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Dr. Mohan R
Assistant Professor,
Department of General
Medicine, JJM Medical
College, Davangere,
Karnataka, India

Dr. Manjunath Alur
Professor and Dean,
Department of General
Medicine, JJM Medical
College, Davangere,
Karnataka, India

Dr. SN Vishwakumar
Professor, Department of
General Medicine, JJM
Medical College, Davangere,
Karnataka, India

Clinical profile of patients with newly detected diabetes mellitus at a tertiary care hospital

Mohan R, Manjunath Alur and SN Vishwakumar

Abstract
Introduction: The worldwide prevalence of DM has risen dramatically over the past two decades, from an estimated 30 million cases in 1985 to 285 million in 2010. Based on current trends, the International Diabetes Federation projects that 438 million individuals will have diabetes by the year 2030. Although the prevalence of both type 1 and type 2 DM is increasing worldwide, the prevalence of type 2 DM is rising much more rapidly, presumably because of increasing obesity, reduced activity levels as countries become more industrialized, and the aging of the population.
Methodology: Patients with newly diagnosed Diabetes mellitus presenting to department of medicine, were formed study subjects. They presented to physician either for routine checkup or have been admitted for some other illness and diabetes was detected by chance for first time. Known cases of diabetes mellitus under treatment were excluded from study.
Results: It is clear that 34% of the patients at the time of diagnosis of diabetes mellitus had some infections (24% males and 10% females). 2% of the patients had cellulitis, 4% of them had UTI, 2% of them had tuberculosis, 10% of them had pneumonia, and 2% had gluteal abscess.
Conclusion: 56% of the patients presented with classical symptoms of Diabetes and 32% of patients with symptoms due to complications. 12% of the patients were asymptomatic.

Keywords: Clinical profile, diabetes, newly detected

Introduction

Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia, resulting from defects in insulin secretion, insulin action or both. The metabolic dysregulation associated with diabetes mellitus causes secondary pathophysiological changes in multiple organ systems. With an increasing incidence worldwide, diabetes mellitus will be the leading cause of morbidity and mortality in the future [1].

The two broad categories of diabetes mellitus are designated as type 1 and type 2. Type 1 result from autoimmune beta cell destruction, which leads to insulin deficiency. Type 2 diabetes mellitus is a heterogeneous group of disorders characterized by variable degree of insulin resistance, impaired insulin secretion and increased glucose production. Distinct genetic and metabolic defects in insulin action and/or secretion give rise to the common phenotype of hyperglycemia in type 2 diabetes mellitus [2].

Two features of the current classification of diabetes mellitus diverge from previous classifications. First, the terms 'insulin dependent diabetes mellitus (IDDM) and non-insulin dependent diabetes mellitus (NIDDM) are obsolete. Since many individuals with type 2 diabetes mellitus eventually require insulin treatment for control of hyperglycemia, the term NIDDM generates considerable confusion. Second, age is not a criterion in the classification system. Although type 1 diabetes mellitus most commonly develops before the age of 30, an autoimmune beta cell destructive process can develop at any age. It is estimated that between 5 to 10% of individuals who develop diabetes mellitus after the age of 30 have type 1 diabetes mellitus. Likewise, type 2 diabetes mellitus more typically develops with increasing age, but it also occurs in children, particularly in obese adolescents [3].

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Corresponding Author:
Dr. Manjunath Alur
Professor and Dean,
Department of General
Medicine, JJM Medical
College, Davangere,
Karnataka, India

increasing obesity, reduced activity levels as countries become more industrialized, and the aging of the population [4].

In the most recent estimate for the United States (2010), the Centers for Disease Control and Prevention (CDC) estimated that 25.8 million persons, or 8.3% of the population, had diabetes (27% of the individuals with diabetes were undiagnosed). Approximately 1.6 million individuals (>20 years) were newly diagnosed with diabetes in 2010. DM increases with aging. In 2010, the prevalence of DM in the United Sates was estimated to be 0.2% in individuals aged <20 years and 11.3% in individuals aged >20 years. In individuals aged >65 years, the prevalence of DM was 26.9%. The prevalence is similar in men and women throughout most age ranges (11.8% and 10.8%, respectively, in individuals aged >20 years). Worldwide estimates project that in 2030 the greatest number of individuals with diabetes will be aged 45–64 years [5, 6].

Methodology
Source of Data
Patients with newly diagnosed Diabetes mellitus presenting to department of medicine, were formed study subjects. They presented to physician either for routine checkup or have been admitted for some other illness and diabetes was detected by chance for first time. Known cases of diabetes mellitus under treatment were excluded from study.

Sample Size: 100 cases.

Sample procedure: Cross-sectional study.

Inclusion criteria
- Fasting plasma glucose ≥126mg/dl (7.0mmol/dl). (Fasting is defined as no calorie intake for at least 8 hours)
- Postprandial plasma glucose ≥200mg/dl (2 hours after 75gm of oral glucose)
- A1C ≥6.5%. The test performed in a laboratory using a method that is NGSP certified and standardized to the DCCT assay

Exclusion criteria
- Congestive cardiac failure
- Urinary tract infection
- Known hypertensives
- Fever
- Renal diseases
- Other diseases causing peripheral neuropathy

Detailed history regarding the symptoms of diabetes like polyuria, polydipsia, polyphagia and weight loss were taken

Results

Table 1: Showing number of patients according to age and sex distribution

Age	Male	Female	Total
30-34	2	2	4
35-44	14	11	25
45-54	36	17	53
55-64	5	8	13
56-74	2	-	2
> 75 years	1	2	3
Total	60	40	100

Above data suggest that out of total 100 patients with newly diagnosed diabetes, 60% were males (60 males) and 40% were females (40). 44% of the patients were within age of 45-54yrs, 32% of them were within 35-44yrs. So maximum numbers of patients were clustered between 35-54yrs of age (44% +32%=76%). Mean age duration was found to be 55.26±20.24. None of the patients were above 85 years.

