Impact of COVID-19 on satisfaction of patients with Diabetes toward health care services in an Endocrine and Diabetic centre

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Providing diabetic care to uncontrolled diabetics who are at higher risk for developing complications is very challenging especially during COVID 19 pandemic.To assess satisfaction with diabetes care in a diabetic centre among diabetics during the COVID 19 pandemic and to identify its underlying factors.
A comparative cross-sectional study conducted in a diabetic centre. Target population were diabetic patients who visited the diabetic centre. Data were collected during the period from March 2021 to July 2021 using an online questionnaire based on Diabetes Treatment Satisfaction Questionnaire, General Practice Assessment Survey and Diabetes Clinic Satisfaction Questionnaire DCSQ.The overall satisfaction percentage among the visitors of the diabetic center during the pandemic was 95%. About three fourth of participants visited the diabetic center during the COVID 19. Appointment commitment during the pandemic was evaluated as excellent by most visitors. The average waiting time was 11-20 minutes during the visit. Performance and communication with doctors was rated as excellent by about 60%.More than two thirds of visitors were satisfied with diabetes care during the COVID 19 pandemic.The center satisfies the need of nearly all patients. Further research is needed to investigate factors affecting the satisfaction using a well representative sample representing all population. We recommend more health education campaigns about the importance of DM continuous follow-up to avoid complications.

Keywords: COVID 19, DM, satisfaction, health care, performance

INTRODUCTION

The COVID 19 pandemic started for the first time in Wuhan in China in December 2019. Then, it spread throughout the world. Cases and deaths increased rapidly with more than 203,569,521 confirmed cases and 4,307,288 deaths worldwide up till August 2021 (Johns Hopkins U, 2021). There is a challenge to provide care for diabetic patients with patients, who have uncontrolled diabetes, are at greater risk to develop complications due to this pandemic (Alromaihi et et al. 2020). Diabetes mellitus (DM) is considered

the commonest chronic endocrine disease. It affected 9% of people worldwide during 2019 affecting community seriously (Saeedi et et al. 2019).

The primary management of DM is the responsibility of the patient as the corner stone in its care is the support for self-management (Anderson et et al. 1995). Thus, patient education is very necessary for this self-management. However, the traditional education programs effects for improving diabetes control and reducing complication risk were discouraging in the long term. In addition, self-management interventions were found to be beneficial for quality of life and mental health in both the short and long term (Norris et et al. 2001). Adherence and compliance terms which were used to refer to diabetic care have begun to be replaced by terms as patient empowerment and patient centeredness which may be due to research results that expecting adherence causes frustration and less communication (Anderson and Funnell, 2000).

There is increasing importance of patient satisfaction which is widely used as an essential indicator for medical care quality. No clear definition for patient satisfaction is present as it affects many aspects of care (Hornsten et et al. 2005). Therefore, patient satisfaction interpretation as an overall score is difficult but care dimensions comparisons are more appropriate (Kersnik, 2000). The health care policy focuses on increasing care quality for patients with chronic diseases like DM (Gulliford et et al. 2007). There was increasing focus especially on DM as it became a serious public health concern. It was found by studies that prevalence of DM would be doubled from 2000 to 2030 with the most increase happening in Asia (Herman and Zimmet, 2012). The prevalence of diabetes among adults in The Arab Kingdom of Saudi was reported to be 15.9% during 2019 by the world bank collection of development indicators (Bank, 2019).

Research on DM began to increase focus on diabetes care quality and its measurement. The care quality is multidimensional involving combination of self-care, access and effectiveness of clinical care (Maddigan et et al. 2004). In addition, most interventions rely on self-management by the patient himself. Therefore, improving patient satisfaction could be essential to improve diabetic care (Narayan et et al. 2003). When providing care is done according to the standard clinical procedures, satisfaction

increases strongly (Lantz et et al. 2005).

Most studies done in Saudi investigated factors associated with satisfaction of patients towards primary health care services (Narayan et et al. 2003, Saeed et et al. 2001). However, there are few studies which investigated the views of patients on quality of care provided to them especially during the COVID 19 pandemic which we think need further research. Therefore, we aim to assess satisfaction with diabetes care in a diabetic centre among diabetics during the COVID 19 pandemic and to identify its underlying factors.

MATERIALS AND METHODS

This study was a comparative cross-sectional study conducted in an Endocrine and diabetic center in Jeddah. Target population were diabetic patients who visited the diabetic centre. Data were collected during the period from March 2021 to July 2021.

