



# Effect of Dietary Interventions on Obesity

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**Abstract:** The WHO recognises obesity as the greatest health threat of 21st Century. The rapid rise in prevalence across the world has caught governments and health services by surprise, and the consequences are clearly evident. The study is purposive because only obese women were selected for the study. Dietary intervention was used for weight loss. The diet consultation is done by the qualified dietician. The data for the research study was collected during November 2020. Women under the category of obesity as per WHO BMI criteria and belonging to the age group between 18-60 years were included in the study. Personal interview schedule was used as research tool to collect information. Result: From this study it is very clear that there was significant effect of diet on obesity. There was a remarkable decrease in the percentage of all grade of obesity except grade III was observed. 50% decrease in obesity was observed in grade II. After intervention, 36.8% of respondents were found to be overweight which show the efficacy of dietary intervention in obesity.

**Key words:** obesity, diet intervention, BMI

## Introduction:

Obesity has been evident in human records for over twenty thousand years and has affected numerous aspects of human life and society (Bray GA 2015). Overweight and obesity are the fifth leading risk factor for global deaths. The WHO recognises obesity as the greatest health threat of 21st Century. The rapid rise in prevalence across the world has caught governments and health services by surprise, and the consequences are clearly evident. As per WHO 2.8 million adults die each year directly or indirectly as a result of being overweight or obese (Campbell and Haslam)

Obesity can be viewed as the first wave of a defined cluster of NCDs (Non-communicable diseases) called New World Syndrome, creating an enormous socio-economic and public health burden associated with an increased risk for type 2 diabetes mellitus, hypertension, dyslipidaemia, cardiovascular diseases, obstructive sleep apnoea, musculoskeletal disorders, some cancers, as well as mortality (Bharati DR et al).

According to the World Health Organization, 65% of the world's population live in a country where being overweight or obese causes more deaths than being underweight (World Health Organization, 2009). Worldwide, more than 1 billion people are estimated to be overweight (body mass index (BMI)  $\geq 25$  kg/m<sup>2</sup>), and more than 300 million of these are considered obese (BMI  $\geq 30$  kg/m<sup>2</sup>), making obesity one of the greatest threats to public health today (World Health Organization, 2009).

In 2008, 35% of adults aged 20 and above were overweight (BMI  $\geq 25$  kg/m<sup>2</sup>) (34% men and 35% of women). The worldwide prevalence of obesity has nearly doubled between 1980 and 2008. In 2008, 10% of men and 14% of women in the world were obese (BMI  $\geq 30$  kg/m<sup>2</sup>), compared with 5% for men and 8% for women in 1980. An estimated 205 million men and 297 million women over the age of 20 were obese i.e., a total of more than half a billion adults worldwide.

The prevalence of obesity is rising globally and in India. Overweight, obesity and related diseases need to be delineated in Asian Indian women. Women have higher prevalence of overweight and obesity as compared with men in India and that obesity are increasing in the youth (Chopra *et al.*, 2013). Overweight and obesity have reached epidemic proportions globally.

Obesity was traditionally defined as an increase in body weight that was greater than 20 percent of an individual's ideal body weight—the weight associated with the lowest risk of death, as determined by certain factors, such as age, height, and gender. Currently the most widely used index for obesity is the body mass index (BMI). There is a worldwide increase in the consumption of high energy-dense food and sugary drinks, potentially contributing to the increasing prevalence of obesity (WHO 2003; Mendoza *et al.* 2007). Weight loss is directly related to the difference between the patient's energy intake and energy requirements. Among the several strategies for obesity treatment, diet and exercise are considered useful for losing weight in moderately obese adults. However, it seems that even losing weight with these approaches, most obese individuals do not maintain the loss for long periods.

## Materials and Methods

This is a cross sectional observational comparative study. Purposive Sampling Technique was used to select subjects for the study. The study is purposive because only obese women were selected for the study. Dietary intervention was used for weight loss. The diet consultation is done by the qualified dietician. The data for the research study was collected during November 2020. Women under the category of obesity as per WHO BMI criteria and belonging to the age group between 18-60 years were included in the study. Written consent form was collected before undergoing research study. Personal Interview schedule was used as research tool to collect information. The questions in the interview schedule included the following;

1. Socio-Demographic data
2. Anthropometric Measurements
3. Dietary Information

### Socio-Demographic data

All basic data of socio-demographic variable i.e. age, marital status, education, occupation etc were collected in semi-structured proforma.

### Anthropometric measurements

#### Height

Height is measured using a stadiometer. The stadiometer comprises a rigid vertical backboard and a horizontal headboard running free, perpendicular to the backboard and without cross-play.

#### Weight

An electronic digital weighing balance was used for measuring weight. The balance was standardized and adjusted to zero every time to avoid error.

#### BMI

BMI, which is calculated as weight (kg) divided by height squared (m<sup>2</sup>), was chosen as a simple measurement of body weight in relation to height. The Standard values given by WHO is represented in below table.

