

COVID-19 Turning Threat into Opportunities: Knowledge and Attitude of Physicians toward Relative Advantages of Telemedicine

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Abstract

This study aimed to assess the knowledge and attitude of physicians toward telemedicine, examine the readiness of organizational aspects of telemedicine application, and investigate the knowledge and attitude of physicians toward telemedicine relative advantage moderated by organizational aspects during infectious disease outbreaks such as COVID-19. A cross-sectional descriptive analytical study was done using a validated questionnaire distributed to a purposive sample of 320 Jordanian physicians. Structural equation modeling was done using AMOS 22.0. Results supported a claim of good fit of the structural model and revealed a positive and significant effect of both knowledge and attitude on relative advantage of telemedicine. Moreover, there was a significant impact of organizational aspects as a moderator of the relation between knowledge and attitude and the relative advantages of telemedicine. These results contributed to existing literature and are beneficial to policy makers and practitioners at the healthcare sectors.

Keywords: Knowledge, Attitude, Relative Advantages, Telemedicine, Physicians, COVID-19

Introduction

Covid-19 outbreak has been labelled a pandemic by the WHO (World Health Organization) in the early months of 2020. As it started in Wuhan city, China and rapidly spread to all continents to become a global pandemic. According to WHO (World Health Organization)

& R&D Blueprint, 2020), COVID-19 is a highly contagious disease caused by the newly discovered coronavirus. “Moreover, it can cause severe pneumonia, mild to moderate respiratory illness, as well as it can cause death particularly among older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness” WHO (World Health Organization) & R&D Blueprint, 2020). The sheer speed for the COVID-19 outbreak, was the strong reason that push all countries to follow a policy of social distancing to enable health care systems to handle patients efficiently (Portnoy et al., 2020). The most expressive example and leader in the social distancing policies, is the Chinese Government where people were encouraged to stay home and avoid mass gatherings; no large public events, closing schools, universities, religious places, everything has been stopped unless the health care system. Furthermore, more restrictive procedures such as isolation and quarantine have been taken to enhance effectiveness (Chen et al., 2020). On 2 March, 2020, the Prime Minister of Jordan reported the first case of coronavirus. According to Ministry of Health, Jordan Government has started to announce preventive measures to face coronavirus taking advantage of the experiences of the other infected countries; some of these measures were signing an agreement with Facebook and dedicate a website “corona site” for all news related to coronavirus to enhance an awareness campaign regarding COVID-19 between Jordan citizens. Moreover, all air travel from/to the Kingdom was halted until further notice, except for commercial cargo, and many other strict measures to guarantee the social distancing policy such like preventing all public events and gatherings, halting prayer in all the mosques and churches upon the Fatwa from Council and Council of Churches (Ministry of Health 2020). According to this, the Jordanian government announced strict policies to decrease the outbreak of COVID-19, halting any event could cause gatherings and ensure all people stay home (Arraf 2020).

When social distancing is encouraged to reduce the spread of coronavirus and mitigate severity especially, COVID-19 is proving to be more infectious than any other acute respiratory syndrome (Portnoy et al., 2020). During this global pandemic, and the necessity for the social distancing, telemedicine is effectively proved to be a solution for controlling the spread of COVID-19 (Siwicki, 2020). Telemedicine gathered between the technology innovation and the health care services and became one of the major innovations in health service. Moreover, it is one of the important solutions for the changes in health care systems such like the greater demands on health care (David Novillo-Ortiz, 2016). Thus, in the COVID-19 circumstances telemedicine would be the possible solution to allow the expert medical knowledge to reach distant people where they should stay home (Biruk & Abetu, 2018).

One of the major benefits of telemedicine is improving healthcare quality; through enhancing the quality of diagnosis and treatment by using the video conferences between physicians and specialists and consultants in remote locations (Ahmad et al., 2012). Telemedicine in the context of COVID-19 acts as a medical triage by determining which cases are very urgent to refer to ER, and which cases can be held by pediatrician’s instructions with a digital medicine prescription (Haimi et al., 2018). As coronavirus disaster is not the first, and nor will it be the last, and since such contagious epidemics can’t be predictable then telehealth will play the crucial rule in emergency responses (Smith et al., 2020). This is what countries really need at the coronavirus crisis to help the health care provider deal with high emergency situations of an infected people whose number are gradually increasing day after day. The aim of our study is to investigate the knowledge and attitude of physicians toward telemedicine relative advantage during infectious disease outbreaks such as COVID-19.

