Assessment of physician's knowledge, perception and willingness of telemedicine in Riyadh region, Saudi Arabia

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ARTICLE INFO

ABSTRACT

Introduction: Telemedicine is the utilization of computer applications and telecommunication technologies to deliver clinical services remotely. The Ministry of Health in Saudi Arabia, recently established an e-Health strategy that includes the use of telemedicine in order to improve the accessibility and quality of care among patients and healthcare providers.

Objectives: The present study aimed to assess the knowledge and perception of telemedicine and its applications among physicians. Secondly, to evaluate their willingness towards adopting telemedicine in clinical practice.

Methods: The study is a cross sectional conducted in four hospitals; King Abdulaziz Medical City, King Faisal Specialist Hospital and Research Center, King Saud Medical City and King Saud University Medical City in Riyadh, Saudi Arabia. The survey questionnaire was a self-administered, which was adopted from previous studies. The questionnaire consists of; access to a computer and its literacy, knowledge, perceptions and willingness of telemedicine.

Results: A total of 391 physicians of which male (301; 77.0%) and female (90; 23.0%) completed the questionnaire. Half of the participants never used personal computers or laptops at home. Interestingly, 89.2% of them have two or more smart devices. Participants have average knowledge about telemedicine technology (46.1%). Nearly, 77% of the professionals believed that continuous training is necessary for the use of telemedicine (P = 0.01). The highest level of perception was (90%) for telemedicine as a viable approach for providing medical care services to patients. More than 90% of specialties professional agreed that telemedicine can save time, money and further believed information and communication technology (ICT) has a potential role in healthcare. Overall, 70% of physicians reported a very low number of conferences, speeches or meetings held regarding telemedicine technology in their working places. Main issues reported in adopting telemedicine are patient privacy, the high cost of equipment, lack of suitable training, and lack of consultation between information technology expert and clinicians.

Conclusions: Despite the fact that the majority of professionals have two or more smart devices and are communicating with patients via email or social media. However, the majority of medical professionals still have low knowledge of telemedicine technology. In addition, most of the participants showed positive perceptions of telemedicine and are willing to adopt it in clinical practice. The major reported barriers for the adoption of telemedicine were privacy issues, lack of training, cost and issues related to information and communication technology.

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Introduction

In recent decades, there has been a great advancement in Information Technology (IT), telemedicine, telehealth and e-health in healthcare systems. Telemedicine and telehealth are important tools for elaboration in healthcare delivery using smartphones, email, video conferencing and other tools especially in rural areas. Telemedicine is the use of electronic information and communication technology to provide and support clinical care remotely, while patient support and professional health related education, public health and health administration when distance separates the participants is considered as telehealth [1–4]. Telehealth and telemedicine play a vital role in patient-centered healthcare delivery in diagnosis, and management of chronic diseases and future treatment plan [5]. Further, telehealth enables real time health condition monitoring of chronic diseases by enabling the recording of physiological signs that cannot be observed during clinical visits [6].

The World Health Organization (WHO) defines e-health as the cost effective use of Information and Communication Technology (ICT) in the support of health services, health surveillance, education, knowledge and research [4]. Even though having the advantages of telemedicine, still there are many obstructs and challenges to its adoption, specifically from physicians and other health professions which would vary depending on the organization or the country [6–9]. Apart, there are many possible reasons why the implementation of telemedicine continues to be challenging despite the available literature [7–11]. The success of any new technology depends on many accomplishments including professionals' knowledge, skills, and attitudes and working environment in the health organization. Therefore, it is important to make professionals comprehend the new concept of telemedicine and evaluate how far they are professionally ready to accept and provide telemedicine services.

Telemedicine is relatively a new concept in Saudi Arabia, the Ministry of Health (MOH), recently established an e-Health strategy that includes the use of telemedicine in order to improve the quality and actability of health care services among patients and healthcare providers particularly in rural/remote areas [12,13]. In order to achieve the goals of telemedicine, MOH launched the national project for telemedicine called as Saudi Telemedicine Network (STN) covering all healthcare facilities in collaboration with Canada Health Infoway and Ontario Telemedicine Network [13].

In the past few years, the use of telemedicine has become widespread among health professionals in various hospitals in Saudi Arabia. An extensive review of literature in the field of telemedicine in Saudi Arabia resulted in few publications in the identification of barriers, challenges of telemedicine, knowledge and attitude of health professionals towards telemedicine [9,12,14]. The present study aims to assess the knowledge of physicians about telemedicine and its applications. Secondly, to evaluate their perceptions and willingness towards adopting telemedicine in their clinical practice in various specializations.

