

# Impact of Hypertension on Type 2 Diabetes in Mysore Population of South India<sup>\*</sup>

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## ABSTRACT

**Objective:** The study aims to explore the prevalence of hypertension and its impact on Type 2 diabetes in a Mysore population of the Indian subcontinent. **Methods:** 636 participants volunteered for the study. Anthropometric measurements and blood pressure were recorded while plasma was analyzed for biochemical markers. The IDF and JNC 7 diagnostic criteria were followed to define diabetes and hypertension. **Statistical Analyses:** One-way analysis of variance,  $\chi^2$ -test and Logistic regression analysis were performed to assess differences of the mean, proportion and the independent effect of hypertension on the development of type 2 diabetes. **Results:** Hypertension was observed to be prevalent in 37.1% of the studied population with an insignificant gender difference. Rate of occurrence of hypertensives was found to be significantly higher in type 2 diabetes (51.9%), obese subjects (45.2%), long-term smokers (49%) and alcohol addicts (48%) than control groups. The risk of development of diabetes was significantly higher in hypertensives than normotensive. However, when creatinine and blood urea nitrogen were included in the model, the significance was nullified. **Conclusions:** The prevalence of type 2 diabetes and hypertension is increasing at an alarming rate. This study reveals that the significance of hypertension as a parameter in predicting the risk of type 2 diabetes was influenced by the renal function and lipid profile.

**Keywords:** Hypertension; Type 2 Diabetes; Prevalence; Kidney Dysfunction; Mortality; Mysore Population; India

## 1. Introduction

The incidence of Type 2 Diabetes (T2D) is increasing globally from 2.8% in 2000 to 4.4% in 2030 [1]. The prevalence of T2D in Asian Indians ranges from 2.7% in rural India to 14% in urban India. India has the highest number of diabetes in the world [2,3]. The National Urban Diabetes Survey reported 12.1% of diabetes and 14% of impaired glucose tolerance [4]. The prevalence of hypertension (HTN) among adults is expected to rise by 60% resulting in a total of 1.56 billion affected individuals by 2025. Approximately 70% of diabetics are hypertensives, as diabetics are prone to HTN twice more likely than normoglycemic individuals [5]. Similarly, the presence of HTN precedes the onset of diabetes mellitus (DM) [6,7]; and among diabetics, HTN develops into diabetes

nephropathy and retinopathy. The co-occurrence of HTN and T2D affects up to 60% of patients leading to higher risk of developing cardiovascular morbidity and mortality [8]. Though cardiovascular risks are common in both, in conjunction they accelerate cardiac, cerebral and renal dysfunctions [9]. The United Kingdom Prospective Diabetes Study (UKPDS) revealed that blood pressure control helps to avoid cardiovascular complications in patients with T2D [10]. The decrease in mean systolic blood pressure by 10 mm/Hg reduces the risks of developing complications in diabetes by 12%, mortality by 15%, myocardial infarction by 11% and microvascular complications by 13% among diabetics respectively [11].

The prevalence varies across different ethnic and religious groups in Asia; the co-occurrence of diabetes with HTN shows an increasing trend and has become an epidemic of a great concern [12]. About 50% of diabetes cases in India show the co-occurrence of HTN [13,14].

<sup>\*</sup>Competing Interests: the author(s) declare that they have no competing interests.

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