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Behavioral, psychological, and clinical outcomes of Arabic-speaking people with type 2 diabetes during COVID-19 pandemic

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ABSTRACT

Aims: Assess self-care activities, health behaviors, self-efficacy, diabetes distress, challenges, and changes in diabetes treatment and clinical parameters among Arabic-speaking people with T2DM during the COVID-19 pandemic.

Methods: A cross-sectional study was conducted at a tertiary hospital in the United Arab Emirates. The study instrument collected self-reported data using validated tools about health behaviors, self-efficacy, and diabetes distress, and challenges in accessing and using healthcare services during the pandemic and documented clinical data and treatment before and during the pandemic from medical records.

Results: 206 patients participated with a mean age of 58.7 years and 15.7 years since diabetes diagnosis. Non-adherence to healthful eating and exercise was reported by 38.3% and 73.7%, respectively. Exercise was the self-care activity that decreased the most (36.8%). Most participants had low diabetes distress (85.9%). There were no significant differences in clinical parameters before and during the pandemic, and diabetes treatment was unchanged for 72.8% of participants. Having two or more challenges with accessing and using diabetes healthcare services was significantly associated with decreased adherence to healthy eating ($p = 0.025$) and exercise ($p = 0.003$).

Conclusions: Arabic-speaking people with T2DM appeared to maintain relatively similar self-care levels, except exercise, with no deterioration in clinical parameters compared to pre-pandemic.

1. Introduction

The 2019 coronavirus pandemic (COVID-19) continues to cause substantial morbidity and mortality globally [1]. Several factors are associated with worse COVID-19 health outcomes, including age and comorbidities, particularly diabetes and chronic lung disease [2]. There is a bidirectional relationship between COVID-19 and diabetes, where diabetes is associated with increased COVID-19 severity and mortality [3], and new-onset diabetes and severe metabolic complications of pre-existing diabetes have been reported in patients with COVID-19 [3]. A recent systematic review and meta-analysis of studies from Asia, Europe, and the United States (US) that included nearly 79,000 adults found that COVID-19 patients with diabetes had a two-fold higher risk of intensive care admission and nearly three-fold increased risk of

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in-hospital mortality [4]. Poor glycemic control seems to be emerging as a contributory factor to COVID-19 mortality outcomes among those with pre-existing diabetes. A multi-center study in China showed that the mortality rate among patients with hyperglycemia was 11% compared to 1.1% in well-controlled patients [5]. Another study revealed that glycemic stability corresponded with better outcomes in reducing the risk of mortality from the infection [6].

Even under 'normal' circumstances, diabetes can negatively affect the quality of life and mental health [7]. People with diabetes are known to have an increased prevalence of depression, anxiety, and stress compared to the general population [8]. Recently, an emphasis has been placed on understanding self-management practices and the broader psychosocial aspects in people with diabetes during the pandemic. Recent studies found a high prevalence of diabetes-specific worries related to COVID-19 [9,10]. These worries included fear of being overly affected by the virus, the perception that people with diabetes were at high risk, and the inability to manage diabetes if infected [9,10]. Similar findings were observed in a study in the Arabian Gulf region where a remarkably high prevalence of depression and anxiety symptoms were apparent particularly among subgroups of people with diabetes during the pandemic [11]. Managing diabetes and performing daily self-care activities are expected to be more challenging during the pandemic, particularly because of the impact on healthcare access [12]. Patients reported challenges like visiting physicians for regular appointments, refilling diabetes prescriptions, reduced physical activity, and dietary irregularity during the stay-at-home periods [13].

From a healthcare delivery perspective, a global survey that assessed the impact of COVID-19 on routine care for chronic diseases showed that diabetes care was the most severely affected [12]. Several factors, which were necessary to halt the spread of the COVID-19 pandemic, have impeded the provision of clinical care services and threatened the continuity of care for people with diabetes, particularly during the early phase of the pandemic. These included the contact precautions, closure of some healthcare services and sporting facilities, cancellation of routine medical appointments, and home confinement [14,15].

