



E-ISSN: 2616-3594
P-ISSN: 2616-3586
www.comedjournal.com
IJACM 2020; 3(3): 01-08
Received: 05-05-2020
Accepted: 08-06-2020

Randa Bin Madhi
Family and Community
Medicine Department Prince
Sultan Military Medical City,
Riyadh, Saudi Arabia

Abuobaida Khugali
Family and Community
Medicine Department Prince
Sultan Military Medical City,
Riyadh, Saudi Arabia

Mostafa Kofi
Family and Community
Medicine Department Prince
Sultan Military Medical City,
Riyadh, Saudi Arabia

Corresponding Author:
Randa Bin Madhi
Family and Community
Medicine Department Prince
Sultan Military Medical City,
Riyadh, Saudi Arabia

Online health information seeking among patients in primary health care settings, Riyadh, Saudi Arabia

Randa Bin Madhi, Abuobaida Khugali and Mostafa Kofi

DOI: <https://doi.org/10.33545/comed.2020.v3.i3a.151>

Abstract

Background: Online health information is one of the resources for patients to know about disease pathophysiology, diagnosis, causes, treatment and when to see the physician. Searching for answers through the Internet for health information has become a feature of many people in our country, many institutions provide health information through their website page. Searching for health information online may be important and positive, such as improving the condition of the patient, self-protection, and contributing to raising health awareness. Some patients trust what they find in these sites without verifying the medical reference. misrepresentation of the condition when searching lead to misunderstanding of the information presented, and presence of a serious medical error on the site, or similar description of the situation can Mislead and increase patient's stress on their health. **Objectives:** this study aimed to find the prevalence, Determinants, beliefs and identify common topics and websites searched by online health information seekers among patients in primary care settings, Riyadh, Saudi Arabia, 2020.

Methods: cross-sectional study with a total number of participants 330 done by using self-administered questionnaire.

Result: prevalence of online health information seeking in the current study was 92.2%. Lifestyle 72.4% and acute health conditions 43.4% were the most common topics searched by patients, The highest positive score of the beliefs items was for the point "I think because it's fast and easy to access". The most common health websites searched by the seekers were as following: Websites recommended by search engines, and websites related to Ministry of Health or universities at 64.6%, and 28.2%.

Conclusion: online health information seeking is highly prevalent. Therefore, Physicians, public health professionals, and health care organizations should work together to offer high-quality health information online.

Keywords: online health information, online health seekers, primary care patients, prevalence and determinant

Introduction

The Internet an important in delivering medical information to the patient ^[1] online health seekers is defined as "Internet users who search online for information on health topics, whether they are acting as consumers, caregivers or patients aiming to take more control of their health". ^[2, 3] but are they reliable for the patients to depend on for their self-management and suffice from visiting a physician?

in the Arab world 85.9% of Health online seekers using social media, 71.5% of them searching for diet and body fitness, 39.6% searching for smoking cessation information, 48.6% said that to increase their knowledge by searching for health information ^[4]. In Europe a study done in 2007 through computer-assisted telephone interviews showed 33.9% of the responder before deciding to go to the physician they search health information online. In the united states year 2012, Health Information National Trends Survey discovered that 79.04% American adults searching health information by using internet ^[5]. Many of online health seekers go to the physician to ask about their opinion, they said that physicians often not willing to discuss online health information brought from the internet with their patients, and this can lead to miscommunication and affect the physician – patient relationship ^[6-8]. More than half of the respondents in a study saw that health information online was the same or better than their physicians information. Therefore, patients who discussed online information with their physicians showed to have more positive quality of information ^[9].

Online health information seekers founded that its lower costs to search than going to a hospital, easy to access and have many variation of illustrated medical topics [10]. Furthermore, being anonymous online can make patients share their medical health problems confidentially with the physician [30]. Improving social interaction becoming more knowledgeable for specific health problem leading to ease their anxiety and improve their health outcome [11]. Online health information have grown in the Arab world [12, 13]. 46% of Health Websites from Saudi Arabia, 15% from Egypt and 1% were from Sudan and Oman. Survey indicating that Arabic physicians don't trust these health websites. The quality not designed to act as resources for clinical decisions. Mostly belong to health ministry or medical college and research centers [14-16].

