Physicians' satisfaction with telehealth services among family physicians in Cluster 1 hospitals

Saad S. Alqahtani, Abdullah D. Alraqi, Abdulelah A. Alageel

Family Medicine Resident, King Saud Medical City, Riyadh City, Saudi Arabia

ABSTRACT

Background: Physicians are increasingly applying telehealth services in the hospital. The use of telehealth services helps to ensure that doctors treat patients and write prescriptions remotely without the need to meet physically with the patient. **Methods:** The study used a descriptive survey design, in which collection and sampling of data were standardized to represent the population of all physicians. The target population was all doctors in all private healthcare systems, King Saud Medical City (KSMC), and four hospitals in the southwest area of Saudi Arabia. Data were collected via a simple random sampling system and engaged questionnaires. Microsoft Office Excel was used for data entry and preparation of graphs and charts. **Results:** We collected data from 151 physicians in Cluster 1 hospitals. Most were males (74.8%) with a mean age of 31.14 years. Of these, 57.6% thought that telemedicine saved physicians' traveling time, 27.8% were satisfied with telemedicine services, 28.5% were not satisfied, and 43.7% were neutral; 61.6% thought that telemedicine was important for them, and 53.6% liked using telemedicine because of the similarity of participants' values and society values underlying its uses; 59.6% reported that telemedicine improved their job effectiveness and performance, while 58.9% reported that telemedicine enabled them to accomplish tasks more quickly and made them more productive. **Conclusion:** Physicians expressed a high level of satisfaction and a positive attitude toward telemedicine. Future researches are essential to see how attitudes about telemedicine have altered since the pandemic.

Keywords: Family, physicians, satisfaction, services, telehealth

Introduction

Telemedicine is the use of electronic information and communication technology to overcome geographical barriers and increase access to healthcare. In the past two decades, the world has experienced a giant leap in technology and made telemedicine begin to be part of delivering healthcare to people worldwide.[1] Telemedicine is a fast-growing field and offers promises to overcome challenges that health providers and patients face nowadays.[2]

Telehealth includes a broad range of technologies and services to provide patient care and improve the healthcare delivery system.[3] It refers to a wide scope of remote healthcare services in addition to telemedicine.[4] Telehealth is an effective option for improving health services, especially during crises.[5]

According to Wosik *et al.*,[6] the evolution of the current healthcare system that utilizes measures such as telemedicine or telehealth has been met with mixed reactions by various groups in USA and worldwide. Proponents of the strategy argue that it that offers broad support to a large number of groups, such as the government, healthcare providers, and, more importantly, patients.[7] Telemedicine offers benefits such as access to affordable medical services by patients in the comfort of their homes.[7] Ohannessian *et al.*[8] noted that telemedicine offers great relief to elderly patients, patients with acute respiratory illnesses, and chronically ill patients for whom movement is difficult.

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Telemedicine is associated with a decline in patient waiting times, especially for patients with specific difficulties and restrictions encountered at the present time.[9] Physicians report that telemedicine has reduced the time spent by both doctors and patients when patients seek medical services physically.[10] Telemedicine has decreased the costs of face-to-face healthcare services. It has been highly praised for its benefits to people's overall quality of life.[11]

However, DiGiovanni *et al.*[12] reported that some doctors feel that telehealth may turn out to be more of a burden than a benefit to patients. Telemedicine is more costly than physical examination. Bashshur *et al.*[2] noted that this is simply because the parity laws that pertain to value-based care require a similar reimbursement for telehealth to that of a face-to-face visit. One of the primary considerations for a cost-effective method revolves around savings, which is not apparent in the case of telemedicine. The technology is set to assist a large number of patients in critical conditions on the side of healthcare. Physicians, on the other hand, may receive fewer relevant cases than expected. This has been attributed to over-utilization, which continually increases the operational costs to both the government and insurers.[2]

Patient care at the primary healthcare level is a constant necessity, and virtual consultations have proven to be the ideal solution for limiting COVID-19's potential spread and protecting patients and health professionals.[13-15]

This study seeks to determine physicians' satisfaction with the use of telehealth services in helping to overcome all issues regarding doctor–patient face-to-face visits. The study will help to determine how doctors are using telehealth as well as what they feel is the role of telemedicine in helping them to fight the COVID-19 pandemic.

