

Health information seeking patterns among medical and non-medical university students in Egypt

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ABSTRACT

The researchers conducted the study to define university students' current patterns of health information resources use, compare, and assess the resources medical and non-medical university students use when exercising health information seeking (HIS), and to assess their perceptions and behaviors regarding adoption of online tools. This is an exploratory cross-sectional study conducted among a convenience sample of 336 university students via an online survey comprised of the following: demographics, perspectives of health information seeking, and experiences and problems towards HIS. More than two thirds of the sampled students stated that they sought health information. Their most curious subject was lack of physical activity. Searching the internet and using social media were the most used ways to obtain health information. Ease of access and reliability of source were the most affecting sources while searching. Medical students prefer reliable websites in the health domain with high level of quality and credibility. While non-medical students access health information more through social media. Workshops could be organized for medical students to convey to them the proper criteria for selecting credible health websites sources. As regards non-medical students, reliable easily accessible health information sources that could be reached through social media.

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1. INTRODUCTION

Health information seeking (HIS) is the process of gathering information related to health [1]. Many factors guide the need to and have an impact on the need to seek health information, including our concern for a specific health state, or health-related risk or benefit [2]. Today, due to new fast technological progresses, individuals turn out to have a wide range of means when searching for health issues [3]. In the earlier decades, sources of health information were almost restricted, but research now indicates that the use of the internet powers health information seeking trends [4]. All over the world, more than 4.2 billion people worldwide use the internet and social media nowadays [5], [6]. Consequently, it is now affirmed that these are means through which people search for information regarding their health [6].

Health information seeking sources have a multiplicity of material that is easily accessible, readily available, and free of cost. With more accessibility to these health resources, individuals become now more able to manage health matters more by themselves, in terms of seeking information more often for themselves and for others, especially when access to health care is inadequate [3], [7].

University students are a neglected target group for health promotion activities. Moreover, they are at high risk of using untrustworthy health information through social media networking. There is a need to

precisely understand their preferred and convenient source of health information [8]. On another hand, despite the benefits of using internet for health purpose, the existing literatures have mainly focused on developed countries, with little research work done in developing countries, particularly Africa [9]. University students-both medical and non-medical - is an important subcategory of the population. Medical students specifically are generally faced with making health decisions on their own for the first time during the early time period of recently acquired independence. More to say they might become a potential source of health information for others.

2. METHOD

2.1. Study setting and design

The researchers conducted an exploratory cross-sectional study among a sample of university students in Egypt via an electronic-open survey from January to March 2021. The research was carried out in accordance with the checklist for reporting results of internet e surveys (CHERRIES) guidelines. The researchers conducted the current study to define university students' current patterns of health information resources use, compare and assess the resources medical and non-medical university students use when exercising health information seeking, and to assess their perceptions and behaviors regarding adoption of online tools.

2.2. Population and sampling

The study was targeting undergraduate Egyptian university students, both medical and non-medical. The sample size is calculated using OpenEpi online calculator. In response to the scarcity of previous studies regarding the topic both in Egypt and worldwide, we assumed the proportion of students who practice electronic health information seeking was taken as 50%; the required sample size was 330 students. Adding a 10% for the possible non-response, the final sample size would include 363 students via a convenience sampling technique. The researchers used an online data collection tool because the COVID-19 critical situation necessitated social distance. Participants were given the opportunity to fill out and submit a google form. The researchers distributed the questionnaire link to Facebook which is the most widely used social media platform in Egypt. We used a purposive sampling technique through searching the coalition social media groups with a great network of students. Once they located the groups, they disseminated announcements about the study to these groups and provided the study page link. along with an encouraging statement that included the survey's purpose and the contact information for one of the researchers. The inclusion criteria of participants were: i) being an Egyptian student; ii) aged >18 years old), and iii) willing to participate. The researchers excluded incomplete forms.

2.3. Data collection instrument

A questionnaire previously developed to assess HIS in a sample of college students was used with minor modifications [10], [11]. It consisted of the following sections, the first section addressed demographics, which included age, sex, as well as grade level, the second section addressed perspectives of health information seeking among university students using seven close ended questions. The third section addressed experiences and problems towards HIS, and the last one was concerned with important items in evaluating health information

A pilot test on a non-probability convenience sample of 30 students (beyond the sample size and they were excluded from the sampling frame) to clarify terms and assess any potential difficulty in questionnaire administration. The content of the questionnaire was validated by four faculty members who are public health specialists, and the required revisions were made. Using the Cronbach's alpha method, the reliability of the questionnaire was calculated to be 0.85.

2.4. Data management and statistical analysis

The researchers used SPSS version 24.0 (IBM, SPSS, USA) for statistical analysis. Categorical variables were expressed in proportions and percentages. The researchers used the chi square test of significance for comparison. A p-value of 0.05 was considered significant.

