

ORIGINAL ARTICLE

Real World Data about the Characteristics of Adult Diabetes Mellitus Patients Visiting Outpatient Department of a Tertiary Care Hospital

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ABSTRACT

Objective: To find out characteristics of adult diabetes mellitus (DM) patients visiting outpatient department (OPD) of a tertiary care hospital.

Study Design: Observational, cross-sectional study.

Place and Duration: Outpatient department of Medicine, Pakistan Institute of Medical Sciences, Islamabad Pakistan from October 2021 to March 2022.

Methodology: We included a total of 200 patients. Inclusion criteria were patients of both genders aged 18 to 70 years having type-1 and type-2 diabetes mellitus with a disease duration history of at least 6 months visiting outpatient department. Socio-demographic data along with DM related characteristics including family history of DM, types of DM, types of medications being used and fasting/postprandial blood glucose levels were recorded. Frequency of various DM related complications at the time of enrollment were also noted.

Results: In a total of 200 patients of DM, 129 (64.5%) were male and 71 (35.5%) female. Overall, mean age was 45.03 ± 12.46 years while 91 (45.5%) patients were aged between 31 to 45 years. Mean BMI was 23.33 ± 4.75 kg/m². Positive family history of diabetes was found in 98 (49.0%) patients. Type-1 diabetes mellitus was reported by 13 (6.5%) patients while remaining 187 (93.5%) patients had type-2 diabetes mellitus. Mean Duration of diabetes was 7.65 ± 7.60 years. There were 91 (45.5%) patients who were using oral plus injectable/insulin medications. Overall, mean fasting blood glucose was 148 ± 49.06 mg/dl while mean 2-hour postprandial blood glucose was 235.07 ± 58.80 mg/dl. Neuropathy was the most common diabetes related complications noted in 91 (45.5%) while gastrointestinal related complications were the 2nd most frequent complications observed in 31 (15.5%).

Practical Implications: Vast majority of the DM patients reported hyperglycemia during routine follow ups which arises the need to revisit current management strategies.

Conclusion: Majority of the patients with DM were male, middle aged and belonged to urban areas of residence. Nearly half of the DM patients reported neuropathy related complications.

Keywords: Diabetes mellitus, neuropathy, hyperglycemia, insulin.

INTRODUCTION

In 2017, International Diabetes Federation (IDF) estimated 451 million people to be living with diabetes mellitus (DM) worldwide and these numbers were anticipated to soar up to 693 million by the year 2045.¹ Growing population, sedentary lifestyle, utilization of high calorie intake and stressed living style are some of the most important contributing factors to the increasing prevalence of DM globally.²⁻⁴ Pakistan is ranked 6th as the most populous country while it has a population above 208 million as per 2017 national census. A national survey published in 2019 estimated around 35.5 million people in Pakistan to be living with DM which is roughly 17% of the whole population.⁵

Gender, age, marital status, residential status, literacy, occupation, socio-economic class, family history of T2DM, duration of T2DM, types of medications, BMI, physical activity practices, dietary patterns, DM monitoring practices and family support have been identified to be some of the main reasons affecting glycemic control.⁶ In a developing country like Pakistan, DM is the cause of social and financial burden on the affected patients and their families. The Asian population is at increased risk of developing DM related complications as pointed out by IDF.¹ It is very important to observed trends in presentation, diabetes related characteristics, management strategies and blood glucose control. So, the present study was planned and our aim was to find out characteristics of adult DM patients visiting outpatient department (OPD) of a tertiary care hospital.

METHODOLOGY

This observational cross-sectional study was conducted at the OPD of department of Medicine, Pakistan Institute of Medical Sciences, Islamabad Pakistan from October 2021 to March 2022. Approval from Ethical Review Board of the Study Institution was

acquired. Informed consents were taken from all patients ensuring them the secrecy of their data. Considering 95% confidence level, 5.2% margin of error and anticipated prevalence of DM as 17%⁵ in Pakistan, a sample size of 201 was calculated.

For this study, we included a total of 200 patients. Inclusion criteria were patients of both genders aged 18 to 70 years having type-1 and type-2 diabetes mellitus with a disease duration history of at least 6 months visiting outpatient department. Exclusion criteria were patients with memory disorders, acute illness or very sick or those who were dependent. Patients whose medicines were changed in the last 1 month were also not included.