Our study aim to raise awareness of online health information resources in Saudi Arabia. To support future research studies to know the consequences of online health information on the power of the traditional physician and patient relationship. To improve weakness of health information websites infrastructure, lack of data standards and evaluating the quality of medical information available. This study will provide better understanding of the impact of online health information on health care system in Saudi Arabia. In our research we aim to study the prevalence, Determinant, beliefs of online health information seekers among primary care clinics patients at PSMHC, Riyadh, Saudi Arabia, and to know the common topics and websites searched by online health seekers.

Methods

This is a cross sectional study conducted on all patients aged from (15-65 years old) attending Al Wazarat primary care center at PSMHC (Largest and Accessible center of family & community medicine In Riyadh.), patients attending are Military, PSMHC employs and their family. Excluded those who are older than 65 years old and younger than 15 years' old. A self-administered questionnaire were distributed to total number of the current study participants was 330 around (83%), we excluded the uncompleted questionnaires and it was 282. Questionnaire developed by previous studies [2, 17, 18]. Consists items of: socio demographic characteristic, access to online information, common topics and websites searched by online health information seekers, and beliefs towards online health information seeking. Questionnaire presented to 3 consultants of family medicine for validation of the contents and test-retest study was done on 20 individuals. The Cronbach's alpha was scored at 0.860 for overall items which reflects good reliability and internal consistency of the items in the questionnaire. Questionnaire was divided by using non probability convenient sampling technique among patients waiting for vital signs in the triage of primary care clinics at PSMHC.

Data were analyzed by using Statistical Package for Social Studies (SPSS 22; IBM Corp., New York, NY, USA). Continuous variables were expressed as mean \pm standard deviation and categorical variables were expressed as percentages. The t-test and one way ANOVA were used for continuous variables. Chi square test was used for categorical variables. The Cronbach's alpha was used to assess reliability and internal consistency of the items in the questionnaire. Kappa test was used to assess the level of agreement. Kappa of 0.75 or above indicates an excellent level of agreement, kappa of 0.40-0.75, a fair to good

agreement level, and kappa below 0.40, a poor level of agreement. A p-value <0.05 was considered statistically significant.

Results

We set out this cross sectional survey study to estimate the prevalence of online health information seekers among primary care patients in Riyadh, Saudi Arabia, determine the seekers characteristics, identify the common topics and websites searched. For the questionnaire used in the current study, the Cronbach's alpha was scored at 0.860 for overall items which reflects good reliability and internal consistency of the items in the questionnaire, as shown in table (1). The total number of the current study participants was 330 around (83%), we excluded the uncompleted questionnaires and it was 282, more than half (62.8%) of them were females, and single (64.2%). The vast majority (98.2%) were Saudi, and the highest percentage (44.8%) have bachelor degree. Almost half (52.3%) of the participants reported that their general health is excellent, and 43.1% reported that it is good. The prevalence of chronic diseases among the respondents were as following: diabetes 9.4%, hypertension 7.9%, and dyslipidemia 7.1%. Less than 10% were smokers (8.6%), and 10.9% were asthmatic. More than half (53.2%) said that they visited the physician 1-2 times last year, while 33.7% have three or more visits, for different reasons. Data is shown in table (2). The prevalence of online health information seekers among primary care patients in Riyadh was assessed and the data is shown in table (3). Overall, the prevalence of online health information seeking in the current study was 92.2%. The highest percentage (37.2%) of the respondents reported that they are seeking online health information monthly, followed by 18.8% weekly. Only 7.8% reported that they don't seek health information online, while 13.1% seeking online health information daily. When participants were asked about internet use, 60.6% reported that they are using internet daily, while only 3.5% weren't using internet, as shown in table (4). Almost all (99.3%) of the study population are using smart phones, and 49.3% reported that they have good/excellent computer skills as shown in table (5).

