Original Article

The Effect of Allied Health and Nursing Staff's Online Covid-19 Related Information-Seeking Behaviors on Preventive Behaviors against Covid-19

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ABSTRACT

OBJECTIVE: To evaluate allied health and nursing staff's online COVID-19 related information-seeking behavior to prevent COVID-19 infection.

METHODOLOGY: This study was cross-sectional research performed from February to May 2020 that surveyed allied health and nursing staff working in healthcare settings, whether full or part-time, of Semnan University of Medical Sciences, Iran. Two valid questionnaires, such as preventive behaviors and online COVID-19 related information-seeking behaviors, were used. Multiple logistic models were used to explain the correlation between one dependent binary variable and other variables.

RESULTS: 291(94.8%) had good preventive behaviors. 239 (77.9%) of the participants, after getting online health information from the Internet, very often search the obtained data in other books and journals; 240 (78.2%) very often compare the received data with information on other websites; 252 (82.1%) very often consulted with physicians about the obtained information. There was a relationship between online COVID-19 related information-seeking behaviors (Beta = 0.04, 95% CI: 1.02-1.06 and P<0.001) and preventive behaviors.

CONCLUSION: Health-care workers use various information-seeking strategies to decrease the chance of finding inaccurate data and misjudging the correct data. This study shows that healthcare workers' behavior to see credible information related to COVID-19 significantly affects their preventive behaviors.

KEYWORDS: Information seeking behavior, Preventive behaviors, COVID-19, Internet, Allied health, nursing staff.

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INTRODUCTION

Presently, COVID-19 as a general health crisis is a worldwide subject of conversation in the media and among people, particularly among healthcare professionals and patients. Giao H et al.[1] examination in Vietnam indicated that social media was the principal information source of COVID-19 among social health care providers. The utilization of online social networks during a period of emergency can give quick and clear messages, which increase the quality of decisions made by groups to react to an emergency. An investigation by Ruggiero A 2014[2] showed that checking and examining online social networks during a period of emergency is one of the most significant strides in dealing with a crisis.

In healthcare settings, healthcare professionals are the essential segment in interaction with patients and are a significant resource of contact with contaminated cases; in this manner, healthcare professionals are predicted to be in grave danger of contagion[3]. Hence, healthcare professionals should be taught and prepared for disease prevention and control and consistently refresh these abilities[4].

Abbag HF 2018[5] study about awareness and attitude about the Middle East respiratory syndrome coronavirus among clinical staffs in the southern locale of Saudi Arabia demonstrated restricted microbiological and virological understanding of MERS-CoV contamination amongst the clinical team.

Clinical sciences are improving step by step, so electronic and printed resources, in addition to printed resources, play an essential role in raising people's awareness. Right now, the immense assorted variety of data accessible through the Internet, containing unconfirmed pernicious data, can spread rapidly and can misguide healthcare professionals[6]. Alsulaiman's investigation indicated that around 39% of students went first to the Internet, similar to Google and Yahoo, to look for Coronavirus data[7]. Balkhy HH 2010[8] study showed that most of the participants doubted that the Saudi health ministry reports about swine influenza were valid, making undue resistance, indifference, and absence significant to all recommendations offered to

them.

False impressions among health-care professionals defer controlling endeavors to deliver necessary cure[9], lead to the quick extent of contamination in clinical settings[10], and put patients' lives in danger. The valuable resources are essential in accepting precise data about the emerging COVID-19 contamination and are fundamental for healthcare professionals' readiness and reaction. Expressly, health specialists and researchers have cautioned that extensive incorrect information about COVID-19 is a grave concern causing xenophobia overall (Shimizu, 2020). This is in line with the Pew Research (2016) report that discovered individuals have less certainty and belief in the data they get from web-based social networks[11]. This research aims to reply to how allied health and nursing staff find and check online COVID-19 related information and how much their seeking behavior affects their preventive behavior from the COVID-19 infection.

The specific research hypothecs were the allied health and nursing staff's online COVID-19 related information-seeking behavior has direct and positive relationships with their preventive behaviors from the coronavirus disease.

METHODOLOGY

This study was cross-sectional research performed from February to May 2020 that surveyed allied health and nursing staff working in health-care settings, whether full or part-time, of Semnan University of Medical Sciences, Iran. All the allied health and nursing staff working in the healthcare settings of Semnan University of Medical Sciences, like other staff across the country, were trained by a national education system, had access to the internet, and used the COVID-19 infection prevention protocol prepared by the Health Ministry of Iran. All workers, including nurses, allied health, and administrative staff, were eligible to contribute to this study. Students and participants who did not use the Internet were excluded from the study.

