

ORIGINAL ARTICLE

A Study on Adherence to Medicines and Lifestyle of Diabetic Patients Attending a Tertiary Care Hospital in Kolkata Post-coronavirus Disease Lockdown

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ABSTRACT

Introduction: In the era of coronavirus disease (COVID-19) pandemic, people suffering from non-communicable diseases have to face greater challenges. Chronic diseases such as hypertension, diabetes, chronic kidney disease, and HIV/AIDS are posing a higher risk for contracting COVID-19, making the people more vulnerable to COVID-19 with difficulties in management. For patients with diabetes, strict adherence to medications is a must for good glycemic control and it prevents various complications, both microvascular and macrovascular including diabetic ulcers, neuropathy, and nephropathy. The present study aimed to explore the influence of COVID-19 lockdowns on drug and lifestyle adherence of diabetic patients attending a tertiary care hospital in Kolkata, which is also dedicated to COVID-19 care and management.

Materials and Methods: It was an observational, cross-sectional hospital-based study. The study was conducted in a tertiary care hospital in Kolkata among patients who attended diabetic clinic between June 2020 and August 2020 just after nationwide lockdown was unlocked. Complete enumeration of the patients aged 18 years and above, suffering from Type 2 diabetes who attended diabetic clinic for the 1st time between June 2020 and August 2020, was the study subjects. The study subjects were interviewed using a pre-designed, pre-tested semi-structured schedule comprising three parts. Demographics of the study population along with basic clinical characteristics were included in the first part. The second and third parts comprised six questions on patients' medication compliance and daily habits before and after the lockdown.

Results: Out of 510 study subjects, nearly half (50.2%) of them were in the age group of 45–59 years. Female participants were slightly higher (53.7%) in proportion. While majority (85%) of the patients was prescribed 2–4 oral medications for glycemic control, only 12.7% of the patients were prescribed insulin injections. About 85.6% of the patients used to take their medications regularly and on time before the lockdown, while 40.2% timely monitored their blood glucose levels most of the time. About 46.3% and 58.7% of the patients had not experienced any symptoms of hypoglycemia or hyperglycemia, respectively, before the lockdown, while 71% of the patients used to take their medications regularly and on time after the lockdown, while less than one-third of the patients (31.7%) timely monitored their blood glucose levels most of the time.

Conclusion: This study showed a remarkable drop in relation to medicine and lifestyle compliance after the lockdown.

Key words: Adherence, coronavirus disease, diabetes mellitus, lifestyle lockdown

INTRODUCTION

In the era of coronavirus disease (COVID-19) pandemic, people suffering from non-communicable diseases (NCDs) have to face greater challenges.^[1,2] Chronic

diseases such as hypertension, diabetes, chronic kidney disease, and HIV/AIDS are posing a higher risk for contracting COVID-19, making the people more vulnerable to COVID-19

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with difficulties in management.^[1] To combat this current pandemic, Government of India had to take tough decisions including lockdowns and restrictions of mobility support for the common people. Thus, the people having NCDs requiring revisits and follow-ups encountered a major problem since health facilities became inaccessible. Furthermore, the increased likelihood of being infected forced most patients to avoid their health facilities for physician consultations.^[3,4]

For patients with diabetes, strict adherence to medications is a must for good glycemic control and it prevents various complications, both microvascular and macrovascular including diabetic ulcers, neuropathy, and nephropathy.^[5-7] With the administrative orders of making an institute dedicated to COVID-19 care, a major challenge was to provide the scheduled follow-up consultations to persons with diabetes mellitus to attend weekly diabetic clinic. Although an alternative approach was to use telemedicine facilities run by the state government, the impact of getting antidiabetic medicines at free of cost for 1 month at a time could never be denied. With this background, the present study aimed to explore the influence of COVID-19 lockdowns on drug and lifestyle adherence of diabetic patients attending a tertiary care hospital in Kolkata, which is also dedicated to COVID-19 care and management.

MATERIALS AND METHODS

It was an observational, cross-sectional hospital-based study. The study was conducted in a tertiary care hospital in Kolkata among patients who attended diabetic clinic between June 2020 and August 2020 just after nationwide lockdown was unlocked.

Complete enumeration of the patients aged 18 years and above, suffering from Type 2 diabetes who attended diabetic clinic for the 1st time between June 2020 and August 2020, was the study subjects. After taking informed consent from the participants, the study was conducted among the patients. Patients refusing to give consent or with Type 1 diabetes or gestational diabetes were excluded from the study. Thus, out of 538 patients, 510 were included in the study.

The study subjects were interviewed using a pre-designed, pre-tested semi-structured schedule comprising three parts. Demographics of the study population along with basic clinical characteristics were included in the first part. The second and third parts comprised six questions on patients' medication compliance and daily habits before and after the lockdown. Data, thus collected, were presented as frequency and percentages for categorical variables.

The data were entered into spreadsheet and analyzed using R version 4.0.2.

RESULTS

Demographics of the study participants along with basic clinical characteristics are displayed in Table 1. Out of 510 study subjects, nearly half (50.2%) of them were in the age group of 45–59 years followed by the people aged 60 years and above (29%). Female participants were slightly higher (53.7%) in proportion. Most of the study subjects (78.2%) were from Hindu family. While majority (85%) of the patients was prescribed 2–4 oral medications for glycemic control, only 12.7% of the patients were prescribed insulin injections. Some of the patients, who really require insulin, refused to take it for the fear of injection. Nearly half (48.4%) of the study subjects were hypertensive. Based on available data, mean fasting blood glucose was 157.65 mg/dl with standard deviation 70.30 mg/dl, mean postprandial blood glucose was 240.35 mg/dl with standard deviation 132.06 mg/dl while those who did their glycosylated hemoglobin, mean HbA_{1c} level was 6.2% with standard deviation was 0.78%.

