

Iranian patients with type 2 diabetes who use insulin pens during the COVID-19 pandemic change their self-care practices

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ABSTRACT

AIM: Changes and limitations in daily life have been brought on by the COVID-19 pandemic, a severe public health issue. Particularly in underdeveloped nations with limited resources, this may have an impact on disease management and health behaviours directly or indirectly. In this study, self-care practises of type 2 diabetes patients using insulin pens were compared before and after the COVID-19 pandemic

METHODS: This was a prospective cohort study involving 300 patients with type 2 diabetes who had been referred to a referral tertiary care diabetes clinic during 2018–2019. The Summary of Diabetes Self-Care Activities Assessment questionnaire was used for the evaluation of 5 self-care activities.

RESULTS: Prior to the COVID-19 crisis and one year afterwards, the mean total self-care score was 37.63 and 26.14, respectively.

Before the COVID-19 crisis, patients' levels of poor, moderate, and good self-care were, respectively, 27%, 54.3%, and 18.7%. However, these rates were 66.3%, 29%, and 4.7%, respectively, a year after the epidemic started. The mean score of five self-care behaviour variables varied significantly between.

CONCLUSION: Our findings point to a decline in self-care practises among Iranians during the COVID-19 pandemic. Particularly in light of the COVID-19 crisis, ongoing patient monitoring and the development of efficient educational programmes for these patients can help to prevent or delay the long-term effects of diabetes.

Key Words: *Self-care, Diabetes, Insulin*

INTRODUCTION

The World Health Organization (WHO) declared the COVID-19 infection a pandemic on January 30, 2020. This unparalleled catastrophe has had a terrible negative effect on every element of human life, including a sharp rise in mortality and morbidity rates, disruption of the healthcare system, and the imposition of additional obligations on local communities. A higher rate and more severe cases of COVID-19 infections, a greater need for hospitalization and intensive care, and worse disease-related outcomes have all been linked to the presence of some co-morbidities, such as hypertension, cardiovascular disorders, diabetes, and cerebrovascular diseases. Results of a comprehensive review and meta-analysis revealed that co-morbidities were present in 40.80% of the affected individuals. While diabetes is more common among fatal cases compared to total cases (24.89%), hypertension is associated with more severe and fatal cases

in proportions of 47.65% and 47.90%, respectively. One of the most significant comorbidities is diabetes, which is documented in 5–36% of COVID-19 patients. After controlling for confounders, patients with diabetes have a 100–250 percent higher risk of developing severe complications and dying from COVID-19 than those without diabetes.

Lockdown and social isolation may have an impact on how people live their daily lives, receive routine medical care, and manage chronic illnesses like diabetes. The COVID-19 epidemic can have indirect negative effects on the diagnosis, prevalence, and self-management of the disease due to changes in how the healthcare system functions, social support, and patients' regular lifestyles and health behaviours, in addition to direct negative effects on mortality and morbidity in patients with diabetes. Changes in nutrition and intake of high-calorie meals are among these repercussions, as are the

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encouragement of a sedentary lifestyle, inadequate sleep, an increase in social and economic issues, and trouble getting to hospitals or pharmacies.

The most crucial elements of diabetes self-management that should be taken into consideration include regular blood glucose monitoring, adhering to a healthy diet, regular physical activity, compliance with medication, and compliance with foot care. These factors help patients with diabetes better control hyperglycemia and prevent or at least delay the complications that come with the disease. Numerous studies have revealed poor adherence to diabetes self-care practices, particularly in developing nations. Different individual, familial, and social factors might have an impact on self-care practises. The most significant obstacles to managing diabetes care in developing nations during the COVID-19 pandemic are insufficient preventive measures, interrupted traditional patient relationships, a lack of medications, disruption of routine diabetic care, and a lack of the necessary infrastructure for telehealth services. Iran, like many other nations, has recorded an increase in the prevalence of diabetes. This study's goal was to look out how the COVID-19 pandemic affected people with type 2 diabetes who used insulin for self-care. This study's primary hypothesis (H1) was that the COVID-19 epidemic significantly affects patients with type 2 diabetes who use insulin pens.

METHOD

300 type 2 diabetes patients who had been sent to a reference tertiary care diabetes clinic for instruction on how to inject pen insulin during one year (2018–2019) were included in this ongoing prospective cohort study. The only specialist referral facility for patients with diabetes in Khuzestan Province, southwest Iran, is the Golestan Hospital's Diabetes Clinic. The internal medicine ward of this hospital hosts more than 5000 outpatients and inpatients at this clinic each year since its establishment in the year 2000. It offers almost 500 new insulin users basic training on insulin injection procedures and the associated information. This clinic is situated in Khuzestan's capital city of Ahvaz, where the prevalence of diabetes is especially high.

Before the onset of COVID infection, trained practitioners conducted face-to-face interviews to complete a standard questionnaire that included demographic data, disease characteristics, and the Summary of Diabetes Self-Care Activities Assessment (SDSCA). This was done as part of a semi-experimental study. In our prospective study, a questionnaire, a checklist of diabetes tests, and a section on consequences of diabetes following the COVID-19 crisis were completed through phone and social media. Contact information for these patients was also accessible. Patients used smartphone social media messaging apps to send pictures of their tests and other information about self-management during the COVID-19 outbreak, Whatsapp and Telegram.

