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Patient satisfaction with virtual clinic during Coronavirus disease (COVID-19) pandemic in primary healthcare, Riyadh, Saudi Arabia

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Abstract:

BACKGROUND: The novel coronavirus, officially known as COVID-19, was first reported in Wuhan, China in December of 2019. Since that time, medical services in Saudi Arabia have adapted to the situation by delivering medical care via virtual clinics. Therefore, the present study aimed to assess patients' level of satisfaction with virtual clinics during the COVID-19 pandemic in Saudi Arabia.

MATERIALS AND METHODS: This cross-sectional study was conducted among patients who had experienced virtual clinics in primary healthcare centers in Riyadh, Saudi Arabia. An online validated questionnaire was sent to all participants who had at least one virtual visit between March 2020 to July 2020. The data sought included demographics, level of satisfaction and questions related to their experience with virtual clinics. Computed frequencies and percentages for categorical variables, and median, mean, and standard deviation for continuous variables. Satisfaction scores were compared between groups using Mann-Whitney U test and Kruskal Wallis test.

RESULTS: A total of 439 patients completed the questionnaire (response rate 97.5%); 54% were male. The participants were divided into three age groups: 18–39, 40–59, and ≥60 years. Overall level of patients' satisfaction with virtual clinic was 68.1%. Factors statistically significantly associated with satisfaction included gender, age group and level of education (post-graduate and middle school) and being well-informed on the use of telemedicine. Specific age groups that were significant were 18–39 and 40–59 years; 50.2% of the males found telemedicine very convenient, compared to only 36.1% females. Family medicine clinics were the most commonly visited virtual clinics, whereas obstetrics and gynecology clinics were the least attended virtual clinics. The inability to meet the health-care professional face-to-face was reported by 53.8% as the most important disadvantage.

CONCLUSION: This study shows a high level of satisfaction with virtual clinics in Saudi Arabia during the COVID-19 pandemic despite the service being relatively new in healthcare service in the country. Our study demonstrated that satisfaction was linked to age, gender, education and the type of clinic used.

Keywords:

COVID-19, satisfaction, Saudi Arabia, telemedicine services, virtual clinics

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Introduction

The novel coronavirus, officially known as COVID-19, was first reported in

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Wuhan, China in December of 2019.^[1] This novel coronavirus (SARS-CoV-2) is a Betacoronavirus, like Middle East respiratory syndrome-related CoV and SARS-CoV, that mainly affects the human respiratory system and is considered a

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zoonotic, transmission from animals to humans, infection in origin.^[2] WHO had classified COVID-19 as a pandemic, denoting that it had spread through multiple countries and across continents.^[3] Currently, it has affected over 210 countries globally.^[4] The first coronavirus case in Saudi Arabia was reported on March 2, 2020.^[5] By the July 30, 2020, over 272,000 confirmed COVID-19 cases had been reported with the deaths of 2816 patients in Saudi Arabia.^[4] Worldwide, there were more than 17 million confirmed cases of COVID-19 in over 215 countries with the deaths of over 668,000 persons.^[4]

During this pandemic, outpatient visits posed a great health risk for both the physician and the patient as this could spread the virus rapidly.^[5] Therefore, there was an urgent need to divert patients from in-patient care to prevent overwhelming the healthcare services.^[6] Telemedicine provided the opportunity for patients and physicians to carry out regular appointments without spreading the virus.^[7] Telemedicine is defined as the use of electronic communications technologies to provide health care over long distances.^[8] The design of telemedicine varies widely depending upon the technology deployed.^[9]

COVID-19 is transforming the telemedicine landscape with breathtaking speed. Social distancing and quarantine have been important interventions, creating a compelling reason for in-person care alternatives.^[10] A recent study published in the Journal of American Medical Informatics Association provided data on the feasibility of video-enabled telemedicine use by patients and providers in both urgent and non-urgent healthcare visits. The authors found that the use of telemedicine had increased from 102 visits daily to 801 visits daily, a 683% increase. This shows that telemedicine can be used successfully in both urgent and nonurgent care.^[11] Telemedicine appears to be increasing in popularity and in variety and have been used in many specialties and conditions, but there are still concerns about both logistical and technical issues, and acceptability to patients and staff.^[12]

The emerging literature and research during COVID-19 pandemic focus on health informatics infrastructure.^[13] However, there is very little data on the satisfaction of the patient with virtual clinics. The aim of this study was to measure the level of patient satisfaction with virtual clinics during COVID-19 pandemic in Saudi Arabia.