Description of instruments

The instruments included a preventive behaviors questionnaire a closed-ended questionnaire including 15 multiple-choice questions to assess the participants' preventive behaviors for COVID-19. The OCRIB questionnaire was designed to evaluate the study subjects' online COVID-19 related information-seeking behavior. A questionnaire that contained 29 closed questions, including two questions were related to "Internet skills" five questions that were related to the evaluation methods of the validity of online COVID-19 related information, ten questions that were also associated with the use of online information resources and twelve questions that were related to COVID-19-related topics searched on the Internet. We also asked some socio-demographic characteristics of the participants such as age, sex, job, education level, general health, having an underlying disease (such as heart disease, pulmonary disease, and diabetes), having older people (older than 65 years) in the family and English language skills (ELS).

The authors developed and validated the two researcher-made questionnaires in three stages, including developing the initial questionnaire, evaluating their face and content validity, and examining the reliability of the tools in a pilot study.

The questionnaires were therefore finalized as:

a. Fifteen items in the preventive behaviors questionnaire with the range of total scores from 15 to 60 and the cut-off point 45 (score <45 was considered low and score ≥45 was deemed high).
b. Twenty-nine items in the OCRIB questionnaire with the range of total scores from 29 to 203 and the cut-off point 87 (score ≤87 was considered low and score >87 was deemed to be high).

The questionnaires were dispersed amongst the participants and were returned to the investigator. The length of the questionnaires filled by the study subjects ranged from 10 to 20 minutes.

Statistical Analysis: Data were appraised routinely for fullness and correctness, then managed and analyzed using SPSS, version 21. The mean ± SD or frequency (percent) was used for data expression. Statistical analyses were used by Cronbach's alpha, the interclass correlation analysis. We also used the multiple logistic models to explain the relationship between one dependent binary variable and other variables. P-value<0.05 was considered statistically significant.

Ethical consideration: Ethics approval from the Semnan University of Medical Ethics Committee (IR.SEMUMS.REC.1398.295) was acquired. A covering letter was set for spreading with the questionnaire document, which described the aims of the investigation and described that a response to the questionnaire would indicate the agreement of the participant to take part in the study. It also assured participants of the confidentiality of their replies.

RESULTS

310 allied health and nursing staff working in healthcare settings were accidentally chosen from 7 institutions; 3 were left out from the research for different causes (unwillingness to continue or unfiled questionnaire). The data of 307 (99%) persons were finally analyzed.

The mean (Min-Max) study subjects' age was 35.80 (21-55). The results also showed that 221 (72.0%) of the study subjects were female, 138 (45.0%) were nurses, 238(77.5%) had bachelor's degrees, 256 (86.3%) had good status in health, 286(93.2%) did not have an underlying disease, 227(73.9%) did not have older people in their family, and 211(68.7%) had moderate skill in the English language.

Information related to preventive behavior from COVID-19 disease

The results showed that 291(94.8%) had good preventive behaviors, and 16(5.2%) had poor behaviors.

Information related to online COVID-19 related information-seeking behaviors

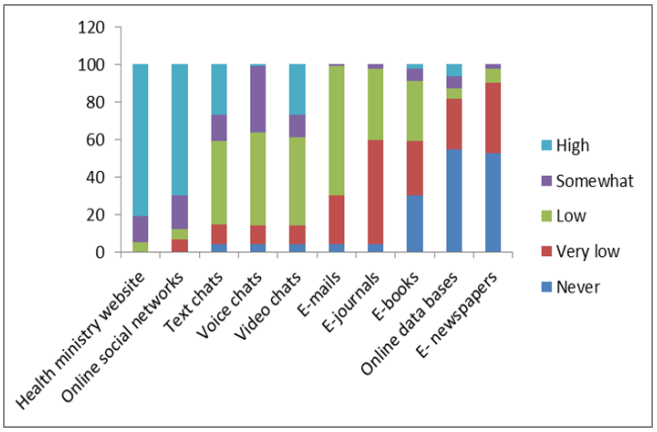
The results showed that 21 (6.8%) had poor and low internet skills. 153(49.8%) used the internet for more than 3 hours per day. The findings indicated that 239 (77.9%) of the participants, after getting online health information from the Internet, very often search the obtained data in other books and journals; 240 (78.2%) very often compare the received data with information on other websites; 252 (82.1%) very often consulted with physicians about the obtained data; 231(75.2%) very often consulted with their colleagues about the received information, and 206 (67.1%) very often consulted with medical students about the obtained data. (**Table I**)

