

## Original Research

### Assessment of cardiovascular risk factors in diabetes patients

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#### ABSTRACT:

**Background:** Diabetes mellitus (DM) is a metabolic disorder principally characterized by elevated blood glucose levels and by microvascular and macrovascular complications that considerably increase the morbidity and mortality related to the disease. The present study was conducted to assess cardiovascular risk factors in diabetes patients. **Materials & Methods:** 140 type II Diabetes mellitus patients of both genders were subjected to assessment of glycated hemoglobin, fasting and random blood glucose. Lipid profile was also performed. Assessment of risk factors were done. **Results:** Out of 140 patients, males were 80 and females were 60. Risk factors were hyperinsulinemia in 24, obesity in 18, dyslipidemia in 30, hypertension in 56, hyperalbuminemia in 28, smoking in 34 and alcoholism in 52. The difference was significant ( $P < 0.05$ ). **Conclusion:** Common cardiovascular risk factors in diabetes patients was hyperinsulinemia, obesity, dyslipidemia, hypertension, hyperalbuminemia, smoking and alcoholism.

**Key words:** Diabetes, Hyperinsulinemia, Obesity

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#### INTRODUCTION

Diabetes mellitus (DM) is a metabolic disorder principally characterized by elevated blood glucose levels and by microvascular and macrovascular complications that considerably increase the morbidity and mortality related to the disease.<sup>1</sup> Type I DM (insulin-dependent diabetes mellitus, IDDM) is characterized by a near-total reliance on exogenous insulin for survival, and long-standing type I DM patients are susceptible to microvascular complications, including nephropathy, retinopathy and neuropathy, specific to diabetes and to nonspecific macrovascular disease (coronary artery disease [CAD] and peripheral vascular disease.<sup>2</sup> Mortality in type I DM has increased four- to sevenfold over the matched nondiabetic population, and nephropathy and CAD are the main causes of death. However, type II DM (noninsulin-dependent diabetes mellitus, NIDDM) is characterized by relative insulin deficiency and/or insulin resistance and is becoming more common than type I, usually occurring in middle age, most commonly in the obese. The reason for this is attributed, in part, to an aging

population and the increasing prevalence of obesity and sedentary lifestyles.<sup>3</sup>

Globally, according to the International Diabetes Federation (IDF), there are 352 million adults with impaired glucose tolerance which is a high risk of developing diabetes by 2045. Despite the increase in diabetes burden, interventions are still poor and epidemiological data are scarce.<sup>4</sup> The present study was conducted to assess cardiovascular risk factors in diabetes patients.

#### MATERIALS & METHODS

The present study was conducted among 140 type II Diabetes mellitus patients of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Patients were subjected to assessment of glycated hemoglobin, fasting and random blood glucose. Lipid profile was also performed. Assessment of risk factors were done. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

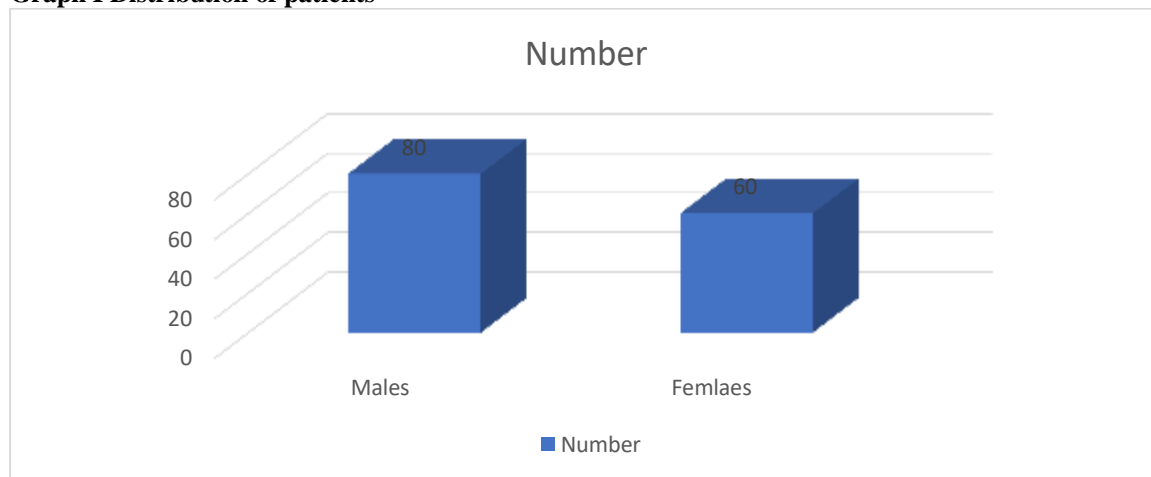
**RESULTS**

**Table I Distribution of patients**

Total- 140		
Gender	Males	Females
Number	80	60

Table I, graph I shows that out of 140 patients, males were 80 and females were 60.

