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Original Article

The Opportunities of Virtual Social Networks in Awareness of Covid-19: Experience of Medical Sciences Students in Iran

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Abstract

Introduction: Despite the availability of various vaccines to prevent Covid-19, the individuals' awareness of this disease is essential. Social networks, as one of the important information media, can meet this need. In this study, an attempt was made to examine the students' awareness of Covid-19 through social networks.

Methods: The present study was conducted in 2 stages. At first, a narrative review was done about the effectiveness of social media in coronavirus pandemic. At the second phase, a descriptive cross-sectional study was performed on 384 students of Shiraz University of Medical Sciences using simple sampling method in 2020. After determining the validity and reliability, we designed a questionnaire using PorsLine website and the link was sent to the students by WhatsApp. The questionnaire included 25 questions (4 questions were about demographic data and the others were related to the level of knowledge and respondents' agreement to use social networks in COVID-19 disease). Finally, the results were analyzed using SPSS.

Results: The review of previous studies showed the diverse role of social networks in preparedness, response, and recovery of public health threats. Also, the results showed high levels of the respondents' agreement to use virtual networks in Coronavirus pandemic. 69.1% of the students emphasized that social networks, especially Instagram, is the first source of receiving information about mortality, symptoms, methods of transmission, and prevention of COVID-19. Also, according to the results, more than 90% of the participants were more inclined to use social networks during the pandemic.

Conclusion: Popularity of virtual technologies in health industries provides opportunities regarding health issues pandemic. Such environments provide opportunities for the policymakers and health managers to monitor the level of the public's awareness about Covid-19 and make the best decision to control this worldwide threat.

Keywords: Social networks, COVID-19, Medical sciences students

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Introduction

Coronaviruses are a large family of viruses which are found in a wide variety of animal species and can transmit to humans. The viruses can cause a variety of manifestations, from common cold to more severe conditions such as SARS, pneumonia, severe acute respiratory illness, and even death (1, 2). Because of the unpredictable nature of coronavirus, people with Covid-19 disease experience different symptoms, but the most common ones are fever, dry cough, sore throat, and in acute cases, shortness of breath (1). The latest type of these viruses is Covid-19, which emerged in December 2019 in Wuhan, China. It was identified as the first outbreak site of this disease (2, 3). In order to deal with this crisis, many procedures were done in all countries to limit the spread of the new virus; schools and workplaces were shut down, external borders were closed, and travel

restrictions were imposed.

Under such conditions, the public searched for information and guidance to limit the transmission of the virus (4). According to the World Health Organization (WHO) in January 2020, the outbreak of the new virus was a public health emergency (5). Despite many efforts to develop vaccine, there are no definitive cure, prevention, or control of coronavirus infections in general. Therefore, in order to control and prevent Covid-19 disease, people in the community should keep their distance with others, cover their mouths and noses by using mask, and stay at home. In addition, whenever they feel sick, they must immediately call health care centers for additional health services (6, 7).

Social networks are broadly understood as a set of online activities that facilitate interpersonal communication, information sharing, and collaboration among online user (8). They have a great contribution to health awareness and promotion, through dissemination of wellness education (4). Also, they have the potential to be used as data source for public health to disseminate disease risks and interventions and to promote healthy lifestyles and health policies (8, 9).

According to Ali et al. (2019), social media present a promising competitive communication landscape for health practitioners and organizations during pandemic of infectious disease (9, 10). Utilizing the sensitivity and timeliness capabilities of digital-based surveillance systems, social networks could provide a new platform to improve the quality of detection and reporting of infectious disease threats (11). Social networks are one of the achievements of ICT that have been able to gain a lot of popularity among the users in the recent years, so that today networks such as WhatsApp and Telegram have more than hundreds of millions users worldwide (12).

The potential of data sources, search queries, social media, and website have been proven for digital surveillance systems. In Korea, National Health Insurance Service has developed a national health alert system which uses data from social media and blogs (13).

Previous studies show that low-cost social networks and provision of accurate and reliable information to people in the community about diseases and health conditions play a prominent role in the field of health sciences (14, 15). Social networks enable health professional and other people to participate in the community and share the advice and health instructions, so they can be very effective in self-care training and raising awareness of medical knowledge. These lead to the control, prevention, and reduction of the burden of diseases in communities and countries and improve people's health (16-19).