2.5. Ethics approval and consent to participate

Research proposal along with data collection instrument was submitted to the Medical Research Ethics Committee Faculty of Medicine Cairo University for reviewing and approval. Before data collection, study participants provided anelectronicallysigned written informed consent after being informed about the purpose of the study. Only those who agreed were included in the study, while those who refused were excluded by submitting an empty form after answering 'Not willing to participate'. All data collection

techniques were conducted in accordance with the Helsinki Declarations of biomedical ethics. Participants were informed that the survey was anonymous and that their participation was entirely optional.

3. RESULTS AND DISCUSSION

The worked upon sample included 336 university students; females formed the greater percent (59%) of them. Non-medical students formulated more than one third of the sample (39%). Most of the students (80%) were aged 20 years or more with a maximum of 25 years, most of them were in the 3rd academic year or more. About three quarters of the sampled students were urban residents (75%) as displayed in Table 1.

Table 1. Sociodemographic characteristics of the sampled students (N=336)

Sociodemographic characteristics		No.	%
Gender	Males	139	41.2
	Females	197	58.8
College	Medical	206	61.1
	Non-medical	130	38.9
Age	17-19	66	19.6
	20 or more	270	80.4
Grade level	1 st or 2 nd year	80	24.4
	3 rd year or more	248	75.6
Residence	Urban	246	74.5
	Rural	84	25.5
Socioeconomic status	Well to do	301	90.4
	Not well to do	32	9.6
Familiar with English	Yes	305	90.8
	No	31	9.2

More than two thirds of the sampled students stated that they sought health information during the last six months, more among medical than non-medical students with a significant difference. The highest significant cause of not seeking medical information -with more than half of the students stating it- was “Haven’t felt need for health information” more among medical students (65%). Students responded that they moderately sought health information for themselves and their parents. Regarding their siblings and acquaintances, they slightly sought health information for. Medical students were found to seek health information for themselves more than non-medicals, while non-medicals sought health information more for their parents and family members. The differences were significant. The extent of curiosity was slight for all health subjects except for “Lack of physical activity”. Again, the differences were significant as shown in Table 2.

The ways which were stated to be greatly used for obtaining health information were “searching the internet” (59%) followed by “using social media” (25%). Non-medicals reported using social media almost double to medical students (36%, 17%). The difference was with a lower extent regarding “using applications on cellphone” (23%, 16%). Both with a significant difference. “Listening to Radio” and “Watching TV” were the least ways of obtaining health information. Most students (65%) prefer “A search engine such as Yahoo, and Google” as a place of start searching the internet, more among non-medicals (75%) followed by “Social media” and “website for health care center” with a big difference, while among medicals it was followed by “A specific website in the health domain” with a less difference and the differences were significant. Almost half of the sampled students searched in other language other than Arabic, more among medicals (63%) than non-medicals (31%) with a significant difference as revealed in Table 3 (see in Appendix).

All reasons affecting ways of obtaining health information were higher among medical students “Ease of access” was the most affecting one. The difference was most demarcated between medical and non-medical students in “Higher reliability” reason as displayed in Figure 1.

Most of the students agreed that “Seeking health information helps to understand the conditions, health status, and possible treatments required” and “Seeking health information gives confidence to communicate with the physician and to manage health”. The most problems and obstacles found when seeking health information were “Difficulty in determining the quality of information found” with no significant difference and “The absence of proper information” with a significant difference as seen in Table 4.

Table 2. Reasons of health information seeking among medical and non-medical students (N=336)