**Graph I Distribution of patients**

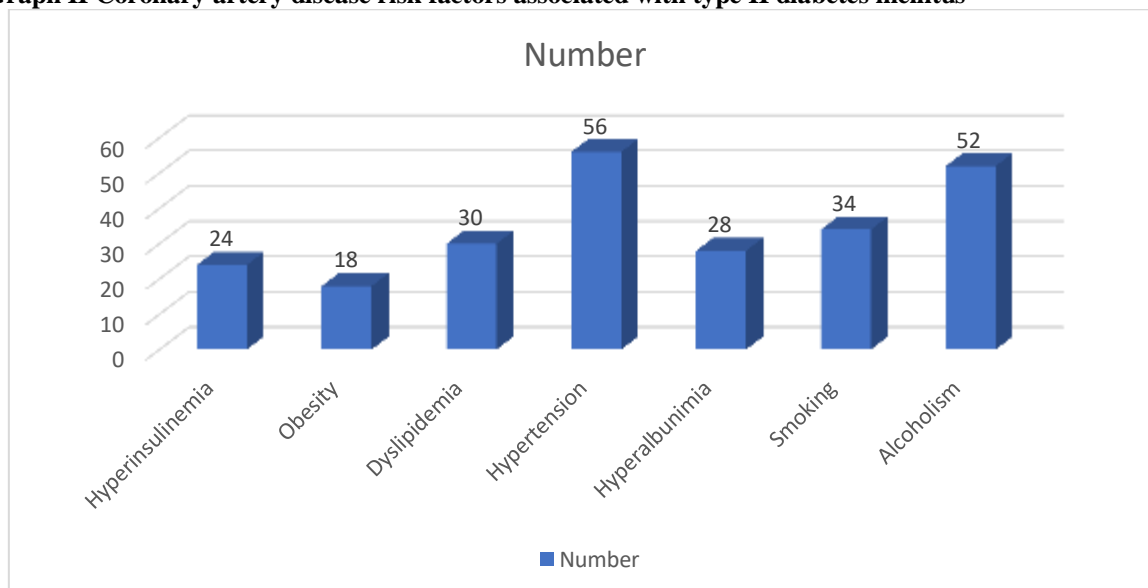


**Table II Coronary artery disease risk factors associated with type II diabetes mellitus**

Risk factors	Number	P value
Hyperinsulinemia	24	0.04
Obesity	18	
Dyslipidemia	30	
Hypertension	56	
Hyperalbuminemia	28	
Smoking	34	
Alcoholism	52	

Table II, graph II shows that risk factors were hyperinsulinemia in 24, obesity in 18, dyslipidemia in 30, hypertension in 56 and hyperalbuminemia in 28, smoking in 34 and alcoholism in 52. The difference was significant (P< 0.05).

**Graph II Coronary artery disease risk factors associated with type II diabetes mellitus**



## DISCUSSION

Specific microvascular complications in type II DM are less common than in type I DM, in which the onset is earlier and exposure to the disease is generally longer. However, retinopathy (especially maculopathy rather than proliferative changes), nephropathy and neuropathy occur.<sup>5</sup> Type II DM carries a high risk of large-vessel atherosclerosis, where the linking of the artery wall becomes enlarged, as cells from the blood, along with lipids, accumulate, ultimately weakening the wall and precipitating a rupture. This condition affects many individuals and is commonly associated with hypertension, hyperlipidemia and obesity. Myocardial infarction (MI) is also common and accounts for 60% of deaths. Overall mortality of type II DM has increased two- to threefold and life expectancy is reduced by five to 10 years.<sup>6</sup> Atherosclerotic CAD and other forms of cardiovascular disease (CVD) are the major causes of mortality in type II DM and are major contributors to morbidity and depreciation in quality of life. Risks of incidence from CAD or fatal CAD are two- to fourfold higher in people with DM than in those without. Furthermore, long-term prognosis after a coronary event is significantly worse among people with DM than those without.<sup>7</sup> Patients with type II DM (but without previous MI) have as high a risk of MI as nondiabetic patients with previous MI.<sup>8</sup> The present study was conducted to assess cardiovascular risk factors in diabetes patients.

In present study, out of 140 patients, males were 80 and females were 60. Asimwe et al<sup>9</sup> conducted a study among patients aged 45-80 years. The prevalence of type 2 diabetes was determined by the blood sugar of patients. Questionnaires were used to collect data for factors associated with type 2 diabetes. The overall prevalence of type 2 diabetes was 18.7% among the tested patients. 22.8% of diabetic patients were females as 7.8% were males. The age group most affected by diabetes was 61-65 years. Alcoholism, smoking, body mass index (BMI), and family history were found to be significantly associated with type 2 diabetes.

We found that risk factors were hyperinsulinemia in 24, obesity in 18, dyslipidemia in 30, hypertension in 56 and hyperalbuminemia in 28. The major underlying defect of type II DM is insulin resistance and progressive deterioration of  $\beta$ -cell functions. A diversity of causes, including aging, genetic defects, environmental factors and obesity, can trigger the development of insulin resistance.<sup>10</sup> Once insulin resistance develops in several tissues, insulin-stimulated glucose disposal is decreased and adipocytes release many free fatty acids (FFAs). Furthermore, increased FFAs inhibit the insulin action on liver, resulting in increased gluconeogenesis in the hyperglycemic state. Coronary artery atherosclerosis in diabetic subjects is more diffuse and severe than in nondiabetic subjects.<sup>11</sup> Acute MI in diabetes carries twice the mortality of that in the general population

and contributing factors may include coexistent diabetic cardiomyopathy, autonomic neuropathy, and adverse cardiac and metabolic effects of increased nonesterified fatty acid levels. Acute MI in these subjects is usually managed by tight control of blood glucose and potassium levels and prompt treatment of cardiac failure. The symptoms of angina can be masked in diabetic patients by autonomic neuropathy.<sup>12</sup>

## CONCLUSION

Authors found that common cardiovascular risk factors in diabetes patients was hyperinsulinemia, obesity, dyslipidemia, hypertension, hyperalbuminemia, smoking and alcoholism.

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