

Diabetic Complications among Adult Diabetic Patients

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Abstract

Background: Diabetic complications are becoming common community problems. The outcomes of diabetic complications are increased hospitalization, increased direct patient costs, and mortality. In Dessie, the prevalence of diabetic complications is not well studied so far. *Aim:* This study aims to assess the prevalence of diabetic complications and associated factors among adult diabetic patients in north India. *Method & Materials:* A cross-sectional study was conducted from Jan to March 2020, in the general medicine department. All diabetic patients who visited the clinic during the study period were included. Data was collected using an interview-guided-administered questionnaire. The presence of complications and the type of medications the patient was on were identified through a review of patient records. *Results:* Eighty-one (81) diabetic patients who came to the follow-up clinic during the 3 months of data collection were included in the study. The majority of the patients (57.4%) were males. The median age of the patients was 45 (± 17.677) and they were known diabetic patients for a mean duration of 5.00 (± 5.70) years. Complications were strongly associated with the occurrence of diabetic complications but self-reported adherence, attitude, and knowledge level of patients. *Conclusion:* The prevalence of complications among diabetic patients in Dessie Referral Hospital was high. Targeted counseling and health information provided to the patients by the clinical staff will help reduce avoidable morbidity and mortality in the patients.

Keywords

Complication, Diabetes, Hypoglycemia, Ketoacidosis, Prevalence.

INTRODUCTION

Diabetes mellitus (DM) is a group of common metabolic disorders that share the phenotype of hyperglycemia, which are caused by a complex interaction of genetics and environmental factors. It is the leading cause of end-stage renal disease (ESRD), traumatic lower extremity amputations, and adult blindness. It also predisposes to cardiovascular diseases. With an increasing incidence worldwide, DM will be a leading cause of morbidity and mortality in the foreseeable future. The goal of treatment for DM is to prevent mortality and complications by normalizing blood glucose levels. But blood glucose levels might be increased despite appropriate therapy resulting in complications, such as disturbances in fat metabolism, nerve damage, and eye disease.[1][2][3][4][5]

Different studies, in fact, of different methodological quality have documented the complications of diabetes in different setups including hospitals and the community including its contributing factors like poor attitude and adherence. These all affect the treatment outcome and may lead to complications and thus to death.[6][7][8]

The prevalence of chronic complications varies from 52.0% to 74.2%. The most common chronic complications were erectile dysfunction, visual disturbance, cardiovascular disorders, though hypertension, and nephropathy.[9][10] Likewise, acute complications had

similar a trend which ranges 30.5% among which diabetic ketoacidosis (DKA), hypoglycemia but hyper other similar hyperglycemic states (HHS) was insignificant. The common risk factors for the occurrence of complications were gender, long duration with diabetes, poor and inadequate glycemic control, negative attitude towards diabetes, poor treatment adherence, and poor knowledge about the disease and its management. Thus, a better understanding of perceptions and attitudes among both patients and providers is needed to guide initiatives to improve the management of diabetes.[11][12][13]

Hence, the common causes of diabetic complications are poor control of diabetes either due to nonadherence, poor attitude towards the disease and its complications, unhealthy diet, and insufficient physical activity.[14][15][16] On top of these complications' diabetes can predispose the patient to different infections. The outcome of diabetes is a disability, and/or death, and of course has a great economic impact which is direct (medical and treatment costs) and indirect (costs of hospitalizations, loss of vision, lower extremity amputations, kidney failure, and cardiovascular events).[17][18][19][20] Thus, prevention is most cost-effective than treatment and management of diabetic complications. Thus, this study is aimed at determining the prevalence of diabetes-related complications and associated risk factors among diabetic patients in a hospital in North India.

AIM

This study aims to assess the prevalence of diabetic complications and associated factors among adult diabetic patients in North India.

METHODS & MATERIALS

Study Setting

A cross-sectional study was conducted from Jan to March 2020, in the general medicine department.

Study Participants

All diabetic patients visited the adult diabetic clinic of the hospital during the study period. Since all diabetic patients were included in the study, sample size determination and sampling techniques were not used.

Data Collection Process

Pretested data was collected by four nurses trainees of the data collection. All patients visiting the hospital during the three months of data collection period were given the self-administered questionnaires and get interviewed if they do not read and write.

