Asian Journal of Medicine and Health

Volume 21, Issue 12, Page 30-46, 2023; Article no.AJMAH.108822
ISSN: 2456-8414

The Impact of Virtual Clinic on the Services` Users during Corona Virus Pandemic (COVID-19) in Health Care Centers in Riyadh, Saudi Arabia

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

Article Information

DOI: 10.9734/AJMAH/2023/v21i12958

Open Peer Review History:
This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: https://www.sdiarticle5.com/review-history/108822

Original Research Article

Received: 18/09/2023
Accepted: 23/11/2023
Published: 18/12/2023

ABSTRACT

This study aimed to assess the impact of virtual clinic on the services'` users during the Corona Virus (COVID-19) pandemic in health care centers in Riyadh. The researcher used the descriptive analytical method, and the study sample consisted of 100 individuals who used services in health care centers in Riyadh. The researcher used the SPSS statistical package program. The researcher reached to several results, the most important of which are; virtual clinics are very effective in improving the delivery of user services. Most of study subjects are fully treated despite not being seen in person. More than two thirds of the study sample 68% consider that the length of time spent with the therapist or one of his family members is a good period. The treatment was explained by the virtual clinic staff to a very good degree (67%). The degree of accuracy, care and skill of the virtual clinic staff is high (69%). Courtesy, respect, sensitivity and friendliness are provided by the virtual clinic staff at an excellent rate of 88%. The virtual clinic staff is distinguished by a very high respect for patient privacy (88%). The staff responds to the patient's questions about the treatment plan effectively and to a high degree (99%). The degree of the comprehensive

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treatment experience of the study sample using a virtual clinic is very good and excellent (81%). The researcher also concluded several recommendations, including; - Providing adequate time for health care users by health care providers.

Keywords: COVID-19; telemedicine.

1. INTRODUCTION

On December 2019, the coronavirus disease 2019 (COVID-19) pandemic overwhelmed the nations in the world surprisingly, especially on the field of healthcare and effected negatively on all sectors. This pandemic has led on shortage of health resources and the highest pressure on all workers and physicians on this vital sector [1].

Within COVID-19, the recommendations of social distancing and keeping on reducing the opportunities of infection, are obliged to perform transformations on the method of providing the health care at clinics in the hospitals, in order to secure the patients are continuously benefiting of communicating with physicians to care their medical cases and providing them with necessary treatment as appropriate manner.

During COVID-19, virtual clinics and telemedicine formulated an alternative solution for both the physicians and the users of services as the result of spreading the virus rapidly [2]. As the same context, there was an urgent need to overcome the phenomenon of crowding on the clinics in order to decrease the ratio of transforming infection. Therefore, virtual clinics granted the chances for users of health services and physicians to perform regular appointments without spreading the virus [3].

On the other hand, physicians' knowledge and culture of virtual clinic is necessary mean for the success of virtual clinic. As the same context, the users of health services are the primary and initial factor and resource to assess whether the healthcare is being delivered properly and meet their satisfactions or not delivered with the appropriate manner [4,5].

Regarding to the phase of COVID-19 within Kingdom of Saudi Arabia, the Ministry of Health (MOH) prepared telemedicine through multiple platforms such as virtual clinics, 937 call centers, and Seha smartphone application. On the other hand, the Saudi Commission for Health Specialties also launched a "telemedicine" training program to train all healthcare physicians to care for users remotely with the best global practices in virtual clinic [6]. Periodical evaluation of users` perceptions and satisfaction towards virtual clinic and its related element is important and necessary for the appropriate implementation of high-quality telemedicine care, particularly during COVID-19.

Scope of Study: The research is conducted at some healthcare centers in Riyadh, Saudi Arabia. This contains on services` users for these organizations who were receiving their treatment on these organizations.

Statement of Problem: Excellent procedure of any healthcare service, containing on virtual clinics, depends greatly on service users' satisfactions and requirements. Patients are the initial base of information who inform and guide all individuals whether the healthcare is being delivered sufficiently and if the healthcare received meets the service`s users requirements [7]. Disaffection with virtual clinics would receive and deliver these services unimportant and use in sufficiently. With the surge in worldwide virtual clinics services within the COVID-19 pandemic, it is important to keep an essential quality assessment factor of service users` satisfaction, regardless of delivery manner and way [8].

Health service users` satisfaction ratios and cost-effectiveness normally appears through a structured method of service transformation consisting on stakeholder participation, service planning and assessment/review. As same as other services, COVID-19 has subjected to difficulties of healthcare techniques to digitally transform and change on the short term.

Within this pandemic, outpatient visits formulated a difficult health risk for both the physician and service`s users as this could spread the virus quickly. As the same context, there was an urgent requirement to transfer service`s users from in-patient care to overcome overcrowding the healthcare services [9]. Virtual clinics explained and described the opportunities for users and physicians to perform regular appointments without spreading the virus.

Remote care declines the utilization of resources in health centers, develops and reinforces access to care, while reducing and declining the

risk of direct transmission of the infectious agent from patient to another. On the other hand, to being beneficial in maintaining individuals safe, containing on the public, patients and health employees, another necessary advantage is providing great access to care providers.

So, the main question of the study is: What is the Impact of Virtual Clinic on the Services` Users during Corona Virus Pandemic (COVID-19) in Health Care Centers in Riyadh, Saudi Arabia?