Socio-demographic data along with DM related characteristics including family history of DM, types of DM, types of medications being used and fasting/postprandial blood glucose levels were recorded. Frequency of various DM related complications at the time of enrollment were also noted. A special proforma was designed to record study data. "Statistical Package for Social Sciences" version 26.0 was used for data analysis. Categorical variables were shown as frequency/percentages. Mean and standard deviation were calculated for numeric variables.

RESULTS

In a total of 200 patients of diabetes mellitus, 129 (64.5%) were male and 71 (35.5%) female. Overall, mean age was 45.03 ± 12.46 years while 91 (45.5%) patients were aged between 31 to 45 years. Mean BMI was 23.33 ± 4.75 kg/m² and 136 (78.0%) patients had BMI below 25 kg/m². Table-1 is showing socio-demographic characteristics of all patients included in this study.

Positive family history of diabetes was found in 98 (49.0%) patients. Type-1 diabetes mellitus was reported by 13 (6.5%) patients while remaining 187 (93.5%) patients had type-2 diabetes mellitus. Mean Duration of diabetes was 7.65 ± 7.60 years while 77

(38.5%) patients had disease duration above 10 years. There were 91 (45.5%) patients who were using oral plus injectable/insulin medications. Overall, mean fasting blood glucose was 148 ± 49.06 mg/dl while mean 2-hour postprandial blood glucose was 235.07 ± 58.80 mg/dl. Table-2 is showing diabetes related characteristics of patients.

Table-1: Socio-Demographic Characteristics of Patients with Diabetes Mellitus

Characteristics	Number (%)
Gender	
Male	129 (64.5%)
Female	71 (35.5%)
Age in Years	
18-30	19 (8.5%)
31-45	91 (45.5%)
46-60	64 (32.0%)
61-70	26 (13.0%)
Residential Status	
Rural	73 (36.5%)
Urban	127 (63.5%)
BMI	
<25	136 (78.0%)
25-30	32 (16.0%)
>30	20 (10.0%)
Educational Status	
Illiterate	104 (52.0%)
Primary	38 (19.0%)
Secondary to Intermediate	46 (23.0%)
Graduation or Above	12 (6.0%)
Marital Status	
Married	168 (84.0%)
Unmarried	32 (16.0%)
Occupation	
Laborer	33 (16.5%)
Housewives	51 (25.5%)
Shopkeeper	39 (19.5%)
Machine Operator	7 (3.5%)
Fruit Stall	18 (9.0%)
Sanitary Worker	19 (9.5%)
Toll Booth Operator	6 (3.0%)
None	27 (13.5%)
Monthly Family Income (PKR)	
<25,000	181 (90.5%)
25,000 to 45,000	7 (3.5%)
>45,000	12 (6.0%)

Table-2: Diabetes Related Characteristics of Patients (n=200)

Diabetes Related Characteristics	Number (%)
Family History of Diabetes	
Yes	98 (49.0%)
No	64 (32.0%)
Don't Know	38 (19.0%)
Diabetes Type	
Type-1	13 (6.5%)
Type-2	187 (93.5%)
Duration of Diabetes	
6 months to 1 years	47 (28.5%)
>1 year to 5 years	64 (32.0%)
>5 to 10 years	12 (6.0%)
10 years	77 (38.5%)
Current Medications for Diabetes	
Oral	84 (42.0%)
Injectable/Insulin	25 (12.5%)
Oral + Injectable/Insulin	91 (45.5%)
Fasting Blood Glucose	
≤ 120 mg/dl	78 (39.0%)
>120 mg/dl	122 (61.0%)
Postprandial Blood Glucose (2-hours)	
≤ 180	46 (23.0%)
>180	154 (77.0%)

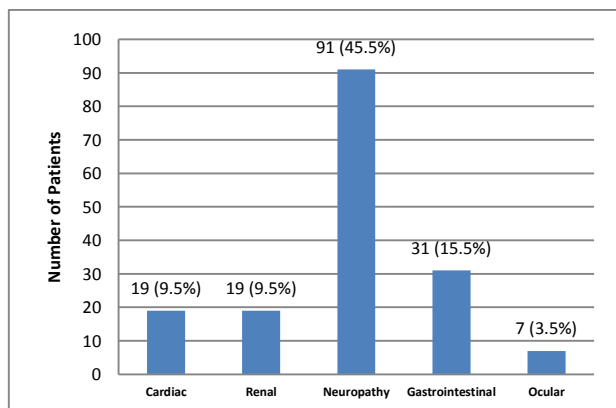


Figure-1: Frequency of Diabetes Related Complications in Patients with Diabetes (n=200)

Neuropathy was the most common diabetes related complications noted in 91 (45.5%) while gastrointestinal related complications were the 2nd most frequent complications observed in 31 (15.5%). Figure-1 is showing frequency of diabetes related complications in patients with diabetes.