Items		Medical (206)		Non- medical (130)		Total (336)		P value
		No.	%	No.	%	No.	%	
Seeking health information for the last six months	Yes	153	74.2	85	65.4	238	70.8	0.001*
	No	53	25.7	45	34.6	98	29.2	
Reasons for answering "no"	Haven't felt need for health information	32	65.0	21	42.0	53	54.1	0.042*
	Felt need but wasn't familiar with resources	3	6.0	8	16.0	11	11.0	
	Felt need but didn't have access	2	4.1	8	16.0	10	10.0	
	Felt need but don't have time	12	24.0	12	24.0	24	24.0	
Seeking health information for Oneself	Greatly	45	26.0	14	13.0	59	21.0	0.007*
	Moderately	81	47.0	49	46.0	130	47.0	
	Slightly	44	25.0	43	40.0	87	31.0	
Parents	Greatly	17	11.0	27	26.0	44	17.0	<0.001*
	Moderately	60	39.0	53	51.0	113	44.0	
	Slightly	74	49.0	22	21.0	96	37.0	
Siblings	Greatly	8	6.0	5	6.0	13	6.0	0.005*
	Moderately	37	28.0	42	50.0	79	37.0	
	Slightly	83	64.0	36	43.0	119	56.0	
Acquaintances	Greatly	4	3.0	6	6.0	10	4.0	<0.001*
	Moderately	44	34.0	39	43.0	83	38.0	
	Slightly	80	62.0	44	49.0	124	57.0	
Other family members	Greatly	4	3.0	9	10.0	13	6.0	<0.001*
	Moderately	29	23.0	39	44.0	68	32.0	
	Slightly	89	72.0	39	44.0	128	61.0	
Friends	Greatly	16	11.0	15	16.0	31	13.0	<0.001*
	Moderately	59	41.0	37	41.0	104	45.0	
	Slightly	67	47.0	37	41.0	104	45.0	
Curiosity about each health subject & its extent	Greatly	44	27.0	21	20.0	65	24.0	<0.001*
Incidents & injuries	Moderately	52	32.0	38	37.0	90	34.0	
	Slightly	65	40.0	43	42.0	108	41.1	
Tobacco use	Greatly	25	17.0	15	18.0	40	18.0	<0.001
	Moderately	39	27.0	20	25.0	59	26.0	
	Slightly	79	55.0	44	55.0	123	55.0	
Lack of physical activity	Greatly	33	20.0	41	39.0	74	27.0	0.001
	Moderately	85	51.0	36	34.0	121	45.0	
	Slightly	46	28.0	26	25.0	72	26.0	
Narcotics & alcohol	Greatly	23	17.0	9	11.0	32	15.0	<0.001
	Moderately	32	24.0	20	26.0	52	25.0	
	Slightly	76	58.0	47	61.0	123	59.0	
Physical violence	Greatly	23	17.0	13	16.0	36	16.0	<0.001
	Moderately	36	27.0	22	27.0	58	27.0	
	Slightly	73	55.0	45	56.0	118	55.0	
High risk sexual behaviors	Greatly	26	21.0	18	23.0	44	22.0	<0.001
	Moderately	32	26.0	16	21.1	48	24.0	
	Slightly	65	52.0	42	55.0	107	53.0	

*Statistically significant (Chi-square test)

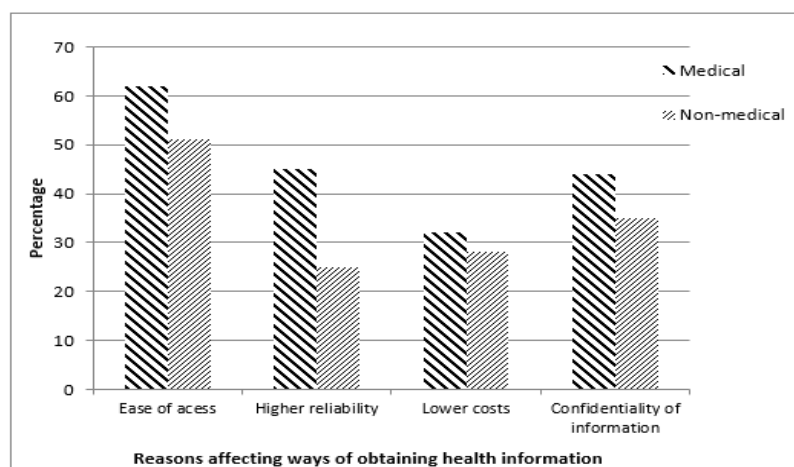


Figure 1. Reasons affecting ways of obtaining health information

Table 4. Experiences and problems towards health information seeking among enrolled participants (N-336)

Items		Medical (206)		Non-medical (130)		Total (336)		p-value No.
		No.	%	No.	%	No.	%	
Extent of agreement with these statements considering experiences and attitude towards health information								
Useful and valid health information can be obtained easily	Agree	48	24.0	40	33.1	88	27.0	0.089
	To some extent	139	69.0	70	57.0	209	65.0	
	Disagree	12	6.0	11	9.1	23	7.0	
Seeking health information helps to understand the conditions, health status, and possible treatments required	Agree	144	72.0	83	69.0	227	71.0	<0.001*
	To some extent	51	25.0	33	27.0	84	26.0	
	Disagree	5	2.0	3	2.0	8	2.0	
Seeking health information reduces anxiety and worries about health.	Agree	101	51.0	72	60.0	173	54.0	0.048*
	To some extent	78	39.0	31	26.1	109	34.0	
	Disagree	19	9.0	16	13.0	35	11.0	
Seeking health information gives confidence to manage health	Agree	126	63.0	68	58.0	194	61.0	<0.001*
	To some extent	66	33.0	45	38.0	111	35.0	
	Disagree	8	4.0	4	3.0	12	3.0	
Seeking health information gives confidence to communicate with the physician	Agree	141	70.0	68	58.0	209	66.0	0.033*
	To some extent	49	24.0	37	31.0	86	27.0	
	Disagree	9	4.0	12	10.0	21	6.0	
Problems and obstacles when seeking health information								
Lack of access to appropriate information sources in a simple language	High	21	10.0	19	15.0	40	12.0	<0.001*
	Moderate	85	44.0	61	50.0	146	46.0	
	Low	87	45.1	41	33.0	128	40.0	
Concerns about the disclosure of problems or illness to others	High	10	5.0	13	11.0	23	7.0	0.046*
	Moderate	78	42.0	55	48.0	133	44.0	
	Low	96	52.0	45	39.0	141	47.0	
High costs of access to health information	High	22	11.0	24	21.0	46	15.0	0.064*
	Moderate	65	35.0	39	35.0	104	35.0	
	Low	98	52.0	48	43.0	146	49.0	
Believing that they can solve the problem or the disease themselves	High	23	12.0	22	19.0	45	14.0	<0.001*
	Moderate	79	42.0	50	43.0	129	42.0	
	Low	86	45.0	43	37.0	129	42.0	
Being punished by parents	High	6	3.0	9	9.1	15	5.0	0.015*
	Moderate	16	9.0	18	18.0	34	12.0	
	Low	143	86.0	72	72.0	215	81.0	
Lack of information or inability to find the information being searched for	High	21	11.0	18	15.0	39	13.0	<0.001*
	Moderate	78	43.0	55	48.0	133	45.0	
	Low	80	44.0	40	35.0	120	41.1	
Difficulty in determining the quality of information found	High	43	23.0	39	34.0	82	27.0	0.081
	Moderate	108	58.1	53	46.0	161	53.0	
	Low	35	18.0	21	18.0	56	18.0	
The absence of proper information	High	22	11.0	21	18.0	43	14.0	0.013*
	Moderate	93	50.0	67	59.0	160	53.0	
	Low	70	37.0	25	22.0	95	31.0	