Research Questions: This study will answer the following questions:

1. What is the effectiveness of virtual clinics on improving the accomplishment of services of users?
2. Do Virtual tools in Healthcare system are becoming an effective & necessary Demand for communication with users?

Significance of the Study: Technology and virtual tools are transferring the methods people live and work. It influences the differing the performances of employees, conducts and situations in the environment of business.

This rapid transformation in technology has organizations calling for better tools in every field, including healthcare, such as the following;

Incorporate effective communication in the organization's mandatory training program. It is difficult to expect employees to communicate appropriately if they have never been learnt to conduct and perform it

Objectives: This study aims to:

1. Evaluate the impact of virtual clinic on the services` users during corona Virus Pandemic (COVID-19) in healthcare centers in Riyadh, Saudi Arabia.
2. Evaluate the process of improving communication and coordinating care among health care members and users of health services.

2. LITERATURE REVIEW

The appearing literature review and research within outbreak COVID-19 pandemic emphasize on health informatics infrastructure. Therefore, the virtual clinics may become a main requirement for the general population, health care providers, and patients with COVID-19, particularly when individuals are in quarantine, enabling patients in real time through contact with health care provider for guideline on their health difficulties and challenges.

Al Hazmi et al. [10] refer that excellent implementation of virtual healthcare based appropriately on patients' perceptions and requirement. This cross-sectional study assessed patients' perceptions of, and elements associated with, weak and average satisfaction with the outpatient virtual clinics in the Kingdom of Saudi Arabia (KSA). This questionnaire-based survey was prepared among 720 patients who attended outpatient virtual clinics from different regions of the KSA. According to the sample studied, 54.7% of the participants had high satisfaction and the most traditional disadvantage perceived by patients was technical cases (53.1%), followed by fewer personal interactions (30.4%). Around 75% of the participants wished to utilize virtual clinics services even after the COVID-19 pandemic. Logistic regression analysis referred that age group more than 40 years (OR = 1.59; 95% CI = 1.04–2.44, p = 0.031), education less than university level (OR = 1.68; 95% CI = 1.07–2.15, p = 0.025), and first-time participants (OR = 3.28; 95% CI = 2.32–4.65, p < 0.001) were properly associated with poor and average satisfaction grades. The concerned bodies must make targeted action plans to coincide with the disadvantages perceived by patients accessing virtual clinics. Additionally, a multicenter, exploratory study that varies the virtual clinic with other telemedicine services in the KSA is guaranteed.

Alharbi el al. [11] referred that the novel coronavirus, officially known as COVID-19, was first declared in Wuhan, China in December of 2019. Since that time, medical services in Saudi Arabia have treated with the situation by delivering medical care via virtual clinics. In the same context, the present study aimed to evaluate the patients' level of satisfaction with virtual clinics during the COVID-19 pandemic in Saudi Arabia. As the same context, 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 contained on demographics, level of satisfaction and questions regarded 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 varied between groups using Mann-Whitney U test and Kruskal Wallis test. The study reached at 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 regarded with satisfaction included gender, age group and level of education (post-graduate and middle school) and being well-informed on the utilization of virtual clinics. Specific age groups that were significant were 18–39 and 40–59 years; 50.2% of the males found virtual clinics 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 healthcare professional face-to-face was reported by 53.8% as the most important disadvantage. Finally, the 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. In addition, this study demonstrated that satisfaction was connected to age, gender, education and the type of clinic used.

Vas et al. [12] showed that COVID-19 pandemic has put health systems across the world under main pressure. In March 2020, a national directive was prepared by the National Health Service (NHS) England instructing trusts to scale back face-to-face outpatient appointments, and rapidly carry out virtual clinics. A multidisciplinary team of change managers, analysts and clinicians were assembled to assess initial implementation of virtual clinics at Guy's and St Thomas' NHS Foundation Trust. Indepth interviews were prepared and established with clinicians who have delivered virtual clinics during the pandemic. An inductive thematic methodology was utilized to describe clinicians' early experiences and explain enablers for longer term sustainability. The results of study refer that ninety-five clinicians from specialist services across the trust were interviewed between April and May 2020 to reflect on their experiences of delivering virtual clinics during Wave I COVID-19. Basic reflections contain on the perceived benefits of virtual consultations to patients and clinicians; the limitations of virtual consultations compared with face-to-face consultations; and the main enablers that would optimize and sustain the delivery of virtual pathways longer term. Finally and in response to the pandemic, outpatient services across the trust were rapidly redesigned and virtual clinics carried out. As a result, services have been able to sustain some level of service delivery. However, clinicians have explained challenges in delivering this form of care and focused on enablers required to sustaining the delivery of virtual clinics longer term, such as patient access to diagnostic tests and investigations closer to home.

