

In December 2019, an outbreak of coronavirus disease resulted in a worldwide pandemic where many countries enforced a series of national lockdowns, including Kuwait.

By reducing access to clinical care, lockdowns can affect the glycemic control and diabetes-related complications in patients with diabetes.

Among people with diabetes in Kuwait:

- #### 4. Assess experiences and attitudes towards telemedicine

Design: A cross-sectional study of people with diabetes aged 18 years and older, living in Kuwait.

Sample: 675 adults with diabetes (315 type 1 and 360 type 2), aged ≥ 18 years in Kuwait, using online “snowball” sampling via social media platforms.

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Study approved by the Health Sciences Center Ethics Committee for Undergraduate Research and the Ministry of Health ethics committee

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Table 1. Sociodemographic characteristics of 675 people with diabetes, Kuwait, 2020

Characteristic	Frequency	
	n	(%)
Age (years)		
<i>Mean age (±SD)</i>	43.72	(±15.85)
Gender		
Male	280	(41.5)
Female	395	(58.5)
Nationality		
Kuwaiti	605	(89.6)
Non-Kuwaiti	70	(10.4)

Table 2. Medical History of 675 people with diabetes in Kuwait, 2020

Medical History	n	All	
		n	(%)
Type of medication	675		
Oral diabetes medication (% Yes)		394	(58.4)
Insulin injections (% Yes)		379	(56.1)
Usual site of diabetes care	675		
Public polyclinics / Public hospitals		544	(80.6)
Private clinics / Private hospitals		106	(15.7)
Not receiving		25	(3.7)

Table 3. Diabetes care experience of 675 people with diabetes in Kuwait, before, during and after the COVID-19 lockdown, 2020

Diabetes Care Experience	For 6 months Before the Lockdown		During the 6 months of the Lockdown		Change from Before to During The Lockdown		For 6 months After the Lockdown		Change from Before to During The Lockdown	
	n	n (%)	n (%)	n (%)	Change	p-value	n (%)	n (%)	Change	p-value
HbA1c%	550									
Median [IQR]		7.7 [2.4]	--	--	--	--	7.6 [2.1]		0 [1.7]	0.97
Mean (\pm SD)		8.2 (\pm 2.5)	--	--	--	--	8.1 (2.3)		-0.06 \pm 2.1	0.51
Number of Diabetes Care Visits	674									
Median [IQR]		2.0 [3.0]	0 [2.0]		-1.0 [2.0]	<0.005	2.0 [1.0]		0 [3.0]	<0.005
Mean (\pm SD)		3.1 (\pm 8.3)	1.0 (\pm 1.6)		-2.1 (\pm 8.3)	<0.005	1.8 (\pm 1.8)		-1.3 \pm 8.2	<0.005
Number of ER visits	675									
Median [IQR]		0 [1.0]	0 [0]		0 [0]	<0.005	0 [1.0]		0 [0]	0.98
Mean (\pm SD)		0.6 (\pm 1.3)	0.5 (\pm 1.2)		-0.1 (\pm 1.1)	0.005	0.6 (\pm 1.2)		-0.009 \pm 1.1	0.94
Change in Number of ER Visits										
-2 or more visits					ER Visit Change Category				ER Visit Change Category	
-1 visit					57 (8.4)				35 (5.2)	
No change in visit number					53 (7.9)				76 (11.2)	
+1 visit					500 (74.1)				461 (68.5)	
+2 or more visits					44 (6.5)				63 (9.3)	
					21 (3.1)				40 (5.9)	

Table 4. Diabetes care experience of 675 people with diabetes in Kuwait during the COVID-19 lockdown, according to nationality, 2020

Diabetes Care Experience	n	All	Kuwaiti	Non-Kuwaiti	p-value
		n (%)	n (%)	n (%)	
Sufficient stock of medications?	675				0.001
Insufficient		212 (31.4)	178 (29.4)	34 (48.6)	
Sufficient		463 (68.6)	427 (70.6)	36 (51.4)	
Difficulty refilling diabetes medications?	675				<0.005
Difficulty		169 (25.0)	135 (22.3)	34 (48.6)	
No Difficulty		506 (75.0)	470 (77.7)	36 (51.4)	
Needed Emergency Room care, but avoided it from fear of COVID-19	675	158 (23.4)	136 (22.5)	22 (31.4)	0.094
Use of telemedicine?	675				0.273
No		465 (68.9)	421 (71.1)	44 (64.7)	
Yes		195 (29.5)	171 (28.9)	24 (35.3)	

