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Health information-seeking behavior of nursing students in Isfahan city about COVID-19 disease

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Abstract:

BACKGROUND: The proper planning to help the health information-seeking behavior (HISB), as well as promoting its quantitative and qualitative level among nursing students increases educational efficiency and enables provide appropriate services to patients. The purpose of this study is to investigate the HISB of nursing students in the process of obtaining information about the emerging disease of COVID-19 in Isfahan city.

MATERIALS AND METHOD: The present cross-sectional descriptive-analytical study was conducted in Isfahan's faculties of nursing and educational hospitals. The research sample included 448 students who met the inclusion criteria, using convenience sampling. Lenz's HISB questionnaire was used to collect information. Data were analyzed using Statistical Package for the Social Sciences statistical software version 20, using descriptive and inferential statistics, with confidence interval = 95%.

RESULTS: The results indicate a statistically significant relationship between the age and marital status of students with the overall score of the HISB of nursing students ($P < 0.05$). Regarding the study, information was mostly obtained from "social media" (43.7%) although the participants more trusted in "health experts" (57.5%). The results of the present study indicated that the students often searched for "disease symptoms" (38.8%) and "epidemiological issues" (22.5%).

DISCUSSION: "Internet sites and search engines" and "social media" provide quick access to information for users, which is one of the reasons for favoring these sources. However, they can be a platform for disseminating false and invalid information. Thus, other reliable sources such as the Ministry of Health and Medical Education should play a greater role in creating content on social media.

Keywords:

COVID-19, health information-seeking behavior, Iran, nursing students

Introduction

Given the COVID-19 pandemic and its subsequent several concerns, accessing medical information and increasing relevant information, or improving health information-seeking behavior (HISB) lead to valuable results in facing the disease.^[1] The outcomes of promoting the HISB among the people include higher knowledge, less anxiety, more ability to overcome risk factors, and faster recovery.^[1]

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The HISB refers to the purposeful behavior of individuals to meet health information needs, as well as how they search for and use disease-related information. It involves aspects such as health information needs, sources, and barriers, as well as individuals' attitudes toward health information.^[2-4] Due to the determinant role of students in enhancing the scientific, social, health, and economic infrastructures of various communities, it is important to highlight and identify their access channels to the required information, achievement, barriers, and problems in the information-seeking

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process.^[5,6] Students find themselves in uncharted territory when facing COVID-19 disease, and their preventive measures may affect the behavior of their families and community members apart from the disease's social issues. Accordingly, students from universities and higher education institutions play a pivotal role in disseminating key health messages and fighting against the COVID-19 disease.^[7]

Further, the nursing profession is strongly and directly related to individuals' health. Nurses need to seek information due to their professional activities. They work with health care workers to make patients healthy and Information is in this manner a vital device for nurses.^[8] Those with information-seeking skills, as well as the ability to appropriately and purposefully select scientific information, can optimally benefit from current knowledge and provide more useful services to patients.^[5]

Given the rapid outbreak and irreparable consequences of the COVID-19 disease, the understanding of the nursing students' HISB in this regard is crucial to remove their facing barriers and problems, as well as improving their access to the required information. It is considered as one of the important topics regarding information-seeking behavior, especially in the field of health. The proper planning to help the HISB, as well as promoting its quantitative and qualitative level among nursing students increases educational efficiency and enables provide appropriate services to patients. Therefore, analyzing the HISB of this population, one of the groups on the front line and in face-to-face contact with COVID-19 patients, about self-care and training the patients plays a key role in preventing the next waves of this disease.

To the best of our knowledge, no study has focused on information sources, trust in the sources, and satisfaction level with the sources, as well as the purposes of information-seeking, the frequency of active information-seeking, the effect of utilizing this information on individuals' performance during coping with the COVID-19 disease, and generally HISB of students in the fields of medical sciences and health, especially the nursing, about this disease in Isfahan. Further, inconsistent results have been obtained in the limited studies conducted worldwide. Thus, the present study aimed to assess the COVID-19 HISB among nursing students in Isfahan city.

The results can estimate the HISB of these individuals who have an effective role in preventing the next waves by caring for patients and training people due to their field of study. In fact, they provide researchers with basic information for performing the future intervention

research to improve the HISB and health literacy by evaluating the current situation.