An online questionnaire was formulated to survey the diabetic patients. It was done using google forms. The questionnaire was based on Diabetes Treatment Satisfaction Questionnaire, General Practice Assessment Survey and Diabetes Clinic Satisfaction Questionnaire DCSQ (Paddock et et al. 2000, Westaway et et al. 2003, Rutter et et al. 2013, Al Shahrani and Baraja, 2014) with adding new questions related to the COVID 19 pandemic. The questionnaire consisted of 4 parts. The first section assessed demographic data and disease characteristics. The second section assessed practice related factors during the COVID 19 pandemic. The third section assessed doctor's clinical competence and communication. The fourth section assessed the diabetic care.

Statistical analysis:

Statistical analysis were done by using SPSS (statistical package for social science) version 25. Qualitative data were expressed as numbers and percentages, while quantitative data were expressed by mean and standard deviation (SD). Chi-square test was used as a test of significance for qualitative data.. Statistical significance was considered when P value was less than 0.05.

Ethical Considerations

Consent was obtained from participants during questionnaire filling. There were no potential risks to the participants. Ethical approval was obtained from institutional review board (IRB), Ministry of health, Kingdom of Saudi

Arabia. Confidentiality was respected and data were not used for any other purpose.

RESULTS

Out of 320 visitors to the diabetic center, 60% were males. The mean age was 44± 20 years. About 29% had family income of 3000 to 6000 SR. 83% were non-smokers. 92.5% lived in urban regions. 33% had higher education either university students or postgraduate. 75.6% were married (Table 1).

About 51% of visitors rated their health as good. 60.9% had other chronic illnesses. 50% of participants have had DM for more than 10 years (Table 2). About 73% visited the diabetic center during the COVID 19. The twenty-seven participants who did not visit the diabetic center were excluded from the following analysis. Regarding evaluating practice factors, appointment commitment during the pandemic was evaluated as excellent by about 65%. More than 58% of visitors visited the center during the pandemic one or two times. 34% waited for 11-20 minutes during the visit. Only 9% stated that they waited more than 30 minutes. About 39% had one lab investigation during the pandemic (Table 3).

Regarding evaluating performance and communication with doctors during the pandemic, more than 60% of visitors rated these factors as excellent (such as medical information, requesting lab investigations, prescribing proper treatment, taking good medical history, attention and listening, proper explanation of disease and treatments, shared decisions and doctor's patience with questions or worries) except thorough physical examination which was rated as excellent by about 58% (Table 4).

On comparison of those with other chronic disease with those without other diseases regarding evaluating performance and communication with doctors during the pandemic, no significant difference was found except regarding proper explanation of disease and treatment. It was rated as excellent by higher proportion among those without other diseases than among those with other diseases (72.7% vs. 64.8%).

When evaluating diabetes care during the COVID 19 pandemic, more than 70% of visitors stated that they are satisfied with the care aspects (such as the amount of time they spent during counseling, information provided regarding the disease (treatment, complication, information provided regarding the laboratory results, appropriate nutritional tips, information provided on the duration and type of exercise to control diabetes, information provided to them regarding medications [including side effects], satisfaction with current treatment, easy access to medicine, desire to continue with current treatment, laboratory services, easy access to lab results and transfer to diabetes foot clinic or to the cardiology department if the patient needs) except diabetes health education (brochures, video, etc.) and periodic physical examination of diabetes complications (foot, retina, etc.) which were stated by 67% of visitors as satisfied with (Table 5).

Table 1: Demographic characteristics of participants who visited the diabetic center (n=320).

		n	%
Age in years (mean±SD		**44± 20**	
Sex	Males	194	60.6%
	Females	126	39.4%
Family income in SR	Less than 3000	82	25.6%
	3000-*6000*	92	28.7%
	6000-10000	76	23.8%
	More than 10000	70	21.9%
Smoking	Yes	55	17.2%
	No	265	82.8%
Residence	Urban	296	92.5%
	Rural	24	7.5%
Educational level	Ignorant	25	7.8%
	Primary	51	15.9%
	Preparatory	49	15.3%
	Secondary	88	27.5%
	University	90	28.1%
	postgraduate	17	5.3%
Marital status	Married	242	75.6%
	Unmarried	78	24.4%

Table 2: Medical history of participants who visited the diabetic center (n=320).

		n	%
Self-rated health status	Good	163	50.9%
	Neutral	150	46.9%
	Bad	7	2.2%
Presence of other chronic illnesses	Yes	195	60.9%
	No	125	39.1%
Duration of DM	Less than 6 years	67	20.9%
	6-10 years	92	28.7%
	More than 10 years	161	50.3%

Table 3: Evaluating practice factors of participants who visited the diabetic center (n=320).

		n	%
Did you visit the medical center during the pandemic?	Yes	233	72.8%
	No	87	27.2%
The eighty-seven participants who did not visit the diabetic center were excluded from the following analysis			
Appointment commitment during the pandemic	Excellent (<6)	151	64.8%
	Good	74	31.8%
	Bad (1)	7	3.0%
	Do not know	1	0.4%
Number of medical center visits	Zero	15	6.4%
	One or two	136	58.4%
	Three or four	61	26.2%
	Five or more	21	9.0%
Waiting time in minutes	<10	71	30.5%
	11-20	80	34.3%
	21-30	52	22.3%
	>30	22	9.4%
	Do not know	8	3.4%
Number of lab investigations during the pandemic?	Zero	67	28.8%
	One	90	38.6%
	Two	51	21.9%
	Three or more	25	10.7%

Table 4: Evaluating performance and communication with doctors during the COVID 19 pandemic (n=320).