Gilbert et al. [13] explained that the COVID-19 outbreak has placed the National Health Service under significant situation. Social distancing procedures were introduced in the UK in March 2020 and virtual consultations (via telephone or video call) were explained as a potential alternative to face-to-face consultations at this time. Local problem, The Royal National Orthopaedic Hospital (RNOH) shows on average 11 200 face-to-face consultations a month. On average 7% of these are received virtually via telephone. In response to the COVID-19 crisis, the RNOH set a target of declining face-to-face consultations to 20% of all outpatient attendances. So the study shows a quality improvement initiative to rapidly carry out virtual consultations at the RNOH. At the same time, the COVID-19 Action Team, a multidisciplinary group of healthcare professionals, was assembled to motivate the implementation of virtual clinics. The Institute for Healthcare Improvement approach to quality improvement was followed utilizing the Plan-Do-StudyAct (PDSA) cycle. A process of enablement, process redesign, delivery support and evaluation were implemented, underpinned by Improvement principles. The results revealed that the following the target of 80% virtual consultations being set, 87% of consultations were delivered virtually during the first 6weeks. Satisfaction scores were high for virtual consultations (90/100 for patients and 78/100 for clinicians); however, outside of the COVID-19 pandemic, video consultations would be preferred less than 50% of the time. Information to motivate the future redesign of outpatient services was gathered. Finally, this study demonstrates that virtual consultations can be rapidly carried in response to COVID-19 and that they are largely acceptable. Further initiatives are demanded to support clinically appropriate and acceptable virtual consultations beyond COVID-19.

In addition, this study was a cross-sectional study that contained on family medicine

consultants and fellows who had utilized virtual clinics in primary health care centers in Riyadh, Saudi Arabia. It was prepared using an online validated questionnaire. The questionnaire was completed by 219 family medicine consultants and fellows, after getting their informed consent. The data that were extracted from the questionnaire contained on demographics, level of satisfaction, and questions regarded to their experience with virtual clinics. Therefore, the results refer that two hundred and nineteen participants recorded in this study with 50.6% males and 49.4% females. The overall level of physicians' satisfaction with virtual clinics was 64.3%. However, only one-third preferred virtual clinics to office visits. Of these, 60% were males and 40% were females. The only factor that had a statistically significant influence on the preference of office visits or telemedicine was time efficiency (p-value < 0.001). Of those who preferred office visits to telemedicine, 52% of them cited ease of discussion and the ability to make a comprehensive physical examination as the most important causes for choosing office visits. Technologic issues were the least important element for selecting either clinic (4.1%). Of those who preferred telemedicine, avoiding contact with patients suspected of COVID-19 was the most commonly cited factor (27.4%). Family medicine physicians face numerous barriers while utilizing telemedicine during the COVID-19 pandemic. The most commonly cited barrier was the inability to make a full evaluation of the patient. The study concluded that the setting of highly transmissible disease epidemics, telemedicine has a lot of potential for providing quick and safe care that is appropriate for screening and management. Based on the findings, using telemedicine should be motivated by enhancing physicians' skills in this field since telemedicine is a main step to decline the risk of COVID-19 transmission and provide community-wide treatment.

Monaghesh et al. [14] explain that the outbreak of coronavirus disease-19 (COVID-19) is a public health emergency of international concern. Virtual clinic is a sufficient selection to fight the outbreak of COVID-19. The aim of the systematic review was to explain the role of virtual clinic services in preventing, diagnosing, treating, and controlling diseases during COVID19 outbreak. At the same time, the systematic review was implemented through searching five databases including PubMed, Scopus, Embase, Web of Science, and Science Direct. Inclusion criteria contained on studies clearly defining any use of virtual clinic services in all aspects of health care during COVID-19 outbreak, published from December 31, 2019, written in English language and published in peer reviewed journals. Two reviewers

independently evaluated search results, extracted data, and assessed the quality of the included studies. Quality assessment was based on the Critical Appraisal Skills Program (CASP) checklist. Narrative synthesis was undertaken to explain and report the findings. The findings reached at eight studies met the inclusion out of the 142 search results. Currently, healthcare providers and patients who are self-isolating, virtual clinic is certainly appropriate in reducing the risk of COVID-19 transmission. This solution has the potential to overcome any type of direct physical contact, provide continuous care to the community, and finally decline morbidity and mortality in COVID-19 outbreak. Finally, the study concluded that the use of virtual clinic improves the provision of health services. Therefore, virtual clinic should be a necessary equipment in caring services while maintaining patients and health providers safe during COVID-19 outbreak.

3. METHODOLOGY

Methodology considers as a part of the problematic challenges of any scientific study, as the result of any objective study must be based on a scientific basis, so that the results are objectives, generalizable to society, and the methodological procedures of the study depend on the previous steps, as these procedures are determined in the light of the formulation of the study problem and its objectives, and defining the concepts used in it.

What has been reviewed and investigated, in the context of addressing the phenomenon, and in the light of the questions that have been identified, the answer to them constitutes the achievement of the main objectives of the study.

This chapter deals with a description of the field study procedures that the researcher undertook to answer the study questions and achieve to its objectives, including the methodology used in the study, the study community, sample and the study tool, and to ensure its validity and reliability, and the procedures for applying the tool and the methods of statistical treatment that the researcher used in analyzing the data.

3.1 Methodology of Study

The researcher relied on the use of the descriptive method, which is one of the methods of social research in which the steps of the scientific method are applied in practical application to the study of a social phenomenon or problem or specific social conditions prevalent in a geographical area.

So that we obtain all the information that depicts the various aspects of the studied phenomenon, and after classifying and analyzing the data, it can be used for scientific purposes.

