

Review Article (Open access)

A Methodological Analysis on Obesity

Deepak Prashar^{1*}, Ram Kumar Sahu²

Department of Pharmacy, PAHER University, Udaipur (RJ), India
 Department of Pharmacy, Columbia Institute of Pharmacy, Raipur (CG), India
 Email: pm_vcp@rediffmail.com

ABSTRACT- Obesity is the problem of global concerned. All over the world it is considered to be the most improbable dilemma both health and appearance wise. Obesity not only makes the person to feel low in society but also indulge them with other health related disorders. Present review tries to focus on the different aspects allied with the obesity. Diseases associated with obesity and different therapies of concerned are being discussed.

Keywords: Obesity, BMI, Negative Energy Balance, Anti-Obesity Agents

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INTRODUCTION

Obesity is the nutritional disorder caused by storage of excessive fat in the body as a reserve of energy. This storage of fats in the body might leads to negative outcomes. BMI (Body Mass Index) clearly indicates the difference between overweight and obese. Body Mass Index between 25 and 29.9 is consider overweight whereas BMI value 30 or above is considered as obese. The main problem with obesity is that in most cases, there is a strong tendency to regain weight; about one-third of lost weight is regained within a year, and almost all within five years. Treatment options are limited and expensive, recommended medicines are not always available, and patients experience many adverse effects.

WHO has recommended the definition of obesity based on the range of BMI (Table 1). Healthcare professionals around the world often use Body Mass Index while determining whether patients are underweight, healthy weight, overweight or clinically obese. Clinically obese persons have a higher risk of developing diabetes, stroke, cancer and cardiovascular disorders.

**Address for Correspondence:*

**Deepak Prashar*
 Department of Pharmacy, PAHER University, Udaipur (RJ), India
 Department of Pharmacy, Columbia Institute of Pharmacy, Raipur (CG), India
 Email: pm_vcp@rediffmail.com

Table 1: Classification of Body Weight Status Based On BMI¹

BMI Value	Body Weight Status
less than 18.5	Underweight
between 18.5 and 25	Healthy Weight
between 25 and 30	Overweight
between 30 and 40	Obese
above 40	Extremely Obese/Morbidly Obese

According to a research carried out in the area of USA, Canada and Western Europe it has been concluded that the daily consumption of calories in both man and women depends upon their age and working conditions/activity status (Table 2). Some studies establish the fact that people risk malnutrition if they are not consuming a well planned balanced diet. This result in demotivation and most dieters drop out before reaching their target.

Table 2: Daily Recommended Calorie Consumption (in Calorie) to Maintain Weight

Gender	Age limits (year)	Activity Status		
		Sedentary	Moderately active	Active
Male	19-30	2400-2600	2600-2800	3000
	31-50	2200-2400	2400-2600	2800-3000
	Above 51	2000-2200	2200-2400	2400-2800
Female	19-30	1800-2000	2000-2200	2400
	31-50	1800	2000	2200
	Above 51	1600	1800	2000-2200

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Causes of obesity

Earlier it was assumed that overeating and less workout are the only causes of obesity. However, literature reviews suggests that there are

many other reasons for the development of obesity. The reasons which initiate obesity can be summarized in Fig. 1.

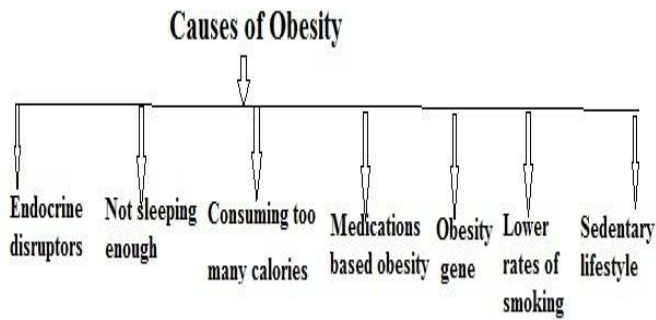


Fig. 1: Enlisted the Various Causes of Obesity

Ailments/Symptoms allied with obesity:

There are always the risks of disease association with obese patients. Directly or indirectly accumulation of excess body fat might have harmful effect on patients' health. In order to lose weight patients starts exerting more energy than normal resulting in a state of **negative energy balance**. In this state of negative energy balance, body seeks out stores of energy, such as fat or muscle to make up for the shortfall it will start using up your excess weight. In extreme cases, this leads to the generation of obesity associated diseases²⁻⁸.

