

Impact of Internet Medical Information on Patient-Doctor Relationship in Al-Hilla City

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ABSTRACT

Background: Patient engagement with online health has increased before seeking professional guidance. The surge in patient use of online health information is poised to reshape healthcare consultations. This influences how patients interact with their physicians, participate in discussions, and ultimately perceive the doctor-patient relationship. **Aim:** To determine the extent to which patients use the Internet for medical information and its impact on patient-doctor relationships. **Patient and Method:** A cross-sectional study was conducted on 432 patients who attended the outpatient clinic of Merjan Teaching Hospital and Al-Sadiq General Teaching Hospital in Al-Hilla City, Iraq, data collected from the 1st of May, 2024 to the 31st of August, 2024. A well-structured questionnaire was used containing questions about the participants' sociodemographic features and questions to assess patients' online health information-seeking behaviors and their awareness of the Internet's impact on the patient-doctor relationship. Data were analyzed using the SPSS program version 27. **Results:** The mean age of study participants was (34.25 ± 10.47 years). The largest age category was 26-45 years (67.4%), and (57.2%) were females. The Internet for medical information was used by 91% of the patients. Regarding health behavior, the therapeutic topic was the common topic searched by half of the study participants (50.3%). More than half of the participants believed that seeking online health information improves the patient-doctor relationship (59%). Concerning internet use, a greater rate of internet utilization was significantly recorded among the age group (26-45 years) ($P=0.001$), housewives ($P=0.046$) and high levels of education ($P=0.02$). Also, Internet users spend significantly more time online than nonusers ($p=0.002$). **Conclusions:** A high proportion of patients use the Internet to get medical information, significantly more among younger age groups, housewives, and a high level of education: health education and initiatives to encourage eHealth as an effective health intervention and care platform.

Keywords: Patient-Doctor Relationship, Internet for medical information, health education.

Article Information

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1. INTRODUCTION

A strong doctor-patient relationship, built on trust and open communication, is essential for optimal health outcomes and patient satisfaction. Mutual respect and transparent communication are the cornerstones of a patient-doctor bond that fosters successful

treatment and enhances well-being. Without a collaborative doctor-patient relationship, optimal health outcomes are difficult to achieve⁽¹⁾.

Today's empowered patients are increasingly proactive in managing their health. The vast amount of online information fuels trusting

doctors as the sole source of medical knowledge and treatment options, the Internet information allowing individuals to research symptoms, explore potential diagnoses, and educate themselves about various treatment approaches before seeking professional guidance. This shift necessitates a new paradigm in patient-provider communication⁽²⁾. The surge in patient use of online health information is poised to reshape healthcare consultations. This influences how patients interact with their physicians, participate in discussions, and ultimately perceive the doctor-patient relationship⁽³⁾.

On the positive side, the ubiquity of the internet has democratized access to health information, creating an unparalleled knowledge base readily available to the public. Gone are the days of restricted resources; individuals can now delve into comprehensive explanations of diseases, explore various treatment options, and readily identify preventive measures⁽⁴⁾. This newfound empowerment fosters active patient participation in their health journey, enabling them to make informed decisions regarding their care and confidently advocate for their healthcare needs⁽⁵⁾.

However, the flip side of readily available health information online is the potential for confusion and misinterpretation. This can lead to poor health choices and outcomes or even unnecessary demands for medical procedures. While the vast amount of information can feel empowering, it can also be overwhelming and misleading. Unsubstantiated health claims, often exaggerated or inaccurate, can create anxiety, lead to bad decisions, and even worsen existing health problems⁽⁶⁾.

Despite existing researches on the impact of internet health information on doctor-patient relationships, there's a gap in studies specifically focused on the Iraqi patient population. This lack of local data makes this present study highly relevant and timely. And

its aim to determine the extent to which patients use the internet for medical information and its impact on patient doctor relationship.