Methods

Study design, setting, and time frame: A cross-sectional study was done on five hospitals and health centers practicing telemedicine in Saudi Arabia in the time from January to April 2022.

The following formula was used to calculate the sample size: [16]

Sample size = $Z^2P (1 - p) d^{2}$"

where *Z* is Z-value of the selected confidence level, *P* is the probability of the study, and *d* is the the selected confidence interval.

The values selected for the study were $Z = 1.96$ for the confidence level of 95%; $P = 0.9$, which allows for 20% error in sampling; and $d = 5\%$ from 100% to 95%. The target population was all the doctors at KSMC, primary health centers (PHCs), Imam Faisa, King Salman, and Cluster 1. These were all the hospitals and health centers practicing telemedicine in Saudi Arabia.

Study participants: The inclusion criteria were all physicians who had used telemedicine for more than 1 month to provide healthcare, including answering queries, refilling medications, ordering tests, and providing counseling and advice. And the exclusion criteria were healthcare professionals who had never used telemedicine before or had been using it for less than 1 month, and healthcare professionals who were not willing to participate.

Sampling methods: Simple random sampling methodology was followed and the respondents were selected by the lottery method of simple random sampling. All the respondents from a hospital or healthcare facility were assigned sequential numbers, and participants in the study were selected by random sampling of those numbers.

Data collection: A pre-designed questionnaire was used to collect data about participants' demographics, years of experience, proposed advantages of using of telemedicine services, attitudes of the participants toward the role of telemedicine in improving healthcare systems, their attitudes toward the use of telemedicine and barriers to using it.

Ethical considerations: In this study, the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional or regional) and with the Helsinki declaration of 1975, as revised in 2000. An ethical approval for the study was obtained from the research ethics committee of King Saud Medical City, Riyadh city, Saudi Arabia. Informed written and verbal consent was obtained from all participants before sharing in the study.

Statistical analysis: After collecting the data, the researchers used computer software to enter and analyze the data. Microsoft Office Excel was used for data entry and preparation of graphs and charts. The Statistical Package for the Social Sciences (SPSS) was used for data entry and performance of advanced statistical tests, such as comparisons of means and analysis of variance (ANOVA). SPSS was also used to prepare charts, tables, and graphs. Microsoft Office PowerPoint was used to prepare slides for presentation of the final results.

Results

We collected data from 151 physicians in Cluster 1 hospitals. Most were males (74.8%), with a mean age of 31.14 years; 88.1% were Saudi Arabian; 70.9% reported 0–5 years of experience, 17.9% reported 5–10 years of experience, and 11.3% reported more than 10 years of experience [Table 1].

Among the participants, 59.6% agreed that telemedicine improved their job effectiveness and performance, and 58.9% thought that telemedicine enabled them to accomplish tasks more quickly and made them more productive. Moreover, 41.1% of the participants had a neutral position considering whether telemedicine gave them greater control over their

work, and 15.9% did not think that telemedicine helped them to obtain current diagnosis and treatment plans for patients [Table 2].

We found that 68.9% of the participants had positive intention in adapting and using telemedicine services and 58.9% thought that they gained rich and diverse experience in delivery of telemedicine services. However, 19.9% of the participants did not think that telemedicine services positively supported the treatment plan, and 35.8% had a neutral position when considering whether telemedicine could provide them with more comprehensive care services [Figure 1].

We found that 71.5% of the participants thought that telemedicine was beneficial for their practice, and 69.5% agreed that using telemedicine enabled them to make contact with patients who seldom came to the hospital. Moreover, 63.6% agreed that telemedicine services helped them to take care of patients and to avoid several referrals; however, 17.9% disagreed with the last statement as well as the statement that telemedicine could help treat more patients with fewer clinicians (17.2%) [Table 3].