Materials and Methods

This is a cross-sectional study of 439 patients who used virtual clinics in three main primary healthcare (PHC) centers (Khashm-Ala'an, Umm-alhammam, and Iskan) that serve the employees of the Saudi National Guard

and their families who live in Riyadh. Each PHC center has 20-25 family medicine clinics. In addition, other specialty clinics were distributed as follows: Three pediatric clinics, three obstetrics and gynecology, and one clinic each for general surgery, dermatology, ear nose and throat (ENT), and ophthalmology. Referral system in each PHC center starts with an online application booking for a virtual appointment to the family medicine clinic. If the patient needs a referral to another specialty after being seen by his/her family medicine physician, the referral is done electronically through Best Care system which has had electronic files for all patients since 2018, in all three PHC centers.

Ethical approval was obtained from the Institutional Review Board vide Number IRBC/0914/20 dated 17/06/2020 and informed written consent was taken from all study participants. All participants who had had at least one virtual visit between March 2020 to July 2020 were asked to take part in the study. An online survey questionnaire was distributed by one of the most popular social media, WhatsApp, in Saudi Arabia for the conduct of the survey. Double response was prevented by allowing participants to have one response only. This was checked by asking the participants to log into their E-mail accounts to confirm they have not answered the questionnaire previously.

The sampling technique used in this study was a convenient sampling technique in which all eligible participants were included. This study was on patients living in Riyadh, Saudi Arabia, who had visited the PHC centers in National Guard Health Affairs. This population was estimated to be 320,000 patients. Using the website Raosoft, the sample size was estimated as 384 with a confidence interval of 95%. Included were any Saudi participants living in Riyadh, older than 18 years, and had used virtual clinic in PHC centers in National Guards, Riyadh. Participants excluded from the study were those younger than 18 and those not living in Saudi Arabia.

The study was conducted using a pretested questionnaire from a study done in USA.^[14] The questionnaire originally in English was translated into Arabic and then piloted with 50 patients who received it through WhatsApp social media 25 responses were retrieved. It was then administered formally to 450 participants to avoid low response rate. Data collected in the questionnaire included demographic data, level of satisfaction, 9 questions related to virtual clinic experience, and 2 questions on COVID-19 and virtual clinic use. Data analysis performed using the Statistical Package for Social Science (SPSS) version 24.0 (IBM, Armonk, NY, USA). Descriptive analysis included computing frequencies and percentages for categorical variables, and median,

Table 1: Demographic characteristics of patients attending primary healthcare clinics in Riyadh, Saudi Arabia

Demographic characteristics	N (%)
Clinic	
Family medicine	255 (58.1)
Dermatology	66 (15.0)
Pediatrics	52 (11.8)
Ear, nose, and throat	36 (8.2)
Obstetrics and gynecology	22 (5.0)
General surgery	8 (1.8)
Gender	
Male	237 (54.0)
Female	202 (46.0)
Age group	
18–39	200 (45.6)
40–59	185 (42.1)
>60	54 (12.3)
Marital status	
Married	363 (82.7)
Unmarried	76 (17.3)
Level of education	
Illiterate	41 (9.3)
Primary school	45 (10.3)
Middle school	42 (9.6)
Secondary school	148 (33.7)
Under-graduate	148 (33.7)
Postgraduate	15 (3.4)

mean, and standard deviation for continuous variables. Mann-Whitney U test and Kruskal Wallis test were used to compare satisfaction scores between groups. All tests were performed at 0.05 significance level.

