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Socio-Demographic and Treatment Profile of Diabetes Patients in a Tertiary Care Hospital in Delhi: A Descriptive Analysis

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Abstract

Background: About 422 million people worldwide have diabetes, the majority living in low-and middle-income countries, and 1.5 million deaths are directly attributed to diabetes each year. For a healthcare facility it is significant to keep a track of overall treatment and disease profile from the beginning of diagnosis for a better understanding of its course in their patients. This article covers the treatment and disease profile of diabetes patients in a tertiary care hospital.

Methodology: It was a hospital based cross sectional study. Study subjects were Type 2 Diabetes patients belonging to middle and high income groups in the age group of 30-64 years. Data was collected during OPD hours using a self-prepared semi-open ended questionnaire by the investigator to record information of socio-demographic profile of respondents, disease history including complications, co-morbidities and diabetic treatment profile and lifestyle modifications.

Results: Out of 150, 54 (36%) were females and 96 (64%) were males. The mean age was 48.9 years (SD=7.2). 35.3% of the participants were taking a single oral drug, 50% were taking combined oral drugs and 14.7% patients were on insulin. Thirty nine percent of the patients had some complications related to diabetes. Around 71% of the patients reported at least one episode of hyperglycemia in the last one year. More than half of the patients (55.3%) got their medications free of cost from the treating hospital. Regarding substance abuse, 12% of patients were smokers. The prevalence of diabetes self-care practices was good in our study participants.

Conclusion: Health facilities should keep a track of demographic profile as well as disease profile of its patients. Regular record keeping of the epidemiological determinants is a fundamental step towards evidence based practice.

Keywords: Non Communicable Diseases; Type 2 Diabetes; Demography; Diabetes Care

Abbreviations

IEC-HR: Institutional Ethics Committee-Human Research; MIG: Middle Income Group; HIG: Higher Income Groups.

Introduction

Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose which leads over time to serious multi organ damage. The most common is type 2 diabetes, usually in adults, which occurs when the body becomes resistant to insulin or doesn't make enough insulin [1]. About 422 million people worldwide have diabetes, the majority living in low-and middle-income countries, and 1.5 million deaths are directly attributed to diabetes each year. Both the number of cases and the prevalence of diabetes have been steadily increasing over the past few decades [1]. Over 90% of people with diabetes have type 2 diabetes, which is driven by socio-economic, demographic, environmental, and genetic factors [2]. International Diabetes Federation has also predicted the rise in prevalence of diabetes in India to 10.8% (age adjusted) in 2024 [3].

Type 2 diabetes is a global crisis that threatens the health and economy of all nations, particularly developing countries [4]. Initial stages of this disease i.e. diagnosis, initial treatment if managed properly can affect the overall course of diabetes in a patient. In addition, lifestyle changes also play an important role in its management. For a healthcare facility it is significant to keep a track of overall treatment and disease profile from the beginning of diagnosis for a better understanding of its course in their patients. In this article we present the treatment and disease profile of diabetes patients belonging to middle and high income groups coming to a diabetes clinic in a tertiary care hospital.

Methodology

It was a Hospital based cross sectional study, conducted in a 1700 bedded tertiary care hospital in Delhi. This hospital caters to the population of East Delhi as well as adjoining areas of Western UP (Uttar Pradesh). Study subjects were Type 2 Diabetes patients belonging to middle and high income groups in the age group of 30-64 years. Based on previous records, it was estimated that approximately 160 to 170 type 2 diabetes patients attend the OPD at the study site in one year, who belong to middle and high income groups. Therefore, we decided to include all such patients who attended the diabetes clinic of the health facility in the year 2019 beginning 1st January till 31st December. We excluded the patients with gestational diabetes and diabetes patients who were mentally unfit to comprehend questions and respond. Data was collected during OPD hours using a self-prepared semi-open ended questionnaire by the investigator to record information of socio-demographic profile of respondents, detailed disease history including complications, co-morbidities and diabetic treatment profile etc. After considering exclusion criteria and few missing data entries, we analysed the data of 150 patients.

Data Analysis

The collected data was entered into a computer-based spread sheet (Microsoft Excel) and cleaned. The cleaned data was transferred to software SPSS 23.0 (Statistical Package for Social Sciences) version 23.0 IBM Corporation and then analysed. Descriptive tables and diagrams were made to present the results.

Ethical Consideration

Clearance was taken from the Institutional Ethics Committee–Human Research (IEC-HR) of University College of Medical Sciences, Delhi. An informed written consent was obtained from each participant. Privacy of study participants and confidentiality of information was maintained and this was also explained to them. The study participants were counseled for self-care and lifestyle modifications for diabetes.