Patients who visited the hospital for the second time were excluded from the study and the first visit's data was taken. The questionnaire contains 18 knowledge, 19 attitudes, and 16 practice-related questions in addition to 16 general and sociodemographic questions. In addition, the last one-month adherence was assessed based on the patient's report. Diagnosis of diabetic complications was done and complications and laboratory results were taken from patient cards. The collected data were cleared and checked every day for completeness and consistency before processing.

Data Processing and Analysis

Collected data were edited, coded, and entered into SPSS 22.0. Descriptive statistics were computed to determine the frequency, means, and standard deviations whereas chi-square tests were carried out to determine the association between variables.

Operational Definition and Terms

- Good self-reported adherence: patients who answered correctly more than or equal to mean score.
- Poor self-reported adherence: patients who answered below the mean score.
- Good attitude: patients who answered correctly more than the mean score.
- Poor/negative attitude: patients who answered below the mean score.
- Good knowledge: patients who answered correctly more than the mean score.
- Poor knowledge: patients who answered below the mean score.
- Acute complications: including diabetic ketoacidosis and hyperosmolar hyperglycemic.

- Chronic complications: including vascular (microvascular and macro-vascular) and nonvascular complications of diabetes.

RESULTS

Sociodemographic Characteristics of Diabetic Patients

Eighty-one (81) diabetic patients who came to the follow-up clinic during the 3 months of data collection were included in the study. The majority of the patients (57.4%) were males. The median age of the patients was 45 (± 17.677) and they were known diabetic patients for a mean duration of 5.00 (± 5.70) years (Table 1).

Table 1

| Variables | Frequency (%) |
|---------------------------------------|---------------|
| Sex | |
| Male | 47 (58.02) |
| Female | 34 (41.97) |
| Age | |
| ≤30 | 11(13.58) |
| 31–45 | 25(30.86) |
| ≥45 | 45(55.55) |
| Duration since diagnosed <5 | 46(56.79) |
| 5–9 | 19(23.45) |
| 10–14 | 08(9.87) |
| 15–19 | 05(6.17) |
| ≥20 | 03(3.70) |

The regimen used to manage types I and II diabetes

The majority of the patients, 57 (70.03%), were of type II with the remaining 24 (29.62%) being type I patients. The medications used for the treatment of diabetes were oral hypoglycemic agents, 45(55.55%), either in combination or alone. But it was noted that insulin was used for both types I and II diabetics to manage the complications (Table 2).

Table 2

| Regimen | Frequency (%) |
|--------------------------------------|---------------|
| Oral hypoglycemic agents | 45(55.55) |
| Insulin only | 25(30.86) |
| oral hypoglycemic agents and insulin | 11(13.58) |

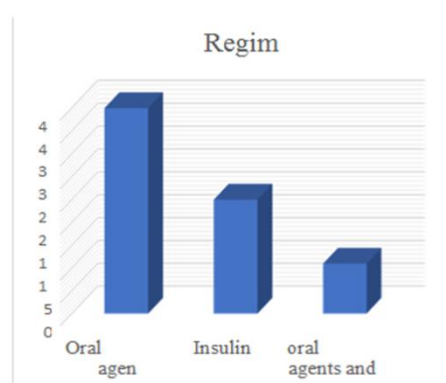


Figure 1

Distribution of variables based on the type of diabetes

Prevalence of Diabetic Complications among Diabetic Patients. When we see the type-specific complications, 57

(70.03%) and 24 (29.62%) were among types II and I diabetes. Results are summarized in (table no.3).

Table 3

| Variables | Types of diabetes | | Total (%) | p-value |
|--------------------------------|------------------------|-------------|-----------|---------|
| | Type I (%) | Type II (%) | | |
| Is there complication? | | | | |
| Yes | 22(27.16) | 51(62.96) | 73(90.12) | |
| No | 02 (2.46) | 06 (7.40) | 08(9.87) | |
| Sex | | | | 0.048 |
| Male | 15(18.51) | 32(39.50) | 47(58.02) | |
| Female | 09(11.11) | 25(30.86) | 34(41.97) | |
| Age | | | | 0.02 |
| ≤30 | 03(3.70) | 08(9.87) | 11(13.58) | |
| 31–45 | 06(7.40) 19(23.45) | | 25(30.86) | |
| ≥45 | 15(18.51) 30(37.03) | | 45(55.55) | |
| Category of duration | | | | |
| <5 | 14(17.28) 32(39.50) | | 46(56.79) | |
| 5–9 | 05(6.17) 14(17.28) | | 19(23.45) | |
| 10–14 | 03(3.70) | 05(6.17) | 08(9.87) | |
| 15–19 | 01(1.23) | 04(4.93) | 05(6.17) | |
| ≥20 | 01(1.23) | 02(2.46) | 03(3.70) | |
| Overall knowledge score | | | | 0.03 |
| Good | 09(11.11) | 25(30.86) | 34(41.97) | |
| Poor | 05(18.51) | 32(39.50) | 47(58.02) | |
| Self-reported adherence | | | | 0.35 |
| Good | 02 (2.46) | 06 (7.40) | 08(9.87) | |
| Poor | 22(27.16) | 51(62.96) | 73(90.12) | |
| Overall attitude score | | | | 0.02 |
| Good | 09(11.11) | 25(30.86) | 34(41.97) | |
| Poor | 05(18.51) | 32(39.50) | 47(58.02) | |