2.METHODS

Study design and setting

A descriptive cross-sectional study was conducted in Iraq, Al-Hilla city (which is located 100 km south of the Iraq capital (Baghdad), and is the center of Babylon Governorate) at the outpatient clinic of the two main Hilla Teaching Hospitals (Merjan Teaching Hospital and Al-Sadiq General Teaching Hospital) which were selected by simple random sampling out of the five major hospitals in Hilla city. The data collection were carried out during the period from the 1st of May, 2024 to the 31st of August, 2024. The study targeted the patients through convenient sampling method, who attended the outpatient clinic for any medical consultation, diagnosis, follow-up, or treatment and met the inclusion criteria

Sample size calculation

The sample size was calculated using the Fischer's formula:

$$\text{Sample size (n)} = \frac{z^2}{d^2} * pq = 341$$

Where n is the number of participants required in the study, The level of confidence was 95%, so **z** is equal to 1.96, **P** is the prevalence of opinion whether the internet will harm the patient-doctor relationship that was documented from the previous study as 66.9%⁽⁶⁾. The final sample size enrolling in the study was 432 patients, with an overall response rate of 96%.

Inclusion and Exclusion criteria:

Inclusion criteria included Patients within the age group 18-65 years old and those who accept to participate in the study, whereas exclusion criteria included patients who don't have internet, severely ill patient, Patients who need a referral or urgent intervention and Illiterate.

Pilot study

A pilot study was carried out on 20 patients who visited the outpatient clinic of Merjan Teaching Hospital and Al-Sadiq General Teaching Hospital over two weeks, after the pilot study, no major changes were made on the study tool apart from trivial modifications but during pilot study, illiterates were excluded and it was realized that it was difficult for participants to remember the number of times they searched for medical information, so the number of times was removed from the study. The sample in pilot study was not included in the analysis of the study data.

STATISTICAL ANALYSIS

Data was first entered into an Excel file and then imported to SPSS (version 27 for Windows). Descriptive statistics were presented in simple measures of frequency, percentage, or mean and standard deviation. Tables and figures were depicted as necessary. Pearson Chi-square test (χ^2 -test) with the application of Yate's correction or Fisher Exact test was used where appropriate to find out the possible association between the related variables of the current study. Statistical significance was considered whenever the P value was equal to or less than 0.05.

Ethical considerations

The study was implemented after obtaining approval from the Iraqi council of medical specialization and an official agreement from the Babylon Health Directorate. The participation in the study was optional. The researcher explained the study's objectives to the patients and their relatives. A verbal consent was taken from all patients who decided to participate in the study. A complete confidentiality of data was maintained throughout the study.

3.RESULT

The total sample comprised of (432) participants, The mean age of study participants was (34.25 ± 10.47) with the (26-45years) age category being the most prevalent (67.4%), while the (>45) age category was the least prevalent (13.4%). There were 185 males (42.8%) and 247 females (57.2%) among the study participants.

According to the use of the Internet among study participants, about 49% (212) always used it, 42% (181) sometimes used it, and only 9% (39) never used the Internet for searching medical health information, as shown in **Figure (3.1)**.

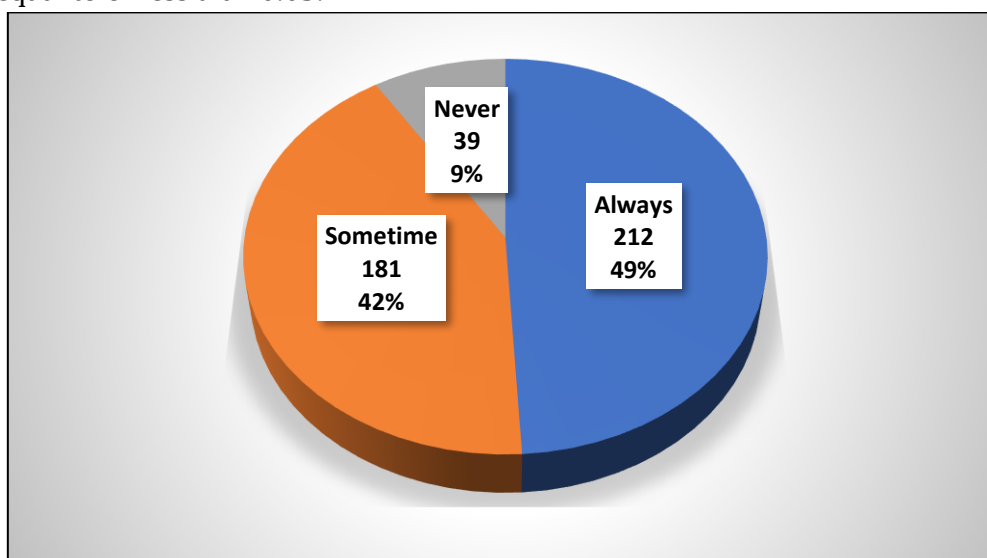


Figure (3.1): -Distribution of study samples according to using the Internet for health information.