	Bad		Good		Excellent	
	n	%	n	%	n	%
Medical information	2	0.9%	67	28.8%	164	70.4%
Thorough physical examination	9	3.9%	89	38.2%	135	57.9%
Requesting lab investigations	4	1.7%	74	31.8%	155	66.5%
Prescribing proper treatment	3	1.3%	71	30.5%	159	68.2%
Taking good medical history	4	1.7%	79	33.9%	150	64.4%
Attention and listening	1	0.4%	78	33.5%	154	66.1%
Proper explanation of disease and treatments	7	3.0%	68	29.2%	158	67.8%
Shared decisions	3	1.3%	82	35.2%	148	63.5%
Doctor's patience with questions or worries	3	1.3%	69	29.6%	161	69.1%

Table 5: Evaluation of diabetes care during the COVID 19 pandemic (n=320).

	Dissatisfied		Neutral		Satisfied	
	n	%	n	%	n	%
The amount of time you spend during counseling	4	1.7%	40	17.2%	189	81.1%
Information provided regarding the disease (treatment, complications)	4	1.7%	46	19.7%	183	78.5%
Information provided regarding the laboratory results	4	1.7%	41	17.6%	188	80.7%
Appropriate nutritional tips	8	3.4%	49	21.0%	176	75.5%
Information provided on the duration and type of exercise to control diabetes	7	3.0%	59	25.3%	167	71.7%
Diabetes health education (brochures, video, etc.)	15	6.4%	61	26.2%	157	67.4%
Information provided to you regarding medications (including side effects)	11	4.7%	49	21.0%	173	74.2%
Satisfaction with current treatment	1	0.4%	41	17.6%	191	82.0%
Easy access to medicine	2	0.9%	42	18.0%	189	81.1%
Desire to continue with current treatment	2	0.9%	40	17.2%	191	82.0%
Laboratory services	3	1.3%	46	19.7%	184	79.0%
Easy access to lab results	11	4.7%	47	20.2%	175	75.1%
Periodic physical examination of diabetes complications (foot, retina, etc.)	24	10.3%	53	22.7%	156	67.0%
Transfer to diabetes foot clinic if the patient needs	5	2.1%	47	20.2%	181	77.7%
Transfer to the Cardiology Department if the patient needs	5	2.1%	53	22.7%	175	75.1%

Table 6: Association between satisfaction and other characteristics among participants who visited the diabetic center

		Dissatisfied		Satisfied		Chi-square	significance
		n	%	n	%		
Sex	Males	6	4.3%	135	95.7%	0.172	0.678
	Females	5	5.4%	87	94.6%		
Type of DM	Type 1	5	5.6%	85	94.4%	0.227	0.634
	Type 2	6	4.2%	137	95.8%		
Duration of DM	Less than 6 years	0	0.0%	49	100.0%	4.132	0.127
	6-10 years	6	7.9%	70	92.1%		
	More than 10 years	5	4.6%	103	95.4%		
Presence of other chronic illnesses	Yes	8	5.5%	137	94.5%	0.541	0.462
	No	3	3.4%	85	96.6%		
Smoking	Yes	0	0.0%	43	100.0%	2.613	0.106
	No	11	5.8%	179	94.2%		
Residence	Urban	9	4.2%	204	95.8%	1.355	0.244
	Rural	2	10.0%	18	90.0%		
Marital status	Married	8	4.5%	169	95.5%	0.066	0.797
	Unmarried	3	5.4%	53	94.6%		
Family income	Less than 6000	7	5.7%	115	94.3%	0.588	0.443
	More than 6000	4	3.6%	107	96.4%		
Educational level	Lower education	8	5.3%	144	94.7%	0.286	0.593
	Higher education	3	3.7%	78	96.3%		

The overall satisfaction percentage among the visitors of the diabetic center during the pandemic was 95%.

When relating satisfaction to demographic and medical factors, no significant relationship was found (Table 6).