Materials and Method

Study design and setting

The present cross-sectional descriptive-analytical study was conducted in Isfahan's faculties of nursing and the Islamic Azad University of Khorasgan and all educational hospitals of Isfahan city.

Study participants and sampling

The sample of the research was selected among the nursing students who met the criteria. The inclusion criteria included the willingness to participate in the study. The sample size was calculated by using Cochran's formula and considering the value of $P = 0.5$ and the confidence level of 95%, the number of 385 people, and taking into account the attrition rate of 15%, finally, 448 people were considered using convenience sampling.

Data collection tool and technique

The data were collected through the questionnaire. The first part of the questionnaire consisted of demographics, followed by the question "Have you ever cared for or been in close contact with a patient with suspected or confirmed COVID-19?" Additionally, questions were also asked about sources of information acquisition, trust in sources, objectives of information acquisition, the minimum frequency of actively seeking information, level of satisfaction with sources, and the effect of using the obtained information on performance.

The second part of the questionnaire included the HISB questionnaire which was approved by the faculty members of the medical information and management faculty of Isfahan University of medical sciences, based on the lens of HISB theory and reliable sources. In Lenz's theory of health information-seeking behavior gathering information as part of the decision-making process consists of six stages, which include information search stimulus, information goal determination, decision-making related to active information search, information search behavior, information acquisition and evaluation, and finally, decision-making based on information adequacy.^[9]

This questionnaire consists of 30 questions of the 5-point Likert type and includes six subscales (information search motivation, information goal determination, decision-making about active information search, information search behavior, information acquisition and evaluation, and decision-making based on information adequacy). Each question is graded from 1 to 5 (1 = very low to 5 = very high) and the total score of the questionnaire is between 30 and 150. HISB

is divided into three levels, unfavorable level (score 30–75), medium level (76–105), and favorable (good) level (106–150). Questions 1–5 related to the field of “information search engines,” questions 6–10 related to the field of “determining the purpose of information,” questions 11–15 related to the area “decision about active information search,” questions 16–20 related to the field of “information-seeking behavior,” questions 21–25 related to the field of “acquiring and evaluating information,” and questions 26–30 are related to the field of “decision-making based on the sufficiency of information.”

The validity of the questionnaire was examined and confirmed by the content validity method by the panel of experts and respected members of the medical library and information faculty of Isfahan Faculty of Management and Medical Information. The reliability of the questionnaire was also evaluated by the test-retest method. The correlation coefficient of 0.85 for the questionnaire indicates the satisfactory reliability of the present questionnaire. The reliability of this questionnaire in nursing students was also investigated using the internal consistency method. The value of Cronbach’s alpha coefficient for the questionnaire was 0.75, which is a satisfactory level of reliability. The data were analyzed using Statistical Package for the Social Sciences statistical software version 20, applying descriptive and inferential statistics (one-way analysis of variance (ANOVA), independent sample *t*-test, Pearson and Spearman correlation coefficient test).

Ethical consideration

After getting the code of ethics (IR.MUI.RESEARCH.REC.1399.285) from the research vice-chancellor of Isfahan university of medical sciences, the researchers obtained relevant officials’ cooperation, taking into account ethical considerations, and obtained informed consent from the nursing students to collect data.

Results

Most of the participants were female (61.5%), single (88.4%), and undergraduates (91.51%) at Isfahan University of Medical Sciences (70.60%). In addition, 150 (33.6%) and 204 (45.6%) respondents had taken care of a patient with the COVID-19 disease and an individual suspected of the disease, respectively. The mean score of HISB was 108.66 (11.74) with a range of 70–150 [Tables 1 and 2]. Further, 0.2% of the participants exhibited poor HISB (30–75), while moderate (76–105) and very good (106–150) behaviors were observed among 38.2 and 61.6%, respectively.