DISCUSSION

DM has been considered a major public health issue globally. Without satisfactory understanding of the clinical as well as demographical aspects of patients affected with DM, it is hard to arrange required strategies, funding and human resources especially in a developing country like Pakistan. The findings of this study portray a real world image of DM patients visiting OPD of a tertiary care hospital situated in the capital city of Pakistan.

We found that 64.5% patients of DM were male. Recent diabetes prevalence survey of Pakistan published in 2019 showed that 53.6% DM patients were male.⁵ A study done by Chaudhary GM et al from South Punjab Pakistan analyzing 4556 patients with type-2 DM found that 55.9% patients were female which is in contrast to the present findings.⁷ A recent study done by Akash MS et al enrolling 2000 patients with DM found 50.7% patients to be male.⁸ Traditionally, male predominance has been reported among patients of DM belonging to South Asia.⁹

We noted that 79.0% patients with DM were aged between 31 to 60 years but interestingly, 45.5% patients were aged between 31 to 45 years. DM has been found to affect middle age adults most and findings are consistent with what has been reported in the literature in the past.¹⁰⁻¹² The present study highlighted that 26.0% patients were either over-weight (16.0%) or obese (10.0%). Local data highlights around 40% patients of DM to have high BMI (cut-off BMI > 27).⁷ Regional data by Borah M et al noted 42% patients with type-2 DM to have elevated BMI.¹³ A study by Rana HM et al among DM patients attending diabetes clinic of a tertiary care hospital revealed 21% patients to have elevated BMI.¹⁴ Although, we were unable to record waist-to-hip ratio, literature reports 3/4th of type-2 DM adult patients to have elevated waist-to-hip ratio.¹⁴⁻¹⁶

We noted that 63.5% of DM patients belonged to urban areas which is in agreement to what local data has shown where Chaudhary GM et al reported 79.3% DM patients to be from urban areas.⁷ Another local study found 66.9% patients with DM to be from urban areas which is very close to what we noted.⁸ Whatever data is on view, incidence of type-1 diabetes has been reported to be 1 per 100,000 children aged below 17 years in Pakistan. No comprehensive epidemiological data about the prevalence of type-1 DM exists in Pakistan but we noted 6.5% adult patients of DM to have type-1 DM in this study. Recent data has highlighted increasing trends in the incidence of type-1 DM.¹⁸

We observed that neuropathy was the most frequent complications observed in 45.5% DM patients while gastrointestinal, cardiac and renal complications were observed in 15.5%, 9.5% and 9.5% DM patients respectively. A study done by Lakhair MA et al among newly diagnosed type-2 DM patients revealed 32.7% patients to have peripheral neuropathy at the time of diagnosis.¹⁹ Early diagnosis and achievement of optimal blood glucose levels are known to decrease DM related complications to it is always necessary to identify DM related complications among patients visiting diabetes clinics for routine check-ups.

The present study reports our experience of real world data about DM patients visiting OPD of tertiary care hospital for routine check-ups of DM. This study had some limitations as well. Being a single center study with a relatively small sample size, more metacentric studies involving larger sets of DM patients are required to further verify the findings of this study. We were unable to measure and record HbA1c levels in this study. We were unable to correlate details of various types of oral hypoglycemic agents or insulin with control of DM which warrants further research. Compliance of current management approach was also not recorded.

CONCLUSION

Majority of the patients with DM were male, middle aged and belonged to urban areas of residence. Vast majority of the DM patients reported hyperglycemia during routine follow ups which arises the need to revisit current management strategies. Nearly half of the DM patients reported neuropathy related complications. There is a need to devise comprehensive strategies for early screening and treatment of DM while patients should be closely assessed for the presence or development of diabetes related complications during routine visits.

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