*Statistically significant (Chi-square test)

The prominent reason for not using the internet among medical students was “Unreliability” (71%), with the addition of “Competence to search for & use internet information” among non-medicals with almost equal percents (59%, 60%) as displayed in Figure 2. The items which were more important among medical students in evaluating health information were “Validity and reliability of the information” followed by “Understandability of the information content” then “The trueness and correctness of the information”, while the items which were more important among non-medical students were “Free access to information” followed by “Keeping the information up-to-date”, “The trueness and correctness of the information”, “Validity and reliability of the information” and “Understandability of the information content” with almost equal proportion. “The simplicity of finding the information” and “Free access to information” were the items in evaluating health information that were considered among non-medicals than medicals with a significant difference as revealed in Tables 5 and 6.

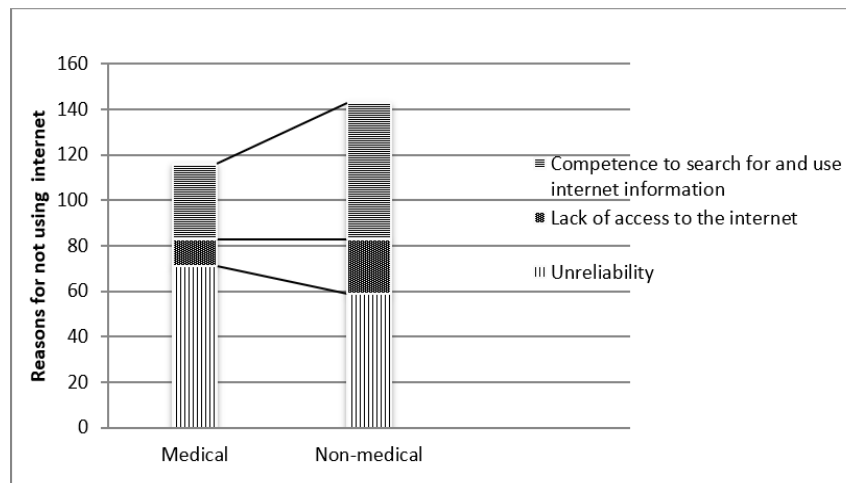


Figure 2. Reasons for not using the internet for health information

Table 5. Important items considered by the enrolled students in evaluating health information