Literature Review

Knowledge of Telemedicine

Telemedicine has several strengths that can enrich an emergency response during infectious disease outbreaks such as COVID-19, since it decreases the risk of infection caused by close contact. For telemedicine to become a consistent part of the health system, it first needs to ensure that clinicians are aware and knowledgeable of telehealth. In fact, healthcare professionals' knowledge is crucial factor that can influence its future success. This section presents a review of recent literature on the influence of clinicians' knowledge on the use of telemedicine. Most previous studies as well as current work demonstrated that many clinicians reported they had few knowledge of telemedicine innovation (Ayatollahi et al., 2015; Demartines et al., 2000; El-Mahalli et al., 2012; El Gatit et al., 2008; Haimi et al., 2018; Shahpori et al., 2011). A previous study by (Ahmad et al., 2013) showed that poor training of clinicians in using the available systems necessary for the implementation of telemedicine technology had affect developing the tele-health at hospitals. Moreover, he emphasized that in order to overcome this obstacle, a huge deal of training to clinicians must be conducted. In addition, in a conducted previous study, most of clinicians believed that telemedicine technology was impacted by the ease of its use which impacts the effective use of the technique. The awareness of telemedicine appears to be hugely impacted by the limited knowledge of clinicians of the technology (Ayatollahi et al., 2015).

In the main, various studies have revealed the influence of the system's features on the real system utility. For instance, previous research has provided evidence that insufficient knowledge about the services and advantages of telemedicine and the hardness in its implementation are among the highest factors to adopt telemedicine (El-Mahalli et al., 2012). Similarly, Influential contributions have been made by (Zayapragassarazan & Kumar, 2016) where they revealed the common complications encountered telemedicine users are inadequate organizing skills and establishing expertise. The results were consistent with a preceding study that was carried out in Ethiopia, where telemedicine is a novel model in health care service. The author claimed that telemedicine has not been as much satisfactory and successful due to the insufficient training and education given for the physicians (Biruk & Abetu, 2018). This has been discussed earlier in previous studies where they have emphasized that the attainment of any innovative technology such as telemedicine relies on several aspects including the concept understanding and knowledge, expertise, and the surrounded work environment by the involved physicians since it is substantial to train the new concept and evaluate to what extent they are well prepared to receive and deliver telemedicine services (Demartines et al., 2000; Edirippulige et al., 2006; Jayasinghe et al., 2016).

In short, the literature pertaining to users' knowledge of telemedicine, strongly suggests that sufficient knowledge of telemedicine by clinicians is a fundamental prerequisite in order to utilize and deploy telemedicine technique and should be considered prior to the initiation of telemedicine program (Ayatollahi et al., 2015; P. J. H. Hu et al., 2002). Additionally, (El-Mahalli et al., 2012) suggested that we can increase the physicians' awareness and tendency towards effective application and deployment of telemedicine through better distribution of telemedicine information about research and development by initiating national educational programs and trainings to improve the skills of healthcare providers.

Awareness can also be achieved by running seminars, workshops and conferences. Furthermore, (Zayapragassarazan & Kumar, 2016) insisted that the most recent need nowadays is to let health care providers have a clearer and more realistic picture of their attitude towards telemedicine by conducting education and training programs for the teaching faculty, clinicians,

residents and medical students.