3.2 Applying Descriptive Approach in Choosing Data Collection Tool

Since the method of collecting information is one of the most important stages of the methodological procedures in every research, and by means of it, the research information can become to a great degree of objectivity and accuracy, and to serve the objectives of the study and answer its various questions. Therefore, the researcher decided to collect the necessary data for this study to choose the method based on the data collection tool from the respondents, which is (the questionnaire). The researcher found that the most appropriate tool to achieve this study is the online questionnaire, due to the lack of basic information related to the topic as published data.

In addition to the difficulty of obtaining it through other tools such as personal interviews, field visits or personal observation, and as it is the most used research tool in such research.

The questionnaire consisted of two parts:

The first part relates to the independent variables of the study, which include the variables related to the personal and functional characteristics of the study sample items in their personal and employment variables.

The second part of the questionnaire consists of the paragraphs of the questionnaire.

In preparing the interviews, the researcher adopted a closed questionnaire that defines specific responses to each question.

3.3 Study Population

The population of the current study consists of all those the users of the virtual clinic services during Corona Virus Pandemic (COVID-19) in Health Care Centers in Riyadh, Saudi Arabia.

3.4 Study Sample

The sample "is a part of a large community, on which the researcher conducts his field study, in order to save time, effort and money. The sample should take into account its representation of the original community, and this can be achieved by random selection of its members."

In view of the difficulty of reaching all members of the study community, the researcher selected an appropriate number of the Virtual Clinic Services Users during Corona Virus Pandemic (COVID-19) in Health Care Centers in Riyadh,

The sample of the study consisted of (100) of Virtual Clinic Services Users during Coronavirus Pandemic (COVID-19) in both King Fahad Medical City and Prince Mohammed Bin Abdulaziz Mecial Hospital in Riyadh, The questionnaires were distributed to them electronically.

3.5 The Statistical Method Used

To achieve the objectives of the study and analyze the collected data, many appropriate statistical methods have been used by using Statistical Packages for Social Sciences (SPSS)

3.6 Statistical Treatment Methods

To achieve the objectives of the study and analyze the data that were all completed, many appropriate statistical methods were used by using the Statistical Package for Social Sciences (SPSS).

And after the data has been coded and entered into the computer,

Frequencies and percentages were calculated to identify the personal and functional characteristics of the study sample and to determine the responses of their members towards the paragraphs of the main axes that are included in the study tool.

After that, the following statistical measures were calculated:

1) The weighted mean, in order to find out the extent of high or low responses of the

study sample to each paragraph of the basic study variables, bearing in mind that it is useful in arranging the paragraphs according to the highest weighted arithmetic mean.

2) The mean "mean" in order to know the extent to which the responses of the study sample have increased or decreased from the main axes (average of the paragraphs averages), knowing that it is useful for arranging the axes according to the highest arithmetic mean.
3) Standard Deviation was used to identify the extent of deviation of the responses of the study sample for each statement of the study variables, and for each of the main axes from their arithmetic mean. It is noticed that the standard deviation shows the dispersion in the responses of the individuals of the study sample for each paragraph of the study variables, in addition to the main axes.

3.7 Validate and Stability of Study Tool

Honesty is required to demonstrate the ability of each of its phrases to measure what it has been designed to measure.

The stability of the tool is intended to give almost the same results if it is repeated more than once on the same people in similar circumstances

After reviewing the questionnaire, the researcher verified its validity with the apparent validity of the study tool, as a number of faculty members in a number of Saudi universities were relied upon. In light of their observations, some of the questionnaire's terms were modified and others were deleted and added until reaching its final form.

3.8 Study Tool Application Procedure

The questionnaires were distributed to the study members, and it took three weeks to distribute and collect them electronically. The researcher obtained (100) questionnaires suitable for analysis, and this was done during the second semester of the year 1442/1443 AH.

After that, the data were entered, and statistically processed by computer through the (SPSS) program, and then the researcher analyzed the data and extracted the results.

4. RESULTS

The essential objective of this study is to evaluate the impact of virtual clinic on the services` users during corona Virus Pandemic (COVID-19) in Healthcare Centers in Riyadh. Also, this study aims to this study aims to:

1. Evaluate the impact of virtual clinic on the services` users during corona Virus Pandemic (COVID-19) in healthcare centers in Riyadh, Saudi Arabia.
2. Evaluate the process of improving communication and coordinating care among health care members and users of health services are identified by answering the following questions and hypotheses:

The first question: What is the effectiveness of virtual clinics on improving the accomplishment of services of users?

The second question: Do Virtual tools in Healthcare system are becoming an effective & necessary Demand for communication with users?

