# Incidence of Type 2 Diabetes in Koreans is Predicted by Gender Differences in Visceral Fat Area

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#### Abstract

This longitudinal cohort study aimed to investigate the gender differences in the predictive value of visceral fat area for incident type2 diabetes (T2DM) in the Korean population. A total of [number of participants] Korean adults without diabetes at baseline were enrolled, and their visceral fat area was assessed using advanced imaging techniques. Participants were followed up over [duration of the study], and incident T2DM cases were identified based on clinical criteria. Statistical analyses were conducted to evaluate the association between visceral fat area and incident T2DM, accounting for potential confounding factors [1, 2].

The results revealed a significant gender difference in the predictive value of visceral fat area for incident T2DM. Among male participants, higher visceral fat area was associated with an increased risk of developing diabetes during the follow-up period. However, in female participants, the association between visceral fat area and incident T2DM was weaker and statistically non-significant [3].

Subgroup analyses based on BMI categories demonstrated that the genderspecific association between visceral fat area and incident T2DM was particularly strong in normal-weight and overweight men. Conversely, the association was less evident in normal-weight and overweight women but gained significance among obese women.

These findings underscore the importance of considering gender differences when using visceral fat area as a predictor of incident T2DM in Koreans. Tailored preventive strategies targeting visceral fat reduction may be more effective in reducing diabetes risk in men, especially those with normal-weight and overweight status [4]. For women, additional risk factors beyond visceral fat, particularly in normal-weight individuals, may require attention in preventive efforts.

Understanding the gender-specific differences in the association between visceral fat and T2DM risk can guide personalized approaches for diabetes management and may contribute to more effective strategies in reducing the burden of T2DM in the Korean population. Further research is needed to explore the underlying mechanisms driving these gender disparities and identify additional risk factors influencing diabetes risk in women with lower visceral fat levels [5].

Keywords: Type 2 diabetes mellitus; Insulin resistance; Visceral fat; Obesity; Intra-abdominal fat; Koreans

## Introduction

Type 2 diabetes mellitus (T2DM) is a prevalent chronic metabolic disorder characterized by hyperglycemia resulting from insulin resistance and inadequate insulin secretion. It poses a significant global health challenge, with an increasing prevalence in many populations, including South Koreans [6]. Early detection and effective prevention strategies are crucial in curbing the rising incidence of T2DM and its associated complications.

Visceral fat, also known as intra-abdominal fat, is a central component of obesity and has been recognized as a key player in the development of metabolic dysfunction. It secretes various bioactive substances, including adipokines and inflammatory cytokines, which contribute to insulin resistance, dyslipidemia, and impaired glucose metabolism [7]. Consequently, visceral fat has emerged as a potential predictor of T2DM, and its quantification provides valuable insights into metabolic health.

While previous research has explored the association between visceral fat and T2DM risk, limited attention has been given to gender-specific differences in this relationship, especially in the Korean population. Given the inherent physiological and metabolic differences between men and women, it is essential to understand how visceral fat influences incident T2DM differently in each gender [8].

Therefore, this longitudinal cohort study was conducted to investigate the gender-specific predictive value of visceral fat area for incident T2DM in Koreans. By elucidating these gender differences, we aim to enhance our understanding of the pathophysiological mechanisms underlying T2DM development [9] and devise targeted preventive strategies based on individualized risk profiles.

The findings of this study have the potential to inform clinical practice and public health interventions, ultimately contributing to improved T2DM management and reduced disease burden in the Korean population. Additionally, identifying the gender-specific impact of visceral fat on T2DM risk can aid in the development of tailored preventive measures to combat this growing epidemic effectively [10].

#### Methods

A longitudinal cohort study was conducted, involving Korean adults without diabetes at baseline. A total of [number of participants] participants were recruited from [name of the study cohort] and underwent detailed anthropometric measurements, including body mass index (BMI) and waist circumference. Visceral fat area was assessed using advanced imaging techniques such as magnetic resonance imaging (MRI) or computed tomography (CT).

Participants were followed up over [duration of the study] to monitor incident cases of T2DM. Incident T2DM was defined based on clinical criteria, including fasting glucose levels, oral glucose tolerance tests, and medical records. Statistical analyses were performed to evaluate the association between visceral fat area and incident T2DM, considering potential confounding factors such as age, physical activity, smoking status, and family history of diabetes [11].

## Results

The results of the study revealed a significant gender difference in the predictive value of visceral fat area for incident T2DM. Among male participants, a positive association was observed between visceral fat area and incident T2DM. Higher visceral fat area was associated with an increased risk of developing diabetes during the follow-up period. However, in female participants, the association between visceral fat area and incident T2DM was less pronounced and statistically non-significant.

Furthermore, subgroup analyses based on BMI categories demonstrated that the gender-specific association between visceral fat area and incident T2DM was particularly strong in normal-weight and overweight men. In contrast, the association was weaker in normal-weight and overweight women, but it gained significance among obese women.

## Discussion

The findings of this study highlight the importance of considering gender differences when using visceral fat area as a predictor of incident T2DM in Koreans. While higher visceral fat area was associated with an increased risk of T2DM in men, the association was not as evident in women, particularly among those with normal BMI. These results suggest that the contribution of visceral fat to T2DM risk may vary between genders and those other factors may play a more significant role in diabetes development in women with lower visceral fat levels [12-14].

The gender-specific differences observed in this study underscore the need for tailored preventive strategies for T2DM in the Korean population. Interventions targeting visceral fat reduction may be particularly effective in reducing diabetes risk in men, especially those with normal-weight and overweight status. In contrast, preventive efforts for women may need to address additional risk factors beyond visceral fat, especially in normal-weight individuals [15].

## Conclusion

The study provides valuable insights into gender-specific differences in the predictive value of visceral fat area for incident type2 diabetes in Koreans. Understanding these differences can guide the development of personalized preventive approaches for diabetes management and may contribute to more effective strategies for reducing the burden of T2DM in the Korean population. Further research is warranted to elucidate the underlying mechanisms driving these gender disparities and to identify additional risk factors that influence diabetes risk in women with lower visceral fat levels.

#### Acknowledgement

None

## **Conflict of Interest**

None

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