Table 2: Showing number of patients who were under weight or overweight and their percentage to BMI

Weight	Male	Female	Total
Overweight	28	9	37
underweight	2	-	2
Obese	14	27	41
Normal	16	4	20

Out of 100 newly diagnosed diabetics, 37% of the patients were overweight (28% males and 9% females).
About 41% of them were obese (27% females and 14% males). 90% of the female patients were having increased BMI (67.5% obese and 22.5% overweight).
Only 20% of the patients were having normal BMI (16% males and 4% females).
Waist hip ratio was available for 99 patients, 30% males and 27% females had central obesity overall 57% of patient had central obesity at the time of diagnosis of diabetes mellitus. Mean waist hip ratio was found to be 0.99 ± 0.08.

Table 3: Showing number of patients who were presented with various infections

Infection	Male	Female	Total
Foot Ulcers	7	2	9
Cellulitis	2	-	0
UTI	-	4	4
Respiratory system	-	-	-
Tuberculosis	2	-	2
Pneumonia	8	2	10
Pleural effusion	4	-	4
Urogenital infections	-	-	-
Others	-	-	-
Gluteal abscess	-	2	2
Amoebic liver abscess	-	-	-

From the above data it is clear that 34% of the patients at the time of diagnosis of diabetes mellitus had some infections (24% males and 10% females). 2% of the patients had cellulitis, 4% of them had UTI, 2% of them had tuberculosis, 10% of them had pneumonia, and 2% had gluteal abscess.

Discussion
In present study 100 newly diagnosed diabetic patients were studied to determine prevalence of diabetic complications (60 males and 40 women) with mean age±2SD = 55.26±20.24.
The mean age in our study is closely related to the study by Manish Sirshat et al. [7] and was slightly higher than study done by Nambuya AP et al. [8] and RP Agarwal et al. [9]
This study was done on 100 newly diagnosed diabetics of whom 60 were males and 40 were females. M:F is 1.5:1.
93 patients were studied (54M + 34F) by Vijayavishwanath et al. [10] with male female ratio 1.38: 1 and 252 patients (117 male and 135 females) by Nambuya AP et al. [8] 597 patients were studied (396 males and 201females) by Weersuriya N et al. [11] with male female ratio 1.97:1. The

male to female ratio was higher in our study when compared to study conducted by Vijayavishwanatha *et al*. [10] and Nambuya AP *et al*. [8] but lesser when compared to Weersuriya N *et al*. [11]

In the present study 56% of patients presented with classical symptoms of Diabetes Mellitus and 36% with weight loss. In a study conducted by V. Sekar *et al*. [12] classical symptoms were 21% and weight loss was 47%.

About 32% of patients presented with symptoms due to microvascular complications out of which 16% were males and 16% were females and 12% of the patients were asymptomatic.

Family history of Diabetes in our study was 50% and in Nambuya AP *et al*. [8] study was 16%. It indicates that family history of diabetes is higher in Indians.

BMI was available in 100 patients in present study of which 37% were overweight, out of which 28% were males and 8% females. None of the females were underweight but 2% males were underweight. 41% of the patients were obese out of which 27% were females and 14% were males. So 90% of female patients were having increased BMI (67.5% obese and 22.5% overweight).

53.5% (33.8% females and 19.7% males) were overweight 11.3% (8.5% men and 2.78% women) were underweight in Nambuya AP *et al*. [8] study. In the present study 42% of patients who were obese was more compared to other studies. When % was looked respect to sex, both men and women were more obese when compared to Nambuya AP *et al*. study. From the above data it is clear that Indian patients are more obese particularly women but were less when compared to Arabian patients in Lajaam *et al*. [13]

The % of underweight patient was less when compared to Nambuya AP *et al*. study and none of the females were underweight in the present study.

The mean BMI in the present study was 25.26±8.85 and it was 27±1.78 in a study by Anand Mosses CR [14] while it was 28.5±4.7 in the study by Cathelineau G [15]. The mean BMI was slightly less in the present study as compared to other studies.

In the present study, W:H ratio of men is almost equal compared to other studies. There is a minimal difference in percentage of central obesity, it was 57% in present study and 21.3% in the study conducted by Weersuriya *et al*. [11] In our study 65.7% men and 100% women had central obesity. It indicates that Indians as an ethnic group have high prevalence of central obesity especially in women.

Mean W:H was 0.99±0.08 in the present study and it was 0.95±0.05 in study of Anand Mosses CR *et al*. [57] and 0.99±0.1 in Cathelineau G *et al*. [15] study. The mean W:H was almost equal when compared to other studies.

It is clear that percentage of patients who presented with infections in our study were high when compared to study conducted by Nambuya AP *et al*. The percentage of patients with diabetic foot in present study is less when compared to Gregory R *et al*. study and higher compared to Nambuya AP *et al*. and Nagaraj BV *et al* study. The percentage of patients who had Tuberculosis was very high when compared to Nambuya AP *et al*. and little lower compared to Manish Sirshat *et al*. study.

Conclusion
- Out of 100 patients, 37% (28% men and 9% women) were overweight and 41% (27% women and 14% men) were obese and 2% men were underweight

- Out of 100 patients, 57% had central obesity (30% men and 27% women)
- 34% of the patients at the time of diagnosis had some infections. Foot ulcers 9%, cellulitis 2%, Urinary tract infection 4%, Pneumonia 10%, Tuberculosis 6% and Gluteal abscess 2%
- 90% of the newly diagnosed patients had positive family history

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