Distribution of chronic diabetic complications

In this study, 73 (90.12%), of the patients have experienced at least one complication. Hypertension 39 (48.14%), visual disturbance 26 (32.09%), and neuropathy 13

(16.04%) were the three most common chronic complications in the diabetic clinic (Table 4), whereas the three most common acute diabetic complications were 15 (18.51%), and HHS 5 (6.17%).

Table 4

| Complications | Frequency (%) |
|---------------------------|---------------|
| Hypertension | 39(48.14) |
| Visual disturbance | 26(32.09) |
| Neuropathy | 13(16.04) |
| Foot ulceration | 04(4.93) |
| Nephropathy | 02 (2.46) |
| Impotence | 02 (2.46) |

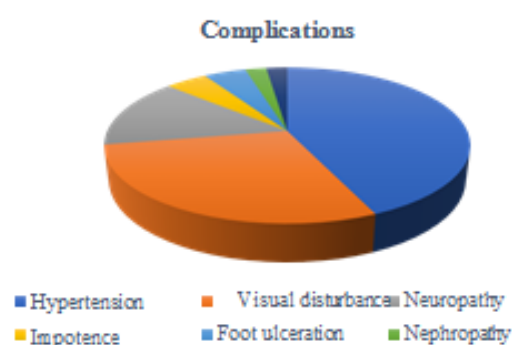


Figure 2

DISCUSSION

This study examines diabetic complications in the general medicine department. It is highlighted that diabetic complications are common in the Ward in which the majority were among type II patients and around 48% of patients have microvascular complications alone or with other macrovascular complications. It is indicated that different factors have been implicated as risks for the occurrence of complications.[1][2][3][4]

In this study; The majority of the patients, 57 (70.03%), were of type II with the remaining 24 (29.62%) being type I patients. The medications used for the treatment of diabetes were oral hypoglycemic agents, 45(55.55%), either in combination or alone. But it was noted that insulin was used for both types I and II diabetics to manage the complications.[5][6][7]

In our study; Prevalence of Diabetic Complications among Diabetic Patients. When we see the type-specific complications, 57 (70.03%) and 24 (29.62%) were among types II and I diabetes.[8][9]

In this study, 73 (90.12%), of the patients have experienced at least one complication. Hypertension 39 (48.14%), visual disturbance 26 (32.09%), and neuropathy 13 (16.04%) were the three most common chronic complications in the diabetic clinic (Table 4), whereas the three most common acute diabetic complications were DKA 43 (53.08%), hypoglycemia 15 (18.51%), and HHS 5 (6.17%).[10][11][12]

The difference in management practitioners and the screening practices in different hospitals might have

contributed to differences in occurrences of complications doubling with medication selection, poor knowledge, and attitude of patients.[13][14][17]

In this study, the age of patients, type of diabetes, antidiabetic drugs, and type of diabetes were significantly associated with the occurrences of diabetic complications in the clinic. This was similar to other studies in Ethiopia, Jordan.[15][16][19]

As the limitation of the study, it must be noted that this study did not determine the severity of complications, and outcomes of the complications. Protein concentration, HbA1c, and direct ophthalmoscopy to detect retinal changes were not performed. Moreover, clinical findings and questionnaire-based approaches were used to determine complications and the factors that could affect their occurrences.

CONCLUSION

Diabetic complications were prevalent. Type II patients were more prone to complications in the hospital. The contributing factors for occurrences of complications were multiple. There should be training on the management of diabetic patients and of course screening of complications should soon be started. Thus, integrated effort should be in place to prevent the development of complications and manage the disease progression.

CONFLICT OF INTERESTS

The authors declare that they have no conflict of interest.

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