Attitude towards telemedicine

An issue worrying healthcare system nowadays is the acceptance of telemedicine to providers. There is a real need to determine the acceptability of telemedicine before starting an investment otherwise huge funds will be wasted (Agomo, 2008). (Wade et al., 2014) claimed in their study that the success of telemedicine depends on the extent of clinicians' willingness to adopt this new technology. Additionally, a previous researches asserted that clinicians' perception towards telehealth is a significant factor that impacts the development and success of its programs. For instance, the users' positive perception for telemedicine may help in a smooth and efficient implementation (Ayatollahi et al., 2015; Levy & Strachan, 2013). Also, it has been previously reported in the literature by (P. J. H. Hu et al., 2002) that the medical staff attitude towards telemedicine technology and their awareness towards its risks were very important for deciding if this technology should be used or not in the healthcare systems. In the same way, another previous empirical studies were conducted and showed that attitude and perception of physicians are important factors to assess telemedicine applicability (Ayatollahi et al., 2015; Shiferaw & Zolfo, 2012; Ward et al., 2008; Whitten et al., 2010; Zayapragassarazan & Kumar, 2016).

Influential contributions have been made earlier revealed that the reasons behind the unwillingness of clinicians to accept telehealth are due to complexity, being disruptive and requires clinicians to learn new methods of consulting (Ayatollahi et al., 2015; Bagot et al., 2015; Green et al., 2016; Presseau et al., 2009; Wade et al., 2014). Other issues were related to ethical concerns, as most of clinicians worries about security and confidentiality of patient data (Idowu et al., 2005; Presseau et al., 2009). To solve ethical issues, (Zayapragassarazan & Kumar, 2016) suggested to implement adequate knowledge and training of telemedicine ethics and medico-legal issues to providers. In addition to that, many empirical studies investigated other reasons such as, Quality of care, financial, reimbursement, restrictions of coverage, communications, technical constraints, and payment for procedures by non-physicians (David Novillo-Ortiz, 2016; Haugh, 2003; Moore, 1996). Also, it was reported in literature that many clinicians have difficulties using telemedicine when they have limited time and competing demand which influence their utility to this technology and as a consequence make it less acceptable (Sauers-Ford et al., 2019). On the other hand, a prior researches examined the ease of use, proper training programs, for the new technology system on the users' acceptance of telemedicine (Meher et al., 2009; Saigí-Rubió et al., 2014). In this area of examination, the focus has been centered on improving physicians' awareness by suggesting many solutions, such as, proper technology application model, include telemedicine during internship in the UG & PG curriculum to develop the proper attitude and knowledge (Ketikidis et al., 2012; Zayapragassarazan & Kumar, 2016). However, despite the limited use of the system, limited knowledge and experience, and even when the participants did not use telemedicine, the results demonstrated that most of physicians have positive attitude towards telemedicine due to its advantages. Moreover, they viewed telemedicine as useful and valuable technology as it increases the reach of patients to healthcare services, enhances the quality of patient care and management and saves both time and money (Biruk and Abetu 2018; Breen et al. 2010; Hu, Chau, and Liu Sheng 2002; Shittu et al. 2007; Zayapragassarazan and Kumar 2016). Additionally, one study demonstrated that younger doctors were more concerned in using telemedicine for case discussions and for continuing education than senior consultants (Meher et al., 2009). However, one previous empirical study revealed that there was no agreement among participants for when telemedicine should

