**Original Research Paper** 



# EPIDEMIOLOGICAL STUDY ON PREVALENCE OF DIABETES, HYPERTENSION, AND EFFECT OF OBESITY ON THE ABOVE PARAMETERS.

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**ABSTRACT** a chronic disease caused by inherited and/or acquired deficiency in production of insulin by the pancreas, or by the ineffectiveness of the insulin produced. Such a deficiency results in increased concentration of glucose in the blood, which in turn damage many of the body's systems, in particular the blood vessels and nerves.

Hypertension is defined by persistent elevation of arterial blood pressure with diastolic blood pressure values more than 90mmHg and systolic blood pressure values greater than or equal to 140mmHg.

**Aim:** To perform epidemiological study on the prevalence of Diabetes and Hypertension and effects of obesity and overweight on the above parameters in Somanahalli Village of Bangalore & provide them medicine based/ diet based patient counselling.

Materials & Methods: Epidemiological observational study with 300 enrollments. All the data was collected and stored in data sheets and were analysed.

**Result & Conclusion :** The observational epidemiological study was conducted in Somanahalli village of bangalore wherein 300 people were analysed for BP Diabetes and obesity; out of which 33% were suffering from either Diabetes mellitus or hypertension, 20% were overweight, and 10% were obese.

From the study it was found that 70% of the obese/ overweight category of people suffered from either of the condition (DM & BP) or both which determines that obesity/ overweight is one of the major predisposing factors contributing for the conditions.

All the above patients were counselled for the prevention of obesity which helps in disease management.

# **KEYWORDS**:

# INTRODUCTION

Diabetes mellitus is a chronic disease caused by inherited and/or acquired deficiency in production of insulin by the pancreas, or by the ineffectiveness of the insulin produced. Such a deficiency results in increased concentration of glucose in the blood, which in turn damage many of the body's systems, in particular the blood vessels and nerves'. Hypertension is defined by persistent elevation of arterial blood pressure with diastolic blood pressure values more than 90mmHg and systolic blood pressure values greater than or equal to 140mmHg. Overweight and obesity is defined as the abnormal or excessive fat accumulation that presents a risk to health. Before 20<sup>th</sup> century, despite the warnings of physicians such as Galen and Hippocrates, many cultures have harbored the false belief that obesity was a sign of health. However, robust medical evidence has dispelled this and revealed in detail how obese individuals are prone to the plethora of diseases.[2]

The global epidemic of overweight and obesity - "globesity" - is rapidly becoming a major public health problem in many parts of the world.[3] World Health Organization (WHO) in its latest projections indicate that globally in 2008 approximately 1.5 billion adults (age 20+) were overweight and at least 500 million adults were obese. WHO further projects that by 2015, at least 2.3 billion adults will be overweight and more than 700 million will be obese. Overweight and obesity are associated with an increased risk of developing hypertension and diabetes.[4,5,6,7,8] The prevalence of these chronic disorders has been reported to be increasing in India. Overweight and obesity have been found to have an impact in the clinical profile of diabetes and hypertension in various studies. In India, there is a rising burden of chronic diseases such as hypertension and diabetes mellitus (DM). India has the largest number of diabetics in the world with a 3.8% in rural and 11.8% in urban adults. The prevalence of hypertension has been reported to range between 12% and 17% among rural and 20-40% in urban adults.[9]

## MATERIAL AND METHOD

Patient population: The study included patients of age  $\geq$  18yrs and patients having past medical history of HTN & DM. the study excluded with patients who were pregnant, underweight, and having any other comorbid conditions.

# METHODOLOGY

Data source: Primary source of data was collected in data sheets during the medical camps conducted in Somanahalli, Bangalore. Secondary data was collected through scientific journals, medical books and internet website.

Pharmacy

Research instrument: A structured data sheet included the filling of information regarding patient demographics, socio-economics & lifestyle which were taken into account in order to assess the health related quality of life.

An informed consent was obtained from the people after explaining the study procedures in detail. During the process of their medical assessment at our hospital, relevant history and measurements were taken, questionnaire filled as per study proforma and relevant investigations were asked for. Relevant investigations were carried out to diagnose diabetes and associated abnormalities. The data were collected and results were analyzed.

