cardiovascular risk factors associated with obesity that is usually achieved with the loss of 5 to 10% of overweight and improve comorbidities related to overweight [1].

Due to the accelerated increase in obesity in the Mexican population, one of the fastest in the world, Mexico has one of the highest prevalence's in the world. This situation is an important Public Health problem, because it secondarily increases the risk of developing chronic diseases, which generates an increase in expenses at the family and institutional level. The intervention in nutrition

education, "NutrIMSS", aims to control and maintain the following indicators within the recommended ranges: BMI, WC, blood glucose, cholesterol, triglycerides and blood pressure [5]. According to the World Health Organization (WHO) [6], obesity has tripled worldwide since 1975. In 2016, 39% of adults aged 18 and over were overweight, and 13% were obese, which has been associated with a higher number of deaths compared underweight patients. In Mexico, in 2018 the prevalence of obesity was 36.1% [7] and 24% in Baja California (2012) [8].

The general objective of the research was to evaluate the effectiveness of the educational intervention of "NutrIMSS" for weight loss in Family Medicine Unit #27 (FMU 27). As secondary objectives, the following were proposed: to quantify weight loss before and after the educational intervention and to know the clinical factors (weight, height, BMI, WC).

## Material and Methods

### Study Design and Population

An analytical cross-sectional study was conducted in Tijuana, Baja California, Mexico, between September and October 2019. The research was carried out at FMU 27, of the Instituto Mexicano del Seguro Social (IMSS); primary care unit and main health care center in the region. Patients who attended the "NutrIMSS" educational strategy between June and December 2018, aged 18 years or over, were included. Patients who did not attend 3 or more monthly

**Table 1:** Description of qualitative variables of the population.

Variable	n=196	%
Women	155	79
Men	41	21
Worker	114	58
Non Worker	82	42
Final Normal WC	6	3
Final Not Normal WC	190	97
Weight loss (>5 %)	43	22
Weight loss (<5 %)	153	78
Weight gain	64	33
No weight gain	132	67

appointments were excluded. Those patients with incomplete data were eliminated.

### Variables

Information was collected in a data collection form in the SPSS version 25 program in Spanish, of the following variables: age, sex, weight, height, BMI, waist circumference; the data was obtained from the database of the nutrition department at the beginning and at the end of the educational strategy.

### Statistical Analysis

The data was analyzed using descriptive statistics with measures of central tendency and dispersion for quantitative variables; frequencies and percentages for qualitative. In the bivariate analysis, the Student T test was used to compare the measures observed at the beginning and at end of the follow-ups of the quantitative variables and the Chi-square test for the analysis of the qualitative dichotomous variables. A  $p < 0.05$  was considered statistically significant.

### Ethics

The study was approved by the Local Committee for Ethics and Health Research number 204; with registration number R-2019-204-029. The research was carried out under the General Health Law on Health Research, the Declaration of Helsinki and the Bioethical Principles. Due to the type of study, no informed consent was required from the participants.

## Results

The sample was 196 patients. 79.1% were women, 58.2% identified themselves as workers (Table 1). The median age for the patients was 48.98 ( $\pm 8$ ) years old (Table 2). At the end of the follow-ups, a weight loss in kilos (kg) of at least 5% compared to the initial weight was reported in 21.9% of the patients. It was identified that 32.7% had gained weight. The mean weight lost by the end was 1.8 kg. A significant association was found between sex and waist circumference ( $p < 0.001$ ), in this category all women and 85.4% of men presented abnormal waist circumference. When measuring BMI ordinarily, we found that 23.9% of women and 41.5% of men were overweight; grade I obesity in 34.2% of women and 36.6% of men; grade II obesity in 21.9% of women and 12.2% of men; grade III obesity in 19.4% of women and 4.9% of men; and normal weight in 0.6% of women and 4.9% of men, this association was significant ( $p = 0.01$ ).

