

Perceived Stress, Hardship, and Self-Reported Health Status of Persons Living with Diabetes Mellitus during Coronavirus Disease-19 Pandemic and Lockdown: A Descriptive Study

Masuma Yasmin, Gargi Dutta Bhattacharyya¹, Sujoy Ghosh, Kajari Bandyopadhyay², Dipta Kanti Mukhopadhyay², Asit Kumar Biswas³

Department of Endocrinology, IPGIMER and SSKM Hospital, ¹NACO, Regional Institute (E) for HSS, ICMR NICED, ²Department of Community Medicine, College of Medicine and Sagore Dutta Hospital, ³Department of Health and Family Welfare, Swasthya Bhaban, Salt Lake, Kolkata, West Bengal, India

Abstract

Introduction: Coronavirus disease-19 (COVID-19) pandemic and subsequent complete lockdown have resulted in a lot of difficulties in availing essential services including medical care, especially among the persons living with Type 2 diabetes mellitus (DM). The situation was complicated by stress and fear due to unknown nature of the pandemic during initial phases. This study aimed at measuring the perceived stress and hardship faced by persons living with DM and assessing their health status during COVID-19 pandemic and lockdown in a tertiary care hospital in West Bengal. **Materials and Methods:** An institution-based, cross-sectional, descriptive study was conducted among diagnosed cases of Type 2 DM attending diabetic clinic outpatient department using an interview technique with the help of a predesigned pretested questionnaire that consisted of variables such as perpetual and experiential stress, hardship, and selected self-reported health parameters. **Results:** Out of a total of 304 study participants, majority responded positively regarding the items of perpetual and experiential stress. However, 80.8% of participants reported the reduction of income, and about 75% of them faced hardship of various extent to manage medicine and diet with low income. Only 9.1% of participants used teleconsultation as a sole method for health checkups. About one-third of participants considered their mental health status as poor or very poor, whereas two-third considered their physical health as good or excellent. **Conclusion:** Although our study participants did not have much stress or deterioration of health during lockdown, their income and regular care were affected to a certain extent. This emphasizes the need for context-specific measures.

Keywords: Coronavirus disease-19 lockdown, diabetes mellitus, hardship, stress

INTRODUCTION

It has been generally perceived that the wake of novel coronavirus disease-19 (COVID-19) pandemic and subsequent lockdown have brought about a lot of restrictions in the day-to-day life of common people. During this period, people faced difficulties in getting food of their choice as well as other essential services and medicines, in availing public places for regular physical exercise; they missed their regular social interaction and had a perception of being imprisoned in their household.^[1] The situation got worsened with enormous fear and stress due to the unknown nature of COVID-19 pandemic, especially in the initial phases.^[2] The nature of stress in such a situation was assumed to be different from general stress

and was expressed as a unique set of psychological reactions. Such a set of common psychological reactions in response to the pandemic as a new stressor of this century was represented as “perpetual stress.”^[3] On the other hand, “Experiential stress” is the subjective feeling of stress experienced by an individual. The physiological effects of stress can be measured by recording heart rate, respiratory rate, blood pressure, etc., whereas experiential stress is usually expressed by

Address for correspondence: Dr. Kajari Bandyopadhyay, Department of Community Medicine, College of Medicine and Sagore Dutta Hospital, 578, B.T. Road, Kamarhati, Kolkata - 700 058, West Bengal, India. E-mail: dr.kajari@gmail.com

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self-reports.^[4] Both the domains were found to be prevailing among people at that time.

While the people, in general, faced some or other problems during this menace, there were certain population groups like those with noncommunicable diseases reported to have faced greater difficulties.^[5] Persons living with diabetes mellitus (DM) are among those who are known to have a greater risk of contracting infection including severe one.^[6] Such groups of people need balanced diet and regular physical exercise along with uninterrupted supply of medicine for management of their disease condition. During lockdown, all these provisions became irregular or the social situation became unfavorable which might create a lot of hardship to the persons with DM. Along with it, lack of social interaction along with limited mobility might have contributed to the already existing stress and anxiety of those chronically ill persons.^[7]

However, being a unique situation, the real effect of the pandemic and resultant lockdown is context-specific, and hence, studies are warranted to take a stock of it depending on the situation. With this background, a study was planned and conducted in a tertiary care hospital in West Bengal to capture the scenario aiming at measuring the perceived stress, which included both perceptual and experiential stress among persons living with DM, finding out the hardship faced by them and assessing the self-reported health status of the study population during COVID-19 pandemic and lockdown.