Patients were questioned regarding their compliance with medications and healthy lifestyle habits before and after the lockdown, and asked to choose a response (always, most of the time, sometimes, rarely, and never).

About 85.6% of the patients used to take their medications regularly and on time before the lockdown, while 40.2% timely monitored their blood glucose levels most of the time. About 46.3% and 58.7% of the patients had not experienced

Table 1: Distribution of patients according to demographics (*n*=510)

Variable	Count	Percentage
Gender		
Female	274	53.7
Male	236	46.3
Age group (in years)		
<30	4	0.8
30–44	102	20
45–59	256	50.2
>60	148	29
Religion		
Hinduism	399	78.2
Islam	111	21.8
Oral drugs for diabetes in prescription		
Not on oral hypoglycemic agent	1	0.2
1	31	6.08
2	112	21.96
3	196	38.43
4	122	23.92
5	48	9.41
Insulin use	65	12.7
Hypertension	247	48.4

Table 2: Compliance of medications and lifestyle before lockdown (figures are in percentages) (*n*=510)

Questions related to compliance and symptoms	Always	Most of the time	Sometimes	Rarely	Never
Do you take your medications on time?	85.6	11.1	3.1	0.2	0
Do you monitor your own blood glucose level?	NA	40.2	41.3	18.5	0
Do you experience symptoms of hypoglycemia?	NA	1.4	18.5	33.8	46.3
Do you experience symptoms of hyperglycemia?	3.1	13.8	9.3	15.1	58.7
Do you commit to a specific diet?	20.3	27.3	19.7	16.1	16.6
Do you commit to a physical activity?	35.4	14.8	20.1	17.3	12.4

NA: Not applicable

any symptoms of hypoglycemia or hyperglycemia, respectively, before the lockdown. Nearly half of the patients either always or most of the time committed to a healthy diet (47.6) and to physical activity (50.2), as shown in Table 2.

About 71% of the patients used to take their medications regularly and on time after the lockdown, while less than one-third of the patients (31.7%) timely monitored their blood glucose levels most of the time. About 64.6% and 50.9% of the patients had not experienced any symptoms of hypoglycemia or hyperglycemia, respectively, after the lockdown. About 39.5% of the patients either always or most of the time committed to a healthy diet, while less than one-third to physical activity (30.9%), as shown in Table 3.

DISCUSSION

Diabetes mellitus is a chronic NCD that needs strict adherence to the pharmacological and non-pharmacological or lifestyle advices. Regular follow-up of the diabetic patients in clinic is also essential for their glycemic control. Uncontrolled blood glucose levels can significantly increase the incidence of complications, thus increasing morbidity and mortality as well.^[8]

In the present study, the levels of compliance of the diabetic patients with their medicine intake and lifestyle habits were found to be reduced due to the COVID-19 lockdown. Similar type of results was found in a study of Saudi Arabia by Reem Alshareef *et al.*^[9] The Saudi patients showed

Table 3: Compliance of medications and lifestyle after lockdown (figures are in percentages) (*n*=510)

Questions related to compliance and symptoms	Always	Most of the time	Sometimes	Rarely	Never
Do you take your medications on time?	71	14.8	10.1	2.3	1.8
Do you monitor your own blood glucose level?	NA	31.7	8.4	19.1	40.8
Do you experience symptoms of hypoglycemia?	NA	0.7	10.3	24.4	64.6
Do you experience symptoms of hyperglycemia?	5.2	17.8	16.7	9.4	50.9
Do you commit to a specific diet?	15.8	23.7	20.1	14.8	25.6
Do you commit to a physical activity?	19.8	11.1	18.2	20	30.9

NA: Not applicable

significantly lower compliance levels during the lockdown than before the lockdown. In a study by Ghosal *et al.* in 2020, a predictive model for the exploration of the impact of lockdowns on diabetes patients and the incidence of diabetes related complications demonstrated the presence of a direct relationship between the lockdown length and non-compliance. There was an association with an increase in the incidence of diabetes-related complications and uncontrolled hyperglycemia was developed.^[10]

In a study with Type 1 diabetic patients in Italy by Bonora *et al.* in March 2020, the conclusion was somewhat different.^[11] The patients who stayed at home had better glycemic control.^[11] The study by Beato-Víborá comprising type 1 diabetes patients also had similar conclusions.^[12] In addition, the incidence of hypoglycemia or hyperglycemia differed little between the pre- and post-lockdown phase. These results were also consistent with the Saudi study.^[9]

CONCLUSION

Like all other studies, the present study had some limitations. The answers to the questions were subjective and were dependent on the patients' honest response. This might have affected the validity of the study. Furthermore, as a hospital clinic-based complete enumeration method was applied to get the study participants, no inferential statistics could be done here and no such hypothesis could be tested here. In true sense, this was a purely descriptive study. However, as this study showed a remarkable drop in relation to medicine

and lifestyle compliance after the lockdown, further research to be conducted to determine the impact of the COVID-19 lockdown on the compliance of diabetes patients in terms of their management care plans.

CONFLICTS OF INTEREST

The authors do not have any conflicts of interest regarding publication of their article.

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