Results

Socio-demographic Profile

The age of respondents ranged from 32 to 64 years. The mean age was 48.9 years (SD=7.2). Table 1 shows the age distribution of the study participants. Out of 150, 54 (36%) were females and 96 (64%) were males. All study participants except one, were married. Majority (89.3%) of the patients were Hindu by religion. Muslim, Sikh and Christian were 6.7%, 1.3% and 2.7% respectively.

Age group (years)	n (%)
30-35	2 (1.3%)
36-40	19 (12.7%)
41-45	40 (26.7%)
46-50	24 (16%)
51-55	35 (23.3%)
56-60	21 (14%)
61-64	9 (6%)
Total	150

Table 1: Age wise composition of the study participants (n=150).

More than half (56%) were graduates/post graduates. 77.3 % of the participants belonged to the middle income group (MIG) and 22.7 % to higher income groups (HIG). 56% of the participants were living in joint families and remaining (44%) in nuclear families.

Occupation	n (%)
Unemployed	3 (2%)
Housewife	34 (22.7%)
Unskilled	1 (0.7%)
Semi-skilled	8 (5.3%)
Skilled	8 (5.3%)
Clerical/shop owner	6 (4%)
Semi-professional	34 (22.7%)
Professional	56 (37.3%)
Total	150

Table 2: Composition of study participants on the basis of occupation (n=150).

Table 2 depicts the composition of the study subjects on the basis of occupation. 2% of patients were unemployed, 22.7% were housewives and 37.3% were professionals. Regarding the type of occupation, 68% were involved in moderate work and 32% in sedentary work.

Diagnosis of Diabetes

The mean age at diagnosis of diabetes among study subjects was 42.4 (SD=5.8) years with a median of 41 years (IQR=38-45.2). Mean duration of the disease was 6.7 with a minimum of one year and maximum of 23 years. As shown by Figure 1, 41.3% patients were first diagnosed by a nearby private practitioner, 21.3% at a private hospital and 37.3% were diagnosed at a government hospital.

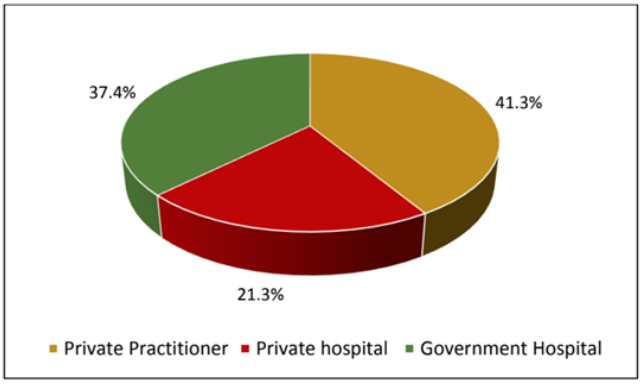

Figure 1: Place of diagnosis of diabetes among study participants (n=150).

Treatment started at the time of diagnosis	n (%)
Single oral hypoglycemic drug	114 (76%)
Oral combined therapy	18 (12%)
Insulin	4 (2.7%)
Other treatments	14 (9.35)

Table 3: Type of treatment started at diagnosis of study participants (n=150).

Table 3 depicts initial treatment at the time of diagnosis of the patient. In 76% patient's single oral agent (metformin) and in 12% oral combined therapy was started. No patient was put only on dietary control. To 2.7% of the patients the treatment at the beginning was insulin. 9.3% participants reported that they opted for non- allopathic treatments like traditional home based methods or ayurvedic or homeopathic medicines first before switching on to allopathic drugs. Regarding family history (Figure 2) among respondents with positive family history, higher proportion of the patients had maternal family history (22.7%). 13.3% had diabetes family history in both parents.

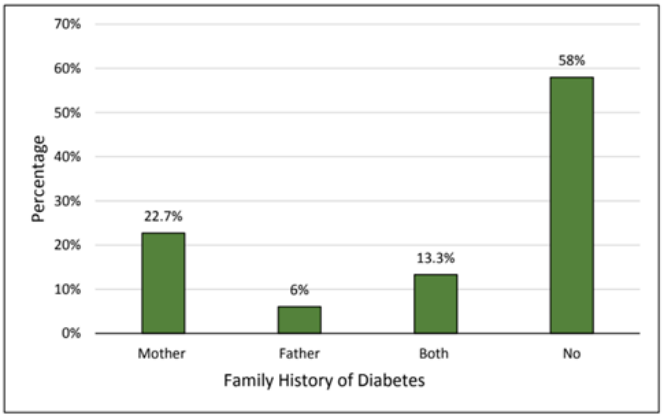

Figure 2: Family history of diabetes among study participants (n=150).