Table 3 outlines the relationship between HISB and its components with the most important demographic

Table 1: Frequency distribution of demographic characteristics of the research units

Demographic characteristics	Frequency	Percentage
University		
University of Medical Sciences	315	70.6
Azad University	131	29.4
Gender		
Female	275	61.5
Man	172	38.5
Grade		
Undergraduate	410	91.51
Master's degree	30	6.69
PHD	8	1.78
Semester		
1	1	2
2	50	11.3
3	90	20.4
4	87	19.7
5	61	13.8
6	48	10.9
7	58	13.1
8	47	10.6
Marital status		
Single	395	88.4
Married	48	10.7
Divorced	4	0.9
History of caring for a patient with suspected COVID-19		
Yes	204	45.6
No	243	54.4
History of caring for a patient with COVID-19		
Yes	150	33.6
No	296	66.4

information of the nursing students. As shown, age and marital status are significantly related to most components ($P < 0.05$) and the total score ($P = 0.001$; $r = 0.16$ for age; $P = 0.01$, $f = 4.58$ for marital status). Furthermore, a statistically significant relationship was found between the internship hospital with the sixth component of HISB ($P = 0.01$; $f = 2.26$).

The results introduced “social media” such as WhatsApp, Telegram, and Instagram (43.7%) and “Internet sites and search engines” (16.7%) as the most utilized information sources for getting information about the COVID-19 disease. However, “brochure” (2%) and “newspaper” (2.4%) were the sources with the minimum use. The share of “television” and “traditional sources” (family, relatives, friends, and colleagues) was 14.3 and 12.5%, respectively.

The students had more trust in “health experts” (physicians, nurses, and relevant experts) (57.5%) in spite of acquiring the greatest amount of information through “social media.” It is worth noting that only 1.5% of information

Table 2: Average, standard deviation, and maximum and minimum age and scores of HISB domains

	Minimum	Maximum	Mean	Standard Deviation
Age	19	52	22.159	3.93
Subscale 1: information-seeking motivation	13	25	19.44	1.96
Subscale 2: Informational goal setting	5	25	17.87	3.15
Subscale 3: Decisions about active information-seeking	10	25	16.52	2.39
Subscale 4: Information-seeking behavior	7	25	17.4	3.44
Subscale 5: Information acquisition and evaluation	5	25	19.04	3.24
Subscale 6: Decision-making based on information sufficiency	9	25	18.38	2.38
Total score	70	150	108.66	11.74

was obtained from “health experts.” Regarding trust in information sources, “Internet sites and search engines” and “social media” (Internet sources) with 30.5% and “traditional sources” (family, relatives, friends, and colleagues) with 12% were in the next ranks, respectively.

Additionally, knowing “disease symptoms” (38.8%), “epidemiological issues” (e.g., incidence, recovery, and mortality rate) (22.5%), and “protective measures” (19.9%), as well as “vaccination” (6%) were among the most common purposes of information-seeking. The majority of the participants (42.6%) performed the HISB “at least once a week,” while the behavior was performed “at least once a day” and “at least once every 2 weeks” by 21 and 20.1% of individuals, respectively. Further, 2.9% did not actively explore at all and received the information passively.

A large number of the individuals self-reported that their performance “improved” (77.5%) or “somewhat improved” (17.6%) following information acquisition. However, only 7.4% believed in the ineffectiveness of getting information in promoting their performance in the treatment and prevention fields. Finally, 60.3, 25.7, and 3.8% of the students were “satisfied,” “very satisfied,” and “dissatisfied” or “very dissatisfied” with the gained information, respectively.

Discussion

The present study was conducted among the participants with the mean age of 22.15 (3.93) years, most of whom were female (61.5%) and undergraduates (91.51%), which is consistent with the results of some studies. For example, Jalilian *et al.* assessed 160 individuals with the mean age of 22.47 (3.09) years, the majority of whom (62%) were female.^[10] Similarly, Zakar *et al.* focused on the participants having the mean age of 22.5 (4.5), a large number of whom were female (52.7%) and held a bachelor’s degree (52.4%).^[11] The present study revealed very good HISB (106–150) among 61.6% of the students with a mean score of 108.66 (11.74). The results are in line with those of Jalilian *et al.* representing very good HISB and information-seeking skills in 40.7% of individuals.^[10]

In the present study, gender was not significantly related to the HISB, reflecting the equal access of both genders to the COVID-19 information sources at the community level, as well as the same HISB of the two genders. The results are in agreement with those of Boumeri *et al.*^[1] and Schäfer *et al.*^[12] According to Jalilian *et al.*, the Chi-squared test results indicated a significant difference between men and women in terms of receiving information from various sources,^[10] which is inconsistent with the results of the present study.