Figure (3.2) revealed that the most medical topics searched by study participants on the internet were therapeutic topics, contributed to 198(50.3%), followed by preventive about 187(47.5%), and 123(31.3%) were the

symptoms of the disease. While 52(13.2%) of them answered that medical investigation was the main reason, and only 42(10.7%) used it for cosmetic topics.

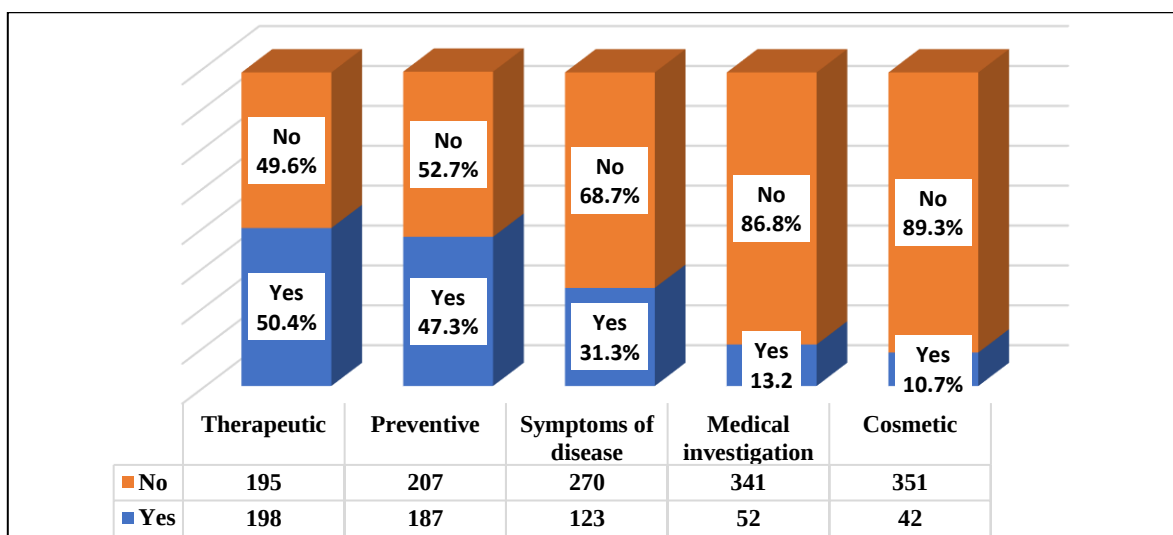


Figure (3.2): Distribution of most searched medical topics by study samples.

Figure (3.3) illustrates that gastrointestinal diseases were the most common health issues sought by the study participants on the Internet, constituting about 29.7% of them, 23.9% were rheumatological diseases, 19.6% of them

sought for gynecological and obstetric diseases, while respiratory disease contributed to 17.8%. In contrast, the less prevalent health issue searched was pediatric disease (5.6%).