Lifestyle was the most common topic searched by online health information seekers among primary care patients in Riyadh at 72.4%, followed by acute health conditions at 43.4%, and chronic health conditions at 34.3%. On the other hand, cancer was the least common topic searched by online health information seekers at 11.4%. Data is shown in table (6). The most common health websites searched by the seekers were as following: Websites recommended by search engines, and websites related to Ministry of Health or universities at 64.6%, and 28.2%, respectively. Wikipedia is searched by 21.1%, while 23.9% have no special preference as shown in table (7).

Mean and standard deviation (\pm SD) for questions of beliefs towards online health information seeking was calculated and the results are shown in table (8). The mean (\pm SD) of the total score of the beliefs item was 25.04 (\pm 6.48) out of 50, indicating that the participants answers were between "agree" and "neutral". The highest positive score was for the point "I think because it's fast and easy to access" with a mean score of 1.75 (\pm 0.87), which occurs in the area between "strongly agree" and "agree". In contrast highest negative score was for the point "I think searching online for health

information more trustable.” At 3.12 (± 1.01), which occurs in the area between “neutral” and “disagree”. For the whole remaining items, the mean scores were between 2 and 3, indicating that they are occurring in the area between “agree” and “neutral”. The means of total score of beliefs towards online health information seeking by characteristics of the participants are shown in table (9). Male gender showed a statistically non-significant ($P = 0.834$) higher mean

score compared to females at 25.15, and 24.98, respectively. Saudi participants showed a higher mean score at 25.11 compared to non-Saudi at 24.80 with a non-significant P value at 0.915. Similarly, there were no statistically significant differences in the mean score by marital status, income, educational level or general health, since all P values were > 0.05 .

Table 1: Reliability analysis of the overall questionnaire

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1. I think because its fast and easy to access.	23.47	36.714	.461	.855
2. I think It can help me diagnose my disease.	22.57	34.655	.594	.844
3. I believe that I can find a treatment.	22.23	35.035	.500	.853
4. I feel that it make me more reassured and relieved.	22.67	34.777	.584	.845
5. I think searching online for health information more trustable.	22.10	35.005	.528	.850
6. I believe It improve the communication with my family physician.	22.75	35.223	.497	.853
7. I think It help me to adopt and be more compliant to the best regimen.	22.92	34.615	.671	.838
8. I think it is more Simplified and illustrated.	22.87	34.742	.607	.843
9. I believe that can help me improve my overall quality of health.	22.74	34.694	.640	.841
10. I believe that I can find elaborated health information.	22.68	33.957	.619	.842

Table 2: Characteristics of the Participants (n=282)

		Number	%
Gender	Male	105	37.2
	Female	177	62.8
Marital status	Married	87	30.9
	single	181	64.2
	Divorced	10	3.5
	widowed	4	1.4
Family income	<5000 SAR	105	40.1
	5000–9999 SAR	72	27.5
	10000 -14999	54	20.6
	15000-24000	29	11.1
	>25000SAR	2	.8
Nationality	Saudi	273	98.2
	Non Saudi	5	1.8
Education level	No schooling	1	.4
	Primary school	7	2.5
	Middle school	23	8.2
	High school	83	29.5
	diploma	30	10.7
	bachelor	126	44.8
	postgraduate	11	3.9
General health	Excellent	147	52.3
	Good	121	43.1
	Fair	12	4.3
	Poor	1	.4
Chronic diseases			
DM	No	241	90.6
	Yes	25	9.4
HTN	No	245	92.1
	Yes	21	7.9
Asthma	No	236	89.1
	Yes	29	10.9
Dyslipidemia	No	247	92.9
	Yes	19	7.1
Obesity	No	242	91.0
	Yes	24	9.0
Smoking	No	243	91.4
	Yes	23	8.6
None	No	123	46.2
	Yes	143	53.8
Doctor visits	0	1	.4