Figure 1. Self-reported difficulties with receiving diabetes care during the COVID-19 lockdown in Kuwait, 2020

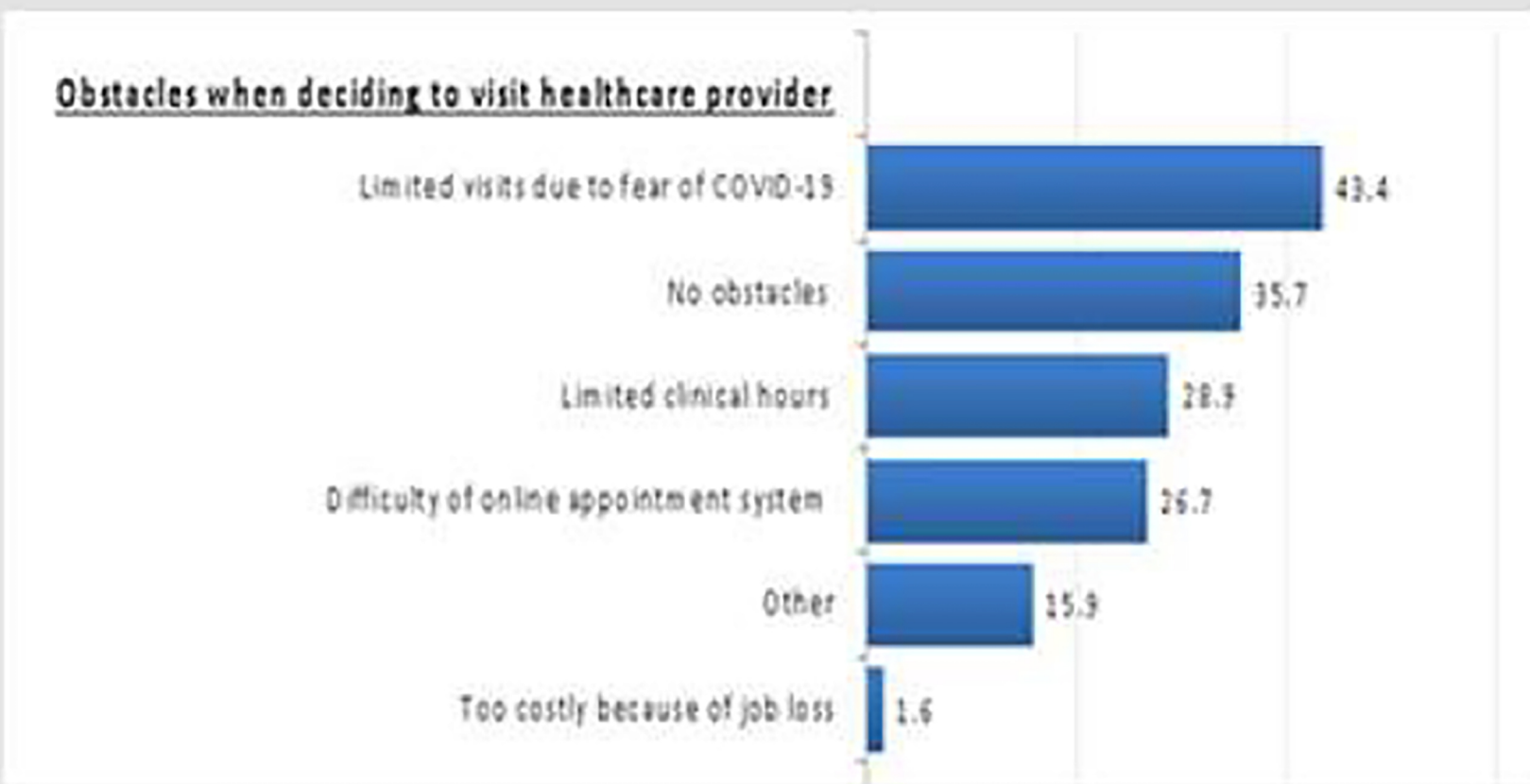


Table 5. Patterns and attitudes regarding use of telemedicine among 195 participants who reported using telemedicine during the COVID-19 lockdown, Kuwait, 2020