We found that 64.9% of participants reported that they felt comfortable communicating with patients using telemedicine; however, 34.4% did not feel at ease in adding telemedicine services to their existing clinical workflows. Moreover, 57.6% thought that telemedicine could save physicians' time in traveling to deliver care to patients; 27.8% reported that they were satisfied with telemedicine services, 28.5% were not satisfied, and 43.7% had a neutral position [Figure 2].

We found that 61.6% of participants thought that telemedicine was important for them, and 53.6% liked using telemedicine because of the similarity of the participants' values and society values underlying its uses. Moreover, 61.6% thought that it was important for them to take telemedicine courses, and 57% found no difficulty accessing and using the telemedicine system at work [Table 4].

Moreover, 43% of participants thought that interacting with telemedicine services was frustrating, and 40.4% thought that telemedicine could be compatible with the existing clinical outflow. Furthermore, 38.4% thought that telemedicine services did not require several trainings to be used effectively [Table 5].

Discussion

To provide services and fulfill the needs of physicians in the healthcare industry, it is important for telemedicine developers to develop systems that satisfy physicians as well as the needs of their patients. This will help in promotion of telemedicine services and improve the physical satisfaction level of physicians.[17] However, most previous studies have focused on patients' preferences and outcomes of care provided by telemedicine[18–22] rather than on the point of view of providers. These studies suggest that telemedicine has been more accepted by patients than by physicians,[23] with most providers citing technical barriers to the provision of care.[24–27] This study seeks to determine physician satisfaction with the use of telehealth services in helping to overcome all issues regarding doctor–patient face-to-face visits.

Table 1: Demographic features of the participants

Variable	No.	%
Gender		
Male	113	74.8%
Female	38	25.2%
Age		
Mean (SD)	31.14 (7.67)	
Nationality		
Saudi	133	88.1%
Non- Saudi	18	11.9%
Years of experience		
0-5	107	70.9%
5-10	27	17.9%
Over 10	17	11.3%

Table 2: Proposed advantages of using telemedicine services among physicians

Advantage	Strongly disagree/disagree		Neutral		Strongly agree/agree	
	No.	%	No.	%	No.	%
1. Using telemedicine service improves my job effectiveness and performance	2	1.3%	59	39.1%	90	59.6%
2. Using telemedicine service gives me greater control over my work	14	9.3%	62	41.1%	75	49.7%
4. Telemedicine services help me to get current diagnosis and treatment plans for patients	24	15.9%	64	42.4%	63	41.7%

Table 3: Attitudes of the participants toward the role of telemedicine in improving healthcare systems

Statement	Strongly disagree/disagree		Neutral		Strongly agree/agree	
	No.	%	No.	%	No.	%
1. Telemedicine is beneficial for my practice	10	6.6%	33	21.9%	108	71.5%
2. Using telemedicine enables me to get into contact with patients who seldom come to the hospital	11	7.3%	35	23.2%	105	69.5%
3. Telemedicine helps me to take care of patients and avoid several referrals	27	17.9%	28	18.5%	96	63.6%
4. Telemedicine helps me to treat more patients with fewer clinicians	26	17.2%	60	39.7%	65	43.0%

Table 4: Attitudes of physicians to the use of telemedicine

Statement	Strongly disagree/disagree		Neutral		Strongly agree/agree	
	No.	%	No.	%	No.	%
1. What telemedicine stands for is important for me	13	8.6%	45	29.8%	93	61.6%
2. I like using telemedicine because of the similarity of the participants' values and society values underlying its use	16	10.6%	54	35.8%	81	53.6%
3. In order for me to prepare for a future job, it is necessary to take telemedicine courses	12	7.9%	46	30.5%	93	61.6%
4. I have no difficulty accessing and using a telemedicine system at work	23	15.2%	42	27.8%	86	57.0%