- Coronary heart disease
- Bone and cartilage degeneration (Osteoarthritis)
- High blood pressure (Hypertension)
- High total cholesterol, high levels of triglycerides (Dyslipidemia)
- Gallbladder disease (gallstone)
- Respiratory problems
- Sleep apnea and depression
- Several cancers
- Stroke
- Type 2 diabetes

Apart from these diseases, which appears in the later stages many other preliminary symptoms evoke which need to be monitored. Patient's emergence is adequate to arrive at a diagnosis in most cases, determined by the persons BMI (body mass index) depending on weight to height, though each adolescent may experience symptoms differently. Symptoms may include:-

- Large body frame
- Difficulty in doing daily activities
- Lethargy
- Breathlessness
- Disproportionate facial features
- Breast region adiposity - (sagging fat cells) in boys

- Big belly (abdomen), sometimes marked with white or purple blemishes
- Male external genitalia may appear disproportionately small
- Flabby fat in the upper arms and thighs
- Knock-knees (Genu valgum)

Human studies considering flora as anti-obesity agents:

From the literature, it has been proven since long that plants and its derivatives can be used as an anti-obesity agents. All over the world researchers have carried out many clinical investigations to prove the same. Human studies however are considered to be the best allowing for use of flora in the treatment and prevention of obesity.

- Lehtonen *et al.* (2011) carried out a comparative study on over weight and obese women's using bilberries. The study reveals the reduction in waist circumference as well as the body weight.
- Datau *et al.* (2010) through his double blind study reveals the significant decrease in body weight, waist circumference and systolic blood pressure using *Nigella sativa*.
- Gurrola-Diaz *et al.* (2010) carried double blind study on human (target) using *Hibiscus sabdariffa* and reach to the conclusion that the herb helps in reducing glucose and total cholesterol levels.
- Pal *et al.* (2011) use psyllium fibre and carried out 12 week double blind study on over weight and obese target reaching to the result i.e. significant decrease in weight, BMI and %total body fat.
- Rehman Riaz *et al.* (2011) find out the decrease in BMI and waist circumference in 100 obese targets using *debese*. The study was carried out for 2 years and also showed the Reduction of triceps skin fold.
- Snitker *et al.* (2009) through his randomized clinical trials on 80 healthy persons using Capsinoids reach to the conclusions that abdominal adiposity is decreased but no major change in resting energy expenditure, higher fat oxidation, overall percentage body fat is observed.
- Wang *et al.* (2009) use the extract of Catechin in the form of green tea on moderately over weight 182 samples. The randomized clinical trials outcome showed decrease in estimated intra-abdominal fat area, waist circumference, body weight and total body fat.

Many other researchers have also carried out the similar studies using different herbs and showed almost the same results.

Anti-Obesity Products Therapies Differences:

There are different therapies which are being used in India and across the world for the treatment and prevention of obesity. Some therapies use medication (tablet, capsule, syrup etc.) while other uses the extract, powder, tea. Some therapies also believe in massage, and hot stone therapies.

Table 3: Enlisted the Diverse Products Used In Different Therapies¹⁶

Therapies	Features Of Therapy
Allopathy ¹⁷	Direct use of the medicine to prevent and dissolve the excess of deposited fats in tissues and muscles.
Ayurvedic	In obese persons, digestive fire may be optimum. To improve its power, herbs like trikatu, shilajit, cyperus, kashtha, barberry, calamus, ativisha, katuka, chitraka, karanja, turmeric, guggulu, arjuna, catechu, camphor, neem, rohitaka, shinshipa, apaamarga,
Homeopathic	It role is bit similar to Ayurveda, but instead of herbs the crude extracts are used
Naturopathy ¹⁸	It focus less on diet and try to correct underlying imbalance through life style change and proper planning
Chinese therapy	Acupuncture
Electroconvulsive ¹⁹ therapy	Often used for depression but in recent years showed significant weight loss in obese patients
Psychotherapy Or Behavioral therapy ²⁰	Reduces the peer pressure related to surgery and weight loss diet pattern follow-ups
Gene therapy ²¹	It increases or decreases gene product and restore and maintain energy homeostasis.

CONCLUSIONS

Literature review suggested that obesity is a matter of concern. The methodological analysis on obesity clearly indicates that prevention is better than cure. Obesity is not lethal but the associated ailments may prove to be fatal if proper care is not taken. Moreover, different therapies are available with the physician which might prevent and treat obesity. Systematic reviews are available and discussed by many researchers, yet there is the need of Meta analysis for the statistical combination of the available data. This clinical based Systematic and Meta analysis might prove to be a boon for the physician for the rationalized therapies.

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