	None	34	12.7
	1–2 visits	142	53.2
	Three or more visits	90	33.7
Follow up	No	147	58.1
	Yes	106	41.9
Check up	No	166	65.6
	Yes	87	34.4
Investigation	No	172	68.0
	Yes	81	32.0
New illness	No	218	86.2
	Yes	35	13.8
Repeat medication	No	208	82.2
	Yes	45	17.8
Vaccination	No	239	94.5
	Yes	14	5.5

Table 3: Prevalence of online health information seekers among primary care patients in Riyadh

	Number	%
Don't use/don't have internet.	22	7.8
1-3 times a year(very rare)	28	9.9
4-6 times a year(rare)	37	13.1
Monthly(occasionally)	105	37.2
Weekly(frequently)	53	18.8
Daily(very often)	37	13.1

Table 4: Prevalence of internet use among primary care patients in Riyadh

	Number	%
Don't use/don't have internet.	10	3.5
1-3 times a year(very rare)	26	9.2
4-6 times a year(rare)	11	3.9
Monthly(occasionally)	30	10.6
Weekly(frequently)	34	12.1
Daily(very often)	171	60.6

Table 5: Access to online information

		Number	%
Computer skills	Do not know how to use	15	5.6
	Not bad	28	10.4
	Accepted	93	34.7
	Good/excellent	132	49.3
Use of smart phone	Yes	266	99.3
	No	2	.7

Table 6: Common topics searched by online health information seekers among primary care patients in Riyadh

		Number	%
Lifestyle	No	77	27.6
	Yes	202	72.4
Chronic health conditions	No	184	65.7
	Yes	96	34.3
Acute health conditions	No	159	56.6
	Yes	122	43.4
Treatment or side effects	No	190	67.6
	Yes	91	32.4
Infectious disease	No	244	86.8
	Yes	37	13.2
Sexual or reproductive information	No	248	88.3
	Yes	33	11.7
Mental health issues	No	223	79.4
	Yes	58	20.6
CANCER	No	248	88.6
	Yes	32	11.4
Smoking cessation	No	246	87.9
	Yes	34	12.1

Table 7: Common health websites you search or you think it can be searched on the Internet

		Number	%
Websites recommended by search engines	No	99	35.4
	Yes	181	64.6
Wikipedia	No	221	78.9
	Yes	59	21.1
Scientific societies	No	255	91.1
	Yes	25	8.9
Websites related to Ministry of Health or universities	No	201	71.8
	Yes	79	28.2
No special preference	No	213	76.1
	Yes	67	23.9

Table 8: Mean and standard deviation for questions of Beliefs towards online health information seeking

	Mean	SD
1. I think because its fast and easy to access.	1.75	0.87
2. I think It can help me diagnose my disease.	2.66	0.98
3. I believe that I can find a treatment.	3.00	1.06
4. I feel that it make me more reassured and relieved.	2.54	0.97
5. I think searching online for health information more trustable.	3.12	1.01
6. I believe It improve the communication with my family physician.	2.46	1.06
7. I think It help me to adopt and be more compliant to the best regimen.	2.33	0.91
8. I think it is more Simplified and illustrated.	2.39	0.97
9. I believe that can help me improve my overall quality of health.	2.48	0.91
10. I believe that I can find elaborated health information.	2.55	1.02
Total score (out of 50)	25.04	6.48

Likert scale with 5 point was used (1= Strongly agree, 2 = Agree, 3 = Neutral, 4= disagree, 5 = Strongly disagree)

Table 9: Mean of total score of Beliefs towards online health information seeking by characteristics of the Participants