be used, where some advised that it should be used for severely ill patients and others believed it should be used for patients who are stable or whose health conditions are not clear or to avoid unnecessary transfers and use of needless intensive care (Sauers-Ford et al., 2019). In light of this, our study was conducted to add to the (Jennett et al. 2003; Simpson 2018). (Kiberu et al., 2019) defined readiness as the extent to which an institution is prepared to deal with changes resulting from the implementation of new technology. Organizational aspects include; management and control, process, structure, and budget (David Novillo-Ortiz, 2016). A greater understanding to aspects of organizational readiness could help better utilization of resources and elimination of implementation errors (Jennett et al., 2003). As a result of the COVID-19 outbreak, many laws and regulations have been generated to facilitate the adoption of various telemedicine systems (Rockwell & Gilroy, 2020). This will positively reflect on the hospitals' performance. However, managers should adjust internal regulations to comply with their countries' plans. On the other hand, it is the role of an organization management to put a plan for change management prior to the practice of telemedicine; ensuring minimal change resistance and maintaining the implemented change (Campbell, 2008). As stated by the Pan American Health Organization (2016), leaders in an organization should ensure that physicians and other related staff are taking an active role in the implementation of telemedicine. Nevertheless, creating a responsible team to monitor the implementation process and supporting the employees will be of great advantage. (Eddin et al., 2013) stated that managing the financial issues, related to the application of telemedicine technologies, is a major challenge facing hospitals, especially at early stages of adoption. (Zayapragassarazan & Kumar, 2016) concluded that lack of organizational skills, deficiencies in management, and inadequate financial support from organizational administrations are major problems facing utilization of telemedicine, they further stressed on the importance of organizational training and awareness programs. Similarly, (Smith et al., 2020) stated that including telehealth in accreditation, training and education programs may increase hospitals' readiness. On the other hand, lack of proper business model, work processes, role ambiguity within an organization are considered barriers to the application of telemedicine (El-Mahalli et al., 2012). (Claver-Cortés et al., 2007) confirmed that a flexible structure that encourages team work, will lead to adequate implementation of knowledge. Organizational culture, which is defined in (Huang, 2012) study as a pattern of beliefs and thoughts that achieves internal integration, was found to enhance efficiency and performance of employees (Kafashpoor et al., 2013). It was also found that integrating telehealth in the daily services in ordinary situations is the most effective way to make an organization ready through emergencies (Smith et al., 2020). In this study, the mediating effect of organizational readiness, considering its elements, on the relation between knowledge and attitude of physicians and the relative advantages of telemedicine will be assessed.

Relative advantages of Telemedicine

Telemedicine offers health services across different geographical areas, enabling individuals to access services that they lack in their residential areas, and facilitate their connection with expertise where ever they are (Ahmad et al. 2003; Ayatollahi, Sarabi, and Langarizadeh 2015; Biruk and Abetu 2018). (Rockwell & Gilroy, 2020) stated that telemedicine prevents overcrowding and consequently decreases infection rates. They added that telemedicine systems can enhance triage and managing to take care of patients with positive covid-19 results, especially in poor areas. In addition, telemedicine can provide a chance for teleconsultations, conferences and educational programs and further improves access to information, quality of screening programs and decrease costs (El-Mahalli et al.,

2012). Similarly, the American Health Organization in 2016 confirmed that telemedicine facilitates the continuity of care within an organization, reduce numbers of referrals due to the ability of holding teleconsultations, achieves equality among different areas and reduces costs on the long run.

Knowledge has been found to positively affect application of telemedicine, thus accomplish its benefits (Dwivedi et al., 2001). Similarly, (Biruk & Abetu, 2018) concluded that better knowledge will lead to better attitude towards the utilization of telemedicine and so getting the desired advantages. This study, to our knowledge, will be the first to assess both of knowledge and attitudes of physicians towards relative advantages of telemedicine in the context of Covid-19 breakout.

Objectives of the research

The main objectives in this research is to:

- 1- Assess the knowledge and attitude of physicians toward telemedicine relative advantage during infectious disease outbreaks such as COVID-19.
- 2- Examine the readiness of organizational aspects of telemedicine application during infectious disease outbreaks such as COVID-19.
- 3- Investigating the knowledge and attitude of physicians toward telemedicine relative advantage moderated by organizational aspects during infectious disease outbreaks such as COVID-19.