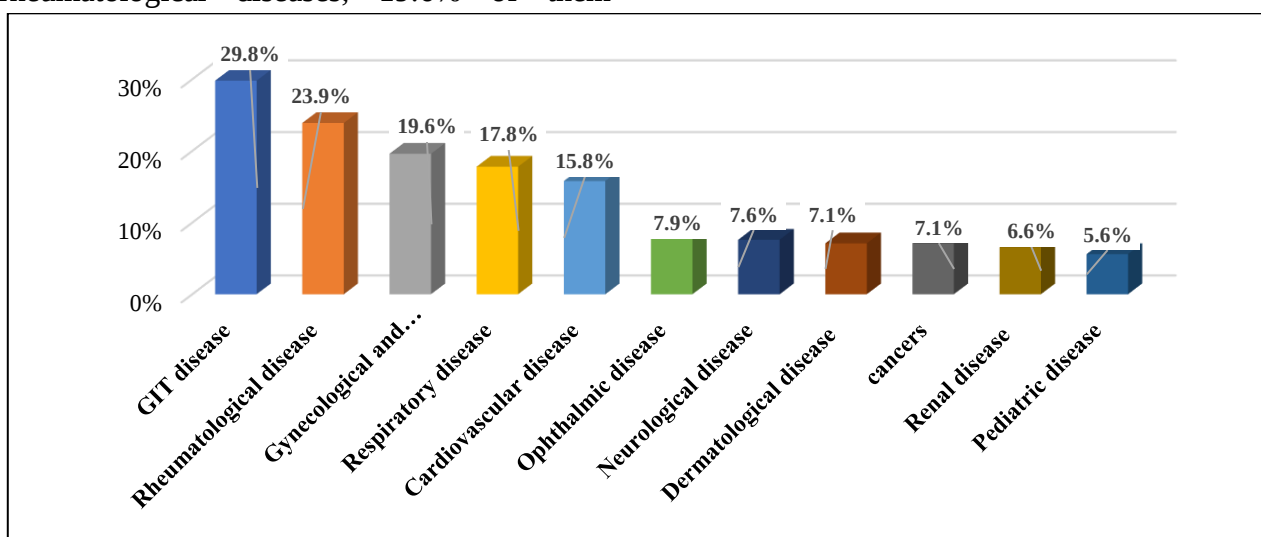


Figure (3.3): -Prevalence of types of health issues sought by Internet user participants.

The current study's data showed a significant difference between using the internet and time spent on it; those who used it for medical health information spent more than five hours significantly ($p=0.002$), as shown in **Table (3.1)**.

Table 3.1: Distribution of study samples according to use of the internet for health information in relation to time spent on the internet

		Total No.	Using internet for health information(n=393)		Not using internet for health information(n=39)		P-value
			N	%	N	%	
Time spends on the Internet per day	< 2 hrs.	91	75	82.4	16	17.6	0.002
	2-5 hrs.	222	203	91.4	19	8.6	
	> 5 hrs.	119	115	96.6	4	3.4	

The current study found a significant association between the use of the Internet and the age of participants; a high proportion of those within the age group (26-45 years) significantly used the Internet to obtain health information (**P=0.001**). Also, there was a significant statistical difference between the use of the Internet and the level of education of study participants; those with a bachelor's

degree or more used the Internet to search for medical health information significantly (**P=0.02**). Moreover, the present study reflected that housewife significantly used the Internet to obtain medical health information (**P=0.046**). However, no significant association was found between using the Internet and sex, marital status, or economic status, as shown in **Table (3.2)**.

Table 3.2: - The association between sociodemographic characteristics of study samples and using the Internet for health information

Variables		Total No.	Using Internet For health information(n=393)		Not using Internet for health information(n=39)		P-value
			N	%	N	%	
Age	<=25 years	83	77	92.8	6	7.2	0.001
	26-45 years	291	271	93.1	20	6.9	
	>45 years	58	45	77.6	13	22.4	
Sex	Male	185	168	90.8	17	9.2	0.919
	Female	247	225	91.1	22	8.9	
Educational level	Read and write	32	24	75.0	8	25	0.02
	Primary school	106	98	92.5	8	7.5	
	Secondary school	123	115	93.5	8	6.5	
	Bachelors	127	113	89.0	14	11	
	Diploma	18	18	100	-	-	
	Masters	15	15	100	-	-	
	Ph.D. or more	11	10	90.9	1	9.1	
Marital status	Single	119	111	93.3	8	6.7	0.571
	Married	286	259	90.6	27	9.4	
	Divorce	19	16	84.2	3	15.8	
	Widow	8	7	87.5	1	12.5	
Economic status	<350 USD	214	194	90.7	20	9.3	0.242
	350- 700	174	156	89.7	18	10.3	
	> 700	44	43	97.7	1	2.3	
Occupation	Employed	86	80	93	6	7	0.046
	Retired	9	6	66.7	3	33.3	
	freelancer	149	133	89.3	16	10.7	
	Housewife	188	174	92.6	14	7.4	