There is a paucity of data about how the COVID-19 pandemic affects people with diabetes in Arabic-speaking countries. However, studies prior to the pandemic have shown that Arabic-speaking people with diabetes have difficulties in achieving glycemic control (i.e., HbA1c <7.0% (53 mmol/mol)) owing to a range of beliefs, healthcare experiences, suboptimal medication adherence, and motivational barriers around self-care [16,17]. The United Arab Emirates (UAE) has one of the highest diabetes prevalence rates among adults in the world [18]. The government took several precautionary measures to limit spread of COVID-19 across the country, including social distancing, movement restrictions, and remote working. The COVID-19 outbreak in the UAE has resulted in more than 730,000 confirmed cases and exceeded 2100 deaths as of October 2021 [19]. This exploratory study aimed to assess the impact of the COVID-19 pandemic on self-care activities, health behaviors, and self-efficacy among Arabic-speaking people with type 2 diabetes in the UAE. It also aimed to determine the emotional burden of diabetes, challenges, and changes in diabetes treatment and clinical parameters during the pandemic.

2. Methods

2.1. Study design and setting

A cross-sectional study was conducted in outpatient diabetes clinics at a major tertiary hospital in Dubai, UAE, which was purposively selected because it is one of the largest in the country, serving mostly Arabic-speaking people with type 2 diabetes in Dubai and the Northern Emirates.

The study instrument consisted of two parts; the first captured self-reported data from people with type 2 diabetes about the impact of COVID-19 on self-care activities, health behaviors, self-efficacy, and diabetes distress using validated tools. Additionally, the challenges of people with diabetes during the pandemic, including those related to healthcare access were assessed. The second part of the instrument documented the clinical data and lab parameters from electronic medical records.

2.2. Participants

Between February and July 2021, potential participants were initially identified through the hospital database and were contacted by phone by trained research assistants. They explained the study objectives and procedures, and determined potential participants' interest and eligibility. Arabic-speaking people with T2DM who 18 years of age or older and residing in the UAE were included in the study. Those diagnosed with type 2 diabetes less than one year ago, those with cancer or severe mental illness, and pregnant women were excluded. Verbal consent was obtained from interested and eligible participants before completing the survey.

2.3. Study instrument

A thorough literature search and discussions among the investigators and diabetes physicians informed the development of the study instrument. The self-report part of the instrument consisted of 28 items in six sections (A-F). Section A covered socio-demographic characteristics, including sex, education level, work status, and nationality. Participants' knowledge about various aspects of diabetes self-care and the level of support received from health care providers and family were also assessed using a three-point scale (not sufficient, somewhat sufficient, and sufficient). Section B assessed diabetes self-efficacy using two validated items about participants' confidence in taking diabetes medications and carrying out self-care activities. Section C evaluated the impact of the COVID-19 pandemic on health behaviors. The Summary of Diabetes Self-Care Activities was used to assess dietary habits, physical activity, self-monitoring of blood glucose (SMBG), and smoking [20]. Participants were also asked to indicate the change in frequency of performing of these activities during the pandemic in comparison to a similar time before the pandemic. Sleeping habits before and during the COVID-19 pandemic were assessed using items adapted from the work of Grabia et al.[21] Section E assessed diabetes distress during the last week using the two-item Diabetes Distress Scale (DDS-2) [22]. Participants indicated their responses on a six-point Likert scale, where 1 =not a problem and 6 =a very serious problem. Finally, section F assessed 10 potential challenges in accessing and using diabetes healthcare services during the COVID-19 pandemic. Participants rated the level of difficulty as challenging, somewhat challenging, or not challenging.

The clinical data collection tool had 12 items and was completed from electronic medical records to understand the pandemic's association with clinical parameters and outcomes. Collected data included HbA1c level, lipid profile, serum creatinine, urinary albumin, body mass index, and diabetes treatment before and during the COVID-19 pandemic, years since diabetes diagnosis, comorbidities, and COVID-19 history. The period before the COVID-19 pandemic was defined as before 01 February 2020, and the time period during the pandemic was defined as on or after 01 February 2020. For each of these periods, the latest available clinical data were recorded.

The self-report survey was translated into Arabic by a certified translation service. The researchers then compared the Arabic translation to the original English survey, reaching a consensus on the translation of words, phrases, and items to ensure equivalence. The Arabic and English versions were then revised by academic physicians, endocrinologists, and diabetologists to establish content validity and the appropriateness of all items. Minor refinements in wording were made based on their recommendations. Next, the two versions of the survey were pilot tested with an internal medicine consultant, a diabetologist, and an endocrinologist to establish content validity and appropriateness

of all items. Furthermore, they were pilot tested with people with diabetes to ensure the clarity of all items and to determine the time needed to complete the survey, which was found to be around 5 min.