The COVID-19 crisis was used to gauge patient self-care practises using the Toobert and Glasgow Diabetes Summary Self-Care Scale. A seven-point Likert scale was used to grade the 12 questions in the SDSCA. None of the women and a small number of males in our study smoked, and the majority of earlier studies that focused on the five key regions likewise did away with this question. Because of this, we utilised 11 items to evaluate five elements of diabetes self-care practises, including food (4 questions), exercise (2 questions), insulin

injection or correct tablet taking (1 question), blood sugar self-monitoring (2 questions), and foot care (two questions). The patients' responses to the questions enable them to describe the scope and frequency of their diabetes self-care activities throughout the previous seven days. The scale's overall score can be anywhere between 0 to 77. A panel of specialists was used in a research by Morwati sharifabad to confirm the scale's content validity. 45 persons were examined in order to determine the internal stability. According to calculations, the total sample and preliminary study's Cronbach's alpha coefficients for the structure of self-care behaviours were 0.66 and 0.68, respectively.

RESULTS

The self-care practises of type 2 diabetes patients who used insulin pens were compared in this study before and after the COVID-19 epidemic. Nine patients who met the eligibility requirements passed away within a year of the COVID-19 spread, and 300 patients were subjected to the analysis. Patients' ages ranged from 53.85 to 10.88 years on average. The majority of the patients were women. The sickness lasted an average of 11.69 (6.01) years. Additionally, 22.3% of the patients changed the insulin type or dosage, and 12.3% discontinued using insulin pens. 6.7% of those infected with COVID-19 in the first six months of the epidemic checked their blood glucose in a lab within the subsequent six months, and 31.7% did so within the subsequent year. Before the COVID-19 outbreak, 174 (58%) of patients with diabetes reported having laboratory plasma glucose testing, and 226 (75.3%) had glucometers. Within a year of the pandemic situation, routine doctor visits decreased from 63.7% to 45.3%.

Prior to the COVID-19 crisis and one year afterwards, the mean total self-care score was 37.63 (SD, 10.89) and 26.14 (SD, 10.99), respectively. Before the COVID-19 crisis, patients' levels of poor, moderate, and good self-care were, respectively, 27%, 54.3%, and 18.7%. However, these rates were 66.3%, 29%, and 4.7%, respectively, a year after the epidemic started. Table 1 shows the average and standard deviation of self-care practises based on some demographic and disease characteristics. The Wilcoxon test revealed a significant difference between the mean scores of the five self-care behaviour indices before and after the COVID-19 crisis.

Contraception

Prior to the COVID-19 crisis and one year afterwards, the mean total self-care score was 37.63 (SD, 10.89) and 26.14 (SD, 10.99), respectively. Before the COVID-19 crisis, patients' levels of poor, moderate, and good self-care were, respectively, 27%, 54.3%, and 18.7%. However, these rates were 66.3%, 29%, and 4.7%, respectively, a year after the epidemic started. Table 1 shows the average and standard deviation of self-care practises depending on key demographic and illness factors. The Wilcoxon test revealed a significant difference between the mean scores of the five self-care behaviour indicators before and after the COVID-19 crisis. The most common pattern observed in low- and middle-income countries is non-adherence to recommended behaviors, despite the wide variation in the rate of self-care behaviour adherence in these nations. (2017) noted Ghana's comparatively low rates of food compliance, blood glucose self-monitoring, and foot care. In addition, prior to the

COVID-19 crisis, our earlier studies found that type 2 diabetes patients' self-care status was at a modest level. The findings of this study showed that within a year of the pandemic, there was a significant decline in the mean scores of all five self-care activities following a diet plan, exercising, taking medication, self-monitoring blood glucose, and foot examination. Results from other studies on diabetes self-care practises after the spread of COVID-19 infections are both similar to and distinct from our findings. In accordance with our findings, some studies have shown that lockdown and social withdrawal have a negative impact on managing diabetes, particularly when it comes to regularly attending to a healthy diet and engaging in physical activity. Grabowski conducted a qualitative study on 20 diabetic patients, and the findings revealed two distinct patterns of diabetes self-management during COVID-19 lockdown: interruption of diabetes self-care and ability to maintain routine care. They noted that two significant lifestyle changes in diabetic patients were decreased physical activity and increased food intake.

On the other side, some research indicated that pandemic lockdown had no effect or even benefited diabetic self-management. Nachimuthu an online pilot study in India reported maintaining or changing routine care. According to their findings, even though 28% of the participants routinely checked their blood glucose levels, 80 percent of diabetes patients exercised regularly and maintained a healthy diet during the lockdown. By reducing their regular daily activities, 20 type 1 diabetes patients who stayed at home showed improved glycaemic control, according to Bonora. Better glucose control was observed in 307 Spanish patients during the first weeks of lockdown, according to Bonora and Fernández. This improvement was attributed to having more time to concentrate on self-management. It's interesting to note that developed nations account for the majority of the publications discussing the advantages of lockdown during the COVID-19 pandemic for managing diabetes. The majority of studies have also looked at the brief quarantine period. As the epidemic spreads, various outcomes might be attained.

CONCLUSION

Our research indicates that the Iranian population's degree of self-care has declined as a result of the COVID-19 pandemic. The true pattern of the advantages and disadvantages of lockdown during the COVID-19 period in patients with diabetes in underdeveloped and industrialized nations, however, requires more research with a bigger sample size. The results of this study demonstrate the significance of ongoing monitoring of diabetic patients, particularly during the COVID-19 crisis, and can be used to develop efficient patient education initiatives. In order to prevent both short-term and long-term complications of the disease in the current context, additional research is required to monitor patients' self-care behaviours and resilience.

Declaration of competing interest

There are no declared potential conflicts of interest by the authors.