The analysis of the study participants' opinions about using the Internet to obtain health information demonstrated that less than half of the study samples, 175(44.5%) accessed the Internet after their doctor's appointment. When patients were questioned about the quality of information obtained from the Internet, 142 (36.1%) stated that information on the Internet was better than that given by the doctor. However, more than one-third of patients, 142(36.1%), never discuss this information with their doctor. Also, a high percentage of them, 249(63.4%), said their doctor never asked them if they accessed the internet for health information. Furthermore,

about 107(27.2%) participants shared this medical information and advised others. Whereas more than half of the study patients, 232(59%), didn't believe online medical health information seeking hurts the relationship between the patient and the doctor. Regarding the analysis as to whether using the internet affected patients' trust in their doctor, nearly 265(67.4%) of them stated that they would never change their doctor because of the health information on the internet, and 249(63.4%) of them did not cancel treatment prescribed by their doctor because of internet health information as shown in the **Table (3. 3)**.

Table 3.3: - Pattern of Internet use for medical health information among the study participants (Total no.=393)						
Participant's response	Always		Sometime		Never	
	N	%	N	%	N	%
1. Do you discuss the information on the internet with your doctor?	112	28.5	139	35.4	142	36.1
2. Did your doctor ever ask you whether you have accessed the internet for health information?	83	21.1	61	15.5	249	63.4
3. Did you find information on the internet better than that given by the doctor?	142	36.1	122	31.0	129	32.8
4. Did you think the internet will harm the patient-doctor relationship?	30	7.6	131	33.3	232	59.0
5. Was the internet used for self-medication?	31	7.9	164	41.7	198	50.4
6. Did you search for health information after returning from seeing your specialist doctor?	175	44.5	159	40.5	59	15.0
7. Do you share medical information and advice others or keep it for yourself?	107	27.2	223	56.7	63	16.0
8. Have you changed your doctor because of internet information?	30	7.6	98	24.9	265	67.4
9. Have you asked your doctor intending to test his medical knowledge because of what you read on the internet?	87	22.1	81	20.6	225	57.3
10. Have you asked your doctor to perform medical tests because of internet information?	53	13.5	115	29.3	225	57.3
11. Have you asked your doctor to change your treatment because of internet information?	37	9.4	66	16.8	290	73.8
12. Have you canceled the treatment prescribed by your doctor because of internet health information?	71	18.1	73	18.6	249	63.4

The present study reflected that those who frequently use the Internet significantly discussed the information with their doctor, and their doctor accepted the health information from the Internet ($P=0.0001$). On the other hand, the study participants who always used the Internet stated that their doctor significantly asked them whether they accessed it for medical health information ($P=0.02$). However, the current study found that the participants who frequently used the Internet for health information significantly believed

that the information from the Internet was very good and better than that given by the doctor ($P=0.01$). A high proportion of them significantly shared medical information and advice with others ($P=0.0001$). Moreover, most of those who asked the doctor to change their treatment ($P=0.02$) or canceled treatment prescribed by the doctor because of internet health information always used the internet to obtain health information ($P=0.006$) as shown in table (3.4).

Table 3.4: - The effect of the frequent using of the Internet on the patients-doctor relationship