Important items in evaluating health information		Medical (206)		Non-medical (130)		Total (336)		p-value
		No.	%	No.	%	No.	%	
The expertise, experience, and reputation of the author of the content	Always	40	20.0	43	38.1	83	27.0	0.005*
	Often	60	31.1	24	21.0	84	27.0	
	Sometimes	68	35.0	27	23.0	95	31.0	
	Rarely	13	6.0	12	10.0	25	8.0	
	Never	12	6.0	7	6.0	19	6.0	
The availability of the author's phone number and postal address	Always	4	2.1	14	2.0	18	5.0	<0.001*
	Often	16	8.0	16	14.0	32	10.0	
	Sometimes	56	29.0	37	32.0	93	30.0	
	Rarely	66	34.0	28	24.0	94	30.0	
	Never	49	25.0	19	16.0	68	22.0	
The author's dependence on a reputable and prestigious institute	Always	25	13.0	22	19.0	47	15.0	0.096
	Often	54	29.0	21	18.0	75	25.0	
	Sometimes	63	34.1	45	40.0	108	36.0	
	Rarely	26	14.1	19	16.0	45	15.0	
	Never	17	9.0	5	4.0	22	7.0	
The simplicity of finding the information	Always	50	25.0	46	41.1	96	31.0	0.013*
	Often	63	32.0	20	17.0	83	27.0	
	Sometimes	58	29.0	32	28.0	90	29.0	
	Rarely	17	8.0	7	6.0	24	7.0	
	Never	7	3.0	7	6.0	14	4.0	
Free access to information	Always	64	33.0	55	48.0	119	38.0	0.002*
	Often	64	33.0	16	14.0	80	26.1	
	Sometimes	47	24.0	34	29.0	81	26.0	
	Rarely	12	6.0	5	4.0	17	5.0	
	Never	6	3.0	4	3.0	10	3.0	
Providing information about the terms and conditions of accessing and using the content	Always	19	10.0	20	18.0	39	13.0	<0.001*
	Often	32	17.0	15	13.0	47	16.1	
	Sometimes	84	45.0	38	34.0	122	41.0	
	Rarely	35	19.0	23	21.0	58	19.0	
	Never	13	7.0	13	11.0	26	8.0	
Providing the date of publishing the content	Always	62	32.0	31	27.0	93	30.0	0.044*
	Often	0	0.0	0	0.0	0	0.0	
	Sometimes	93	48.0	43	38.0	136	45.0	
	Rarely	23	12.0	24	21.0	47	15.0	
	Never	13	6.0	3	11.0	26	8.0	
Keeping the information up-to-date	Always	88	45.0	52	47.0	140	45.0	0.006*
	Often	46	23.0	16	14.0	62	20.0	
	Sometimes	48	24.0	22	20.0	70	22.0	
	Rarely	9	4.0	9	8.0	18	5.0	
	Never	4	2.1	11	10.0	15	4.0	

*Statistically significant (Chi-square test)

Table 6. Additional items considered by the enrolled students in evaluating health information

Important items in evaluating health information		Medical (206)		Non- medical (130)		Total (336)		p-value
		No.	%	No.	%	No.	%	No.
Absence of favoritism or supporting a certain person or organization more than others	Always	31	16.0	24	22.0	55	18.0	<0.001*
	Often	38	20.0	15	14.0	53	18.0	
	Sometimes	75	40.0	39	37.0	114	39.0	
	Rarely	30	16.0	18	17.0	48	16.0	
	Never	12	6.0	9	8.0	21	7.0	
The trueness and correctness of the information	Always	101	52.0	49	46.0	150	50.0	0.056
	Often	38	19.0	16	15.1	54	18.0	
	Sometimes	40	20.0	23	21.0	63	21.0	
	Rarely	7	3.0	2	11.0	19	6.0	
	Never	5	2.0	6	5.0	11	3.0	
Validity and reliability of the information	Always	111	57.0	50	46.0	161	53.0	<0.001*
	Often	37	19.1	17	15.0	54	17.0	
	Sometimes	32	16.0	29	27.0	61	20.0	
	Rarely	10	5.0	7	6.0	17	5.0	
	Never	4	2.1	4	3.0	8	2.0	
The superficial or profound presentation of the content	Always	38	20.0	31	29.0	69	23.0	0.042*
	Often	53	28.0	7	16.0	70	24.1	
	Sometimes	76	40.0	39	37.0	115	39.0	
	Rarely	15	8.1	13	12.0	28	9.0	
	Never	4	2.0	5	4.0	9	3.1	
Understandability of the information content	Always	74	38.0	46	42.0	120	39.0	0.041*
	Often	66	34.0	21	19.0	87	28.0	
	Sometimes	42	21.0	29	26.0	71	23.0	
	Rarely	8	4.0	7	6.0	15	4.0	
	Never	3	1.0	5	4.0	8	2.0	
Provision of new and innovative information	Always	43	23.0	30	28.0	73	25.0	0.006*
	Often	57	30.0	17	16.0	74	25.0	
	Sometimes	74	40.0	41	39.0	115	39.0	
	Rarely	8	4.0	10	9.0	18	6.0	
	Never	3	1.0	7	6.0	10	3.0	
Taking the audience into consideration	Always	37	19.0	31	28.0	68	22.0	<0.001*
	Often	41	21.0	20	18.0	61	20.0	
	Sometimes	80	42.0	36	33.0	116	39.1	
	Rarely	23	12.0	15	13.0	38	12.0	
	Never	8	4.0	6	5.0	4	4.0	
A friend's recommendation to use a type of information; e.g., watching a certain satellite channel	Always	18	9.0	16	14.0	34	11.0	<0.001*
	Often	37	18.0	15	13.0	52	17.0	
	Sometimes	89	45.0	49	44.0	138	45.0	
	Rarely	32	16.0	14	12.0	46	15.1	
	Never	19	9.0	16	14.0	35	11.0	

*Statistically significant (Chi-square test)

The current cross-sectional study revealed that 70% of the sampled students sought health information during the past six months. This finding was consistent with the results of the study by Esmaeilzadeh *et al.* in a selected educational district in Isfahan [10]. As a result of the effect and circumstances of their education; medical students sought health information more for themselves. Non-medical students sought health information more for their parents and family members which goes complying with a study conducted in Oman which showed that the majority of students were involved in active information search about health when their family members experience health problems. The same situation was found in the study conducted in Saudi Arabia where 73% searched for other persons including parents [12], [13].