Covid-19 threatens the lives of people and causes irreparable damage on economic dimension of the communities and countries; therefore, controlling the occurrence of this disease is the key to overcoming this global virus. In addition, the people's awareness of this infectious disease is very effective to control the pandemic. Given that the students use social networks more than others because of their literacy, this study aimed to examine the medical sciences students' knowledge about the Covid-19 through social networks.

Material and Methods

The present study was conducted in 2 steps. At first, a narrative review was done about the effectiveness of social media in coronavirus pandemic. It was conducted by searching articles from December 2019 to December 2020 in scientific databases (SCOPUS & Pub Med & Google Scholar & IEEE) and e-Journals (science direct), using keywords such as Covid-19, coronavirus disease, and social networks. Non-English and unavailable full texts and also the studies that were not defined as a journal article were excluded from this study. At the second phase, a descriptive cross-sectional study was conducted in 2020. Before the study, a narrative literature review was done about the effectiveness of social networks in the public health domains, especially infectious diseases. The study population were the students in Shiraz University of Medical Sciences. They were selected through convenient sampling and based on Morgan table (384 samples). The inclusion criteria were all university students from all fields; also, the exclusion criteria were graduated students. Table 1 shows the frequency of research samples by gender, age group, marital status, and educational level. Data collection was done based on a researcher-made questionnaire. It was designed based on literature review and consisted of 25 questions (4 items were demographic questions and the rest were related to the use of social media about the corona virus, the level of knowledge gained from social networks, and the respondents' agreement on the use of social networks in corona- virus pandemic). In order to validate the questionnaire, we used the content validity method and they were distributed among five health information management and medical informatics specialists. Also, to determine the reliability, the questionnaires were sent through the WhatsApp social network to 30 members of the same

Table 1: The frequency of research samples

Participants		Frequency	Percent
Sex	Female	258	67.2%
	Male	126	32.8%
Age	<20	80	21%
	20-30	212	55%
	30-40	63	16%
	>40	29	8%
Marital Status	Single	301	79%
	Married	78	20%
	Other	5	1%
Educational Level	Undergraduate	238	62%
	Master of Science	40	11%
	Professional doctorate	76	22%
	PhD	20	5%
Total		384	100%

Table 2: Advantages of social networks in public health

Effectiveness of social networks	References
Individual and social strengthening	Kasperson et al (1988) (20)
• Improving planning and management processes • Easy data acquisition	Lavrac et al (2007) (21)
Rapidly identification	Wilson et al (2009) (22)
Controlling and Prevention	Eke (2011) (23)
Empowering patients	Andersen et al (2012) (24)
Disease surveillance	Bernardo et al (2013) (25)
Detecting or prediction	Kass-Hout et al (2013) (26)
Careful study and analysis	Tony Yang et al (2013) (27)
Detecting threats	Denecke et al (2013) (28)
• Establishment of the Epidemic Intelligence Service • Speeding up detection	Velasco et al (2014) (29)
Providing research tool	Nuti et al (2014) (30)

group from the research community, and finally the reliability was determined (Cronbach's alpha coefficient=86%). Then, for easy access and faster response, the questionnaire was designed online by the PorsLine (Web-based template for Designing Questionnaire), and its link was sent through WhatsApp messenger to the research samples. The participants of this study expressed their consent to complete the questionnaire; also, they were assured about the confidentiality of their demographic information. The present study was approved by the Research and Technology Deputy of Shiraz University of Medical Sciences, Shiraz, Iran with the ethics committee approval No: IR.SUMS.REC.1399.643. Finally, Frequency, mean and percentage were used for descriptive statistics. Statistical analysis was performed using SPSS software version 22.

Results

Table 2 shows the studies on the advantages of social network in public health domain. Accordingly, social networks play an important role in public health domains, including fast detection, prediction and disease surveillance, empowerment of patients, easy data acquisition for planning and management processes. Also, Table 3 highlights the effectiveness of social networks in infectious diseases, especially Covid-19 pandemic.

Social networks play an important and diverse role in various infectious diseases. Studies have shown their effectiveness in the control, prevention, detection, prediction, and surveillance of diseases. Therefore, the present study was designed to survey the knowledge of medical sciences students about Covid-19 disease through social networks. Table 4 shows the knowledge obtained from social networks about the coronavirus disease. It presents the main questions and sub-questions and the main results, according to each question.