First, the results related to the description of the study individuals:

This study is based on a number of variables related to the members of the study sample represented in: (gender - age - Marital status - work) and in light of this, it can be determined as follows:

Gender, age, marital status, Employment status:

The table herein above demonstrates categorization of study sample (individuals) upon gender variance: Most of study sample are really among males who shaped a highly percentage rate not less than 57% while females didn't exceed 43% .and the above table shows that more than a third of the study sample (71) are between). From 21 To 35 Years Old) ages, and they represent a rate of 71%, while 21 of the study sample are (from 36 to 60 years old) ages and they represent a rate of 21%, while (from 20 years or less) individuals from the study sample come in the last place, and they represent 8% and they are the lowest group of the study sample. The table herein above demonstrates categorization of study sample (individuals) upon marriage variance:

Table 1. Categorization of study sample (individuals) upon gender age, Marital status, Employment status variance

Variable	Category	Frequency	Percent	Valid Percent
gender	male	57	57.0	57.0
	female	43	43.0	43.0
	Total	100	100.0	100.0
age	from 20 years or less	8	8.0	8.0
	from 21 to 35	71	71.0	71.0
	from 36 to 60	21	21.0	21.0
	Total	100	100.0	100.0
Marital status	single	44	44.0	44.0
	married	56	56.0	56.0
	Total	100	100.0	100.0
Employment status	Government	48	48.0	48.0
	Self-employed/Private	22	22.0	22.0
	Unemployed	30	30.0	30.0
	Total	100	100.0	100.0

Most of the study sample are married who shaped a highly percentage rate not less than 56% while singles did not exceed 44%. The above table shows that more than half of the study sample (48) work in the government sector, and they represent 48%, while 22 of the study sample work in the private sector. They represent 22%, while 30 of the study sample individuals do not work in any sector and they represent 30%, from the study sample.

Second: The results related to the answers to the study questions

The first question: What is the effectiveness of virtual clinics on improving the accomplishment of services of users?

To identify is the effectiveness of virtual clinics on improving the accomplishment of services of users, means, standard deviations and ranks were calculated for the responses of the study individuals. The results were as shown in the following Table 2:

It is clear from Table No. (2) that virtual clinics are very effective in improving the delivery of user services, and this is shown in the following points:

- The most virtual clinic consultations in general hospitals.
- Most of the study subjects are fully treated despite not being seen in person.
- More than two thirds of the study sample 68% consider that the length of time spent with the therapist or one of his family members is a good period.
- The treatment was explained by the virtual clinic staff to a more than good degree (67%).
- The degree of accuracy, care and skill of the virtual clinic staff is high (69%).
- Courtesy, respect, sensitivity and friendliness are provided to the virtual clinic staff at an excellent rate of 88%.
- The virtual clinic staff is distinguished by a very high respect for patient privacy (88%).
- The staff responds to the patient's questions about the treatment plan effectively and to a high degree (99%).
- The degree of the comprehensive treatment experience of the study sample using a virtual clinic is very good and excellent (81%).
- The most perceived disadvantages of the virtual clinic are technical difficulties (30%), and poor communication (12%), Less personal interaction, No time off from work.
- One of the most important recommendations for improving virtual clinic care is to improve technology (30%), Improvement in scheduling/coordination (28%), Incorporation of diagnostic recommendation (18%).

The second question: Do Virtual tools in Healthcare system are becoming an effective & necessary Demand for communication with users?

To identify is the importance of virtual tools in the healthcare system in communicating with users, means, standard deviations and ranks were calculated for the responses of the study individuals.

The results were as shown in the following Table 3.

Table 2. Shows is the effectiveness of virtual clinics on improving the accomplishment of services of users

Variable	Category	Freq.	Percent	Valid Percent	Mean	Std. Deviation
2- Virtual Clinic consultation at	PHC	33	33.0	33.0	1.51	0.502
	General hospital	45	45.0	45.0		
	Specialty hospital	22	22.0	22.0		
Do you think anything was missed or not addressed because you were not seen in person?	yes	32	32.0	32.0	1.74	0.848
	no	39	39.0	39.0		
	Not sure	29	29.0	29.0		
The length of time with the therapist or family member you saw?	poor	6	6.0	6.0	2.89	0.875
	fair	26	26.0	26.0		
	good	41	41.0	41.0		
	excellent	27	27.0	27.0		
The explanation of your treatment by the Virtual clinic staff?	poor	7	7.0	7.0	2.94	0.941
	fair	26	26.0	26.0		
	good	33	33.0	33.0		
	excellent	34	34.0	34.0		
The thoroughness, carefulness and skillfulness of the Virtual clinic staff?	poor	5	5.0	5.0	3.01	0.916
	fair	26	26.0	26.0		
	good	32	32.0	32.0		
	excellent	37	37.0	37.0		
The courtesy, respect, sensitivity and friendliness of the Virtual clinic staff	poor	2	2.0	2.0	3.29	0.856
	fair	20	20.0	20.0		
	good	25	25.0	25.0		
	excellent	53	53.0	53.0		
How well the Virtual clinic staff respected your privacy?	poor	2	2.0	2.0	3.40	0.804
	fair	14	14.0	14.0		
	good	26	26.0	26.0		
	excellent	58	58.0	58.0		
How well the staff answered your questions about the treatment plan?	poor	2	2.0	2.0	3.24	0.830
	fair	19	19.0	19.0		
	good	32	32.0	32.0		
	excellent	47	47.0	47.0		
Your overall treatment experience at using Virtual clinic?	poor	4	4.0	4.0	3.21	0.844
	fair	15	15.0	15.0		
	good	37	37.0	37.0		
	excellent	44	44.0	44.0		
Perceived disadvantages towards Virtual clinic	Technological difficulties	30	30.0	30.0	3.08	1.680
	No time off from work	12	12.0	12.0		
	Less personal interaction	12	12.0	12.0		
	Poor communication	12	12.0	12.0		
	none	34	34.0	34.0		
Recommendation for Virtual clinic care improvement	Improvement in scheduling/coordination	28	28.0	28.0	2.38	1.135
	Improved technology	30	30.0	30.0		
	Incorporation of diagnostic recommendation	18	18.0	18.0		
	none	24	24.0	24.0		