Results

The survey was completed by 439 respondents with a response rate of 97.5%. Table 1 shows the number and percentages of participants' demographic data. Overall, 237 of the participants were males (54%) and 202 were females (46%). Just under half of the participants (45.6%) were in the 18–39 years age group, 42.1% were in 40–59 years age group and 12.3% constituted the ≥60 years age group. The majority of the study participants were undergraduates or had a secondary school education (33.7% for both). The remainder of the participants had completed primary school, middle school or had a postgraduate degree (10.3%, 9.6%, 3.4%, respectively). Only 41 (9.3%) participants were illiterate. Most of the participants (58.1%) had attended a family medicine clinic virtually, 15% had attended a dermatology clinic and 11.8% the pediatrics clinic.

The level of satisfaction with the different virtual clinics was measured by a Likert scale of 5 items ranging from very convenient to very inconvenient

experience. Figure 1 shows percentages corresponding to participants' experience with virtual clinics. Most of the participants had a good experience (68.1%). Only 15.2% thought the experience with the virtual clinic was inconvenient.

Figure 2 demonstrates the advantages of telemedicine and virtual clinics as cited by the participants. The ability to get a diagnosis without the fear of being around sick patients, and having an appointment without the need to go to the clinic were the highest reported advantages of virtual clinics (52.80% and 34.40%, respectively). Other advantages listed included: Confirming a self-diagnosis, getting a prescription, and the ability to get an appointment within an hour of the same day.

Given that virtual clinics and telemedicine is a new service in health care, being well-informed on how to use this facility might be a factor that affected patient satisfaction. The majority of the 439 participants said that they had been given enough information on how to use this service (77.7%), while only 98 participants (22.3%) said they had not been well informed. Using Mann-Whitney U-test, there was a statistical significance of the effect of being informed on level of satisfaction of the patients with telemedicine ($P < 0.05$).

Similarly, the level of trust of the participants with health information given through virtual clinics might be a factor in determining patients' satisfaction. The majority of the participants viewed information given through virtual clinic as very trustworthy (79.4%). Only 2.3% of the participants perceived information from telemedicine as being untrustworthy.

With almost similar numbers of males and females, we assessed whether gender played a role in patient satisfaction with virtual clinics. Using Mann-Whitney U test, a statistical significance was noticed on the effect of gender on patient satisfaction in favor of male gender ($P = 0.003$). Using Kruskal-Wallis test, there was also a statistical significance of the effect of age on the level of satisfaction ($P = 0.00$). *Post hoc* analysis showed that the significance lay between age group 18–39 and 40–59 years.

Higher level of education had a significant negative effect on level of patient satisfaction ($P < 0.05$). Post-hoc analysis demonstrated that this significance lay between postgraduate and middle school education. Figure 3 demonstrates changes in the level of satisfaction with different levels of educations.

Patients included in the study were from different virtual clinics in a PHC center. The type of clinic where patients had the virtual clinic service experience affected level