Table 5: Barriers to using telemedicine among the participants

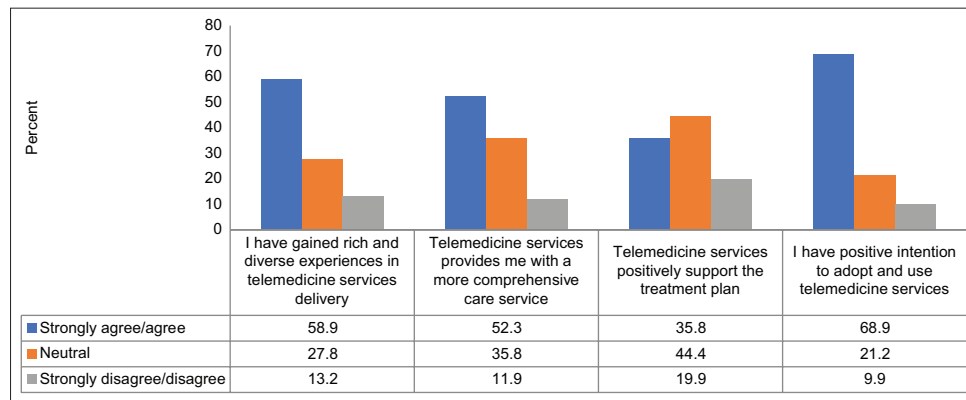| Statement	Strongly agree/agree		Neutral		Strongly disagree/disagree	
	No.	%	No.	%	No.	%
1. Telemedicine services are rigid and not flexible to interact with.	43	28.5%	64	42.4%	44	29.1%
2. Interacting with telemedicine services is often frustrating.	65	43.0%	35	23.2%	51	33.8%
3. Telemedicine services do not require several trainings to be used effectively.	58	38.4%	40	26.5%	53	35.1%
4. Telemedicine services are compatible with the existing clinical workflow	61	40.4%	43	28.5%	47	31.1%

	I have gained rich and diverse experiences in telemedicine services delivery	Telemedicine services provides me with a more comprehensive care service	Telemedicine services positively support the treatment plan	I have positive intention to adopt and use telemedicine services
Strongly agree/agree	58.9	52.3	35.8	68.9
Neutral	27.8	35.8	44.4	21.2
Strongly disagree/disagree	13.2	11.9	19.9	9.9

Figure 1: Attitudes of physicians to features of telemedicine

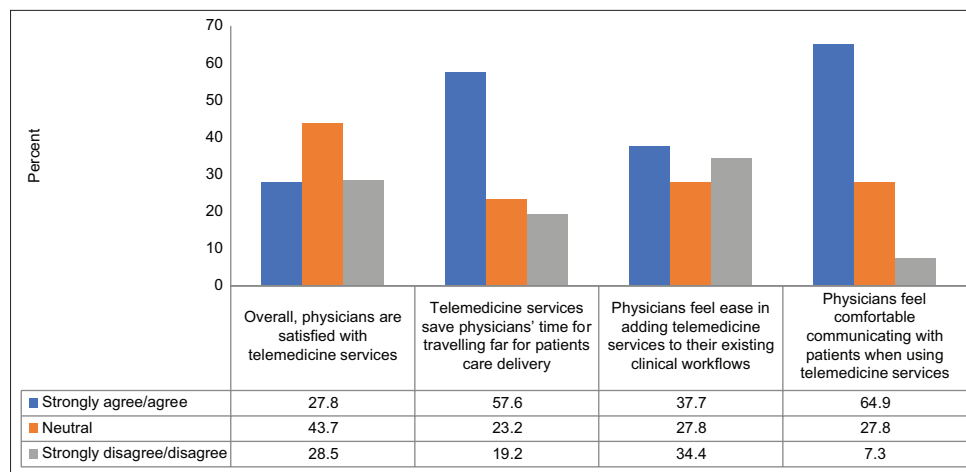|	Overall, physicians are satisfied with telemedicine services	Telemedicine services save physicians' time for travelling far for patients care delivery	Physicians feel ease in adding telemedicine services to their existing clinical workflows	Physicians feel comfortable communicating with patients when using telemedicine services
Strongly agree/agree	27.8	57.6	37.7	64.9
Neutral	43.7	23.2	27.8	27.8
Strongly disagree/disagree	28.5	19.2	34.4	7.3