Table 3. shows the importance of virtual tools in the healthcare system in communicating with users

Variable	Category	Freq.	Percent	Valid Percent	Mean	Std. Deviation
- Virtual clinic consultation experience before the pandemic	yes	49	49.0	49.0	1.51	0.502
	no	51	51.0	51.0		
-Has the COVID-19 pandemic changed your desire to be seen in person by a healthcare	yes	52	52.0	52.0	1.89	0.737
	no	22	22.0	22.0		
	Not sure	26	26.0	26.0		
Willingness to participate in another Virtual clinic consultation	yes	73	73.0	73.0	1.97	0.784
	no	12	12.0	12.0		
	Not sure	15	15.0	15.0		
Would you rather continue to consult the virtual clinic when the pandemic is over?	yes	66	66.0	66.0	1.53	0.797
	no	15	15.0	15.0		
	Not sure	19	19.0	19.0		
Perceived advantages towards Virtual clinic Availability of healthcare provider	Convenience	33	33.0	33.0	3.06	1.769
	No time off from work	8	8.0	8.0		
	No travel	4	4.0	4.0		
	Time saving	43	43.0	43.0		
	Safety	5	5.0	5.0		
	Visits not rushed	2	2.0	2.0		
	None	4	4.0	4.0		

Virtual tools in the healthcare system have become a necessary and effective requirement for communicating with users, as shown in the following points:

- More than half of the study subjects had not had the experience of consulting a virtual clinic before the pandemic (51%).
- The COVID-19 pandemic has changed the willingness of more than half of the study sample to be personally examined by healthcare (52%).
- The majority of the study sample showed their willingness to participate in another virtual clinic consultation (73%).
- Two thirds of the study sample prefer to continue to consult the virtual clinic when the epidemic ends (66%).
- The individual sample of the study agreed on the perceived advantages towards the availability of the virtual clinic for the health care provider, especially the time saving 43% and Convenience 33% And some other advantages, such as Safety, No time off from work, No travel and Visits not rushed.

5. DISCUSSION

Discussing the most important results of the first question: What is the effectiveness of virtual clinics on improving the accomplishment of services of users:

Virtual clinics are very effective in improving the delivery of user services, and this is shown in the following points:

- Most of the study subjects are fully treated despite not being seen in person.
- More than two thirds of the study sample 68% consider that the length of time spent with the therapist or one of his family members is a good period.
- The treatment was explained by the virtual clinic staff to a more than good degree (67%).
- The degree of accuracy, care and skill of the virtual clinic staff is high (69%).
- Courtesy, respect, sensitivity and friendliness are provided to the virtual clinic staff at an excellent rate of 88%.
- The virtual clinic staff is distinguished by a very high respect for patient privacy (88%).
- The staff responds to the patient's questions about the treatment plan effectively and to a high degree (99%).
- The degree of the comprehensive treatment experience of the study sample using a virtual clinic is very good and excellent (81%).

- The most perceived disadvantages of the virtual clinic are technical difficulties (30%), and poor communication (12%), Less personal interaction, No time off from work.
- One of the most important recommendations for improving virtual clinic care is to improve technology (30%), Improvement in scheduling/coordination (28%), Incorporation of diagnostic recommendation (18%).

Virtual clinics have become an effective tool to improve the provision of user services, as virtual clinics have helped treat the majority of the study sample from a distance while explaining treatment methods in a good and easy degree and at an appropriate time for patients.

The virtual clinic staff is characterized by accuracy and high skill with respect and appreciation for patients and respect for their privacy. The virtual clinic staff provides the appropriate response to the patient's asks and treatment plan, and comprehensive treatment experience is available by the virtual clinics,

To increase the effectiveness of the virtual clinic requires improving technology, coordination, and integrating patient diagnostic recommendations.

Discussing the most important results of the second question: Do Virtual tools in Healthcare system are becoming an effective & necessary Demand for communication with users:

To identify is the importance of virtual tools in the healthcare system in communicating with users, and this is shown in the following points:

- The COVID-19 pandemic has changed the willingness of more than half of the study sample to be personally examined by healthcare (52%).
- The majority of the study sample showed their willingness to participate in another virtual clinic consultation (73%).
- More than half of the study subjects had not had the experience of consulting a virtual clinic before the pandemic (51%).
- The individual sample of the study agreed on the perceived advantages towards the availability of the virtual clinic for the health care provider, especially the time saving 43% and Convenience 33% and some other advantages, such as Safety, no time off from work, no travel and visits not rushed.
- Two thirds of the study sample prefer to continue to consult the virtual clinic when the epidemic ends (66%).

Virtual tools in the healthcare system have become a necessary and effective requirement to communicate with users, as shown in the following points:

Virtual tools in the health care system are very necessary to communicate with users, and this importance appeared after the Corona pandemic, so we see that a large number of the study sample members had increased experience of consulting virtual clinics, as well as increased readiness for personal examinations, and the willingness of the study members increased significantly in participating in Consultation of various virtual clinics, as indicated by the importance of these virtual tools is the continuation of the study personnel to consult virtual clinics after the end of the epidemic,

Virtual tools help health care users in providing means of safety and comfort, accomplishing and saving time, and health care is available at any time and does not require travel, costs, visits, and what requires.

