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## Review

# Management of obesity in patients with type 2 diabetes mellitus in primary care

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## ABSTRACT

**Aims:** Obesity and being overweight is the most powerful risk factor accounting for 80–90% of patients with type 2 diabetes mellitus (T2DM). The epidemic of obesity is driving the diabetes epidemic to alarming levels and primary care is becoming an important setting for obesity management in T2DM in India. Yet many primary care providers feel ill-equipped or inadequately supported to address obesity in patients with diabetes. This article reviews the most recent and strongest evidence-based strategies that may aid physicians in management of obesity in patients with T2DM in primary care.

**Material and methods:** A systematic literature search of MEDLINE using the search terms Obesity, Obesity in T2DM, weight loss and Primary Care was conducted. The American Diabetes Association, National Institute for Health, National Institute of Health and Excellence (NICE), Scottish Intercollegiate Guidelines Network (SIGN) and World Health Organization websites were also searched. Most studies in this area are observational in design with few randomized controlled trials (RCTs). Articles and studies involving meta-analysis or RCTs were preferred over other types.

**Results and conclusion:** Effective weight management treatment in T2DM patient can be implemented in the primary care setting. Evidence based individualized lifestyle and pharmacologic measures supported by behavioral intervention and counseling with appropriate and informed surgical referrals has the potential to improve the success of weight management within primary care.

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## 1. Introduction

Obesity is associated with a wide range of metabolic and cardiovascular conditions such as dyslipidaemia, atherosclerosis, hypertension and type 2 diabetes which also substantially increase the risk of stroke, angina and myocardial infarction. Obesity also predisposes to colon, breast, kidney and digestive tract cancers. In addition, non-life threatening disease states associated with obesity include arthritis, sleep apnea, gallstones and gout as well as low self-esteem and affective disorder [1].

Obesity and being overweight is the most powerful risk factor accounting for 80–90% of patients with diabetes [2]. Worldwide, at least 2.8 million people die each year as a result of being overweight or obese, and an estimated 35.8 million (2.3%) of global disability-adjusted life year (DALYs) are caused by overweight or obesity [3]. In India the overall prevalence was 6.8% and 33.5% for obesity and overweight respectively in a cross-sectional survey conducted in five different regions of India in 2007 [4]. One worrisome trend is that the age of onset of obesity is progressively getting younger [5]. Prevalence of overweight and obesity in 8–18 years old children in five urban cities in India was 18.5% and 5.3% respectively, in a recent multicentric cross-sectional study in 2011 [6].

## 2. Does weight loss improves health outcomes?

In more than 90,000 women studied there was a graded increase in the risk for death as body mass index (BMI) increased from normal levels to greater than 40 kg/m<sup>2</sup> [7]. Another study involving 83,744 male and female patients concluded mortality risk was directly related to BMI in patients less than 55 years of age [8]. Basically, the mortality and BMI have a J-shaped relationship.

A small amount of weight loss, approximately 10 kg, carries significant benefits including resolution of comorbid conditions [9] and 10% of initial weight loss has been shown to improve long-term comorbid control [10]. Table 1 lists some of the studies which demonstrate benefits of weight loss in improving health outcomes.

## 3. Obesity management in primary care – does it helps?

Even though evidence suggests that patients are considerably more likely to lose weight when they are advised to do so by their primary care physicians (PCP), most patients who are clinically obese do not receive weight-loss counseling in primary care [19,20]. Studies have provided evidence that PCP can deliver safe and effective weight loss interventions (Table 2).

## 4. Assessment and investigations for obesity

Comprehensive assessment is necessary to the effective management of obese patient. Table 3 enumerates the assessments necessary for management advice.

## 5. Assessment of severity of obesity

The patient should have weight, height, waist circumference measured and BMI calculated. The severity of obesity needs to be classified as per the WHO/IDF criteria – Table 4.

BMI (weight in kg/height in m<sup>2</sup>) is the most widely used parameter to assess obesity [25]. In view of the increased tendency for cardiovascular risk at lower BMIs, it has been proposed to lower these cutoffs to 23 kg/m<sup>2</sup> and 25 kg/m<sup>2</sup>, respectively for Asian Indian [26]. BMI alone does not appear to accurately identify all cases of obesity, and this problem is most significant in individuals who may not appear particularly obese (i.e. BMI – 30 kg/m<sup>2</sup>) [27].

The WC seems to be clearly superior to BMI. In a study which followed a 11 year mortality in an Australian urban sample of 9309 adults aged 20–69 years, concluded that WC is superior in predicting CVD mortality than BMI with superior discrimination of risks compared to BMI [28]. Studies have shown that WC as a good correlate of abdominal visceral adipose tissue using computerized tomography and MRI [29]. WC is independent of height though IDF recommends ethnic specific criteria for variable frame size [30]. For individuals older than 75 years, a waist to hip ratio (WC divided by hip circumference) may be a better predictor of death than either BMI or WC alone [31]. Waist-to-hip ratios greater than 0.95 in men and 0.85 in women are considered elevated [31].

### 5.1. Assessment for potential causes of obesity

Tables 5 and 6 illustrate the possible conditions and medications which may be associated with weight gain and should be looked for in assessment through history and physical examination. A comprehensive drug history is essential to identify possible iatrogenic causes of obesity and determine whether these could be withdrawn, reduced or substituted [33].

### 5.2. Assessment of presence and risks of co-morbidities plus status of diabetes control and complications

This assessment would identify the co-morbidities, control of diabetes and its complications with the aim to optimize the treatment and assess the physical capability of the patient to undergo various modalities of obesity treatment (Tables 6 and 7) [33,34].

### 5.3. Assessment of patients lifestyle and motivation for change

**Diet history:** The patient's dietary habits need to be carefully documented. This information is best obtained by a dietician using techniques such as the 24-h recall, food frequency questionnaire and 3- or 7-day food frequency diaries [35]. Table 8 describes key information which could be elicited.

**Physical activity (PA) history:** Physical inactivity is also an independent risk factor for cardiovascular disease [36] and premature death [37]. Before advising patients for exercise to lose weight it is essential to know the present level of PA for individualized recommendations (Table 8).

### 5.4. Assessment of psychological status and motivational levels

All obese people should be screened for depression and anxiety, and specifically for eating disorders because all these conditions can impair the patient's quality of life and can also interfere with successful management [38]. Before starting the treatment the assessment of patient's motivation and readiness for change is

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