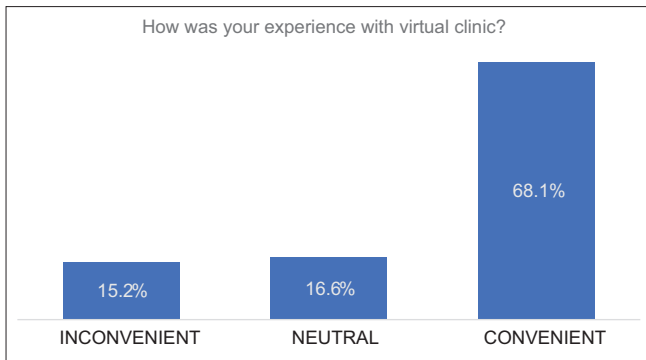


Figure 1: Distribution of level of satisfaction with virtual clinic

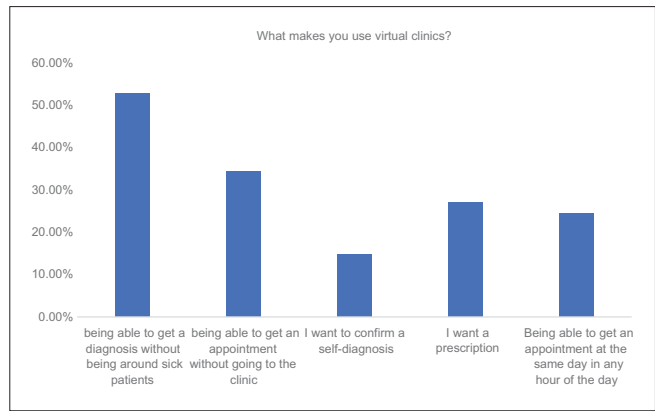


Figure 2: Advantages of virtual clinic

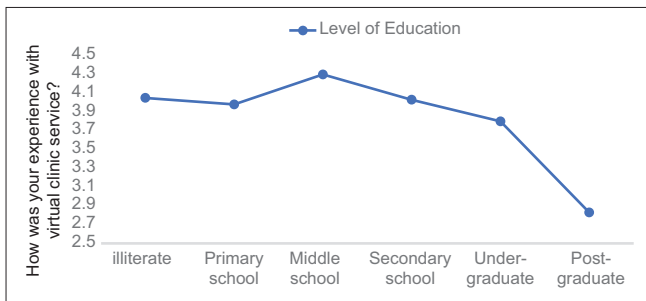


Figure 3: Patient satisfaction scores by patients' education level

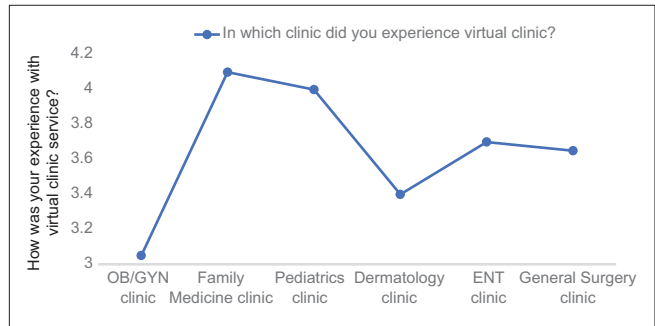


Figure 4: Patient satisfaction scores by different specialties' virtual clinic

of satisfaction with telemedicine. A Kruskal–Wallis test showed a significant result ($P < 0.05$). Post-hoc analysis showed that there were significant results between family medicine, dermatology and obstetrics/gynecology (Ob/Gyn) clinics. Figure 4 shows a varying level of satisfaction with different types of clinics that used the virtual clinic service.

The study participants cited many advantages and disadvantages of telemedicine. The most commonly cited disadvantage was the inability to meet healthcare professionals face-to-face (53.8%). Many of our participants thought that healthcare professionals cannot diagnose their condition through virtual clinics (42.1%). The third most commonly cited disadvantage was that the participants felt uncomfortable talking to a healthcare professional whom they did not know (19.7%). The least cited disadvantage was having had a previous bad experience with telemedicine (8.4%).

Virtual clinic service began with the current COVID-19 pandemic. Of the participants, 77.9% said they would consider using telemedicine to report their COVID-19 symptoms, 9.1% had actually done this before, and nearly 15% said they would not use it.

More than two-thirds of the respondents said that COVID-19 had increased their willingness to use telemedicine. One-in-six respondents had not considered this as an option before, while <10% said that COVID-19

had not increased their willingness to use virtual clinics.

When respondents were questioned on whether the virtual clinic was comparable to regular outpatient clinics, nearly half of them said that the quality of the virtual clinics will never be the same as outpatient clinics, as seen in Figure 5. Over a quarter of them said that it was not comparable but was still a good service;; another quarter said that the two were comparable.