Seeking health information was mostly directed to causes and symptoms of illness as 79% of health-onliners were interested in diseases and health care [14]–[20]. The majority of studies (84%) showed that seeking health information was for improving health status and healthy life style (weight, exercise) [12], [13]. In our study, the most searched health subject was “lack of physical activity” which goes in accordance with the study done on surrogate seekers for health information. The same result was found in the study by Esmaeilzadeh [10], [16]. The related study which was conducted in Egypt revealed that the majority of the participants stated that they sought information about nutrition [14]. On the other hand, only 44% searched for information on general health or specific disease. As an example, a study conducted among university students which showed that “information about particular disease” was the most popular health topic sought by the respondents [21], [22].

Students in our study as in many other studies mostly relied on the internet for obtaining health information [8], [19], [23], [24]. There was almost no difference between medical and non-medical students, while in the study conducted in Kuwait, medical students searched the web more for health information than non-medical students [18]. The least relied on sources were generally TV and radio [10], [14]. Parents as a source of health information were the first choice (93%) for participants aging 10 to 19 years [15]. In a study conducted in Manipal University in India, the internet usage for obtaining health information was taking the third place after family and doctors with a significant difference between males and females. This may be because males use internet more for watching other different contents. Regarding visiting doctor, females were found to be more than males [22].

In a study conducted on medical students in Canada, PubMed and UpToDate were the most common accessed database due to their accuracy and trustworthiness followed by Google, Wikipedia and social media which were valued highly for their accessibility, understandability and usefulness ($p < 0.001$). Our medical students reported “A search engine such as Yahoo, and Google” as a place of start searching the internet followed by “A specific website in the health domain” this may be due to the financial and institutional subscription limitations [25].

Difficulty in determining the quality of information and its reliability were the most faced problems among medical students while searching the web. These findings align with the Kuwaitian study which concluded that credibility of information sought was the most central issue while capturing health information from the web to the students [18]. The findings of another study revealed that the most faced barriers to adolescents while accessing health information were “difficulty in determining the quality of information,” “absence of appropriate ones” and “correctness and trueness of the information”- which were also highlighted in our study- [10]. Additional studies also showed that more than half of the participants declared that they were “concerned about the quality of the information” [16], [26]. The same previously mentioned Isfahanian study also proved that the most important criterion for the selection of health information sources was “accessibility” which goes in line with our findings regarding the non-medical students. This is supported by other studies which reported that the primary found obstacle when seeking health information was “Availability of content e.g., difficulty in accessing content through research journals” [27]–[29].

4. CONCLUSION

The study revealed that medical students prefer reliable websites in the health domain with high level of quality and credibility. Hence, non-medical students access health information more through social media prioritizing free accessibility and simplicity of health information sources during seeking health information. Workshops could be organized for medical students to convey to them the proper criteria for selecting credible health websites sources. As regards non-medical students, reliable easily accessible health information sources that could be reached through social media and applications on cellphone in which health-related data is written in Arabic or simple English language could be provided to them.

REFERENCES

- [1] M. Schäfer *et al.*, “Health information seeking among university students before and during the corona crisis—findings from Germany,” *Frontiers in Public Health*, vol. 8, Jan. 2021, doi: 10.3389/fpubh.2020.616603.
- [2] S. Pesälä, M. J. Virtanen, J. Sane, P. Mustonen, M. Kaila, and O. Helve, “Health information-seeking patterns of the general public and indications for disease surveillance: Register-based study using lyme disease,” *JMIR Public Health and Surveillance*, vol. 3, no. 4, 2017, doi: 10.2196/publichealth.8306.
- [3] F. Ghahramani and J. Wang, “Impact of smartphones on quality of life: a health information behavior perspective,” *Information Systems Frontiers*, vol. 22, no. 6, pp. 1275–1290, 2020, doi: 10.1007/s10796-019-09931-z.
- [4] Y.-Y. Chen, C.-M. Li, J.-C. Liang, and C.-C. Tsai, “Health information obtained from the internet and changes in medical decision making: questionnaire development and cross-sectional survey,” *Journal of Medical Internet Research*, vol. 20, no. 2, p. e47, Feb. 2018, doi: 10.2196/jmir.9370.
- [5] Internet World Stats. “World internet usage and population statistics 2023 Year Estimates” <https://www.internetworldstats.com/stats.htm> (accessed July 5, 2022).
- [6] Statista, “Social network users worldwide from 2010 to 2021 (in billions).” <https://shoptech.media/wp-content/uploads/2019/10/number-of-worldwide-social-network-users/> (accessed July 5, 2022).
- [7] X. Jia, Y. Pang, and L. S. Liu, “Online health information seeking behavior: a systematic review,” *Healthcare*, vol. 9, no. 12, p. 1740, Dec. 2021, doi: 10.3390/healthcare9121740.
- [8] J. Chen and Y. Wang, “Social media use for health purposes: systematic review,” *Journal of Medical Internet Research*, vol. 23, no. 5, p. e17917, May 2021, doi: 10.2196/17917.
- [9] B. O. Asibey, S. Agyemang, and A. B. Dankwah, “The internet use for health information seeking among Ghanaian university students: a cross-sectional study,” *International Journal of Telemedicine and Applications*, vol. 2017, 2017, doi: 10.1155/2017/1756473.
- [10] S. Esmailzadeh, H. Ashrafi-rizi, L. Shahrzadi, and F. Mostafavi, “A survey on adolescent health information seeking behavior related to high-risk behaviors in a selected educational district in Isfahan,” *PLOS ONE*, vol. 13, no. 11, p. e0206647, Nov. 2018, doi: 10.1371/journal.pone.0206647.
- [11] I. M.M., T. M., Y. H.-C., P. T.N., N. P.-A., and L. Y.-C.J., “E-Health Literacy and Health Information Seeking Behavior Among