Methods

A cross sectional survey study carried out in four main hospitals, King Abdul Aziz Medical City, King Faisal Specialist Hospital and Research Center, King Saud University Medical City and King Saud Medical City in Riyadh, Saudi Arabia, from April 2016 to July 2016. The study received ethical approval from The College of Medicine, King Saud University (KSU). A self-administered questionnaire distributed to 450 physicians in four hospitals. In total of 391 participants returned the questionnaire with a response rate of 86.9%. Participants were briefed on the study and signed informed

Table 1
Demographic characteristic of participating physicians N = 391.

S.N	Characteristics	N	%
1	Age		
1.1	Between 20–30 years	240	61.4
1.2	Between 21–40 years	86	22.0
1.3	Between 41–50 years	40	10.2
1.4	51≤	24	6.1
2	Gender		
2.1	Female	90	23.0
2.2	Male	301	77.0
3	Nationality		
3.1	Saudi	284	72.6
3.2	Non Saudi	107	27.4
4	Professional ranking		
4.1	Consultant	85	21.7
4.2	Specialist	150	38.4
4.3	Register	16	4.1
4.4	Resident	61	15.6
4.5	Intern	7	1.8
5	Specialty		
5.1	Dermatology	2	0.5
5.2	Emergency	17	4.3
5.3	Family medicine	13	3.3
5.4	Medicine	115	29.4
5.5	Obstetrics and gynecology	17	4.3
5.6	Orthopedics	23	5.9
5.7	Pediatrics	37	9.5
5.8	Radiology	14	3.6
5.9	Surgery	50	12.8
5.10	Others	101	25.8

consent. The study included physicians who were accessible during the data collection period. The study sample included professionals such as consultants, specialist, registrar, residents and interns.

The study questionnaire was designed and modified based on previously published research articles [15,16]. A group of four member experts who have experience in the field of telemedicine evaluated the modified questionnaire and was adopted in English only. The questionnaire consists of mainly five sections: (1) Demographic characteristics; (2) General Information about access to computers and its literacy; (3) Knowledge; (4) Perceptions; and (5) Willingness about telemedicine. The questions rating for knowledge were measured by three likert type scale, 1= low; 2= average and 3= high. Similarly, perception and willingness were measured by a scale; 1= agree and 2= disagree. The neutral values were omitted in this study. The statistical package for social sciences version 20 (SPSS Inc, Chicago, IL, USA) was used for data analysis. All parameters in this study were expressed in frequencies and percentages. For comparison of categorical data, chi square test was used and statistically significant differences were considered at P < 0.05.

Results

A total of 391 participants, males (301; 77.0%) and females (90; 23.0%) participated in the study. The majority of participants were Saudi's (72.6%), Table 1 shows the demographic features of participating physicians. The majority of participants (61.4%) were between the age group of 20 and 30 years. Specialist formed (38.4%) of the sample followed by the consultant (21.7%).

Table 2 shows physicians' computer literacy and access. The study showed that 49.6% of the participants never used personal computers or laptops at home. Interestingly half of the professionals have three or more smart devices. Nearly 69% of them never search for health information online. About 47.8% of professionals are concerned about possible legal issues with an interacting patient with online means of communication.

The results show that (46.1%) of the participants have low knowledge about telemedicine technology among various specialties. Table 3 shows the knowledge of telemedicine application and

Table 2
Factors related to computer access and literacy by specialty in percentages, P(0.01)values to indicate significance difference.