Hypoglycemic episodes in last one year	n (%)
Zero	124 (82.7%)
1-3	21 (14%)
4-6	1 (1%)
Don't know	4 (4%)
Episodes of Hyperglycemia in last one year	**n (%)**
Zero	43 (28.7%)
1-3	54 (36%)
4-6	37 (24.7%)
7-12	5 (3.3%)
More than 12	8 (5.3%)
Don't know	3 (2%)

Table 4: Hypoglycemic and hyperglycemic episodes experienced by the participants in last one year (n=150).

As Table 4 shows, 82.7% of the participants had no episode of hypoglycemia in the last one year and 14 % had 1-3 episodes of the same. Regarding hyperglycemic episodes, 28.7 % patients did not have any episode of hyperglycemia in the last one year, while 5.3% of the participants had more than 12 episodes of hyperglycemia.

Complications and Comorbidities

Regarding complications of diabetes, 39.3% of patients had some complications related to diabetes whereas 59.3% did not have any. The commonest complication was ophthalmic. Most common comorbidity was hypertension (20.7%). 74.7 % of the participants had no comorbidity.

Current Treatment and its Financial Support

Figure 3 shows the participants' on-going treatment (or current treatment at the time of study) and its financial support. 35.3% of the participants were taking single oral drug, 50% were taking combined oral drugs and 14.7% patients were on insulin. More than half of the patients (55.3%) got their medications free of cost from the treating hospital. 26% of the patients got their medicines sometimes from the study hospital and sometimes from outside.

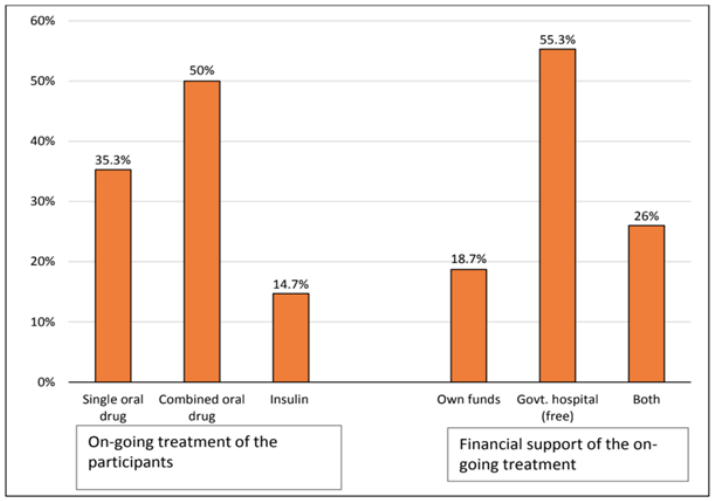

Figure 3: On-going treatment and its financial support in the study participants (n=150).

Substance abuse	n (%)
Alcohol	7 (4.6%)
Alcohol and smoking	1 (0.7%)
Tobacco	1 (0.7)
Tobacco and smoking	1 (0.7)
Smoking	18 (12%)
No	122 (81.3%)
Total	150

Table 5: Substance abuse among study participants (n=150).

Table 5 depicts substance abuse among study participants. 10.7% patients were smokers, 4.7% were taking alcohol and 82.7% had no history of substance abuse.

Lifestyle Modifications

As shown in figure 4, 93.3% of the patients were following dietary control. 77.3% did regular exercise and 76% had regular blood sugar testing (Figure 4).