The findings displayed in Table 5 show the level of participants' agreement about the effectiveness and reliability of social networks in increasing awareness

Table 3: Some studies on the experience of social network in infectious diseases

Disease Types	Effectiveness of social networks	References
Influenza	• Facilitate self-diagnosis • Diagnosis • Offer medical advice	D Corley et al (2010) (14)
Cholera	Gauging disease activity	Chunara et al (2012) (12)
Influenza	• Track the spread • Data collection • Early knowledge	Broniatowski et al (2013) (31)
MERS	Public's risk perceptions	Choi et al (2017) (32)
COVID-19	Amplifier of news articles	Islam et al (2020) (33)
COVID-19	Complement traditional epidemiologic data and methods	Park et al (2020) (34)
COVID-19	Connect and share information	A.Knoll et al (2020) (35)
COVID-19	• Sharing of experiences and research • Rapid Dissemination of Information • Increasing Collaboration and Research	Tsui et ai (2020) (36)

Table 4: The knowledge obtained from social networks about the Corona virus disease

	Questions	Main Results
The use of social media about the corona virus	Are social networks the first source for receiving information about the Corona virus?	More than half of students (69.1%) selected social networks as the first source of information.
	How long have you been a member of social networks?	37.2% of students for 2-5, and 22% of them for more than 7 years were the members of social networks.
	How often do you log in to social media?	90.1% of students logged into social networks for several times in a day.
	How many hours did you use social networks before the Corona outbreak?	5.2% of students used social media for over 8 hours.
	How many hours a day do you use social networks due to the prevalence of Corona?	28% of students spent 2-4 hours a day in corona prevalence.
	Which of the following social networks did you get the most information about the Corona virus from?	57.2% of students got information through WhatsApp (44.6%), Telegram (29.9%) and Instagram (54.6%).
	What information do you receive about the Corona virus through social networks?	The most information (79.6%) was about Corona virus infection / mortality statistics and deaths.
	What messages do you send to others through social networks?	96.7% of students sent messages that were secure and accurate.
	Based on the information obtained from social networks, which groups do you belong to it?	97.1 Students highlighted that they belonged to a healthy group.
The level of knowledge gained from social	Based on the knowledge obtained from social networks, which symptoms are from Corona virus infection?	95.3% of students indicated shortness of breath, fever, and dry cough were the most important symptom of Corona virus.
	Based on the knowledge gained from social networks, do you know how the coronavirus is transmitted?	96.6% of students indicated contact with virus-infected surfaces and with the affected people were the most important ways for transmitting Corona virus.
	Based on the knowledge gained from social networks, what are the ways to prevent Corona virus infection?	96.6% of students indicated washing their hands with soap and water was mostly important.

about the symptoms, modes of transmission, and methods of prevention in Covid-19 pandemic. In addition, it shows the fear, stress, and confusion caused by social networks about corona virus disease.

Discussion

COVID-19 is rapidly spreading across the globe and has become a significant public health threat to millions of people worldwide (10). People prefer to keep themselves up-to-date with the latest information and also track Covid-19 news through virtual networks and official websites. Social networking service is an online platform, in different formats and features, aiming at creating social connections between people. Today, more than 2.9 billion people regularly use these services for a long time (6, 11).

According to Chunara et al. (2010) and Ramazan Ahmad et al. (2020), not only social networks are effective in the early stages of the disease outbreak, but also they can highlight diseases dynamics through the epidemic parameters in the pandemic situation (12, 13). The pervasiveness of these networks provides access to information resources for better diagnosis, biological monitoring, and useful advice (14). This

Table 5: Level of the respondents' agreement to use the social network in Corona virus disease

	Questions	Scale					Total
		Very high	High	Moderate	Low	Very low	
Respondents' agreement about the use of social network in covid-19	Has the use of social media been able to give you the necessary knowledge about the symptoms of Corona virus?	(99) 26%	(129) 33.9%	(132) 34.6%	(11) 2.9%	(10) 2.6%	(381) 100%
	Has the use of social media been able to give you the necessary knowledge on ways to prevent getting the Corona virus?	(104) 27.5%	(145) 38.4%	(115) 30.4%	(9) 2.4%	(5) 1.3%	(378) 100%
	Has the use of social media been able to give you the necessary knowledge about the statistics of patients - recoveries and deaths due to Corona virus?	(99) 26.1%	(146) 38.4%	(123) 32.4%	(8) 2.1%	(4) 1.1%	(38) 100%
	Did the social networks lead to preventive methods?	(93) 24.7%	(92) 24.4%	(129) 34.2%	(35) 9.3%	(28) 7.4%	(377) 100%
	Has the use of social networks been more effective than other forms of communication technologies, to raise your awareness about Corona virus?	(113) 29.9%	(151) 39.9%	(103) 27.2%	(9) 2.4%	(2) 0.5%	(378) 100%
	Did social networks lead to fear / stress and confusion about the Corona virus?	(95) 25.2%	(145) 38.5%	(114) 30.2%	(13) 3.4%	(10) 2.7%	(377) 100%
	How reliable are messages received from social networks about the corona virus?	(35) 9.2%	(78) 20.6%	(143) 37.7%	(81) 21.4%	(42) 11.1%	(379) 100%