Questions	Levels	Emergency (%)	Medicine (%)	Obstetrics and gynecology (%)	Orthope- dics (%)	Pediatrics (%)	Surgery (%)	Others (%)	Total (%)	P value
1. How often do you use PC/Laptop at home?	1. Always or often	0.0	4.4	11.6	0.0	11.6	10.2	13.0	8.4	
	2. Sometimes or rarely	58.1	46.9	34.9	52.5	24.2	42.2	39.3	41.9	0.255
	3. Never	41.9	48.6	53.5	47.5	64.2	47.7	47.6	49.6	
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
2. How often do you search for information online?	1. Always or often	7.0	3.4	7.0	5.1	0.0	0.0	3.8	3.1	
	2. Sometimes or rarely	41.9	23.5	25.6	22.0	24.2	38.3	27.8	27.6	0.663
	3. Never	53.5	73.1	72.1	72.9	75.8	61.7	68.0	69.3	
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
3. How often do you shop online?	1. Always or often	23.3	34.0	41.9	25.4	45.3	32.0	36.4	35.0	
	2. Sometimes or rarely	60.5	52.4	53.5	67.8	41.1	47.7	51.5	51.7	0.929
	3. Never	18.6	13.9	7.0	5.1	13.7	20.3	12.1	13.3	
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
4. In your role as a doctor, how often do you interact with patients via e-mail or through social media?	1. Always or often	79.1	70.7	72.1	64.4	77.9	66.4	74.9	72.1	
	2. Sometimes or rarely	14.0	22.4	23.3	30.5	18.9	32.0	18.9	22.3	0.77
	3. Never	11.6	6.8	7.0	5.1	3.2	2.3	5.9	5.6	
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
5. How many smart devices do you have?	1) 0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.3	
	2) 1	11.6	12.9	11.6	13.6	3.2	12.0	8.3	10.2	
	3) 2	41.9	38.4	53.5	33.9	53.7	39.2	43.2	41.9	0.926
	3 or more than 3	48.8	48.6	34.9	52.5	43.2	48.8	47.6	47.3	
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
6. Have been questioned by patients about online means of contacting you?	1) Yes	63.6	64.8	52.3	55.9	65.3	59.7	66.1	63.5	
	2) No	34.1	35.5	47.7	44.1	34.7	39.5	34.2	36.5	0.92
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
7. Do you use social media/Internet for the following purposes (Select all that applies)	1) Obtaining information to give a patients	28.7	19.1	21.1	27.3	22.1	18.3	18.6	21.7	
	2) Patient consultation	13.3	19.9	29.3	19.0	18.4	23.3	18.8	10.4	
	3) Literature search	26.7	17.5	21.3	25.4	23.9	20.6	19.1	31.0	–
	4) Maintain your knowledge and skills	31.2	17.7	19.6	21.6	19.2	20.0	20.9	31.0	
	5) None of the previous options	0.0	25.9	8.7	6.8	16.4	17.8	22.7	5.8	
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
8. Are you concerned of possible legal issues around interacting with patient online?	1) Yes	40.9	52.0	47.7	44.1	37.9	41.9	50.1	47.8	
	2) No	59.1	47.6	52.3	55.9	62.1	58.1	49.3	52.4	0.92
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	

Table 3
Factors related to knowledge of telemedicine by specialty in percentages, P values to indicate significance difference.

Questions	Levels	Emergency (%)	Medicine (%)	Obstetrics and gynecology (%)	Orthopedics (%)	Pediatrics (%)	Surgery (%)	Others (%)	Total (%)	P Value
1. To what extent are you familiar with telemedicine technology?	Low	41.9	54.1	30.2	47.5	16.8	46.1	50.0	46.1	
	Average	46.5	36.4	41.9	30.5	64.2	38.3	35.5	39.4	0.098
	High	14.0	9.5	30.2	22.0	18.9	16.4	14.2	14.5	
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
2. To what extent are you familiar with the medical applications of telemedicine technology?	Low	65.1	58.2	23.3	42.4	22.1	46.1	48.5	47.8	
	Average	23.3	29.6	53.5	30.5	62.1	39.8	38.5	37.9	0.109
	High	14.0	12.2	23.3	27.1	16.8	14.1	13.0	14.3	
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
3. How often conferences, speeches or meetings held in your workplace regarding telemedicine technology?	Low	69.8	74.8	72.1	78.0	61.1	69.5	65.1	69.5	
	Average	23.3	19.0	18.6	22.0	18.9	24.2	28.7	23.3	0.232
	High	7.0	6.1	11.6	0.0	18.9	6.3	5.9	7.2	
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
4. To what extent are you familiar with telemedicine tools?	Low	40.9	59.0	29.5	55.9	43.2	46.1	57.1	53.1	
	Average	47.7	32.9	47.7	25.4	40.0	46.1	36.6	37.4	0.106
	High	13.6	7.8	22.7	16.9	15.8	7.8	6.0	9.5	
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
5. To what extent are you familiar with telemedicine guidelines	Low	53.5	70.4	53.5	66.1	64.2	74.2	64.2	66.5	
	Average	34.9	23.5	34.9	30.5	32.6	24.2	29.6	27.9	0.816
	High	11.6	6.1	11.6	5.1	3.2	2.3	5.9	5.6	
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
6. To what extent are you familiar with the use of telemedicine in other countries?	Low	70.5	60.7	47.7	55.9	51.6	61.1	55.3	57.6	
	Average	22.7	33.9	47.7	35.6	40.0	34.9	28.7	33.1	0.417
	High	6.8	5.1	6.8	8.5	8.4	4.0	16.0	9.2	
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
7. To what extent is continuous training in the use of telemedicine necessary for doctors?	Low	22.7	25.8	13.6	16.9	11.6	19.8	25.7	22.5	
	Average	34.1	28.8	18.2	25.4	22.1	26.2	32.0	28.5	0.01*
	High	40.9	45.1	70.5	57.6	68.4	53.2	42.3	48.9	
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	