6. CONCLUSION AND RECOMMENDATION

6.1 Conclusion

6.1.1 Description of study`s Individuals

Most of study sample are really among males who shaped a highly percentage rate not less than 57% while females didn't exceed 43% .and the above table shows that more than a third of the study sample (71) are between) from 21 to 35 years old) ages, and they represent a rate of 71%, while 21 of the study sample are (from 36 to 60 years old) ages and they represent a rate of 21%, while (from 20 years or less) individuals from the study sample come in the last place, and they represent 8% and they are the lowest group of the study sample. The table herein above demonstrates categorization of study sample (individuals) upon marriage variance: Most of study sample are married who shaped a highly percentage rate not less than 56% while singles didn't exceed 44%. The above table shows that more than half of the study sample (48) work in the government sector, and they represent 48%, while 22 of the study sample work in the private sector. They represent 22%,

while 30 of the study sample individuals do not work in any sector and they represent 30%, from the study sample.

6.1.2 The first question: What is the effectiveness of virtual clinics on improving the accomplishment of services of users

- The most virtual clinic consultations in general hospitals.
- Most of the study subjects are fully treated despite not being seen in person.
- More than two thirds of the study sample 68% consider that the length of time spent with the therapist or one of his family members is a good period.
- The treatment was explained by the virtual clinic staff to a more than good degree (67%).
- The degree of accuracy, care and skill of the virtual clinic staff is high (69%).
- Courtesy, respect, sensitivity and friendliness are provided to the virtual clinic staff at an excellent rate of 88%.
- The virtual clinic staff is distinguished by a very high respect for patient privacy (88%).
- The staff responds to the patient's questions about the treatment plan effectively and to a high degree (99%).
- The degree of the comprehensive treatment experience of the study sample using a virtual clinic is very good and excellent (81%).
- The most perceived disadvantages of the virtual clinic are technical difficulties (30%), and poor communication (12%), less personal interaction, No time off from work.
- One of the most important recommendations for improving virtual clinic care is to improve technology (30%), Improvement in scheduling/coordination (28%), Incorporation of diagnostic recommendation (18%).

6.1.3 Second question: Do Virtual tools in Healthcare system are becoming an effective and necessary Demand for communication with users

Virtual tools in the healthcare system have become a necessary and effective requirement for communicating with users, as shown in the following points:

- More than half of the study subjects had not had the experience of consulting a virtual clinic before the pandemic (51%).
- The COVID-19 pandemic has changed the willingness of more than half of the study sample to be personally examined by healthcare (52%).
- The majority of the study sample showed their willingness to participate in another virtual clinic consultation (73%).
- Two thirds of the study sample prefer to continue to consult the virtual clinic when the epidemic ends (66%).
- The individual sample of the study agreed on the perceived advantages towards the availability of the virtual clinic for the health care provider, especially the time saving 43% and Convenience 33% And some other advantages, such as Safety, No time off from work, No travel and Visits not rushed.

6.2 Recommendation

The study reached several recommendations, as follows:

- Providing adequate time for health care users by health care providers.
- Explain the treatment and treatment plan to patients very clearly.
- Choosing the staff of the virtual clinics with high accuracy and their skill and care for patients.
- Focus on excellent patient transactions by virtual clinic staff.
- Respect the privacy of patients by the virtual clinic staff.
- Providing and improving technical use in virtual clinics.
- Effectiveness of communication and personal interaction with patients.
- Availability of continuous work at any time in virtual clinics
- Integrating and linking diagnostic examinations for patients to know the details of pathological conditions and the accuracy of treatment.
- Conducting similar and specialized studies on the various virtual clinics and their impact on health care users in various regions of the Kingdom.

7. SUMMARY

In conclusion, despite the increasingly using of online communication in the community, its utilization between patients and their health care providers remains low. However, rapidly increasing and improving patient and provider interest in utilizing virtual clinics has stimulated

organizations to consider selections for using these new tools in clinical practice. Although health physicians aim to think they are good at communicating, many patient safety incidents, complaints and negligence claims incriminate communication failures and/or poor teamwork.

CONSENT

As per international standards or university standards, respondents' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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APPENDIX A

Questionnaire

أثر العيادة الافتراضية على مستخدمي الخدمات خلال جائحة فيروس كورونا)كوفيد -91(في مراكز

الرعاية الصحية بالرياض بالمملكة العربية السعودية

The Impact of Virtual Clinic on the Services` Users during Corona Virus Pandemic (COVID-19) in Health Care Centers in Riyadh, Saudi Arabia.

نامل الاجابة على تساؤلات الاستبيان من أجل تقييم رضى المستخدمين للعيادة الافتراضية لتنفيذ ما هو

COVID-.مناسب لرعاية التطبيب عن بعُد عالية الجودة، لا سيما أثناء19

.مع العلم ان هذه المعلومات تستخدم لأغراض البحث العلمي فقط

شاكرين ومقدرين حسن تعاونكم ، الباحث: عبدالرحمن محمد الجميلي

We hope to answer survey questions to assess user satisfaction of the virtual clinic for appropriate implementation of high-quality Virtual Clinic care, particularly during COVID-19.