Items		Frequency of using Internet health information					P-value
		Total No.	Always (n=212)		Sometime (n=181)		
			N	%	N	%	
Have chronic disease	Yes	90	43	47.8	47	52.2	0.181
	No	303	169	55.8	134	44.2	
discuss the information on the internet with your doctor	always	112	80	71.4	32	28.6	0.0001
	never	142	58	40.8	84	59.2	
	sometime	139	74	53.2	65	46.8	
doctor ever ask you whether you have accessed the internet for health information	always	83	55	66.3	28	33.7	0.02
	never	249	123	49.4	126	50.6	
	sometime	61	34	55.7	27	44.3	
Information on the Internet is better than that given by the doctor	always	142	91	64.1	51	35.9	0.01
	never	129	63	48.8	66	51.2	
	sometime	122	58	47.5	64	52.5	
Internet will harm the patient-doctor relationship?	always	30	15	50	15	50	0.48
	never	232	131	56.5	101	43.5	
	sometime	131	66	50.4	65	49.6	
the information on the net compares with your doctor's information	very good	63	44	69.8	19	30.2	0.01
	good	316	159	50.3	157	49.7	
	bad	14	9	64.3	5	35.7	
internet used for self-medication	always	31	17	54.8	14	45.2	0.73
	never	198	103	52	95	48	
	sometime	164	92	56.1	72	43.9	
share medical information and advice others or keep it for yourself	always	107	71	66.4	36	33.6	0.0001
	sometime	223	119	53.4	104	46.6	
	never	63	22	34.9	41	65.1	
Trust in the medical information published by Iraqi or foreign doctors?	Iraqi doctor	199	109	54.8	90	45.2	0.73
	Foreign	194	103	53.1	91	46.9	

Table 3.4: - The effect of the frequent using of the Internet on the patients-doctor relationship

Items	Frequency of using Internet health information						P-value
	doctor						
the doctor accepts your Internet health information	always	33	29	87.9	4	12.1	0.0001
	never	89	47	52.8	42	47.2	
	sometime	145	90	62.1	55	37.9	
	I don't know	126	46	36.5	80	63.5	
changed the doctor because of internet information	always	30	20	66.7	10	33.3	0.33
	never	265	139	52.5	126	47.5	
	sometime	98	53	54.1	45	45.9	
asked the doctor intending to test his medical knowledge because of what he had read on the internet	always	87	48	55.2	39	44.8	0.88
	never	225	119	52.9	106	47.1	
	sometime	81	45	55.6	36	44.4	
asked the doctor to perform medical tests because of internet information	always	53	26	49.1	27	50.9	0.13
	never	225	115	51.1	110	48.9	
	sometime	115	71	61.7	44	38.3	
asked the doctor to change your treatment because of internet information	always	37	30	81.1	7	18.9	0.002
	never	290	147	50.7	143	49.3	
	sometime	66	35	53	31	47	
cancelled treatment prescribed by the doctor because of internet health information	always	71	48	67.6	23	32.4	0.006
	never	249	118	47.4	131	52.6	
	sometime	73	46	62.5	27	37.5	

4.DISCUSSION

The use of the Internet for obtaining health information has expanded significantly in the past several years because of its frequently updated content, accessibility, and wide availability. This study is focused on an area that has been scarcely investigated in Iraq. It is the first scoping literature that offers valuable insight into information-seeking behaviors among outpatient clinic patients and their impact on the doctor-patient relationship^(7,8) The current study demonstrated a high usage rate of the Internet for medical health information (91%) among study participants, with nearly half of the Internet users stating that they always used it; this high Internet usage rate provides valuable insight into current trends in healthcare. A comparable

result was also recorded by Chu JT et al. ⁽⁹⁾ in their study, which indicated that the majority (92%) of participants did seek Web-based information and that they had sought health information via the Internet. While Singh S et al. ⁽⁶⁾ found in their study that the Internet for medical information was used by 50.35% of the patients. The difference in internet usage between these studies might be due to variations in geographical distributions of Internet penetration and differences in awareness about using the Internet.

Concerning the health topics searched by study participants via the internet, the therapeutic topics were the most searched online health topics reported in the present study by half of the participants while Nölke L et al. ⁽¹⁰⁾ noted in their study done in Germany

that a fifth of study participants (21.4%) go online to look up symptoms. The discrepancy in the type and proportion of topics searched by participants between these studies could be attributable to differences in prevalence of disease and geographic distribution.

The current study's findings showed that a fifth of participants who used the Internet for health information had chronic diseases. Among those, nearly half of them had hypertension. Consistent with this result, a cross-sectional study among Chinese population performed by Xiong Z et al. ⁽⁵¹⁾ found that a minority of respondents had a chronic disease (19.32%). Another study conducted by Baumann E et al. ⁽¹¹⁾ also documented that 22.1% of patients had chronic disease. This might be because more than 50% of the participants were less than 45 years old, meaning they were more likely to be in good general health.