MATERIALS AND METHODS

Study type, design, setting, and duration

An institution-based, cross-sectional, descriptive study was conducted at the Diabetic Clinic of a Government Medical College in Kolkata over the period of 3 months (August–October 2020). The diabetic clinic of the hospital has an average monthly outpatient department (OPD) attendance of 6000 Patients during pre-COVID-19 era. After an initial dip in outpatient attendance due to strict lockdown, the average daily OPD footfall in diabetic clinic was 150/day during data collection period.

Study population

Adult patients of both genders with confirmed diagnosis of Type 2 DM and attending diabetic clinic during the study period were the study population. Those who had diagnosed psychiatric illnesses and those who did not give informed consent were not included in the study.

Sample size and sampling

In scarcity of related scientific literatures, assuming that 50% of the study population faced hardship with absolute precision of 6.0%, 95% confidence level, and 15% nonresponse rate, the final sample size was 307. Based on the experience during pretesting, it was decided to follow systematic random sampling to select every 10th patient with a random start to draw a sample size of 15/day. Two random days per week were

selected and a total of 21 days (approximately 11 weeks) were needed to complete the data collection.

Study tools and techniques

Pretested interviewer-administered questionnaire was used as the study tool. The questionnaire consisted of five sections; the first section for identification and sociodemographic information. Second and third section was used to measure perceptual and experiential stress due to COVID-19. The fourth section consisted of questions to elicit the perception of study participants regarding the hardship they faced during the period of lockdown, and the fifth section collected self-reported health parameters of the respondents.

Method of data collection

After obtaining the permission of Institutional Ethics Committee and appropriate authority, the study was initiated. The researchers interviewed the study participants in a separate space adjacent to diabetic clinic OPD where privacy and confidentiality could be maintained. It was also ensured that physical distancing of 2 m and other COVID appropriate respiratory etiquettes were maintained during the interviews. Written informed consent was obtained from each participant.

Study variables

Stress on patients due to COVID-19 pandemic and lockdown was assessed through two predesigned, validated scales in Bengali: one for “Perceptual stress” (13 items) and one for “Experiential stress” (11 items). Here, the responses for both perpetual and experiential stress were captured in a 5-point Likert scale with categories ranging from “Not at all” to “Severe” for the perpetual stress and from “never” to “always” for the experiential stress. Therefore, increasing score meant increasing stress. The items of the questions were collected through review of relevant literatures, informal discussions with persons living with diabetes, endocrinologists, public health specialists, and psychiatrists.^[8-14] The stress scale items were assessed for content validity by seven psychiatrists and public health specialists through the Delphi technique. They were requested to rate each of the items as one among “Essential,” “desirable,” and “not essential.” Thus, 12 out of 13 items (90%) of perpetual stress and 10 out of 11 items (again 90%) of experiential stress were found to be “essential,” and rests were “desirable.” The revised version was pretested in a similar population of 20 persons with diabetes with a gap of 3 weeks to examine test–retest agreement (kappa value was more than 0.8 for each item). This version was pretested to check internal consistency by Cronbach’s alpha, item-to-item correlation, and item-to-total correlation. All 13 items of perceptual stress scale were retained and the adjusted Cronbach’s alpha was 0.9. Based on these parameters, one item from experiential stress scale was omitted and the adjusted Cronbach’s alpha was 0.7 (10 items).

Hardship faced by the participants was assessed using closed ended questions on difficulty in availing food items, medicine with special mention on insulin injection; availability of usual diet; restriction in use of public places for physical exercise;

managing with reduced income (if so); and lack of social interaction/mixing and sense of being imprisoned. The items were selected after a thorough literature review and were finalized after in-depth interviews among clinicians (three in number) and diabetic patients (five in number). For all the items of stress and hardship, the period of reference was April–June 2020.

Health parameter of individuals was assessed by self-rated physical and mental health, self-perceived change in body weight, blood parameters, if done, and complications/hospitalization, if any.