Characteristic	Frequency n (%)
Number of times accessing telemedicine	
Mean times (\pm SD)	3.2 (3.4)
Preferred mode of telemedicine	
Video consult	41 (21.0)
Phone call	94 (48.2)
WhatsApp/Messaging services	57 (29.2)
Email	3 (1.5)
Preferred type of clinical care	
In-person visits	139 (71.3)
Telemedicine	56 (28.7)
Challenges faced using telemedicine	
Fear of lack of confidentiality	6 (3.1)
Low trust in treatment from a distance	65 (33.3)
Poor access to the internet	18 (9.2)
Lack of financial resources	5 (2.6)
None	112 (57.4)
Continue using telemedicine?	
Yes	86 (44.1)
No	109 (55.9)

Table 6. Associations of participant characteristics and receiving no diabetes care visits (including outpatient clinic, Emergency Room, or telemedicine visits) during COVID-10 lockdown

Characteristic	Sub-group n	Adjusted* Odds Ratio of No Diabetes Care Visits		
		AOR†	[95% CI]	p
All	675			
Age group				
<35	221	1.0	[Reference]	
35-55	261	0.6	[0.6-1.4]	0.63
>55	193	1.2	[0.7-2.0]	0.48
Gender				
Male	280	1.0	[Reference]	
Female	395	0.9	[0.7-1.4]	0.89
Nationality				
Kuwaiti	605	1.0	[Reference]	
Non-Kuwaiti	70	0.8	[0.4-1.5]	0.58
Governorate				
Al'Asimah	214	1.0	[Reference]	
Hawalli	168	1.7	[1.1-2.6]	0.02
Al-Farwaniya	89	1.2	[0.6-2.0]	0.67
Al-Jahra	55	0.9	[0.3-1.3]	0.19
Mubarak Al-Kabeer	81	0.8	[0.5-1.5]	0.55
Al'Ahmadi	68	1.3	[0.7-2.4]	0.42
Type of diabetes				
Type 1	315	1.0	[Reference]	
Type 2	360	1.6	[1.1-2.4]	0.01

a Adjusted for age, gender, nationality, governorate, family income, type of diabetes. b For all models, the Omnibus test was statistically significant and the Hosmer-Lemeshow test was not statistically significant. c Chi-square p-value for trend.

Accessibility to medications during lockdown

- About 1/4 to 1/3 of the participants had difficulty.

Use of healthcare facilities during lockdown

- Diabetes clinic visits and ER visits significantly decreased and did not return to pre-lockdown levels after the strictest lockdown ended.

- This was motivated by fear of COVID-19 transmission.

Change in HbA1c from before to after lockdown

- There was no significant change in HbA1c levels.

- Access to care appeared generally sufficient to keep HbA1c stable.

Use of telemedicine during lockdown

- About 1/3 of patients with diabetes accessed any form of telemedicine.

- A majority (>50%) said it was effective but 71% still prefer in-person care.

Health promotion program designers and health policy makers should take these results for future pandemics which require severe lockdowns.

To prepare for future lockdowns:

- Diabetes care programs should reach out to people with diabetes to facilitate obtaining medications.

- Educational programs about the effect of lockdown on diabetics meal patterns and psychological health on their compliance to medications.

- Educational programs regarding situations for which patients with diabetes should not delay care.

- Kuwait MOH could assess telemedicine for non-urgent care that can be delivered remotely, to be more prepared to deliver remote care in the next lockdown.

Further studies should explore the trade-offs for people with diabetes in avoiding exposures to a pandemic pathogen and obtaining needed medical care at healthcare facilities.