World Health Organization (WHO) Classifications for Obesity Corresponding to Body Mass Index (BMI)	
WHO Classification	BMI (kg/m <sup>2</sup> )
Underweight	< 18.50
Normal range	18.50–24.99
Overweight	25.00–29.99
Obesity class I	30.00–34.99
Obesity class II	35.00–39.99
Obesity class III	≥ 40.00

Source: Adapted from WHO, 1995, WHO, 2000 and WHO 2004

## Dietary Intake

Dietary intervention is the cornerstone of weight loss therapy. Obesity treatment guidelines issued by the National Institutes of Health recommend that persons belonging to class I obesity should reduce their energy intake by 500 kcal/day from the Recommended Dietary Allowance. (NIH 1998). Persons with class II and class III obesity should strive for 500–1000 kcal/day reduction. With a reduction of 500 kcal/day energy intake, a weight reduction of 0.5 kg/week can be achieved.

During dietary intervention, the respondents were suggested by their dietician, the calorie intake ranging from 1200-1300Kcal/day based on their respective BMR and PAL Value. Respondents were observed weekly for their anthropometric measures for three consecutive months.

The data collected were tabulated as per absolute number and percentage distribution across obesity grades and were further analysed as per chi-test.

## Results and Discussions

**Table 1: Distribution of Respondents according to their Age**

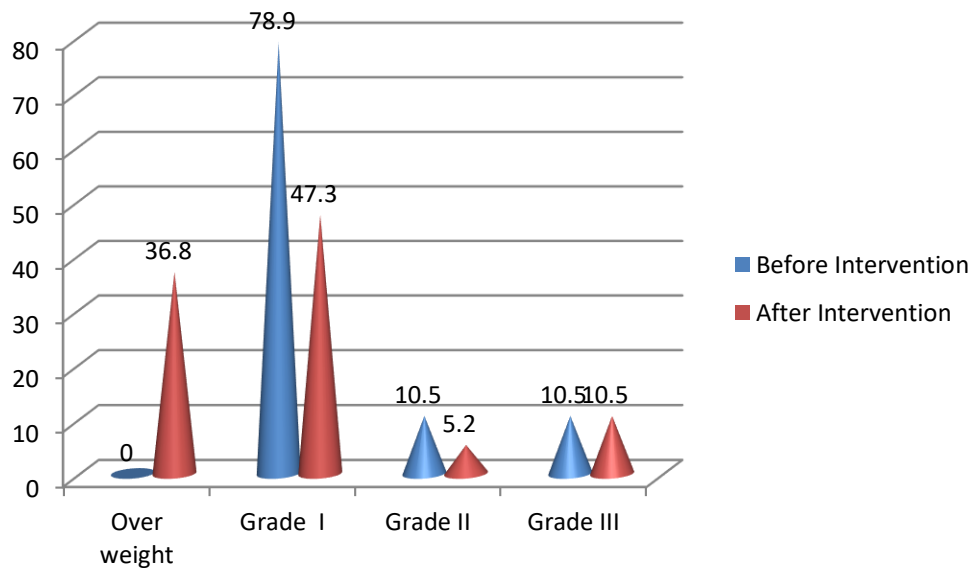
Age-group (years)	No of respondents	Percentage %
20-29	4	21.05%
30-39	8	42.10
40-49	3	15.78
50-60	4	21.05
<b>Total</b>	<b>19</b>	<b>100</b>

According to the above table 1, the highest percentage (42%) of respondents was belonging to the age group 30-39 and lowest (15.78%) were from age group of 40-49.

**Table 2: Distribution of respondents according to the grade of Obesity before and after intervention**

Grade of obesity	Before Intervention		After Intervention		Chi-Test
	No of respondents	Percentage %	No of respondents	Percentage %	
Over weight	0	0	7	36.8	0.0073
Grade I	15	78.9	9	47.3	
Grade II	2	10.5	1	05.2	
Grade III	2	10.5	2	10.5	
<b>Total</b>	<b>19</b>	<b>100</b>	<b>19</b>	<b>100</b>	

**Chart 1: Distribution of respondents according to the grade of Obesity before and after intervention**



According to the above table 2 and chart 1: the highest percentage (78.9%) of respondents was belonging to the grade I obesity and lowest (10.5%) of respondents were from grade II and III respectively before dietary intervention.

Comparing dietary intervention effect as per the above table, it is very clear that there was significant effect of diet on obesity (P value =0.0073) There was a remarkable decrease in the percentage of all grade of obesity except grade III. No change was observed in grade III obesity. 50% decrease in obesity was observed in grade II. After intervention, 36.8% of respondents were found to be overweight which is a good effect of diet over obesity.

### Conclusion:

Overweight and obesity are the fifth leading risk factor for global deaths. Nowadays various intervention techniques are followed for weight reduction, like gym, yoga etc. At present majority of women are engaged in both household chores and in formal works, so due to unavailability of time they can't focus much on their health. According to the survey conducted by NFHS Indian women are found to be more obese than men, which is of serious issue to be considered. Obesity is considered to be one of the most common causes for various degenerative diseases. According to the results of the above study it is very clear that diet intervention played a significant role in weight reduction. The importance of diet intervention is that it is feasible and time saving.

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