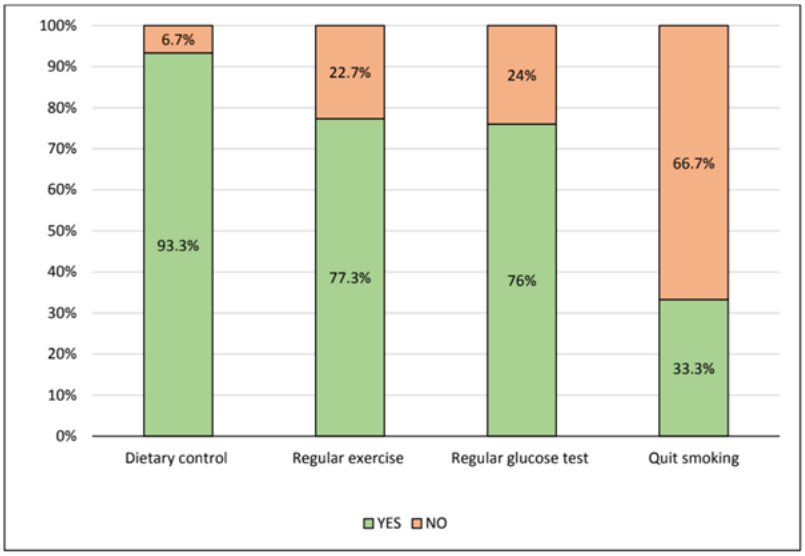

Figure 4: Percentage of patients with modifications in lifestyle regarding dietary control, regular exercise, regular blood sugar testing and quitting smoking among smokers.

Discussion

The epidemiology of diabetes is changing in India. Diabetes is becoming prevalent in younger adults also. In our study, we found a considerable number of diabetes patients in the age group between 30-45 years. This shift in the age distribution in India is an important contributor to its diabetes burden. Regarding diagnosis, depending on several factors like accessibility, patients can go to a private or government health facility. Initial treatments that are started at the time of diagnosis plays a significant role in the overall course of disease and its further management. If managed properly in its initial stages, it becomes easy to maintain glycemic control and complications can be avoided. Few patients reported that initially they switched between allopathic and ayurvedic medicines (sometimes, stopped both the medications) and so that may be one of the reasons for poor glycemic control. Hypoglycemic episodes were not that common in the past one year of our study participants but the hyperglycemic episodes were found to be in 8.6% (more than 7 episodes) and 24.7% (4-6 episodes) of the patients in the past one year. Hyperglycemia can have several reasons. Other than not taking regular medicines, stress and poor diet control can also contribute to increased blood sugar. Stress-induced hyperglycaemia is associated with increased morbidity and short-term mortality [5].

DM imposes a substantial financial burden on Indian households [6]. Households not only bear the financial cost of healthcare but also experience indirect costs, such as loss of earnings, when the patient or caregiver is unable to work [7]. The health facility provides diabetes drugs free of cost since it is a government hospital. This decreases the financial burden due to drugs on the patient. Around 55 % of the patients preferred taking the medicines for the hospital only, since anti-diabetic drugs are costly even for patients coming from a well to do background. Diabetes is a lifestyle disease. It is preventable and can be controlled to some extent by following a strict diet and regular physical activity. Not only excessive calorie intake but diet quality also has its own independent effects on diabetes [4]. It is sometimes difficult for patients to maintain a disciplined lifestyle. However, the prevalence of diabetes self-care practices was quite good in our study participants. There was good dietary control in subjects. A study has reported that changing the dietary environment may have more of an effect on HbA1c in adults with type 2 diabetes than changing dietary behavior [8]. Increased mechanization and driving have displaced physical activity over the last century in industrialized nations. This trend is increasing in developing countries as well [4]. Patients are realizing the importance of physical activity for their diabetes management. 77.3% of the patients reported that they do regular physical exercise. Proactive management of diabetes with SMBG (self-monitoring of blood glucose) can improve treatment outcomes and reduce morbidity and mortality associated with this disease [9]. In our study 76% of patients followed regular glucose monitoring. Some patients did not know the importance of HbA1C. Such patients were educated and counseled by the investigator. A meta-analysis reported that smokers had a 45% increased risk of developing diabetes compared with non-smokers [10]. We also assessed the Quality of life of study participants regarding their day to day life using a disease specific tool developed in India. The results are published as separate

articles [11,12].

Strengths and Limitations

All the patients who fulfilled the inclusion criteria during the one year study duration were studied by the Investigator. So, a complete census of diabetes patients of middle and higher income strata attending the clinic for one calendar year was carried out. Thus, a sufficient number of subjects were studied to have meaningful conclusions. The limitation of this study is that as it was done on middle and higher income groups of diabetes patients, therefore, the findings of our study are generalizable to this income stratum only.

Conclusion

This article presents the demographic profile and treatment profile of well to do (middle and high income group) diabetes patients in a tertiary care hospital. Regular record keeping of patients' and keeping an eye on changing patterns of the epidemiological determinants is a fundamental step towards evidence based diabetes care. Patient-centered health records in chronic conditions have been found potentially associated with beneficial effects on several patient-reported outcomes [13]. In addition, the action oriented record keeping can help in taking timely necessary action to control the diseases in its early stages.

Declarations

Clearance was taken from the Institutional Ethics Committee–Human Research (IEC-HR) of University College of Medical Sciences, Delhi.

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