Based on the results, a statistically significant relationship was detected between age with most components ($P < 0.05$) and total HISB score ($P = 0.001$, $r = 0.16$), as well as between marital status with most components ($P < 0.05$) and total HISB score ($P = 0.01$, $f = 4.58$). However, some researchers found a lack of a significant relationship between the HISB with age^[1,10] and marital status.^[10]

The contradictions may be attributed to the difference in the sample size so that the present study was performed among 448 students, while the sample size was 258 and 200 ones in the study of Jalilian *et al.*^[10] and Boumeri *et al.*,^[1] respectively. The information sources can be mentioned as another reason for the disagreements since all possible sources were allowed in the present study, while respondents could obtain information only through the Internet based on the study of Jalilian *et al.*^[10] Further, Boumeri *et al.* focused on only graduate students,^[1] while students at all levels, especially undergraduates, were included in the present study, which can be among the other reasons in this regard.

In the present study, the participants more referred to “social media” such as WhatsApp, Telegram, and Instagram (43.7%) and “Internet sites and search engines” (16.7%), respectively. However, “brochure” and “newspaper” were the least used sources, the share of which was 2 and 2.4%, respectively. The other common information sources were “television” (14.3%) and “traditional sources” (family, relatives, friends, and colleagues) (12.5%). The majority have sufficient or minimal familiarity with information-seeking methods and can look for the required information from

Table 3: The relationship between the average score of health information-seeking behavior and its subscales with the demographic characteristics of the research units

	Gender Independent f-test		Semester (Spearman)		Age (Pearson)		Marital status (ANOVA)		Hospital (ANOVA)		University Independent f-test		Care of a patient with suspected COVID-19 Independent f-test		Care of a patient with COVID-19 Independent f-test	
	P	t	P	r	P	r	P	f	P	f	P	t	P	t	P	t
Subscale 1: Information-seeking motivation	0.65	-0.44	0.09	-0.07	0.01	0.11	2.17	0.7	0.71	0.76	0.29	0.9	0.11	0.51	-0.64	
Subscale 2: Informational goal setting	0.42	0.80	0.06	-0.08	0.003	0.14	0.004	5.59	0.09	1.65	0.36	0.29	1.05	0.14	1.45	
Subscale 3: Decisions about active information-seeking	0.30	-1.02	0.78	-0.01	0.54	0.02	0.54	0.61	0.68	0.74	0.52	0.51	-0.64	0.21	1.27	
Subscale 4: Information-seeking behavior	0.11	1.59	0.33	-0.04	0.01	0.11	0.03	3.32	0.77	0.64	0.22	0.65	-0.45	0.26	1.12	
Subscale 4: Information-seeking behavior	0.06	1.98	0.13	-0.07	0.001	0.16	0.004	5.58	0.31	1.16	0.65	0.63	-0.47	0.92	0.09	
Subscale 6: Decision-making based on information sufficiency	0.89	0.12	0.36	0.04	0.04	0.09	0.87	0.13	0.1	2.26	0.3	-1.01	1.36	0.38	0.87	
Total score	0.33	0.96	0.22	-0.05	0.001	0.16	0.01	4.58	0.33	1.12	0.65	0.44	0.18	0.28	1.07	

Confidence Interval (CI) of 95% was considered, so P-values less than 0.05 was considered significant

up-to-date information sources such as “Internet sites and search engines” and “social media.” Accordingly, it was expected that they got most information from the two sources, and less referred to traditional and printed ones.

The results are confirmed by those of Boumeri *et al.* who suggested “Internet sites and search engines,” and “social media” such as Telegram and WhatsApp, “family,” and “television” as the most utilized sources, respectively. Furthermore, they reported “brochures and pamphlets” as the sources with the minimum use, which is consistent with the results of the present study.^[1] Also in the Parija *et al.* (2020) study, 88.2% (283/321) were using the Internet for health information through digital media.^[13]

According to Schäfer *et al.*,^[12] 81% of respondents gained information through interpersonal contacts with family members, friends, and colleagues during the COVID-19 crisis. In the COVID-19 crisis, “Internet sites and search engines” and “social media” (online sources) were the most important information sources for students (92%), while personal contacts with “health experts” (19%), pharmacists (4%), or other patients (4%) had little significance.^[14] The results are in line with those of the present study which represented information acquisition from “health experts” by only 1.5% of the participants. Similarly, some researchers have introduced “Internet sites and search engines” and “social media” (Internet sources) as the most important information source.^[14-16]

Additionally, Jalilian *et al.* found that individuals more applied “social media” (most common source, 75.2%), “Internet sites and search engines,” and “television” for accessing COVID-19 information.^[10] Zakar *et al.* introduced “Internet sites and search engines” such as Google, Bing, and Yahoo (43.8%), “social media” like Facebook, Instagram, Twitter, and YouTube (39.9%), and “television news channels” (36.7%) as the most used information sources. However, the least referrals were related to “health experts” (health portals and physician/pharmaceutical websites),^[11] which are in agreement with the results of the present study.