DISCUSSION

DM has become a serious public health concern due to its high prevalence. Furthermore, research suggested that prevalence of DM would be doubled from 2000 to 2030 with the most increase happening in Asia (Herman and Zimmet, 2012). Literature reported that diabetics are at increased risk of severe COVID 19. This can be associated with the impact of hyperglycemia on immunity and with virus entry mechanism to the cell via ACE-2 receptors (Singh et al. 2020, Klonoff and Umpierrez, 2020). Diabetic care must be optimized during the pandemic to improve diabetic control (Garg et et al. 2020).

This comparative cross-sectional study comprised 320 diabetic patients who visited the diabetic centre. To summarize the findings of the current study, the overall satisfaction percentage among the visitors of the diabetic center during the pandemic was 95%. About three fourth of participants visited the diabetic center during the COVID 19. Appointment commitment during the pandemic was evaluated as excellent by most visitors. The average waiting time was 11-20 minutes during the visit. Performance and communication with doctors was rated as excellent by about 60%. More than two thirds of visitors were satisfied with diabetes care during the COVID 19 pandemic.

60% of patients had other chronic illnesses. In the current study, when comparing of those with other chronic disease with those without other diseases regarding evaluating performance and communication with doctors during the pandemic, no significant difference was found except regarding proper explanation of disease and treatment. It was rated as excellent by higher proportion among those without other diseases than among those with other diseases (72.7% vs. 64.8%). A previous study found that patients with other chronic diseases reported difficulty in getting information needed, getting answers to questions and less time with physicians (Parchman et et al. 2002). Another study found that increasing communication and quality of care led to decreasing problems perception and satisfaction by those patients (Thiedke, 2007).

Although telemedicine started to be applied in centers due to the COVID 19 pandemic, 73% of patients visited the center during the pandemic which may indicate that they are satisfied with the diabetic care. The twenty-seven participants who did not visit the diabetic center were excluded from the following analysis. On contrary, a previous study showed that telemedicine was used by 70% of participants with only 13% visited the center and 13% came for medication refill (Alromaihi et et al. 2020). Most patients evaluated performance and communication with doctors during the pandemic as excellent with minimal percent evaluated them as bad.

Aspects such as medical information, requesting lab investigations, prescribing proper treatment, taking good medical history, attention and listening, proper explanation of disease and treatments, shared decisions, doctor's patience with questions or worries and thorough physical examination were evaluated as excellent by the majority which is a good sign that the diabetic center is doing well despite the presence of the COVID 19 pandemic. Thorough physical examination was the least factor rated as excellent. It is recommended to take care of physical examination of the patients which can detect complications of DM.

Regarding diabetic care evaluation during the pandemic, more than two thirds of the participants were satisfied with the care aspects. Such aspects were as the amount of time they spent during counseling, information provided regarding the disease (treatment, complications), information provided regarding the laboratory results, appropriate nutritional tips, information provided on the duration and type of exercise to control diabetes, information provided to them regarding medications [including side effects], satisfaction with current treatment, easy access to medicine, desire to continue with current treatment, laboratory services, easy access to lab results, transfer to diabetes foot clinic or to the cardiology department if the patient needs, diabetes health education (brochures, video, etc.) and periodic physical examination of diabetes complications (foot, retina, etc.).

The highest satisfaction was regarding the amount of time spent during the counselling and information provided regarding the laboratory results, while the lowest satisfaction was regarding periodic physical examination of diabetes complications (foot, retina, etc.). this can confirm the previously mentioned finding that thorough physical examination was the least factor rated as excellent when evaluating

performance and communication with doctors. Therefore, it is recommended to take care of physical examination of the patients which can detect complications of DM.

The overall satisfaction percentage among the visitors of the diabetic center during the pandemic was 95%. When patient is asked about his satisfaction with any care, they compare what they experienced with what they expected. If experience exceeds what they expected, this means that they are satisfied (Wolosin, 2005)

This is very impressive as it shows that the center satisfies the need of nearly all patients, however physicians should optimize physical examination of patients.

Limitations of the study:

The nature of the study which is a comparative cross-sectional study is one of the limitations as the association can not be confirmed. In addition, the survey was online which doesnot reach all social classes of population. Therefore, results can not be generalized. When doing Chi-square test, all relations were non-significant which need further research.This can be due to that almost all participants were satisfied with the diabetic care.

CONCLUSION

The overall satisfaction percentage among the visitors of the diabetic center during the pandemic was very excellent. A very good percent of participants visited the diabetic center during the COVID 19. Performance and communication with doctors was rated as excellent by most participants. Most visitors were satisfied with diabetes care during the COVID 19 pandemic. This shows that the center satisfies the need of nearly all patients, however physicians should optimize physical examination of patients. Further research is needed to investigate factors affecting the satisfaction using a well representative sample representing all population. We recommend more health education campaigns about the importance of DM continuous follow-up to avoid complications.

CONFLICT OF INTEREST

The authors declared that present study was performed in absence of any conflict of interest.

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