Research Model and Hypotheses

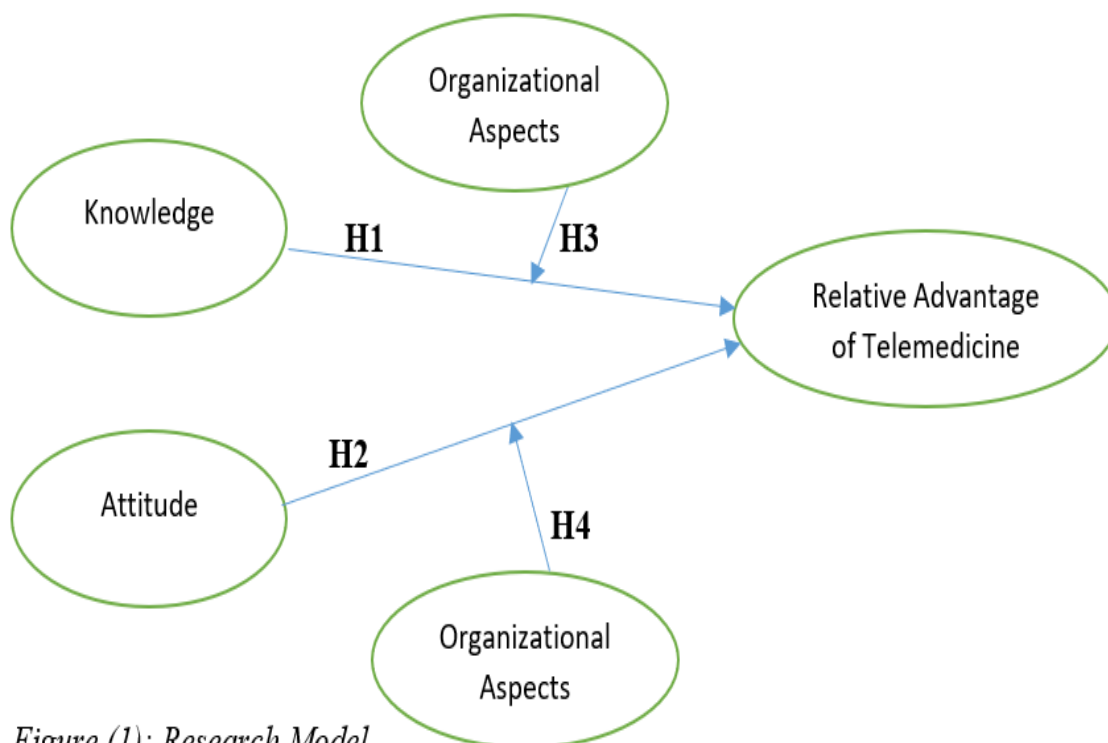


Figure (1): Research Model

Research Hypotheses

- H1 There is a positive relationship between physician knowledge and relative advantage of telemedicine at sig. level ≤ 0.05 .
- H2 There is a positive relationship between physician attitude and relative advantage of telemedicine at sig. level ≤ 0.05 .
- H3 Organizational aspects would moderate the relationship between physician knowledge and relative advantage of telemedicine at sig. level ≤ 0.05 .
- H4 Organizational aspects would moderate the relationship between physician attitude and relative advantage of telemedicine at sig. level ≤ 0.05 .

Research Methodology

Target Population and Sample Size

The study is a cross-sectional descriptive analytical research. A cross-sectional survey was carried out among various physicians ranking (resident, specialist, and consultant) using a proper sampling frame obtained from (Royal Medical Services/Armed Forces, MOH, teaching, and private sector hospitals) located in different cities in Hashemite Kingdom of Jordan, from March-May. Online survey used in this research based on e-mail database, and social media platforms. Purposive sampling technique used to reach the targeted participants. A total of 320 participants from different health sectors in Jordan showed willingness to participate in this research. The research retrieved 320 valid questionnaires.

Tool

The research survey was created by the researcher once a review of the literature relating to knowledge and attitude of telemedicine, health organizations aspects, and relative advantage of telemedicine adoption. Adopted from (Ahmad et al. 2013; Ayatollahi et al. 2015; Biruk and Abetu 2018; Huang 2012; Homer 1995; Mohr and Bitner 1995) and consultation with physicians from different health sectors in Jordan.

The research questionnaire consists of 5 parts: 1) Demographic details; 2) knowledge of telemedicine; 3) attitude towards telemedicine; 4) relative advantages of telemedicine; 5) and organizational aspects.

In part one, participants provide information related to their personal and professional background. It's included their age, gender, education level, professional ranking/level, hospital type (ownership), and medical specialization. Part two consisted of 10 statements to express their opinion about telemedicine organizational aspects. Part three consisted of 16 statements to express their knowledge and attitude about telemedicine. Section four consisted of 6 statements constructed to assess the opinion of the respondents towards relative advantage of telemedicine. Questionnaires utilizing a five-point Likert scale, from strongly disagree (1) to strongly agree (5), were employed to measure the degree of physician opinion.