The following parameters were recorded

- 1. Personal details, which included name, age, sex, address, trade and occupation.
- 2. History of any relevant previous illness such as diabetes, hypertension.
- 3. Anthropometry Height, weight, waist circumference, hip circumference. BMI and waist: Hip ratio was calculated from the parameters measured.
- 4. Resting heart rate.
- 5. Resting blood pressure in the right arm Sitting position.<sup>10</sup>

Impaired fasting blood glucose levels (IFG) were between 110 and 125 mg/dl. Waist circumference (WC) was categorized as low risk if it was less than 94 cm for men, and less than 80 cm for women; high risk if it was 94 cm or more for men, and 80 cm or more for women<sup>1+16</sup>. Body mass index (BMI) was calculated as the ratio of weight in kilograms to the square of height in meters. BMI was used to define underweight (BMI < 18.5), normal (18.5 BMI < 25.0), overweight (25.0 BMI < 30.0), and obese (BMI 30) adults. Current alcohol consumption was assessed by asking participants to respond by ticking "Yes /No" to the question, "have you consumed any alcoholic drink in the last 30 days?". Data about current smoking was found out by asking participants to respond in the same to the question,

"Do you currently smoke any tobacco products, such as cigarettes?" Moderate physical activity was considered as "Yes" for those participants who walked at least for 10 minutes continuously on a daily basis.

# **Design of the study**

This study was based on the cross-sectional study design. The subjects who took part in the study were selected on the basis of criteria for overweight and obesity as suggested for Asians by WHO expert consultation on body mass index (BMI) in Asian populations.<sup>11,12</sup>

# **Inclusion criteria**

- i. Age > 18 years of age.
- ii. Weight > 20% of ideal weight or BMI > 23 kg/m<sup>2</sup> or waist > 90 cm in men and > 80 cm in women.

#### **Exclusion criteria**

i. People who did not volunteer to participate in the study.

## Criteria for overweight and obesity

Any one of the following criteria

- Weight > 20% of ideal bodyweight is overweight and > 30% is obese.
- ii. BMI > 23-24.9 is overweight and > 25 is obese.
- iii. Waist circumference: Men > 90 cm, women > 80 cm.<sup>13</sup>

#### RESULT

A total of 300 subjects were initially invited for the survey, but 05 refused to participate, resulting in a response rate of 97.3%. Of this, about 48% were men and 52% were women. The median age ( $\pm$ SD) of the study group was 56.0 years. The Mean ( $\pm$ SD) systolic blood pressure (mmHg) was 130 mmHg in urban. The Mean ( $\pm$ SD) diastolic Blood Pressure was higher among 80mmHg in men. The difference was not significant in woman. The mean age for subjects with hypertension 55.7 years for women and 56.8 years for men.

The observational epidemiological study was conducted in somanahalli village of Bangalore wherein 300 people were analysed for BP, DM & obesity out of which 37% suffered from either, HTN 15% from DM, 20% were overweight and 9% were obese. From the study it was found that 63% of the obese/ overweight people are suffering from either of the condition which determines that obesity or overweight is one of the major predisposing factors contributing for the conditions.



Fig No 1:Distribution Of Diseases In Somanahalli Village Based On Age









## **DISCUSSION:**

With increasing age, there will be increasing stiffness of the aorta and arterial walls which contribute to the observed high prevalence of hypertension in the older group. In the current study, increasing age was an important risk factor for hypertension. Overall, the agestandardized prevalence rate was found to be significantly associated with hypertension, with much higher prevalence noted in the older age compared to the younger.

In our finding, obesity was the major independent variable associated with hypertension detected using both BMI and waist circumference for the determination of obesity. As we have seen, the forces promoting sedentary behavior have grown substantially over the last few decades. Urbanization is associated with changes in dietary habits and with reduced physical activity that lead to obesity. Such changes of lifestyle and dietary habits contribute to the excess prevalence of abdominal obesity in urban areas which eventually result in the increased prevalence of hypertension [[13]. Urbanization is associated with changes in dietary habits and exercises that lead to obesity which have been implicated as contributing factors in the development of high blood pressure. Alcohol consumption was significantly associated with high blood pressure in the study population. About 81% of the rural study population reported regular alcohol consumption. Previous research indicated that heavy alcohol consumption was a risk factor for high blood pressure [30-32]].

#### CONCLUSION

The prevalence of HTN OR DM in the Somanahalli village was found to be more among the obese/overweight category patients. Obesity/overweight lead to adverse metabolic effects on blood pressure, cholesterol, triglycerides and insulin resistance. The early identification of individuals at risk and appropriate intervention in the form of weight reduction, changes in dietary habits and increased physical activity could greatly help to prevent or atleast delay the onset of the above conditions.

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