Data analysis

The data were entered into an MS Excel spreadsheet and checked for completeness. Descriptive statistics and reliability analysis (of the pretest) were done using MS Excel Workbook version 2010 (Microsoft, Washington, U.S.) and R software v 3.5.1 (R project for statistical computing, Free Software Foundation’s GNU General Public License). The scores of the perpetual as well as experiential stress showed skewed distribution; therefore, median and interquartile range (IQR) were used as summary measures.

Ethical issues

Permission of the Institutional Ethics Committee was obtained (Ref No. IPGMEandR/IEC/2020/600; Date: 10.08.2020) and it was ensured that the procedures followed the guidelines laid down in the Declaration of Helsinki.

RESULTS

The total number of participants that could be included was 302. The age of the study participants ranged from 18 to 78 years, with mean (\pm standard deviation) as 50.1 (\pm 10.5) years. There was equal representation between the male (52.3%) and the female. The median (IQR) values for perpetual stress scale was 15 (7–27) and that of experiential stress was 6.5 (3–12). Majority of the participants were “Not at all” scared about inadequacy of general hygiene such as handwash (66.9%), inability of health system to save one or his close ones (74.8%), and of social distancing in preventing spread of COVID-19 infection (68.2%). One-third to half of the participants expressed that they were not feared at all about virus entering their body at anytime (35.1%), about their inability to save near and dear ones (38.7%), unavailability of food and other essential items (30.5%) as well as medicines (35.1%) and disinfectant and cleaning agents (49.3). Similar nature of responses was also observed in case of rest of the items except “Fear of catching the virus from persons sneezing or coughing nearby”, where equal proportion of participants (27.5%) belonged to “Not at all” and “moderate” categories [Table 1].

Table 2 shows that majority of the study participants expressed “never experienced” in all the items, with the single exception of “occasional” experience of watching YouTube videos by 31.5% of the participants, which is nearly similar to those who “never” did it (32.1%).

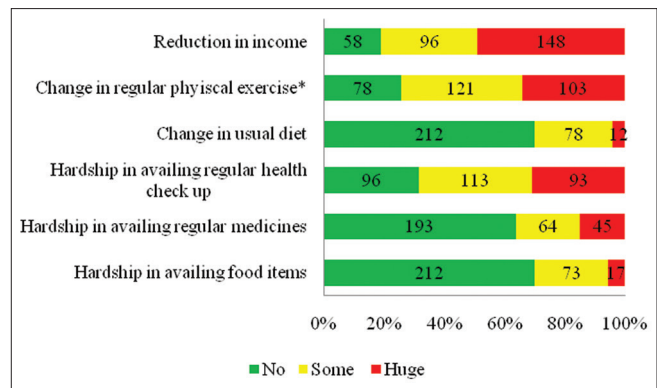


Figure 1: Hardship faced by study participants ($n = 302$). Value labels indicate the number of participants of each category. *Categories “continued physical exercise indoor” will replace “some” and “discontinued physical exercise” will replace “huge”

As shown in Figure 1, during pandemic and lockdown, 244 (80.8%) participants reported reduction of income, and among them, 114 (46.7%) had to reduce their regular expenses, 79 (32.4%) had to use saved money, and 51 (20.9%) had to borrow money to meet up the expenditure; about 75% of them faced hardship of various extent to manage medicine and diet with low income. However, majority of them did not face much hardship regarding the availability of food items (212, 70.2%) and medicines (193, 63.9%). Out of 302 participants, 82 (27.2%) were on insulin injections at the time of study, among which majority (62.2%) had to depend on someone outside of their home for administration, 10.9% of such patients had to arrange for the injections at higher cost, and another 10.9% could not arrange at all. Considerable proportion of study participants had to discontinue physical exercise (34.1%) and health checkup (30.8%). As there was no provision of public transport during a complete lockdown, majority (68.9%) used personal or hired vehicles to reach health facilities and 22.0% visited by walking or cycling. Only 19 (9.1%) participants told that they used teleconsultation as a sole method for health checkups. Among all, 187 (61.9%) did not go out for meeting friends and relatives, while 72 (23.8%) did it rarely. More than half of the study subjects felt some extent of captivity during lockdown.

As described in Table 3, around one in three participants considered their mental health status as poor or very poor (32.1%), whereas two-third considered their physical health as good/excellent. Out of 302 participants, 177 (58.6%) could get their blood sugar tested and out of them, 47.5% reported an increase in blood sugar level during lockdown compared to prelockdown. However, only 28.9% of study participants perceived some amount of increase in body weight during this phase.