Table (1) Construct Operationalization:

Item No	Organizational Aspects (Readiness)	Factor Loading	CR	Mean	AVE	Cronbach Alpha
OA1	Proactive leadership	0.781		3.85		
OA1	Effective communication	0.818		3.76		
OA1	Telemedicine effects the outcomes of healthcare	0.776		3.19		
OA1	Clear policies including security, protect patient data, and ethics	0.780		3.89		
OA1	Aware of privacy	0.850	0.841	3.23	0.622	0.921
OA1	Telemedicine business plan	0.739		3.05		
OA1	Collaboration with other healthcare organizations	0.711		3.67		
OA1	Effective governance standards	0.762		3.91		
OA1	Open to change towards telemedicine	0.754		3.59		
OA1	Strategically aligns all the participants.	0.812		3.52		
Knowledge of Telemedicine						
KM1	Familiarity	0.730		3.17		
KM2	Medical applications	0.840		3.13		
KM3	Conferences and meetings	0.839		2.98		
KM4	Telemedicine tools	0.791	0.892	3.11	0.684	0.868
KM5	Telemedicine guidelines	0.772		2.70		
KM6	Use of telemedicine in other countries	0.854		2.64		
KM7	Continuous training	0.712		3.89		
Attitude toward Telemedicine						
AM1	Necessary for patient care	0.880		4.04		
AM2	Ease of use	0.910		3.88		
AM3	Security policies and guidelines	0.809		4.22		
AM4	Compatible	0.901		3.23		
AM5	Requires mental effort	0.792	0.870	3.22	0.657	0.892
AM6	Hard for me	0.784		2.40		
AM7	Threatens confidentiality and privacy	0.781		2.41		
AM8	Great opportunity	0.857		4.08		
AM9	Effort to try out telemedicine	0.841		3.40		
Relative Advantages of Telemedicine						
RAT1	Reduces overcrowding	0.901		4.32		
RAT2	Saves money (e.g. traveling cost)	0.861		4.29		
RAT3	Reduces infection	0.821		4.37		
RAT4	Improves quality of healthcare	0.831	0.844	3.92	0.687	0.822
RAT5	Saves time	0.801		4.29		
RAT6	Increase communication among health care providers	0.761		4.08		

Results

Model estimation and hypothesis testing

Each set of variables in this research indicated 0.01 levels of positivity and significance for the correlational relationship. The results and output that are derived from AMOS 22.0 are presented in Figure (2) in a structural equation modeling which is also proclaimed as a good

fit. Alongside, Table (2) portrays the statistical fitness of the results that align within the recommended ranges. On balance, the relative normed χ^2 value of 2.311 is less than the recommended maximum value of 3.00 (Bagozzi et al. 1998; Kline 2001), representing a good fit.

Table (2):Model Fit indices:



Indicator	Recommended value	Value
χ^2	$P \leq 0.05$	$P = 0.002$
RMSEA	≤ 0.08	0.062
GFI	≥ 0.90	0.901
AGFI	≥ 0.90	0.871
NFI	≥ 0.90	0.909
IFI	≥ 0.90	0.944
CFI	≥ 0.90	0.963
Normed χ^2	1-2	2.311

As suggested by (Browne & Cudeck, 1993), the recommended maximum value of RMSEA is 0.080 while the value achieved in this research is 0.062, verifying the wellness of the model. The GFI value of 0.901 and the AGFI value of 0.871 are both acceptable in reference to Byrne (2016). Moreover, the model has also been checked through IFI and CFI, both scoring respectively (0.944) and (0.963) index values exceeding the recommended level of 0.900 (Byrne, 2013) confirming the competence of the model (L. T. Hu & Bentler, 1999). In reference to the aforementioned values above, it can be confronted that the structural model is utterly fit and acceptable. The structural model is designed to test the hypotheses (Hair et al., 1998).

