

# Clinical profile of patients with type 2 diabetes mellitus at a tertiary care hospital

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## Abstract

Macrovascular complications of diabetes mellitus include cardiovascular diseases, cerebrovascular accidents and peripheral vascular disease. Macrovascular disease is a significant cause of mortality in diabetic patients. Diabetic individuals have a multitude of risk factors for atherogenesis and the odds of developing coronary artery disease and ischemic strokes are 2 to 4 times and 2 to 3 times more, respectively, than non-diabetic individuals. This is a prospective observational comparative study in which 60 patients with type 2 diabetes mellitus in the age group of 35-65 years were included and results are compared with 60 Normal Individuals. The study design was approved by the Ethical Committee of the institution. In NN group, 12(85.7%) patients were on OHA, 02(14.3%) patients on insulin. In NH group, 19(82.6%) patients were on OHA, 04(17.4%) patient was on insulin. In HH group, 16(69.6%) patients were on OHA, 7(30.4%) patients were on insulin. The distribution of BMI among all the three groups was equal. P value was 0.215 which shows that the groups were similar to each other in the distribution of BMI.

**Keywords:** Type 2 diabetes mellitus, macrovascular complications, BMI

## Introduction

Diabetes mellitus (DM) comprises of a set of metabolic disorders that are characterized by hyperglycemia. The prevalence of diabetes worldwide has increased extraordinarily over the last twenty years, from approximately 30 million cases in the eighties to about 285 million as per the 2010 statistics. The International Diabetes Federation predicted that 438 million people will have DM by 2030<sup>[1]</sup>.

Macrovascular complications of diabetes mellitus include cardiovascular diseases, cerebrovascular accidents and peripheral vascular disease. Macrovascular disease is a significant cause of mortality in diabetic patients. Diabetic individuals have a multitude of risk factors for atherogenesis, and the odds of developing coronary artery disease and ischemic strokes are 2 to 4 times and 2 to 3 times more, respectively, than non-diabetic individuals<sup>[2]</sup>.

The Framingham Heart Study demonstrated a markedly elevated incidence of Peripheral vascular disease, Congestive cardiac failure, ischemic heart disease, acute coronary syndromes, and sudden

cardiovascular death in persons with diabetes mellitus. Diabetes mellitus has been labeled as "CHD risk equivalent". By The American Heart Association Patients with type 2 diabetes with no previous history of STEMI have identical risk for acute coronary events compared to non-diabetic individuals who have had previous history of Myocardial Infarction [3].

Since the traditional risk factors cannot completely account for the increased coronary artery disease risk in diabetic patients, other potential risk factors need to be sought for. Two key pathological mechanisms playing a major role in the development of atherosclerotic changes are vessel wall inflammation and activation of coagulation.

The studies done in the past two decades or so have highlighted the role of augmented and prolonged dysmetabolism occurring in the postprandial state in type 2 diabetes mellitus. In the late 1970s, Zilversmit suggested that atherosclerosis is predominantly a postprandial phenomenon. Since then, a huge amount of evidence has been put forward consolidating a relationship between postprandial dysmetabolism and the macrovascular complications of diabetes, with hyperglycemia and dyslipidemia being the key players [4].

### Methodology

This is a prospective observational comparative study in which 60 patients with type 2 diabetes mellitus in the age group of 35-65 years were included and results are compared with 60 Normal Individuals. The study design was approved by the Ethical Committee of the institution.

**Study period:** 1 year.

**Type of study:** Single centered and prospective observational study.

### Inclusion criteria

All patients with type 2 diabetes mellitus with normal ECG and normal echocardiogram.

### Exclusion criteria

1. Prior history of Ischemic heart disease as determined by history and ECG.
2. Patients on lipid lowering drugs, thiazides, beta blockers.
3. Patients with history of CVA/TIA.
4. Patients with clinical or imaging evidence of Peripheral vascular disease or history of limb amputation.
5. Patients with history of bariatric surgery.
6. Known cases of hypothyroidism.
7. Patients with chronic complications of diabetes like nephropathy, retinopathy.
8. Patients with history or clinical findings suggestive of familial hyperlipidemias.
9. Patients with known hepatic disease.

### Results

**Table 1:** Comparison between Age with Groups

		Groups			Total	
		NN	NH	HH		
Age	Upto 40 yrs	Count	2	3	3	8
		%	14.3%	13.0%	13.0%	13.3%
	41-50 yrs	Count	6	11	8	25
		%	42.9%	47.8%	34.8%	41.7%
	51-60 yrs	Count	5	8	12	25
		%	35.7%	34.8%	52.2%	41.7%

	61-70 yrs	Count	1	1	0	2
		%	7.1%	4.3%	0.0%	3.3%
Total		Count	14	23	23	60
		%	100.0%	100.0%	100.0%	100.0%

- The mean age of the patients in the NN group was  $50.98 \pm 8.52$ .
- The mean age of the patients in the NH was  $48.76 \pm 8.53$ .
- The mean age of the patients in the HH group was  $52.77 \pm 8.04$ .