Different attributes of virtual clinic might be a worry to the patients. Nearly half worried about the accuracy of virtual clinic appointments. 41.2% of the respondents viewed the quality of telemedicine as the most worrisome attribute of telemedicine. Less than a quarter worried about privacy of their personal information and whether their appointment will be recorded.

Discussion

Telemedicine service is a relatively new service in Saudi Arabia. which started 2 years ago in June of 2018.^[15] The number of beneficiaries surpassed 24 million in 1 year in August of 2019.^[16] At the beginning of 2020, the number of beneficiaries reached almost half a million in 90 days.^[17] Since the first coronavirus case in Saudi Arabia, the number of beneficiaries of virtual clinic services was expected to have risen significantly.

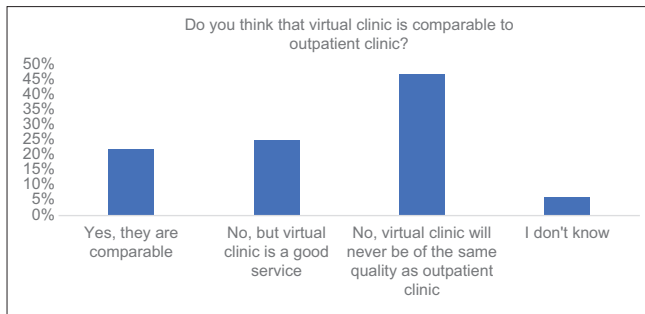


Figure 5: Respondents' view on comparability of virtual clinic with regular clinic

However, there are no current data on what exactly this number is.

The virtual clinic service in Saudi Arabia provides a wide range of health-care consultations in different fields. The specialties included in virtual clinics are family medicine, general surgery, ophthalmology, ENT, Ob/Gyn, dermatology, chronic diseases, pediatrics and vaccinations.^[17]

This study investigated patients' level of satisfaction with virtual clinics in PHC centers in Riyadh during the COVID-19 pandemic. A statistical significance was noticed in the level of satisfaction and age ($P < 0.05$), gender ($P = 0.03$), level of education ($P < 0.05$) and type of clinics ($P < 0.05$) where the patient experienced a virtual clinic. The majority of the study respondents perceived their experience with telemedicine as very convenient. This result is comparable to a study done in the US to assess the level of patients' satisfaction with virtual clinics. Their study showed the level of satisfaction as 92%.^[18]

There was a statistical significance with respect to gender on the level of satisfaction with virtual clinics ($P = 0.03$). Male patients were more likely to be satisfied with their experience of virtual clinics. Female patients were more likely to be neutral in their satisfaction (neither satisfied nor dissatisfied) with their experience. Age also had a significant effect on the level of satisfaction ($P < 0.05$). Most of those who were very satisfied with their experience were aged 18–39 and 40–59.

Patients who visited the family medicine and pediatrics clinics were more likely than others to have found their experience in their virtual clinic convenient. On the other hand, those whose experience in the virtual clinic was an appointment in dermatology and Ob/Gyn clinics were more likely to have found the experience inconvenient as shown in Figure 4. However, these results could be biased owing to unequal numbers of participants using the clinics.

Although the majority of our respondents said they were well-informed on how to use virtual clinic service, the

lack of adequate instruction before using this service had a statistically significant effect on the level of satisfaction. These findings are similar to those of a study conducted in the United States to assess the perception of patients towards telemedicine during COVID-19.^[14] A study done in two Arab countries (Jordan and Syria) showed that cultural barriers were more important than being informed on the use of telemedicine.^[19] In our study, the majority of those who claimed they were not well-informed had an awkward experience. This is important even though less than a third claimed they were not well-informed. This finding proves that more should be done to increase level of satisfaction of patients using telemedicine.