Structural equation modeling

Throughout the testing of hypotheses using AMOS 22.0, the results delineated a positive and significant effect of knowledge of telemedicine (KM) on the relative advantage of telemedicine (RAT) ($\beta = 0.259, p \leq 0.05$). Therefore, hypotheses H1 is supported. The results also showed that the effect of attitude of telemedicine on relative advantage of telemedicine (RAT) was positive and significant ($\beta = 0.239, p \leq 0.05$). Therefore, hypothesis H2 is supported. Figure 2 illustrates direct effects and Table 3 provides summary of the tested hypotheses.

Table. 3: Structural parameters

Hypothesis	Path	Standardized Effect	P-Value	Result
H1	 KM RAT	0.259	0.002	Supported
H2	 AM RAT	0.239	0.000	Supported

Moderation analysis

To test for H3 concerning the moderating impact of organizational aspects on the

path between knowledge of telemedicine and relative advantage of telemedicine. (Hayes, 2017) process macro model was used. The indicator method was used as this approach uses all possible pair combinations of the indicators of the latent predictor and the latent moderator variable. These product terms serve as indicators ("product indicators") of the interaction term in the structural model. As seen in table 4 there is a significant impact of organizational aspects would moderate the relationship between physician knowledge and relative advantage of telemedicine at sig. level ≤ 0.05 . The results showed a positive and significant ($\beta = 0.277, p \leq 0.05$). Therefore, hypothesis H3 is supported. In the same vein, H4 concerning the moderating impact of organizational aspects on the path between attitude of telemedicine and relative advantage of telemedicine. As seen in table 4 there is a significant impact of organizational aspects would moderate the relationship between physician attitude and relative advantage of telemedicine at sig. level ≤ 0.05 . The results also showed that the effect of attitude of telemedicine on relative advantage of telemedicine (RAT) was positive and significant ($\beta = 0.268, p \leq 0.05$). Therefore, hypothesis H4 is supported.

Table (4): Moderation analysis

Hypothesis	Path	Standardized Effect	P-Value	Result
H3	KM → RAT → OA	0.277	0.001	Supported
H4	AM → RAT → OA	0.268	0.000	Supported