* P (0.01).

Table 4
Factors related to perception of telemedicine by specialty in percentages, P values to indicate significance difference.

Questions	Levels	Emergency (%)	Medicine (%)	Obstetrics and gynecology (%)	Orthopedics (%)	Pediatrics (%)	Surgery (%)	Others (%)	Total (%)	P Value
1. Telemedicine is a viable approach for providing medical care services to patients	Disagree	6.8	8.8	6.7	8.5	3.1	4.0	6.8	6.8	0.938
	Agree	93.2	91.2	93.3	91.5	96.9	96.0	93.2	93.2	
2. There is a potential role for ICT in the health care	Disagree	6.8	4.4	6.8	5.1	3.1	2.4	5.3	5.3	0.852
	Agree	93.2	95.6	93.2	94.9	96.9	97.6	94.7	94.7	
3. Using of telemedicine system can save time and money	Disagree	6.7	6.1	0.0	8.3	0.0	2.4	3.3	3.3	0.364
	Agree	93.3	93.9	100.0	91.7	100.0	97.6	96.7	96.7	
4. Telemedicine system can save efforts	Disagree	11.4	9.8	18.2	0.0	3.2	6.3	3.9	3.9	0.371
	Agree	88.6	90.2	81.8	100.0	96.8	93.7	96.1	96.1	
5. The applications of ICT in healthcare is already available	Disagree	34.9	36.1	35.6	47.5	21.9	18.3	32.8	32.8	0.149
	Agree	65.1	63.9	64.4	52.5	78.1	81.7	67.2	67.2	

tools with specialties. The study reveals that 53.1% of professionals are not familiar with telemedicine tools and its medical applications and technology. Interestingly, 69.5% of them reported that a very low number of conferences, speeches or meetings held regarding telemedicine technology in their working places. In total 77.4% of professionals reported that continuous training is necessary for the use of telemedicine (P = 0.01).

The study showed that a high level of perception (90%) for telemedicine is observed. A high perception (more than 90%) for telemedicine as a viable approach for providing medical care services to patients and agreed that information and communication technology (ICT) plays a potential role in health care. More than 90% of specialties agreed that telemedicine could save time and money. More than 60% of participants agreed that the application of ICT in health care is already available in their working hospitals (Table 4).

The majority of the participant's agreed that their colleagues are willing to implement telemedicine and further would like to watch a procedure as it is taking place (between 90 to 95%). In addition, more than 90% of participants in all specialties agreed to consult with large centers in their specialization using telemedicine technology. Interestingly more than 70% of participants agreed that the telemedicine system is possible to integrate within the existing system already available in their working hospitals (Table 5).

With respect to major factors for not adopting telemedicine, most of the participants are concerned (90%) among all groups about patient privacy, the high cost of equipment, lack of suitable training and lack of consultation between information technology expert and clinicians (Fig. 1).

Discussions

Telemedicine is adopted in Saudi Arabia mainly to improve the quality and actability of health care services among patients particularly in rural and remote areas [12]. In today's world of information technology, the use of telemedicine in healthcare is becoming an important tool among health care systems. Telemedicine services can be advantageous to those who have limited access to health care services or have limited healthcare facilities in rural areas compared to urban cities. The present study was conducted in main hospitals to assess a physician's level of knowledge, perception and willingness of telemedicine.

Interestingly, in the current study, 47.3% have three or more smart devices and more than 89% of professionals have two or more smart devices that are higher percentage or comparable when compared to other studies which reported 87% and 91% of professionals are using a smartphone or tablet device in their workplace [22,17]. The current study findings showed that 49.6% participants never used laptops or personal computers at home, which could be in part to the widespread of mobile devices that may combine both mobile phone features and functions and the advanced computing features enabling users to access a number of software applications.