Telemedicine has benefits and advantages that outweigh those of traditional clinics. These include the ability to get an appointment without the need to travel, flexibility of appointment times, and no anxiety about crowded waiting rooms. More than half of the respondents chose "getting an appointment without worrying about crowded waiting rooms" as the most important advantage of telemedicine. This could be relatable owing to the current COVID-19 pandemic and the fear of interacting with potentially infected individuals. This is followed by the ability to get a diagnosis without having to travel to a clinic. These findings are similar to those of a study done in USA.^[14]

Despite the benefits of telemedicine, virtual clinics are not without fault. The most commonly cited disadvantage of virtual clinics is the inability to meet the health-care professional face-to-face. This contrasts to the previously mentioned study done in USA,^[14] which found that the most significant disadvantage of virtual clinics according to respondents' was their worry about the quality of telemedicine.

The perception of our participants towards virtual clinic might have been affected by these disadvantages. This is evident as almost half of the study's respondents reported that the quality of virtual clinic service would never be the same as traditional outpatient clinics. This contrasts with a previous study done in USA, which showed that more than 90% of the participants viewed virtual clinic as better or as good as traditional outpatient clinic.^[20]

As previously discussed, the use of virtual clinics might have increased significantly during the current COVID-19 pandemic, but there are no studies or data on the exact numbers or percentage of increase in the use of virtual clinics in Saudi Arabia. Our study shows that the COVID-19 pandemic in Saudi Arabia has increased patients' willingness to use virtual clinics. This finding is similar to the findings of a study done

in Brazil.^[21] Furthermore, with the advent of certain smartphone applications published by the Ministry of Health affiliates such as “Tetamman” and “Tabaud” applications, public awareness about COVID-19 increased. This is evident in our study in which nearly three-fourths of the respondents stated that they would use these applications or call COVID-19 hotline numbers if they suspected they had COVID-19 symptoms.

This study has its own strengths and limitations. To our knowledge, this is the first study in Saudi Arabia to assess the level of patients’ satisfaction with virtual clinics during the COVID-19 pandemic. We also included many virtual clinics such as family medicine, general surgery, pediatrics, Ob/Gyn, dermatology and ENT. Despite these strengths, we could not account for some of its limitations. One of the major limitations is bias in the type of clinics available in virtual clinic service. The majority of our participants used the virtual family medicine clinics rather than the others. Another limitation is that this study focused on PHC centers in the National Guards, Riyadh, only and did not include other PHC centers in Riyadh or any other city in Saudi Arabia. Also, the convenient sampling technique was used.

Curfews and social distancing orders in Saudi Arabia began late in March, 2020, but ended in late June, 2020. During and after this period, telemedicine service aimed to provide an opportunity for the Saudi population to avail themselves of medical care without the risk of infection. This, however, came with many challenges. The aim was to dramatically decrease the number of outpatient clinic care and offer this service only to those who were unable to access virtual clinic service or to urgent or emergent cases. The virtual clinic has a major role in preventing COVID-19 transmission to health-care workers and to the public. Besides, it maintains continuity of patient’s care for those who need to be seen by their family physician or other specialty physicians for any acute or chronic illness without the fear of getting infected with COVID19.

Conclusion

This study assessed the level of satisfaction of telemedicine service during the COVID-19 pandemic in Saudi Arabia. We concluded that telemedicine service, despite being relatively new, had been a convenient experience for most participants (68.1%). Age (18–39 and 40–59 age groups), male gender, education (post-graduate and middle school education) and type of clinic visited (family medicine, dermatology and Ob/Gyn) all contributed significantly to the impact on satisfaction. The ability to get a diagnosis remotely was cited as the most important advantage. This shows that telemedicine service overrode distances to maintain the delivery of health care

at an acceptable level to patients and reduce demands on health-care services. However, though telemedicine may be convenient, it has disadvantages. The inability to meet health-care provider physically is reported as the most common disadvantage. Furthermore, while most participants reported being well-informed on how to use this facility, for the minority who had not been well informed the level of satisfaction had been negatively impacted by their lack of knowledge. Despite these findings, this study has some limitations. The major limitation is that the study sample was not evenly distributed between different clinics. This is because the majority of participants used virtual clinics for family medicine clinic more than other clinics. Another limitation is that the sample was taken from PHC centers only. However, the study has important pointers for future studies in this field.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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