In this study, the younger age group was found to be more internet users. This finding is consistent with results observed by Chu JT et al. ⁽⁹⁾, Sharma R et al. ⁽¹²⁾, and Parija PP et al. ⁽¹³⁾, in which the younger age group population was more likely to use the Internet as a source of health information. The reason might be that younger online health information seekers are more familiar with using technology and more resourceful in utilizing it for their needs than their relatively older counterparts. Regarding 'sex,' the statistical analyses recognize women as being more likely to search for health topics online than men. However, this difference was statistically insignificant. Meanwhile, Nolke et al. ⁽¹⁰⁾ stated in their study that there is a significantly higher probability of online health information-seeking behaviors for women than men. A possible explanation is that women probably look up health topics online not only for themselves but also for a partner, parent, and child. In the present study, as the level of education increases, the tendency to seek health information on the Internet also increases.

Patients who sought online health information tended to have higher levels of education than those who did not seek online health information; this agrees with Alenezi S et al. ⁽¹⁴⁾ and Jia X et al. ⁽¹⁵⁾, who found that patients with higher education levels were more likely to search for their conditions online. This because technological literacy levels are directly proportional to education levels.

In addition, the current study revealed that employment status significantly affected health information seeking on the Internet—a similar finding documented in a systemic review by Jia X et al. ⁽¹⁵⁾. Also, Rider T et al. ⁽¹⁶⁾. On the other hand, a survey conducted by Demirci Ş et al. ⁽¹⁷⁾ and Nolke et al. ⁽¹⁰⁾ found that effect was not statistically significant. Differences in e-skills and health literacy of the study population may explain this variation.

The study's results illustrated that most participants spent significantly more than five hours online. In comparison with other studies, Baumann E et al. ⁽¹¹⁾ recorded that a higher frequency of general Internet use was associated with a nearly triple increase in the odds of being a health-onliner. Moreover, Demirci Ş et al. ⁽¹⁷⁾ also stated that the participants who used the Internet almost daily and at least once per week predictably sought more health information. A cross-sectional survey in Egypt revealed that the mean time spent searching for online health information was (1.58 ± 2.13) hours/ week, and (46.1%) of them spent less than two hours online ⁽¹⁸⁾. The logistic explanation was that increased frequency and duration of time spent on the Internet could raise the possibility of seeking health information online.

The present study revealed that a greater proportion of participants accessed the Internet after their doctor's appointment and believed that the online health information was better than the doctor's information. In line with this result, Haluza D et al. ⁽¹⁹⁾ demonstrated that more than half of the study participants said

they usually consult the Internet for additional health information after visiting their doctor. Meanwhile, a systemic review conducted by Tan SS et al. ⁽²⁰⁾ reported that 45% of study patients searched the Internet for health information before coming to the clinic. May be to find supplementary health information or a second opinion regarding their health problems

The current study reflected that more than half of the patients believe that seeking online medical health information did not harm the relationship between the patient and the doctor. This finding agrees with a systemic review done by Tan SS et al. ⁽²¹⁾ in Singapore, which found that more participants believed that Internet health information seeking did not adversely affect their relationship with physicians. Singh S et al. ⁽⁶⁾ also stated that about 50% of net users of medical information believed that the Internet would improve the doctor-patient relationship, mainly when users discuss the obtained health information with their physician .

The current study revealed that one-third of participants always discuss the information with their doctor. This proportion was significantly higher among those who frequently used the internet. In agreement with this finding, Singh S et al. ⁽⁶⁾ also found that almost 60% of those using the net discussed the information with their doctors, but those using the net found the doctors to be more informative than the net. Patients must discuss health information with their physicians to prepare for seeing a doctor, fully participate in the decision-making .Finally, the participants who always used the internet shared their medical information significantly with others. Similarly, a study conducted in India⁽²²⁾ found that most respondents shared health information with friends and family mainly because behavioral and habitual changes significantly affected Web-based health information seeking .

5.CONCLUSION

A high proportion of patients use the Internet to get medical information, significantly more among younger age groups, housewives, and a high level of education: health education and initiatives to encourage eHealth as an effective health intervention and care platform.

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