DISCUSSION

The present study highlighted how life situations and care components among persons living with Type 2 DM were

Table 1: Perceptual stress among persons living with diabetes mellitus during coronavirus disease-2019 pandemic and lockdown (n=302)

Items	Not at all, n (%)	Slight, n (%)	Moderate, n (%)	Quite a bit, n (%)	Severe, n (%)
Fear of virus entering the body	106 (35.1)	28 (9.3)	65 (21.5)	53 (17.5)	50 (16.6)
Fear of insufficiency of general hygiene (e.g., handwash) to prevent COVID	202 (66.9)	39 (12.9)	45 (14.9)	14 (4.6)	2 (0.7)
Fear of inability of health system to save oneself or close relatives	226 (74.8)	34 (11.3)	26 (8.6)	13 (4.3)	3 (1.0)
Fear of inability to keep the family members safe	117 (38.7)	53 (17.5)	56 (18.5)	43 (14.2)	33 (14.2)
Fear of ineffectiveness of social distancing to prevent COVID	206 (68.2)	31 (10.3)	45 (14.9)	14 (4.6)	6 (2.0)
Fear of stock out of food and other essential items from stores	92 (30.5)	42 (13.9)	73 (24.2)	32 (10.6)	63 (20.9)
Fear of stock out of pharmaceuticals	106 (35.1)	43 (14.2)	79 (26.2)	28 (9.3)	46 (15.2)
Fear of stock out of disinfectant and cleaning agents	149 (49.3)	49 (16.2)	70 (23.2)	16 (5.3)	18 (6.0)
Fear of closure of the stores and markets	92 (30.5)	39 (12.9)	82 (27.2)	34 (11.3)	55 (18.2)
Fear of spread of virus from people around me	105 (34.8)	31 (10.3)	67 (22.2)	64 (21.3)	35 (11.6)
Fear of catching the virus from the objects touched by or used by others	128 (42.4)	23 (7.6)	61 (20.2)	68 (22.5)	22 (7.3)
Fear of catching the virus from persons sneezing or coughing nearby	83 (27.5)	29 (9.6)	83 (27.5)	63 (20.9)	44 (14.6)
Fear of catching the virus from by handling money or using ATM	140 (46.4)	27 (8.9)	62 (20.5)	53 (17.5)	20 (6.6)

COVID: Coronavirus disease, ATM: Automated teller machine

Table 2: Experiential stress among persons living with diabetes mellitus during coronavirus disease-2019 pandemic and lockdown (n=302)

Items	Never, n (%)	Rarely, n (%)	Occasionally, n (%)	Often, n (%)	Always, n (%)
Experience of disturbed sleep	183 (60.6)	10 (3.3)	53 (17.5)	30 (9.9)	26 (8.6)
Experience of nightmare	267 (88.4)	3 (1.0)	14 (4.6)	13 (4.3)	5 (1.7)
Experience of over-thinking when I did not want to	162 (53.6)	22 (7.3)	61 (20.2)	32 (10.6)	25 (8.3)
Experience of worries	163 (54.0)	31 (10.3)	57 (18.9)	34 (11.3)	17 (5.6)
Experience of lack of concentration	254 (84.1)	11 (3.6)	28 (9.3)	4 (1.3)	5 (1.7)
Experience of discomfort (e.g., palpitation or sweating) while thinking of the virus	264 (87.4)	3 (1.0)	23 (7.6)	10 (3.3)	2 (0.7)
Following comments in social media on this topic	152 (50.3)	7 (2.3)	56 (18.5)	21 (7.0)	66 (21.9)
Watching YouTube videos on this topic	97 (32.1)	26 (8.6)	95 (31.5)	38 (12.6)	46 (15.2)
Discussion with friends and relatives on this topic	222 (73.5)	16 (5.3)	40 (13.2)	9 (3.0)	15 (5.0)
Self-examination of symptoms of COVID	279 (92.4)	20 (6.6)	3 (1.0)	—	—

COVID: Coronavirus disease

affected during lockdown because of COVID19 pandemic. Although neither the perpetual nor the experiential stress was very much heightened, considerable proportion of the study participants were worried quite a bit to even moderately regarding many aspects, stores running out of essentials, markets getting closed; contracting infections from people around, by touching shared items, etc., to name a few. Similar findings were observed in an earlier study from Kerala where only one-fourth reported mental stress during lockdown.^[5] However, researchers from the Netherlands reported elevated levels of stress one-third of participants without any difference between people with Type 1 and Type 2 diabetes.^[15] Although, an exact comparison could not be done due to differences in methods of measurement of stress or anxiety.