2.4. Data analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS), Version 26. Continuous variables such as age, years since diabetes diagnosis, frequency of performing self-care activities, and clinical lab data were described using means and standard deviations (SD), and categorical variables such as sex, education level, challenges, and perceived knowledge were described using counts and frequencies. Participants were categorized into "adherent" if they reported engaging in recommended self-care activities on $\geq$ 4 days of the past week and "non-adherent" if they did not. Diabetes distress scores were determined by calculating mean scores for the two items, with scores of 2 or lower indicating low distress, scores greater than 2 but lower than 3.5 indicating moderate distress, and scores of 4 or above indicating high distress. Clinical lab data were tested using the Shapiro-Wilk and were found to be not normally distributed. Therefore, the Wilcoxon signed-rank test was used to identify differences in their levels before and during the COVID-19 pandemic. Finally, the Chi-squared test was used to identify associations between challenges with accessing and using diabetes healthcare services and knowledge about diabetes with changes in self-care activities during the pandemic. Participants who reported that two or more items were 'challenging' or 'somewhat challenging' were compared to those who reported fewer than two challenges, and participants who rated their knowledge on two or more items as 'insufficient' were compared to those who reported insufficient knowledge on fewer than two items. A p-value < 0.05 was considered statistically significant.

2.5. Ethical approvals

Ethical approvals were obtained from the Research & Graduate Studies Research Ethics Committee, University of XXXXX (reference number REC-20-06-18-01) and the XXXXX XXXXX XXXXX Ethics Committee (reference number DSREC-01/2021_03).

3. Results

A total of 206 participants completed the study survey with a response rate of 78%. Male:female ratio was 58:42%, and the mean age was 58.7 years (Table 1). Around one-third (32.7%) only had a high school diploma, while 34.6% did not have a high school diploma and 26.2% had a college/bachelor's degree.

The mean duration of diabetes was 15.7 ± 8.0 years (Table 1). Almost all participants (96.5%) had documented comorbidities, the most prevalent being were dyslipidemia (83.0%), hypertension (73.8%), and a history of heart attack (17.5%). Neuropathy was the most common diabetes complication (42.7%) followed by retinopathy (36.9%), and around one-third (34.0%) did not have documented complications. Nearly half the participants (49.5%) had a COVID-19 test documented in their electronic medical record, and of those, 12.7% had positive tests. Moreover, three-quarters (76.9%) of these participants were hospitalized due to COVID-19.

Most participants reported having sufficient knowledge about diabetes management. However, 28.2% reported insufficient or somewhat sufficient information about the frequency of measuring blood glucose, and 26.8% reported insufficient or somewhat sufficient information about the meaning of lab tests such as HbA1c. Finally, most participants reported receiving sufficient support from diabetes healthcare providers (85.4%) and family members (87.8%).

When participants were asked about following a healthful eating plan, 38.3% were non-adherent, and 73.3% reported being non-adherent to consuming fruits and vegetables at the recommended

Table 1
Sociodemographic and health characteristics of people with type 2 diabetes (N = 206).

Participant characteristics	n (%)
Male sex	119 (57.8)
Age (mean ± SD)	58.7 ± 11.2
Nationality	
Emirati Arabs	158 (76.7)
Non-Emirati Arabs	48 (23.3)
Education Level	
Less than high school diploma	70 (34.6)
High school diploma	66 (32.7)
College/Bachelor's degree	53 (26.2)
Master's degree	8 (4.0)
Other	5 (2.5)
Employment status	
Employed	78 (37.9)
Unemployed	128 (62.1)
Years since diabetes diagnosis (mean ± SD)	15.7 ± 8.0
Comorbidities	
Dyslipidemia	171 (83.0)
High blood pressure	152 (73.8)
History of heart attack	36 (17.5)
Chronic kidney disease	29 (14.1)
Arthritis	22 (10.7)
Others	151 (73.3)
No co-morbidities	7 (3.5)
Diabetes Complications	
Neuropathy	88 (42.7)
Retinopathy	76 (36.9)
Albuminuria	38 (18.4)
Amputation	9 (4.4)
Others	10 (4.9)
No complications	69 (34.0)
COVID-19 test result documented	102 (49.5)
Diagnosed with COVID-19	13/102 (12.7)
Hospitalized due to COVID-19	10/13 (76.9)

Table 2a
Adherence to self-care activities and sleep duration of people with type 2 diabetes during COVID-19 pandemic (N = 206).