- University Students in Bangladesh,” *Studies In Health Technology and Informatics*, vol. 245, pp. 122–125, 2017.
- [12] E. S. Alghamdi, A. S. Alqarni, M. M. Bakarman, A. Moniem Mukhtar, and M. A. Bakarman, “Use of Internet Health Information Among Students in Jeddah, Saudi Arabia: A Cross-Sectional Study,” *Global Journal of Health Science*, vol. 11, no. 5, p. 51, Apr. 2019, doi: 10.5539/gjhs.v11n5p51.
 - [13] A. Tariq, S. R. Khan, and A. Basharat, “Internet use, ehealth literacy, and dietary supplement use among young adults in Pakistan: cross-sectional study,” *Journal of Medical Internet Research*, vol. 22, no. 6, p. e17014, Jun. 2020, doi: 10.2196/17014.
 - [14] W. El Ansari and A. Samara, “Adherence to recommended dietary guidelines and the relationships with the importance of eating healthy in Egyptian university students,” *International Journal of Preventive Medicine*, vol. 9, no. 1, p. 73, 2018, doi: 10.4103/ijpvm.IJPVM_619_14.
 - [15] C. Delma and P. H. Sudhir, “Assessment of information seeking pattern and evaluation of the degree of its negativity in influence-A cross sectional study among adolescents of Dakshina Kannada district,” *Manipal Journal of Medical Sciences*, vol. 3, p. 1, 2018.
 - [16] A. Freytag, E. Baumann, M. Angermeyer, and G. Schomerus, “Self- and surrogate-seeking of information about mental health and illness in Germany,” *BMC Public Health*, vol. 23, no. 1, 2023, doi: 10.1186/s12889-023-14998-0.
 - [17] K. Sultan, V. R. Joshua, and U. Misra, “Health information seeking behavior of college students in the Sultanate of Oman,” *Khyber Medical University Journal*, vol. 9, no. 1, pp. 8–14, 2017.
 - [18] H. Ashkanani *et al.*, “Web-Based Health Information Seeking Among Students at Kuwait University: Cross-Sectional Survey Study,” *JMIR Formative Research*, vol. 3, no. 4, p. e14327, Oct. 2019, doi: 10.2196/14327.
 - [19] P. Parija, P. Tiwari, P. Sharma, and S. Saha, “Determinants of online health information-seeking behavior: A cross-sectional survey among residents of an urban settlement in Delhi,” *Journal of Education and Health Promotion*, vol. 9, no. 1, p. 344, 2020, doi: 10.4103/jehp.jehp_238_20.
 - [20] B. E.A. *et al.*, “Correlates of health information seeking between adults diagnosed with and without cancer,” *PLoS ONE*, vol. 13, no. 5, 2018.
 - [21] C. H. Basch, S. A. MacLean, R.-A. Romero, and D. Ethan, “Health information seeking behavior among college students,” *Journal of Community Health*, vol. 43, no. 6, pp. 1094–1099, Dec. 2018, doi: 10.1007/s10900-018-0526-9.
 - [22] D. G. Lannin, J. B. Kanter, L. Russell, and L. Parris, “Why do Adolescents seek online mental health information? why do adolescents seek online mental health information?,” *Journal of Adolescent and Family Health*, vol. 11, no. 1, 2020.
 - [23] R. Zowalla, T. Wetter, and D. Pfeifer, “Crawling the German Health web: exploratory study and graph analysis,” *Journal of Medical Internet Research*, vol. 22, no. 7, p. e17853, Jul. 2020, doi: 10.2196/17853.
 - [24] A. Strzelecki, “Google Medical update: why is the search engine decreasing visibility of health and medical information websites?,” *International Journal of Environmental Research and Public Health*, vol. 17, no. 4, p. 1160, Feb. 2020, doi: 10.3390/ijerph17041160.
 - [25] H. Y. Lee, S. Kim, J. Neese, and M. H. Lee, “Does health literacy affect the uptake of annual physical check-ups?: Results from the 2017 US health information national trends survey,” *Archives of Public Health*, vol. 79, no. 1, 2021, doi: 10.1186/s13690-021-00556-w.
 - [26] J. Radez, T. Reardon, C. Creswell, P. J. Lawrence, G. Evdoka-Burton, and P. Waite, “Why do children and adolescents (not) seek and access professional help for their mental health problems? A systematic review of quantitative and qualitative studies,” *European Child and Adolescent Psychiatry*, vol. 30, no. 2, pp. 183–211, 2021, doi: 10.1007/s00787-019-01469-4.
 - [27] L. Liu, “Medical information seeking behavior of urban patients in Zhejiang Province, China: a cross-sectional study,” *BMC Public Health*, vol. 22, no. 1, 2022, doi: 10.1186/s12889-022-14017-8.
 - [28] X. Wang, J. Shi, and H. Kong, “Online Health information seeking: a review and meta-analysis,” *Health Communication*, vol. 36, no. 10, pp. 1163–1175, 2021, doi: 10.1080/10410236.2020.1748829.
 - [29] C. C. Chang and M. H. Huang, “Antecedents predicting health information seeking: A systematic review and meta-analysis,” *International Journal of Information Management*, vol. 54, 2020, doi: 10.1016/j.ijinfomgt.2020.102115.