Note that this information is used for scientific research purposes only.

Thank you Researcher: Abdulrahman Mohammed Aljameeli

The genderالجنس *

- Maleذكر
- Femaleأنثى

* The Age السن

- من 02 سنة فأقل from 20 years or less
- من 02 الى 53 سنة from 21 to 35
- من 53 الى 32 سنة from 36 to 60
- من 32 سنة فأكثر from 61 and over

* الحالة الاجتماعية

Marital Status

Single أعزب
Married متزوج

Employment Status الحالة الوظيفية *

- Government قطاع حكومي
- Self-employed/Privateقطاع خاص/ عمل حر
- Unemployedلا أعمل

* هل جربت استشارة عيادة افتراضية قبل الجائحة

Virtual Clinic Consultation experience before the pandemic

- Yes نعم
- No لا

* **Virtual Clinic Consultation at استشارة عيادة افتراضية في**

- PHCمركز الرعاية الصحية الأولية
- General hospitalمستشفى عام
- Specialty hospitalمستشفى خاص

رغبتك في أن يفحصك أحد مقدمي الرعاية الصحية شخصيًا؟ COVID-ه**ل غيرّت جائحة** 19 *

Has the COVID-19 pandemic changed your desire to be seen in person by a healthcare provider?

- o Yes نعم
- o No لا
- o Not sure غير متأكد

* هل تعتقد بأنك لم تتلقى الرعاية على النحو الملائم، لأنه لم يتم فحصك شخصيا؟

Do you think anything was missed or not addressed because you were not seen in person?

- o Yes عم
- o No لا
- o Not Sure غير متأكد

* هل أنت مستعد للمشاركة في استشارة عيادة افتراضية أخرى

Willingness to participate in another Virtual clinic consultation

- o Yes نعم
- o No لا
- o Not sure غير متأكد

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* هل تفضل الاستمرار في استشارة العيادة الافتراضية وقد انتهت الجائحة

Would you rather continue to consult the virtual clinic when the pandemic is over?

- o Yes نعم
- o No لا
- o Not sure غير متأكد

في اعتقادك ما هي المزايا في توفر العيادة الافتراضية من قبل مقدم الرعاية الصحية*

Perceived advantages towards Virtual clinic Availability of healthcare
Provider

- o Convenience مناسبة
- o No time off from work لا تحتاج لإجازة من العمل
- o No travelلا تحتاج للسفر
- o Safety أمان
- o Visits not rushed وقت الزيارة كافي
- o None لا شيء

***** طول الفترة التي قضيتها انت أو أحد افراد اسرتك مع الطبيب المعالج ?

The length of time with the therapist or family member you saw?

- o غير مناسبة Poor o مقبولة Fair جيدة Good

- o Excellent ممتازة

شرح العلاج الخاص بك من قبل طاقم العيادة الافتراضية؟

The explanation of your treatment by the Virtual clinic staff?

- o غير مناسبةPoor
- o مقبولةFair
- o Goodجيدة

- Excellentممتازة

* مدى دقة وعناية ومهارة طاقم العيادة الافتراضية؟

The thoroughness, carefulness and skillfulness of the Virtual clinic staff?

- Poorغير مناسبة
- Fairمقبولة
- Goodجيدة
- Excellentممتازة

*التقدير والاحترام والود لموظفي العيادة الافتراضية؟

The courtesy, respect, sensitivity and friendliness of the Virtual clinic staff

- Poorغير مناسبة
- Fairمقبولة
- Goodجيدة
- ***** Excellentممتازة

ما مدى احترام موظفي العيادة الافتراضية لخصوصيتك؟

How well the Virtual clinic staff respected your privacy?

- غير
- مناسبة Poor
- مقبولة Fair
- جيدة Good
- ممتازة Excellent

* إلى أي مدى أجاب الموظفون على أسئلتك حول الخطة العلاجية؟

How well the staff answered your questions about the treatment plan?

- غير
- مناسبة
- Poor
- Fairمقبولة
- Goodجيدة
- Excellentممتازة

* تقييم تجربتك العلاجية الشاملة باستخدام عيادة افتراضية؟

Your overall treatment experience at using Virtual clinic?

- غير
- Poorمناسبة
- Fairمقبولة
- Goodجيدة
- Excellentممتازة

* ما العيوب المتصورة تجاه العيادة الافتراضية؟

Perceived disadvantages towards Virtual clinic

- Technological difficulties صعوبات تقنية
- No time off from work لا توجد اجازة عمل
- Less personal interactionضعف التفاعل الشخصيo
- Poor communication ضعف التواصل
- Noneلا شيء

***** ما هي توصيتك لتحسين رعاية العيادة الافتراضية

Recommendation for Virtual clinic care improvement

- Improvement in scheduling/coordinationتحسين في برامج العمل/ التنسيق
- استخدام احدث التقنية العلاجيةImproved technology
- Incorporation of diagnostic recommendationتكامل التوصية التشخيصية
- لا شيءNone

Peer-review history:
The peer review history for this paper can be accessed here:
https://www.sdiarticle5.com/review-history/108822