Figure 2: Physicians' level of satisfaction with the use of telemedicine

The main results of this study were that most of the physicians agreed that telemedicine could improve their job effectiveness and performance and enable them to accomplish tasks more quickly and increase productivity. However, some physicians did not think that telemedicine could help in getting the current diagnosis and treatment plans for patients. Perhaps the most often-cited concern regarding telemedicine is the feeling of being unable to provide comparable care virtually. Zhang *et al.*[28] found that 92% of radiation oncology visits were conducted during the peak of the COVID-19 pandemic, when 71% of the

participants reported that there was no difference in their ability to treat cancer properly, while 55% of them found no difference in overall visit quality compared with traditional visits.

We found that there was a great positive attitude among physicians regarding the use of telemedicine (68.9%), where almost two-thirds of them thought that they gained experience in using telemedicine. Gillman-Wells *et al.*[29] found that 70% of plastic surgeons surveyed in the United Kingdom had a positive attitude toward the use of telemedicine. Srinivasan *et al.*[30] found that the respondents at the Stanford University's general primary care clinics believed that video visits could be an ongoing part of applied medical practice even after the end of the COVID-19 pandemic. We found that the main reasons for a positive attitude toward telemedicine among physicians were that telemedicine was beneficial for their practice, enabled them to get into contact with patients who seldom came to the hospital, reduced the need for several referrals, and saved time. Malouff *et al.*[31] found that physicians were favorable toward adopting the technology because of its cost effectiveness, it's saving of time for both physicians and patients, and the flexibility of scheduling telemedicine visits, all of which may help to improve the physician's quality of life.

However, despite the many advantages of telemedicine, it cannot replace personal medical care in all cases. Telemedicine should not be used in severely ill or unstable patients or when the physician's examination is needed. Our findings confirm those of other researchers,[32–34] some of whom say they prefer private interactions with their primary care provider because a disease is more likely to be diagnosed directly than by telemedicine. Appropriate use of health services is crucial for patients with choice and flexibility.[35] However, we found that a large proportion of physicians denied that telemedicine could help in treatment of more patients with fewer clinicians. We found that 27.8% of the physicians were satisfied with the use of telemedicine, while 28.5% were not satisfied and 43.7% had a neutral position. Moreover, we found that two-thirds of the physicians felt comfortable communicating with patients using telemedicine services. A meta-analysis by Chaudhry *et al.*[36] found no differences in surgeon satisfaction or patient-reported outcome measures between telemedicine and in-person visits. In a study by Salim Saiyed, a significant majority (64%) of physicians responded that they enjoyed telehealth video visits.[37] We found that most of the respondents thought that it was important for them to take telemedicine courses, and no difficulty was found in accessing and using the telemedicine system at work. However, about 40% thought that interacting with telemedicine services was frustrating. Telemedicine could be compatible with existing clinical outflow and did not require several trainings to be used effectively. The variety of preferences could be linked to the specialty's nature and the physician's capacity to provide healthcare.

The current COVID-19 pandemic has underlined the importance of primary healthcare as a key component of any successful health-system emergency response strategy. To ensure effective and safe healthcare delivery, it is critical to engage in deep learning and make adjustments to the health system.[13–15]

Limitations

This study had some limitations, including depending on self-reported questionnaires, which could cause some personal bias because some participants may not be honest in completing the questionnaire. Moreover, the study was conducted among physicians in Cluster 1 hospitals, and therefore, it is not possible to generalize the results over the Kingdom of Saudi Arabia.

Conclusion

This study revealed a high level of satisfaction among physicians in Cluster 1 hospitals, Riyadh, with the use of telemedicine. A positive attitude among most physicians toward applying telemedicine services among hospitals was found. Future research is needed to investigate how views toward telemedicine have changed since the epidemic, as well as how this virtual technology might be used to improve physicians' professional and personal well-being.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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