**Table 2:** Description of quantitative variables in the population.

Variable	Mean (SD)
Age	48.98 ( $\pm 8$ )
Weight at start (kg)	88.14 ( $\pm 15$ )
Weight at end (kg)	86.34 ( $\pm 18$ )
WC at start (cm)	107.51 ( $\pm 10$ )
WC at end (cm)	105.96 ( $\pm 10$ )
Decreased WC	1.53 ( $\pm 0.6$ )
Weight loss (kg)	1.8 ( $\pm 0.4$ )
Weight loss (%)	1.63 ( $\pm 0.2$ )

**Table 3:** Bivariate analysis according to sex.

Variable	Women		Men		p value
	n=155	100%	n=41	100%	
Weight loss (>5 %)					0.089
Yes	30	19.4	13	31.7	
No	125	80.6	28	68.3	
Weight gain					0.371
Yes	53	34.2	11	26.8	
No	102	65.8	30	73.2	
WC final					0.001
Normal	0	0	6	14.6	
Not normal	155	100	35	85.4	
BMI at end					0.001
Over weight	37	23.9	17	41.5	
Obesity grade 1	53	34.2	15	36.6	
Obesity grade 2	34	21.9	5	12.2	
Obesity grade 3	30	19.4	2	4.9	
Normal weight	1	0.6	2	4.9	

When measuring weight loss according to sex (Table 3), we found that 16.7% of women and 43.3% of men lost at least 5% of weight compared to their initial weight, but 83.3% of women and 56.7% of those men did not lose any weight. Weight loss (kg) according to sex at the end of the strategy was the following: women, 1.20 kg; men, 4.06 kg. Applying Student T test for unrelated samples, a value of  $p = 0.03$  was obtained. Regarding the percentage of kg lost at the end in women, the mean was 1.01% and in men 3.96%, with a  $p$  value 0.03. When comparing the mean weight in kg at the beginning versus the end of the "NutriMSS" educational strategy using the Student T test for related samples, statistical significance was found ( $p = 0.001$ ) at the beginning of the follow-ups with a mean of 88.14 kg and at the end with 86.34 kg.

## Discussion and Conclusion

Unlike the research of Tarraga et al (2015) [9], where they followed overweight-obesity patients for 12 months who received usual recommendations to lose weight [7], similar to the educational strategy "NutriMSS", only 16.4% of them achieved a weight loss of 5%, observing a higher percentage of patients who achieved a loss of 5% in our population. Chin et al [10] reported a similar result to our study where they achieved weight loss in 26% of the patients who had

received nutritional advice through an application. According to the mean loss in kg at the end of the intervention, which was greater in men than women (4.06 kg versus 1.20 kg), our results are similar to those described in the work by Garcia-Galbis et al [11], with greater weight loss in the group of men. The average weight lost in kg at the end was 1.8 kg for the entire population, similar to the results found in the work by Tarraga et al [9], this result can be improved by integrating patients into a motivational intervention or by receiving support from some digital platform.

Unick et al [12], reports that the motivation and support to patients who are modifying their eating habits, allows a more significant weight loss during the first months of the lifestyle intervention and can also be associated with long-term weight loss in overweight and obese patients. Garcia-Cedillo et al [13], report that psychological education should ideally be implemented by psychologists to increase the interest in improving their eating habits, increase the capacity to generate self-regulation or control strategies to avoid food intake to reduce anxiety, in addition to other strategies to establish social networks.

All the established objectives were met. The NutrIMSS educational strategy is a good tool for education about healthy eating habits. A high number of patients were discarded for not completing the follow-up in their scheduled appointments, for this reason it is useful to receive support from another department that provides with psychological education, in order to maintain motivation and preserve the lifestyle adjustments. It is necessary to achieve a comprehensive approach in the intervention and consequently generate a greater impact in the reduction of health complications. Weight lost at the end of the follow-up showed similar results to other studies in which basic nutrition education was provided. For this reason, the support of cognitive behavioral education possibly modifies the positive results. According to the goals and objectives that are proposed in the NutrIMSS technical guide, we conclude that these are partially met and the Nutrition team works with the available resources and their limitations. We recommend continuing this line of research for future investigation.

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