Self-care activities and health behaviors	n (%)
Healthful eating habits	
Adherent	127 (61.7)
Non-adherent	79 (38.3)
Fruit and vegetable intake	
Adherent	55 (26.7)
Non-adherent	151 (73.3)
Avoiding eating high-fat foods	
Adherent	160 (77.7)
Non-adherent	46 (22.3)
At least 30 min of physical activity	
Adherent	54 (26.3)
Non-adherent	151 (73.7)
Specific exercise session	
Adherent	34 (16.5)
Non-adherent	172 (83.5)
Self-monitoring of blood glucose	
Adherent	108 (52.4)
Non-adherent	98 (47.6)
Foot care	
Adherent	109 (52.9)
Non-adherent	96 (46.6)
Smoking	33 (16.0)
Number of cigarettes per day (mean ± SD)	17.2 ± 13.0
Sedentary hours per day (mean ± SD)	7.8 ± 4.6
Sleep duration at night **before** the pandemic	
>8 h	26 (12.6)
6–8 h	107 (51.9)
<6 h	73 (35.4)
Sleep duration at night **during** the pandemic	
>8 h	29 (14.1)
6–8 h	92 (44.9)
<6 h	84 (41.0)

Table 2b
Changes in frequency of performing self-care activities during the COVID-19 pandemic compared to a similar pre-pandemic time.

Self-care activity	Changes in frequency of engaging in self-care activities n (%)				
	Increased significantly	Increased	Stayed the same	Decreased	Decreased Significantly
Healthful eating habits	13 (6.3)	19 (9.3)	148 (72.2)	18 (8.8)	7 (3.4)
Exercise	9 (4.4)	13 (6.3)	108 (52.4)	31 (15.0)	45 (21.8)
Self-monitoring of blood glucose	21 (10.3)	13 (6.4)	143 (70.1)	17 (8.3)	10 (4.9)
Foot care	9 (4.4)	6 (2.9)	187 (91.2)	3 (1.5)	0 (0.0)
Smoking[a]	3 (9.1)	3 (9.1)	19 (57.6)	4 (12.1)	4 (12.1)

[a] Responses of the 33 participants who reported smoking.

amounts (Table 2a). A large majority of participants (73.7%) were non-adherent to engaging in at least 30 min of physical activity. Around half of the participants were non-adherent to SMGB (47.6%) and foot care (46.6%).

One-in-six (16.0%) participants reported smoking during the past week. When asked about the number of hours spent sitting during a weekday, the average time was 7.8 ± 4.6 h. Finally, before the COVID-19 pandemic, around half of the participants (51.9%) reported sleeping 6–8 h at night while 35.4% reported less than 6 h of sleep, and these figures did not change substantially during the pandemic.

Table 2b illustrates changes in frequency of performing self-care activities during the COVID-19 pandemic compared to a similar pre-pandemic time. Overall, the majority of participants reported that they performed self-care activities at the same frequency before and during the pandemic. Exercise was the self-care activity that saw the most common decline, with over one-third of the participants (36.8%) reporting a decrease in the frequency of exercise. It was followed by SMBG (13.2%), healthy eating habits (12.2%), and foot care (1.5%). On the other hand, 16.7% of participants reported increased frequency of SMBG, and 15.6% and 10.7% reported increased frequency of healthy eating habits and exercise, respectively. Nearly one-quarter (24.2%) of participants who smoked reported a decrease in smoking.

The majority of participants reported high self-efficacy; 93.7% and 68.6% were confident in taking diabetes medication and carrying out self-care activities as prescribed, respectively. Diabetes distress level was low among most of the participants (85.9%), and 10.7% had a moderate level of distress, while 3.4% reported high levels of distress.

The most reported challenges were having regular appointments with the diabetes doctor (30.3% reported 'challenging' or 'somewhat challenging'), receiving a lot of information about COVID-19 from many sources (29.3%), communicating concerns about diabetes management with the health care team (20.1%), and doing regular lab tests (17.6%) (Table 3).

Participants' clinical parameters, diabetes treatment regimens, and treatment modifications during the COVID-19 pandemic are displayed in Table 4. Compared to their levels before the pandemic, there were no significant changes in HbA1c, low-density lipoprotein cholesterol (LDL), total cholesterol, serum creatinine, urinary albumin, or body mass index (BMI) during the pandemic. Mean HbA1c levels were at or greater than 8.0% before and during the pandemic. The mean urinary albumin levels were 62.8 and 73.4 mg/24 h, respectively and mean BMI levels were stayed at around 31 kg/m^2. Nearly half of the participants (47.1%) were prescribed a combination of oral hypoglycemic agents (OHA) with insulin and/or a glucagon-like peptide-1 (GLP-1) receptor agonist before the COVID-19 pandemic, while 40.3% were on OHA only and 7.8% were on insulin only. Diabetes treatment was modified for 25% of participants during the pandemic and treatment intensification occurred for 86.3%.