81.1% of the participants used the website of the Ministry of Health a lot. 69.7% used online social networks a lot. (**Figure I**)

TABLE I: THE PARTICIPANTS' INTERNET SKILLS, USAGE, AND METHODS OF THE VALIDITY OF ONLINE COVID-19 RELATED INFORMATION

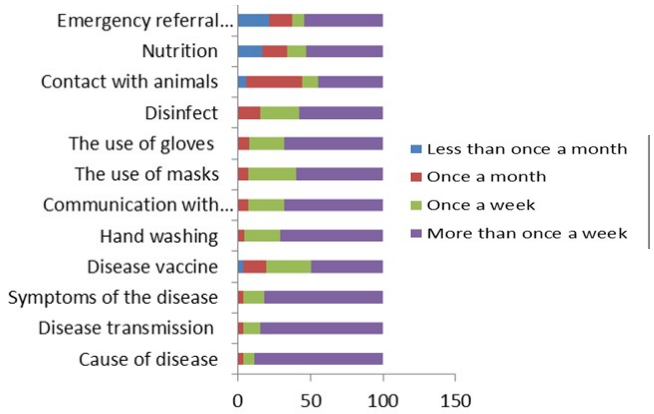
Characteristics	Groups	n (%)
Internet skills	Very low	12(3.9)
	Low	9(2.9)
	Moderate	216(70.4)
	High	70(22.8)
Frequency of internet use per day	Less than1 hour	7(2.3)
	1-2 hours	89(29.0)
	2-3 hours	58(18.9)
	More than 3	153(49.8)
After getting information from the Internet, I search it in other information resources such as books, journals, etc	Never	8(2.6)
	Seldom	4(1.3)
	Often	43(14)
	Very often	239(77.9)
	Always	13(4.2)
After getting information on a website, I compare it to other sites' information.	Never	1(0.3)
	Seldom	12(3.9)
	Often	32(10.4)
	Very often	240(78.2)
	Always	22(7.2)
I consult with physicians about online information obtained from the internet.	Never	0(0)
	Seldom	4(1.3)
	Often	30(9.8)
	Very often	252(82.1)
	Always	21(6.8)
I consult with my colleagues about online information that I have obtained from the inter-net	Never	8(2.6)
	Seldom	19(6.2)
	Often	35(11.4)
	Very often	231(75.2)
	Always	14(4.6)
I consult with medical students about online information that I have obtained from the internet	Never	0(0)
	Seldom	4(1.3)
	Often	35(11.4)
	Very often	206(67.1)
	Always	62(20.2)

FIGURE I: PERCENTAGE OF USE OF ONLINE INFORMATION RESOURCES PER DAY



88.9% reported that they searched for the cause of the disease on the Internet at least once a week. 84.7 % reported that they searched for the disease transmission on the Internet at least once a week. (**Figure II**)

FIGURE II: PERCENTAGE OF SEARCH TIMES FOR COVID-19 RELATED TOPICS ON THE INTERNET



Relationship between independent variables and the preventive behavior from COVID-19

The final model on preventive behaviors indicated that there were direct, positive, and significant

relationships between OCRIB (Beta = 0.04, 95% CI: 1.02-1.06 and P<0.001) and ELS (Beta=2.66, 95% CI: 3.75-54.13 and P<0.001) with preventive behavior. (**Table II**)

TABLE II: MULTIPLE LOGISTIC REGRESSION MODELS ON ALLIED HEALTH AND NURSING STAFFS' PREVENTIVE BEHAVIORS

Variables	Groups	Beta	P-value	95% CI for Exp (Beta)
OCRIB*		0.04	<0.001	1.02-1.06
Gender	Female	-1.88	0.031	0.03-0.84
	Male	Reference		
English language skills	High	19.04	0.998	0.00-2.30
	Moderate	2.66	<0.001	3.75-54.13
	Low	Reference		

- *OCRIB: online COVID-19 related information-seeking behaviors,*

DISCUSSION

The results showed that 6.8% of the participants reported having deficient internet skills. From one side, low internet skills of some healthcare providers give a comprehension of the issues on their search methods and the fundamental structure of the data seeking and consequent decision-making procedure; on the other hand, those with lower intern skills may need elective channels for conveying data about hazards and avoidance.

The findings showed that most participants searched topics related to "the cause of the disease" and "the disease transmission" on the internet at least once a week. From one side, the special attention of employees of health care institutions to the transmission of COVID-19 infection indicates their sense of responsibility towards patients; the familiarity with the transmission methods is the initial step of patient education. On the other hand, once healthcare workers know how the illness is transmitted, they are most likely to comprehend the preventive behaviors limiting its conveyance and more care for themselves to lessen the chances of potential infection transmission.