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Appendix

Table 3. Ways of obtaining health information seeking among medical and non-medical students (N=336)

Items		Medical (206)		Non- medical (130)		Total (336)		p-value
		No.	%	No.	%	No.	%	
Way of obtaining health information								
Visiting the physician	Greatly	40	24.1	24	23.0	64	23.0	<0.001*
	Moderately	62	37.0	32	31.0	94	35.1	
	Slightly	64	38.0	46	45.1	110	41.0	
Watching TV	Greatly	20	14.1	23	23.0	43	17.0	0.046*
	Moderately	37	26.1	31	31.0	68	28.0	
	Slightly	85	59.0	43	44.0	128	53.0	
Listening to radio	Greatly	3	3.0	10	13.0	13	7.0	0.015*
	Moderately	8	8.1	9	12.0	17	9.0	
	Slightly	88	88.0	55	74.0	143	82.0	
Asking friends	Greatly	20	13.0	17	17.0	37	15.0	<0.001*
	Moderately	58	40.0	41	41.0	99	40.0	
	Slightly	67	46.0	40	40.0	107	44.0	
Searching the internet	Greatly	113	59.0	69	60.0	182	59.0	<0.001*
	Moderately	54	28.0	27	23.0	81	26.0	
	Slightly	24	12.0	19	16.0	43	14.1	
Using social media	Greatly	24	17.0	35	36.0	59	25.0	0.006*
	Moderately	47	34.0	24	25.0	71	30.0	
	Slightly	64	47.0	37	38.0	101	43.0	
Using applications on cellphone	Greatly	21	16.0	19	23.0	40	19.0	<0.001*
	Moderately	40	31.0	23	28.0	63	30.0	
	Slightly	66	51.0	39	48.0	105	50.0	
Using sources in libraries	Greatly	9	7.0	9	11.0	18	9.0	<0.001*
	Moderately	30	25.0	20	25.0	50	25.0	
	Slightly	79	66.0	49	62.0	128	65.0	
Asking family members	Greatly	17	11.0	40	37.0	57	22.0	<0.001*
	Moderately	40	27.0	43	40.0	83	33.1	
	Slightly	87	60.0	24	22.0	111	44.0	
Attending workshops on health	Greatly	10	8.0	12	16.0	22	11.0	0.010*
	Moderately	42	36.0	12	16.0	54	29.0	
	Slightly	63	54.0	47	66.0	110	59.0	
Place of start searching the internet	A search engine such as Yahoo, Google	113	58.0	86	75.0	199	65.0	<0.001*
	A specific website in the health domain	54	28.0	7	6.0	61	19.0	
	website of a healthcare center	15	7.0	8	7.0	23	7.0	
	Social media	9	4.0	9	7.0	18	5.0	
	Electronic discussion groups	1	0.0	4	3.0	5	1.0	
Searching in other languages than Arabic	Always	131	63.0	39	31.0	170	51.0	<0.001*
	Often	42	20.0	13	10.0	55	16.0	
	Sometimes	25	12.0	35	28.0	60	18.0	
	Rarely	7	3.0	18	14.0	25	7.0	
	Never	1	0.0	18	14.0	19	5.0	

*Statistically significant (Chi-square test)