Table 3
Challenges of people with type 2 diabetes in accessing and using diabetes care during the COVID-19 pandemic (N = 206).

Statements describing access and use of diabetes care	Level of difficulty n (%)		
	Challenging	Somewhat challenging	Not challenging
Having regular appointments with the diabetes doctor	36 (17.6)	26 (12.7)	143 (69.8)
Receiving a lot of information about COVID-19 from many sources	29 (14.4)	30 (14.9)	142 (70.6)
Communicating concerns about diabetes management with the health care team (doctor, nurse, dietitian, or diabetes educator)	22 (10.8)	19 (9.3)	163 (79.9)
Doing regular lab tests	16 (7.8)	20 (9.8)	168 (82.4)
Obtaining diabetes medicines from the pharmacy	9 (4.4)	12 (5.9)	183 (89.7)
Receiving counseling from the pharmacists about the use of prescribed diabetes treatment	10 (4.9)	10 (4.9)	184 (90.2)
Getting a prescription from the doctor	9 (4.4)	10 (4.9)	186 (90.7)
Obtaining diabetes medical supplies (e.g., insulin syringes or pens, test strips, etc.)	7 (3.4)	10 (4.9)	187 (91.7)
Paying for diabetes medicine	13 (6.4)	2 (1.0)	188 (92.6)
Using prescribed diabetes medicine as prescribed by the doctor	3 (1.5)	3 (1.5)	198 (97.1)

Table 4
Change in clinical parameters and diabetes treatment of people with type 2 diabetes during COVID-19 pandemic (N = 206).

Clinical parameters	Mean ± SD		*P*
	Before COVID-19	During COVID-19	
HbA1c (%)	8.2 ± 1.9	8.0 ± 1.7	0.080
LDL (mg/dL)	76.7 ± 31.1	74.7 ± 30.0	0.264
Total cholesterol (mg/dL)	151.3 ± 37.4	149.4 ± 37.4	0.830
Serum creatinine (mg/dL)	0.9 ± 1.0	0.9 ± 1.1	0.996
Urinary albumin (mg)	62.8 ± 146.1	73.4 ± 173.7	0.077
BMI (kg/m^2)	31.1 ± 5.9	31.0 ± 6.0	0.609
Diabetes treatment before COVID-19		n (%)	
Combination of OHA/insulin/GLP-1 receptor agonist		97 (47.1)	
OHA only		83 (40.3)	
Insulin only		16 (7.8)	
GLP-1 receptor agonist only		3 (1.5)	
Diet alone		1 (0.5)	
Diabetes treatment modification during COVID-19		n (%)	
No modifications		150 (72.8)	
Treatment modified		51 (25.0)	
Treatment intensified		44 (86.3)	
Treatment de-intensified		6 (11.8)	
Types of treatment modification			
Insulin added/switched to insulin		7 (13.7)	
Insulin regimen intensified		28 (54.9)	
Insulin regimen de-intensified/ discontinued		4 (7.8)	
OHA added		7 (13.7)	
OHA dose decreased/OHA discontinued		4 (7.8)	
GLP-1 receptor agonist added		2 (3.9)	

*LDL: Low density lipoprotein cholesterol; BMI: Body mass index; OHA: Oral hypoglycemic agent(s); GLP-1: glucagon-like peptide-1.

Table 5
Associations between challenges with and knowledge about diabetes management with changes in self-care activities during the COVID-19 pandemic.

		Changes in frequency of engaging in self-care activities n (%)																			
		Healthy eating habits				Exercise				SMBG				Foot care				Smoking			
		Decreased	Same	Increased	*P*	Decreased	Same	Increased	*P*	Decreased	Same	Increased	*P*	Decreased	Same	Increased	*P*	Decreased	Same	Increased	*P*
Number of challenges	<2	10 (7.5)	101 (75.4)	23 (17.2)	**.025**	38 (28.1)	82 (60.7)	15 (11.1)	**.003**	19 (14.3)	96 (72.2)	18 (13.5)	.579	1 (0.7)	127 (94.8)	6 (4.5)	.078	5 (22.7)	14 (63.6)	3 (13.6)	.504
	≥2	13 (20.6)	41 (65.1)	9 (14.3)		33 (52.4)	24 (38.1)	6 (9.5)		7 (11.1)	44 (69.8)	12 (19.0)		2 (3.2)	54 (85.7)	7 (11.1)		2 (20.0)	5 (50.0)	3 (30.0)	
Items on knowledge about diabetes management rated 'insufficient'	<2	15 (9.0)	125 (75.3)	26 (15.7)	.057	56 (33.5)	92 (55.10	19 (11.4)	.091	16 (9.6)	119 (71.7)	31 (18.7)	**.004**	2 (1.2)	151 (90.4)	14 (8.4)	.295	7 (25.0)	19 (67.9)	2 (7.1)	**.001**
	≥2	9 (23.7)	24 (63.2)	5 (13.2)		20 (52.6)	16 (42.1)	2 (5.3)		11 (28.9)	24 (63.2)	3 (7.9)		1 (2.6)	36 (94.7)	1 (2.6)		1 (20.0)	0 (0.0)	4 (80.0)	