The result indicated that %77.9 of the participants frequently searched the obtained online COVID-19 related information in books and journals. This finding shows that workers need evidence-based health information resources to meet their data needs, find false data, and do rational practices in a healthcare setting.

The findings showed a direct, positive, and significant relationship (Beta = 0.04, 95% CI: 1.02-1.06 and P<0.001) between OCRIB and preventive behaviors. In other words, with a one-unit increase in OCRIB score, the odds of having good preventive behaviors will be increased to 1.04. This finding accepts the hypothesis of this study. According to this finding, perhaps using evidence-based information resources has had an educational role in reducing the elements that help with the disease outbreak. The results of the Alkot M 2016[13] study confirm this significant relationship. They showed the significance of health training in improving knowledge, attitude, and behavior toward MERS contamination and stopping the infection spread and MERS outbreak.

Perhaps, reviewing online COVID-19 related information in books and journals can be helpful to identify preventive behaviors and adhere to them. Al Mohaissen M 2017[14] study indicated that the more significant part of healthcare workers accurately distinguished the preventive measures used when managing patients to avoid the spread of disease.

The results showed that %78.2 of the participants very often compared the obtained online COVID-19 related information with information on other sites. Sayakhot P 2016[15] study confirms these results. They showed that Dutch women thought data on the Internet was valid, and they checked trustworthiness by testing different sites for consistent data and a reliable source. This finding showed that workers in healthcare settings need a helpful website regarding health, comprising all-important health data. This result can help when building such a particular website. It is also vital to consider the visual design of such a site. This is important for policymakers to understand that there is a robust requirement for a systematic assessment of the correctness and reliability of the most regularly observed websites on health-related subjects.

Models of emergency and crisis hazard communication recommend that it is urgent to comprehend the hazard impression of the populace and the resources of data that the people trust in them[16]. The findings indicated that most of the study subjects trusted the website of the Ministry of Health as a reliable COVID-19 related information source. Health policymakers should also emphasize the sites most frequently visited by healthcare workers.

Exaggeration of dangers regularly occurs via web-based media, where exceptionally and profoundly passionate and often bogus data are shared[5]. The findings showed that more than half the participants reported using online social networks to get online COVID-19 related information. Nevertheless, the results showed that most study subjects often needed to talk with doctors. More than half of them often consulted with colleagues and medical students about the data found on the internet. Workers in healthcare settings do not trust online social media and probably accept that a vital part of reasonable care is delivering data and it's sharing. Regarding the effect of the participants' OCRIB on their preventive

behaviors, perhaps more advantages can be provided by health care providers during seeking COVID-19 related information.

The findings showed having moderate ELS increases the odds of having good preventive behaviors to 2.66. It suggests that a higher ELS helps in comprehending information in another language. This finding also indicates that people who are fluent in another language can acquire data about the sickness and protective behaviors from various information resources, which can't be promptly available to low ELS ones.

Implications

We believe this study's results have potentially two significant implications.

First, this study shows the operators need to raise their awareness on the subjects that are more repeatedly searched and on the sites that are more frequently seen. Second, the findings indicate that the perception of the workers' OCRIB and preventive behaviors in health-care settings adds to the capacity of interventional and educational plans to find gaps in workers' knowledge.

Limitations and future studies

This study has a few limitations that ought to be considered. First, the data indicated in this survey are self-reported and somewhat reliant on the study subjects' honesty; so, it might be subject to recall bias, and second, our small sample size may have constrained our capacity to identify other significant differences that may have influenced the connections among variables. Extra research is expected to check these connections in more extensive samples of healthcare workers. It seems that future investigations are also required to check the electronic health literacy of health care providers and their relationship with their knowledge of COVID-19.

CONCLUSIONS

This study shows why healthcare workers utilize the Internet as a data resource and recognize how the workers check and value it. This study indicates the effect of workers' OCRIB on their preventive behavior in COVID-19 infection control. These results suggest that healthcare employees look for data about healthy behaviors and alter their daily behaviors, which show their health awareness.

Ethical permission: Semnan University of Medical Sciences and Health Services, Semnan Iran, Ethical Committee letter No. IR.SEMUMS. REC.1398.295, dated: 10-03-2020.

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AUTHOR CONTRIBUTIONS

Kahouei M Momeni M Pahlevanynejad S Rahaei F Yaghoobi SS Soltani-Kermanshahi M	All authors have equally Determined study eligibility, designed the data extraction instrument, extracted and interpreted the data, drafted the manuscript, revised the manuscript, and supervised the study.

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