Almost 72% of various categories of professionals in the current study always interact with patients via email or through social media. Similar findings reported of physicians using social media and email to communicate directly with patients for better clinical care [18,19]. Health professionals can use social media to have better health interventions, motivate and develop patient centered networks, up to date awareness of health policies and discoveries, and provide better health in the community [20]. In addition, it was reported that approximately, 66% of doctors have their own tablet computer, in which 54% use in their clinical practices [22]. However, establishing patient physician relationship via email or social media applications such as blogs, microblogs and media-sharing sites, reported medically and ethically objectionable [19,21]. The current study presents similar findings of possible concerns for possible legal issues with an interacting patient with online means of communication such as email or social media [19,21]. In contrast to similar studies, this study results showed that smartphones and tablets have replaced desktop as the preferred computing devices among health professionals in order to maintain their knowledge and skills to keep abreast of the latest information in the field of medical sciences [22,23].

One of the most significant findings in this study is that various specialties medical professionals have (46.1) with low knowledge about telemedicine technology. Similar findings showed that physicians and surgeons have little knowledge about telemedicine [24,25]. In a previous study, it was reported that health professional teaching faculty in the hospital showed the awareness, knowledge, attitude and skills is not adequate [26]. In terms of accessing the telemedicine tool, results showed that 46.9% of professionals are familiar with telemedicine tools. This percentage of accessing tools is higher in the current study when compared with similar studies, which showed a lower percentage of clinicians, nurses, general physicians and specialists are being familiar with telemedicine applications [15,27]. Further, the study revealed that lower percentage of conferences, workshops, training and meetings were held concerning the advantageof of telemedicine and its applications in the four hospitals, which could explain why participants in this study have average knowledge of telemedicine. Nearly 77% of the professionals believed that continuous training is necessary for the use of telemedicine in order to pursuit updated knowledge, similar findings were reported that continuous training would be the most competent way to increase knowledge among health professionals [15,27]. Therefore, the success of the implementation of telemedicine services depends very much upon the users' knowledge, especially medical professionals.

This study reveals the highest level of perception (90%) among all specialties professional that telemedicine is a viable approach for providing medical care services to patients. Similar results reported that telemedicine is a useful distance approaching method providing medical care services to patients [28]. However, a previous study has reported a moderate level of perception among clini-

Table 5
Factors related to willingness about telemedicine by specialty in percentages, P values to indicate significance difference.

Questions	Levels	Emergency (%)	Medicine (%)	Obstetrics and gynecology (%)	Orthopedics (%)	Pediatrics (%)	Surgery (%)	Others (%)	Total	P value
1. I would like to consult with the large centers in my specialty, whilst I am in my own hospital.	Disagree	10.4	4.2	6.4	0.0	3.0	6.0	5.8	5.2	0.986
	Agree	89.6	95.8	93.6	100.0	97.0	94.0	94.2	94.8	
2. I would like to be able to watch a procedure as it is taking place	Disagree	6.8	9.7	0.0	5.0	3.1	8.5	7.6	7.2	0.402
	Agree	93.2	90.3	100.0	95.0	96.9	91.5	92.4	92.8	
3. The implantation of telemedicine technology is appropriate due to the current conditions in the hospitals	Disagree	18.2	21.8	13.3	22.0	16.7	6.2	16.8	16.9	0.512
	Agree	81.8	78.2	86.7	78.0	83.3	93.8	83.2	83.1	
4. I think that my colleagues would like to wiling to implement the telemedicine technology	Disagree	18.2	8.9	0.0	10.0	0.0	6.2	11.5	8.5	0.138
	Agree	81.8	91.1	100.0	90.0	100.0	93.8	88.5	91.5	
5. Telemedicine system can be integrated within the existing system	Disagree	23.3	12.3	13.3	22.0	18.9	22.5	12.1	15.1	0.853
	Agree	76.7	87.7	86.7	78.0	81.1	77.5	87.9	84.8	
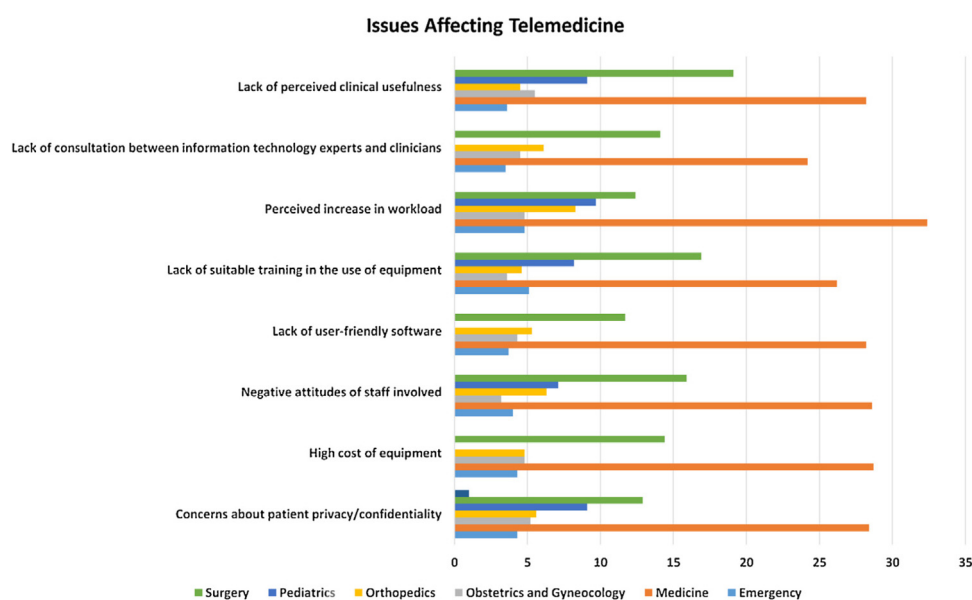
Fig. 1. Issues affecting the adoption of telemedicine from physicians views by specialty in percentages.