The most frequently observed modifications were intensification of insulin regimen (54.9%), adding insulin to existing therapy (13.7%), and adding an OHA (13.7%).

Table 5 displays the associations between challenges with accessing and using diabetes healthcare services and knowledge about diabetes with changes in self-care activities during the COVID-19 pandemic. Participants who reported having two or more challenges with accessing and using diabetes healthcare services were significantly more likely to report decreased adherence to healthy eating habits ($P = 0.025$) and exercise ($P = 0.003$). Additionally, participants who reported insufficient knowledge on two or more items about diabetes were significantly more likely to report decreased adherence to SMBG ($P = 0.004$) and increased smoking ($P = 0.001$).

4. Discussion

Our study provided broad insight into the everyday management and challenges of diabetes during the COVID-19 pandemic among Arabic-speaking people with type 2 diabetes in the UAE. Although the pandemic has adversely affected the well-being of many people with diabetes worldwide [9,10,23–26], participants in this study did not report high diabetes-related distress nor did they experience worsening glycemic control. We postulate that intensification of therapy could have masked a potential worsening in glycemic control. During the pandemic, the participants reported high confidence levels about medication-taking and performing diabetes self-management. Moreover, participants appeared to retain similar levels of self-care activities compared to the period before the pandemic despite the temporary lockdown and social distancing. These findings indicate a resilience among people with diabetes in coping with this unprecedented pandemic. It is postulated that the sufficient level of support from both family members and healthcare providers helped, in part, participants to maintain levels of self-efficacy levels and self-management [27,28]. The broader living context for people with diabetes in the UAE, and unlike other countries, might have facilitated self-management including lack of disruption in the pharmaceutical supply chain, no difficulties in procurement of diabetes medications, no restriction in food supplies, initiatives to support patients such as the delivery of prescribed medicines to people's homes, and the availability of telemedicine [13,29]. As expected and in line with similar studies in other countries, adherence to exercise was the lowest during the pandemic that mandated lockdowns and closure of sport facilities [23, 26, 30].

The results also demonstrated a variety of challenges encountered during the pandemic, mainly access to the healthcare team and services. Although telemedicine has been available in the country from the early stages of the pandemic, its use has been limited and was implemented on a small scale for several reasons. These were consistent with previous findings, including the unfamiliarity with and the lack of comfort of patients and providers with such technology and concern for more liability on healthcare providers [14]. The COVID-19 pandemic has pressed healthcare providers and patients to adopt remote consultations to receive healthcare and accelerated use of telemedicine across several healthcare institutions in the country. However, systemic effort is needed to provide sufficient resources and training for healthcare professionals to successfully make this transition.

The most common types of comorbidities identified in this study were also consistent with previous findings [31,32]. The relatively high prevalence of diabetes and related comorbidities creates the perfect storm for poor outcomes in patients with COVID-19 infection.

However, diabetes treatment remained unchanged in 75% of the participants during the pandemic. This could be explained by the limited face-to-face patient-physician encounters during the pandemic, with physicians reluctant to modify treatment via telephonic encounters. At best, the telephonic encounters served to allow refill prescriptions for patients and avoid treatment interruptions.

4.1. Limitations

Caution must be exercised with the generalization of study findings due to a non-probabilistic sample from one major hospital. Additionally, recall bias could have occurred when participants were asked to reflect on self-care activities during a similar pre-pandemic time. Finally, we could not determine if changes in treatment during the pandemic were due to the natural progression of diabetes or if they were potentially accelerated during COVID-19.

5. Conclusions

Arabic-speaking people with T2DM showed resilience and appeared to maintain similar self-care activities levels with no deterioration in clinical parameters compared to pre-pandemic.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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