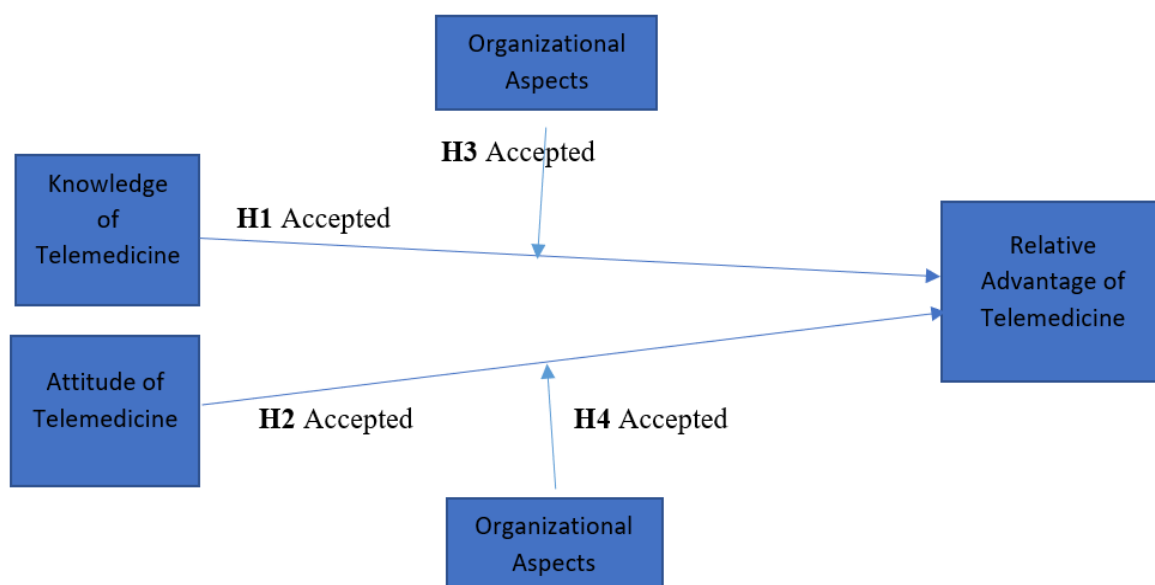


Figure (2): Final Model

Discussion

The main aim of this study was to investigate the knowledge and attitude of physicians towards telemedicine relative advantages moderated by organizational aspects during contagious disease outbreaks such as COVID-19. Results indicated a positive significant relation between knowledge and attitude of physicians towards the relative advantages of Telemedicine supporting all research hypotheses (H1, H2, H3, and H4).

Reviewed literature insisted on the importance of knowledge as a prerequisite for the application of Telemedicine (Ayatollahi et al., 2015; P. J. H. Hu et al., 2002). This agrees with the results of this research that indicated a significant relation between the physicians' Knowledge and relative advantages of Telemedicine. Consequently, it is of great importance to integrate the concept of telemedicine in schools of medicine and physicians' training programs in Jordan as well as inside hospitals and among various clinics. It is the role of policy makers to ensure sufficient knowledge about telemedicine use and advantages in order to better utilize telemedicine facilities not only during infectious diseases outbreaks but also to facilitate providing of health care to rural areas and patients who faces difficulties attending clinics. (El-Mahalli et al., 2012) supported the idea of emphasizing training and education aiming to increase knowledge among health providers in their study.

Attitude toward the use of telemedicine was found an important factor that ensures successful use of telemedicine (Ayatollahi et al., 2015; Shiferaw & Zolfo, 2012; Ward et al., 2008; Whitten et al., 2010; Zayapragassarazan & Kumar, 2016). Similarly, this study indicated a significant effect of attitude toward relative advantages of Telemedicine. Accordingly, increasing awareness about the advantages of telemedicine and encouraging its use by providing the required training and financial support should be a priority in health care systems in order to increase the attitude toward the implementation of telemedicine. Various studies focused on the importance of improving physicians' awareness by suggesting many solutions, such as, proper technology application model, include telemedicine during internship in the UG & PG curriculum to develop the proper attitude (Ketikidis et al., 2012; Zayapragassarazan & Kumar, 2016).

The moderating role of Organizational readiness on both knowledge and attitudes toward the relative advantages of telemedicine was supported in this study. Organizational readiness was also mentioned in reviewed literature as an important factor for telemedicine application and long-term success (Jennet et al. 2003; Simpson 2018). Therefore, managers should be aware of the importance of all organizational aspects including; management and control, process, structure, and budget, and modify hospitals' policies and procedures to accept and effectively be able to utilize resources towards the adoption and implementation of telemedicine. Supporting these recommendations, the Pan American Health Organization (2016) stated that leaders in an organization should ensure that physicians and other related staff are taking an active role in the implementation of telemedicine.

Limitations & Future Research

This study was conducted in April 2020 during the Covid-19 crises in Jordan. Therefore, in light of the hard conditions that the Kingdom is passing through in general and the healthcare sector in particular due to the outbreak of corona epidemic, the sample size was small as it was

targeting the physicians who were overwhelmed with tough circumstances. Thus, results may not have covered the whole health professional population. It is recommended in the future to conduct a study with larger sample size. In addition, the current research examined knowledge and attitude of physicians, impact toward telemedicine relative advantage moderated by organizational aspects during infectious disease outbreak. However, it is also recommended to examine physicians practice factor along with knowledge and attitude towards telemedicine.

Conclusion

In brief, it has been agreed on the importance of telemedicine and vast advantages especially through infectious outbreaks such as the 2020 Covid-19 breakout. Taking into consideration the possibility of appearance of other infectious diseases, it has become of great importance to increase countries' ability to face such situations with a protected and strong health system. To achieve this goal, policy makers in health sectors shall develop a system of change that allows proper adoption of telemedicine facilities. Data will be made available upon request by contacting the first author of this paper.

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Declaration of Interest

The author(s) declare(s) that there is no conflict of interest regarding the publication of this paper.

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