technology has been important in disseminating information during the Covid-19 outbreak (6, 15). The present study examined the students' awareness of Covid-19 through social network in Shiraz University of Medical Sciences. According to the findings, more than half of the students obtained their information about the Coronavirus from social networks such as WhatsApp, Telegram and Instagram, and used them as their first sources to get information. It is in accordance with the study of Pashaeypoor et al. and Giustini et al. (2018) about the satisfaction and positive experiences of students related to social networks to obtain health-related content (16, 17). Our study indicated that the use of social network by students has been increased in the Covid-19 pandemic which is in the same line with Feyzi et al.'s (2019) study about the increasing use of social networks in students in recent years (3.45±2.78 hours per day) (18).

Today, Instagram is very popular media for users to easily share photos and videos about different subjects. It provides the opportunity to be used in education and information about infectious diseases (19). The present study showed that half of students had used Instagram instead of other networks in the pandemic. Also, Mersin et al. (2020) indicated more use of Instagram among nursing students (37).

Social network is increasingly being used for public health to provide information about the risks of diseases and advise healthy lifestyles. Also, they are data sources for public health monitoring (8, 33). In this study, the most information received by students were 1) statistics of patients, recoveries and deaths caused by Covid-19, 2) symptoms of disease, and 3) methods of transmission and prevention against this pandemic (8). According to our finding, these data are very useful to promote health-related behavior and lifestyle; they are also helpful for health care providers' decision-making (17). In this regard, the study of Eydi et al. (2018) highlighted that using WhatsApp and Telegram could increase the level of awareness and training among students (38). Also, the studies of Kumar et al. (2016), Park et al. (2020), and Merchant et al. (2020) emphasized the main role of social networks in assisting public health professionals in their complex decision-making processes in pandemic situation and taking appropriate measures (6, 34, 39).

One of the main findings of our study was related transfer of correct and secure information in Covid-19 pandemic. Students indicated that they sent messeages via social network which were reliable. According to Giustini et al. (2018) and Adebimpe et al. (2015), one of the disadvantages of social networks is sharing false and unreliable information which led to serious threats in infectious pandemic and can increase the disease outbreak (16, 40).

Mheidly et al. (2020) indicated the important role of social networks to influence the people's health attitude, intention, and behavior. They reported the effect of social network on public views and risk perceptions (4). Emotions such as fear and anger are related to the public's risk perception. Oh S-H et al. (2021) explored the relationships between using social

media, risk perception, and preventive behaviors (41). Also, Oh et al. (2015) and Choi et al. (2017) indicated the relationship between social media and risk perception (32, 42). In line with these studies, the present study demonstrated the correlation of social media and two self-relevant emotions (fear/stress) which significantly increased the preventive behaviors and public's risk perception in Covid-19 pandemic (41).

Limitations

Despite the positive and undeniable effects of information technology in epidemic situations such as Covid-19, it is important to pay attention to the challenges of these technologies. Lack of control and management in using social networks leads to negative and harmful effects on people' life. In this study, the challenges and issues related to social networks have not been considered.

Conclusion

Today, social networks, as essential tools in preparedness, response, and recovery of public health threats, can influence the response to infectious diseases pandemic such as Covid-19. Because of the popularity of social networks including WhatsApp, Telegram and Instagram among Iranian students, the present study was carried out to survey the effectiveness of such technologies in the awareness about Covid-19 in medical sciences students. Advances in virtual technologies in health industries provide opportunities regarding health issues pandemic. They provide information for policymakers and health managers to monitor the level of public's awareness about Covid-19 and make the best decision to control this worldwide threat. However, in order to reduce the damage of social networks and take more advantages of them, it is recommended that people should follow the news and information from official sources in social networks and do not publish the rumors of unreliable groups.

Ethical Approval

This paper was approved by the Research and Technology Deputy of Shiraz University of Medical Sciences, Shiraz, Iran with the project code: 99-01-68-22525 and ethical approval No: IR.SUMS.REC.1399.643.

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