



## Abstract

Gastric cancer, also known as stomach cancer is a prevalent malignancy with significant global impact. It arises from the abnormal growth of cells in the lining of the stomach and is associated with substantial morbidity and mortality. The development of gastric cancer involves a complex interplay of genetic, environmental, and lifestyle factors. In recent years, there has been growing recognition of the role of obesity in gastric cancer development. Obesity, characterized by excessive body fat accumulation, contributes to chronic inflammation, hormonal imbalances, insulin resistance, and other metabolic dysregulations, creating a favorable environment for cancer initiation and progression. Epidemiological studies consistently demonstrate an increased risk of gastric cancer in individuals who are overweight or obese, particularly for the adenocarcinoma subtype. Adipose tissue-derived hormones, chronic inflammation, and disrupted insulin signaling pathways are proposed mechanisms linking obesity to gastric cancer. Furthermore, obesity is often associated with other risk factors such as gastroesophageal reflux disease (GERD) and unhealthy dietary habits, which further contribute to the development of gastric cancer. Understanding the complex relationship between

**Keywords:** Gastric cancer; Obesity; Weight; High fat diet

## Introduction

### The obesity epidemic

Obesity is characterized by excessive accumulation of body fat, leading to a state of imbalance between energy intake and expenditure. The World Health Organization (WHO) estimates that over 1.9 billion adults are overweight, and approximately 650 million are obese. Obesity is a multifactorial condition influenced by genetic, environmental, and behavioral factors. Sedentary lifestyle, high-calorie diet, and altered gut microbiota are key contributors to the obesity epidemic [1-3].

### Unveiling the connection

Recent research has highlighted the significant impact of obesity on the development of gastric cancer, a link that has been attributed to several mechanisms, including chronic inflammation, insulin resistance, and altered gut microbiota.

**Chronic inflammation:** Obesity leads to a state of chronic low-grade inflammation, characterized by increased levels of pro-inflammatory cytokines and adipokines. This inflammatory state is thought to contribute to the development of gastric cancer by promoting cellular damage and DNA damage [4].

**Insulin resistance:** Obesity is closely linked to insulin resistance, a condition where the body's cells do not respond effectively to insulin. This leads to elevated levels of insulin and insulin-like growth factor (IGF) in the blood. High insulin and IGF levels are associated with increased risk of gastric cancer. A study conducted in India, by Shah et al.,

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**Literature Review**

The complex relationship between obesity and gastric cancer is an area of ongoing research, highlighting the multifaceted interactions between these two conditions [6]. A better understanding of the underlying mechanisms, including the role of chronic inflammation, insulin resistance, and the gut microbiome, is crucial for developing targeted interventions. Additionally, lifestyle modifications, such as maintaining a healthy weight and a balanced diet, are essential for reducing the risk of both obesity and gastric cancer [6,7].

**Epidemiological evidence**

Epidemiological studies have consistently shown a positive association between gastric cancer incidence and obesity, particularly in the upper gastrointestinal tract. This relationship is more pronounced in individuals with higher body mass index (BMI) and is often mediated by factors such as chronic inflammation and insulin resistance [8].

**Adipose tissue and cancer promotion**

Adipose tissue, the primary site of fat storage, is not merely a passive energy reservoir but an active endocrine organ. It secretes various adipokines, including leptin and adiponectin, which play roles in regulating metabolism and inflammation. Dysregulation of these hormones can contribute to the development of obesity-related conditions, including cancer [9].