**Table 2:** Comparison between Gender with Groups

			Groups			Total
			NN	NH	HH	
Sex	Female	Count	4	9	9	22
		%	28.6%	39.1%	39.1%	36.7%
	Male	Count	10	14	14	38
		%	71.4%	60.9%	60.9%	63.3%
Total	Count	14	23	23	60	
	%	100.0%	100.0%	100.0%	100.0%	

Among the total of 60 patients, 38 were males (63.3%) and 22 were females (36.7%).

- In the NN group, 10 were males (71.4%) and 4 were females (28.6%).
- In the NH group, 14 were males (60.9%) and 9 were females (39.1%).
- In the HH group, 14 were males (60.9%) and 9 were females (39.1%).

**Table 3:** Comparison between O/I with Groups

			Groups			Total
			NN	NH	HH	
	INSULIN	Count	2	4	7	13
		%	14.3%	17.4%	30.4%	21.7%
	OHA	Count	12	19	16	47
		%	85.7%	82.6%	69.6%	78.3%
Total	Count	14	23	23	60	
	%	100.0%	100.0%	100.0%	100.0%	

- In NN group, 12(85.7%) patients were on OHA, 02(14.3%) patients on insulin.
- In NH group, 19 (82.6%) patients were on OHA, 04(17.4%) patient was on insulin.
- In HH group, 16(69.6%) patients were on OHA, 7(30.4%) patients were on insulin.

**Table 4:** Comparison between SysHTN with Groups

			Groups			Total
			NN	NH	HH	
SysHTN	N	Count	8	18	15	41
		%	57.1%	78.3%	65.2%	68.3%
	Y	Count	6	5	8	19
		%	42.9%	21.7%	34.8%	31.7%
Total	Count	14	23	23	60	
	%	100.0%	100.0%	100.0%	100.0%	

- In NN group, 6 were hypertensives (42.9%).
- In NH group, 5 were hypertensives (21.71%).
- In HH group, 8 were hypertensives (34.8%).

**Table 5:** Comparison between BMI with Groups

			Groups			Total
			NN	NH	HH	
BMI	< 18.5	Count	1	0	0	1
		%	7.1%	0.0%	0.0%	1.7%
	18.5 - 24.9	Count	6	8	7	21
		%	42.9%	34.8%	30.4%	35.0%
	25 - 29.9	Count	7	11	12	30
		%	50.0%	47.8%	52.2%	50.0%
	≥ 30	Count	0	4	4	8
		%	0.0%	17.4%	17.4%	13.3%
Total		Count	14	23	23	60
		%	100.0%	100.0%	100.0%	100.0%

- In the NN group, the mean BMI was  $25.04 \pm 3.46$ .
- In the NH group, the mean BMI was  $26.77 \pm 2.84$ .
- In the HH group, the mean BMI was  $27.06 \pm 4.06$ .

The distribution of BMI among all the three groups was equal. P value was 0.215 which shows that the groups were similar to each other in the distribution of BMI.

## Discussion

**Table 6:** Distribution of Mean age in different Studies

Study	Gayathri <i>et al.</i> [5]	Khamseh ME <i>et al.</i> [6]	Amruth rao <i>et al.</i> [7]	Kavitha bendal <i>et al.</i> [8]	Our Study
Mean age	55.79±8.9	52.9±9.3	52.18± 6.30	54±10	49±7.61

The mean age of study population is around 50. Mean age group of our study is comparable to above shown studies.

**Table 7:** Distribution of Sex in different Studies

Study	Gayathri <i>et al.</i> [5]	Kavitha bendal <i>et al.</i> [8]	P Gandiah <i>et al.</i> [9]	Our Study
Sex (M/F)	30/14	73/47	66/34	38/22

In our study diabetic patient's sex Ratio is 38:22 which is comparable to Gayathri *et al.* but both kavitha *et al.* & P Gandiah *et al.* had diabetic study population of 100.

**Table 8:** Distribution of BMI in different Studies

Study	Kavitha bendal <i>et al.</i> [8]	P Gandiah <i>et al.</i> [9]	Khamseh Me <i>et al.</i> [6]	Our study
BMI	28.75±10.25	24.98 ± 4.94	25.57 ± 5.84	26.77 ± 2.84

BMI of our study is  $26.77 \pm 2.84$  which is comparable to above % other study [10].

## Conclusion

- In NN group, 12(85.7%) patients were on OHA, 02(14.3%) patients on insulin.

- In NH group, 19 (82.6%) patients were on OHA, 04(17.4%) patient was on insulin.
- In HH group, 16(69.6%) patients were on OHA, 7(30.4%) patients were on insulin.

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