cians in terms of advantages of using telemedicine technology [15]. On the other hand, more than 90% of participants believed that telemedicine could save time, money and efforts. In addition, the current study results further revealed that participants' physicians believed that ICT had a potential role in the healthcare system to become more efficient and effective. Inconsistent, similar findings, that telemedicine will save time and money by bringing the medical consultation of experts to the physicians while they remain in hospitals. Consequently, this can save the lives and time of patients and money for the healthcare system [15,28]. Majority of professionals agreed that the application of ICT in health cares is already available in four hospitals; however, appropriate training is required among clinicians to assist in future utilization of telemedicine.

The present study revealed that 95% of participants believe that their colleagues are willing to adopt telemedicine in their work places. The finding of the current results is in line with another study that reported physicians (99%) is agreeable to the use of telemedicine service and suggesting their colleagues would desire to use this technology [28]. However, one previous study reported that willingness to adopt telemedicine needs to be examined in a rural area since it has different factors to measure [29]. Findings in the study evident that various health professionals affirmed to

consult large centers especially with global experts in their specialization such as cardiology, orthopedics, dermatology and pediatrics using telemedicine technology by working in their own hospitals. These outcomes will have a positive impact on the medical practice, particularly on its referral pattern and time management [30].

One of the interesting findings in the current study reported four major concerns by various health professionals from four main hospitals against the adaptation of telemedicine. These are; patient privacy, the high cost of equipment, lack of suitable training and lack of consultation between information technology expert and clinicians. All these stated factors are inconsistent with various literature published [9,15,28,31–33]. Almost no telemedicine projects have been successfully implemented on a large scale due to several reasons [34]. Hence, it is recommended that policymakers consider the given factors alleged in the current study to ensure the best possible measures to make telemedicine more sustainability in the future. In contrast, the telemedicine technology can be useful to all specialists of healthcare professionals and successful implementation depends upon improving awareness among various medical professionals regarding various telemedicine tools and its practice. The present study reveals important information on the level

of computer literacy, knowledge and perception of telemedicine among various specialties of medical professionals.

This study was administered among various medical professionals working in the selected four hospitals in the Riyadh region and the results cannot be attributed to the whole health professional population. In addition, the study did not discuss any culture issues towards telemedicine. Further, future studies should examine other additional factors such as culture issues reported other than in this study. Recommend to study various implementation and adoption process of telemedicine in various healthcare organizations and different settings.

In conclusion, despite the fact that the majority of professionals have two or more smart devices and are communicating with patients via email or social media. However, the majority of medical professionals, still have low knowledge of telemedicine technology. In addition, most of the participants showed positive perceptions towards telemedicine and a willingness to adopt it in clinical practice. However, factors such as privacy, equipment cost, lack of training, information and communication technology (ICT) issues are major barriers to the adoption of telemedicine in the hospitals. Participating physicians suggested that there should be increased in the awareness through workshops, seminars and training and they believe that telemedicine could be a vital tool to improve health care services and quality.

Acknowledgements

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