Regarding the study, information was mostly obtained from “social media” although the participants more trusted in “health experts” (physicians, nurses, and relevant experts) (57.5%). Further, “Internet sites and search engines” and “social media” (Internet sources) with 30.5% and “traditional sources” (family, relatives, friends, and colleagues) with 12% were ranked as the next sources in terms of trust in information sources, respectively. The results are consistent with those of Boumeri *et al.* which reflected the higher trust in the information from “traditional sources” despite the

greater utilization of new sources such as “social media” and “Internet sites and search engines.”^[1]

According to Gani *et al.*, participants utilized “television” and “Internet” more as the information sources. They had the highest trust in “health experts” and “authorities” although this source was rarely used by them,^[17] which is in line with the results of the present study. However, Zare reported the trust of Kermanshah citizens in “social media” such as Telegram, WhatsApp, and Instagram to get COVID-19 health information,^[18] which is inconsistent with the results of the above-mentioned studies which assigned this source in the first priorities.

The results of the present study indicated that the students often searched for “disease symptoms” (38.8%), “epidemiological issues” (e.g., incidence, recovery, and mortality rate) (22.5%), “protective measures” (19.9%), and “vaccination” (6%). Based on the results of Zakar *et al.*, the vast majority of individuals explored to find “current spread of disease cases” and “epidemiological issues” (57.5%), as well as “disease symptoms” (15.1%).^[11] Some studies revealed that a large number of respondents sought to find the information related to “disease prevention” and “early symptoms” (47.8%),^[19] which is in agreement with the results of the present study.

In terms of the frequency of active information-seeking, most of the participants (42.6%) performed the HISB “at least once a week” in this study, which is in line with the results of Zakar *et al.*^[11] However, they found that 15.9% of individuals did not search for COVID-19 information on the Internet during the last 4 weeks although the respondents followed the COVID-19 news through other sources.^[11]

In the present study, a significant percentage of the students (95.1%) self-reported their performance “improved” or “somewhat improved” after receiving information, which is consistent with those of Jalilian *et al.* which revealed a promoted behavior among 243 ones (94.2%).^[10] Finally, the majority of the individuals were “satisfied” (60.3%) and “very satisfied” (25.7%) with the obtained information. The result is in agreement with those of another study which reported 35 and 25.6% as the percentage of the students satisfied and very satisfied with the information during the COVID-19 crisis.^[11]

Limitation and recommendation

This study was conducted among a population of nursing students which cannot be generalized to all medical students populations, and one of the limitations of our study was it. Therefore, it is suggested that to increase generalizability, future studies should be conducted with the population including all groups of medical students. Another limitation was sampling was

done at the peak of the COVID-19 wave, so the risk of transmitting the disease to the researchers was high. To solve this problem, the researchers had to wear protective clothing, which slowed down the sampling process.

Conclusion

The HISB is considered as essential for community health promotion. The results of the present study revealed that the nursing students had very good HISB about COVID-19 disease. They are more trusted in “health experts” in spite of getting the highest amount of information through “social media” and “Internet sites.”

“Internet sites and search engines” and “social media” provide quick access to information for users, which is one of the reasons for favoring these sources. However, they can be a platform for disseminating false and invalid information. Thus, other reliable sources such as the Ministry of Health and Medical Education should play a greater role in creating content on social media. More attention from ministerial authorities to this issue can strongly help improve health literacy, followed by enhancing the health of students, patients, and healthcare recipients, respectively.

This issue can have an effective role in preventing the next waves of the disease or reducing its upward slope in the possible subsequent waves during the long term. In fact, the results can open up new perspectives for the planning and policy-making of the health authorities in COVID-19 prevention and self-management programs.

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Conflicts of interest

There are no conflicts of interest.

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