In a study among Type 2 diabetes patients, less than half of the patients reported a change in quantity of diet.^[16] In the present study, only one-third of population did face certain hardship in availability of food and diet. Residence in the urban/suburban area where there was abundant supply by local mobile vendors

along with support by the government through food security measures might be the reasons behind. Striking deterioration was observed in the economic domain. Reduction of income was reported by a considerable proportion of participants and they had to cope up with reduced income by several means including compromise with quality of life. Whether this reduction of income resulted in deterioration of their diabetic care was beyond the scope of this article. Overall, only one-fourth of the participants reported major restriction in carrying out physical activities during lockdown, as a considerable proportion continued indoor physical activities. A similar pattern was found in a few other studies.^[1,16,17] Saqib *et al.* from Pakistan observed that around half of the study population with chronic illnesses missed their routine medical checkup and missed regular testing while two-third could not continue their daily exercise.^[18] The figures were slightly better in the present study. Teleconsultation has become widespread and largely upgraded as a result of pandemic and lockdown, especially for chronic medical conditions. However, in the present study, only one in every ten participants reported to use it as the priority method

Table 3: Selected health parameters of the study population during coronavirus disease-2019 pandemic and lockdown (n=302)

Parameters	n (%)
Perceived physical health during lockdown compared to prelockdown	
Good	203 (67.2)
Fair	43 (14.2)
Bad	56 (18.5)
Perceived mental health during lockdown compared to prelockdown	
Good	155 (51.3)
Fair	50 (16.6)
Bad	97 (32.1)
Testing of blood sugar during lockdown	
Yes	177 (58.6)
No	125 (41.4)
Mode/place of testing (n=177)	
Glucometer	24 (13.6)
Private laboratory	134 (75.7)
Hospital	19 (10.7)
Level of blood sugar compared to prelockdown (n=177)	
Nearly same as before	27 (15.3)
More than before	84 (47.5)
Less than before	67 (37.3)
Level of blood lipids compared to prelockdown	
Not applicable/not done	274 (90.7)
Nearly same as before	5 (1.7)
More than before	19 (6.3)
Less than before	4 (1.3)
Any complication during this phase	
Yes	43 (14.2)
No	259 (85.8)
Hospitalisation due to complications (n=43)	
Yes	16 (37.2)
No	27 (62.8)
Perceived change in body weight	
Increased	87 (28.9)
Same as before	115 (38.1)
Decreased	100 (33.1)

of consultation. Lack of ability to handle video conferencing of this population group along with dissatisfaction in the absence of physical contact might be the reason. Health care of persons with chronic diseases was affected to a large extent, even in developed countries with fair investment in health.^[19]

This study revealed that around one-third of the participants had difficulties in availing their medications regularly, two in every five could not monitor their blood sugar, and only one-sixth faced diabetic complications during the lockdown phase. Similar figures were reported from a study in Saudi Arabia.^[20] Another study based on an online and telephonic survey revealed that glycemic control in persons with diabetes remained unaffected to a greater extent.^[17] Elsewhere it was reported that glycemic control of diabetics was worse during pandemic.^[21] Self-reported gain in body weight was mentioned

by less than one-third of participants, which was corroborated by Román *et al.*^[22]

The major strength of the study lies in a face-to-face interview, which ensured quality and completeness of data collection. Being a hospital based study, the results will not truly represent the population. The stress scales were newly developed and adapted and pretested in a small sample of patients which might have restricted the validity. In addition, self-report of change in weight, glycemic, and lipid control has some inherent limitations.

CONCLUSION

Therefore to conclude, although our study participants did not have excessive stress, or pervasive worsening of health during lockdown, regular medical consultation and monitoring of blood parameters were affected to a certain extent during lockdown. This amelioration of effect of pandemic and lockdown might be due to urban and suburban residence where facilities were more. However, the study emphasized the need of widening choice of consultation (telemedicine, mobile clinic, etc.) and measures to address physical and mental health including laboratory services to persons living with diabetes so that their care is not compromised.

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Conflicts of interest

There are no conflicts of interest.

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