		Mean*	SD	P value
Gender	Male	25.15	7.22	0.834
	Female	24.98	6.02	
Marital status	Married	25.23	6.28	0.681
	single	25.01	6.65	
	Divorced	25.60	5.34	
	widowed	21.25	6.70	
Family income	<5000 SAR	24.52	5.91	0.892
	5000–9999 SAR	25.22	6.53	
	10000 -14999	25.46	7.00	
	15000-24000	25.48	6.85	
	>25000SAR	24.50	2.12	
Nationality	Saudi	25.11	6.43	0.915
	Non Saudi	24.80	6.94	
Education level	No schooling	18.00		0.182
	Primary school	30.57	6.53	
	Middle school	23.14	6.64	
	High school	24.59	6.68	
	diploma	25.40	6.79	
	bachelor	25.29	6.27	
	postgraduate	25.18	5.34	
General health	Excellent	24.71	6.70	0.672
	Good	25.28	6.25	
	Fair	25.83	6.60	
	Poor	31.00		
* out of 50				

Discussion

The current study findings suggest that among the study participants, consisting mostly of Saudi with bachelor degree, internet use is widespread and online health information seeking is highly prevalent. For those who did seek health information online, most searched monthly. Generally, smart phones were the most used devices for seeking online health information, which indicates a desire for instant information.

Overall, the rate of online health information seeking in the current study are considered higher compared to similar studies done globally [19-21]. In a recently published study from Hong Kong [19], 87.44% of patients attending a university primary care clinic reported that they had used the internet to find health information, a percentage which is lower compared to ours at 92.2%. Additionally, in Scotland, Moreland J *et al.* [21] found that 68.4% of patients had previously used the Internet to acquire health information.

The Pew Project ^[22] showed a lower proportion of Americans are using the Internet to search for health information at 80% in 2011. The Oxford Internet Survey (OxIS) ^[23] reported this rate as 71% in 2011 and dwindling to 69% in 2013 ^[24], which is far lower compared to the findings of the current study at 92.2%. Such differences in the rates of internet health information seeking might be attributed to cultural differences, and healthcare services availability at the point of need.

A new study in Poland showed increase effect of online health information on influencing online health seekers to be on a healthy diet and exercise ^[25]. Thus Large variety of health information was sought, but the majority of respondents searched for lifestyle, acute health conditions and chronic diseases. In the Chinese study ^[19], approximately half of the participants sought information about healthy behaviors, a percentage which is lower compared to ours at 72.4%, and this indicates health consciousness. Additionally, our results in this regard was in line with other previous studies ^[26-28], in which acquiring information on specific disease and healthy lifestyle was the most common reason for seeking online health information, are consistent with previous studies. Cancer was found to be the least topic searched; and this findings was in contrast to previous studies by Siow *et al.* ^[27] and Yan YY ^[29], in which cancer was found to be among the top 5 topics searched.

The findings of the current study revealed that fewer respondents sought health information at official websites such as scientific societies and websites related to ministry of health or universities. This may suggest that the respondents were less concerned about the accuracy or quality of health information online, or unaware of the possible consequences of receiving inaccurate health information online. This finding is in contrast with the findings of a previous similar study in which majority of the participants visited mostly (78.0%) professional websites including government, non-profit organization and hospital sites ^[29]. Currently, the internet is burgeoning with healthcare information, some of which are misleading or inaccurate, incomplete and in technical language. Previous studies showed that authority of source and ease of use were the key criteria for health websites ^[30, 31]. Therefore, Physicians, public health professionals, and health care organizations should work together for offering high-quality health information online, improving the ease of use and readability of health care websites, as well as educating patients and the general community on the importance of assessing the quality of online health information quality.

Several predictors including age, gender, socioeconomic status, education, health status, and internet usage, were shown to have an effect on the prevalence and extent of online health information seeking in previous studies ^[21, 32-35]. The Pew Internet and American Life Project has shown that female gender, young age, as well as high education level were associated with more online health information seeking ^[28]; while, in Scotland ^[16], age, educational attainment, employment status, geographic location, and gender were associated with online health information seeking. The current study did not show any significant association between any of the above mentioned predictors and online health information seeking. In Saudi Arabia, Jamal A. *et al.* in their study that assessed the association of online health information-seeking behavior and self-care activities among type 2 diabetic patients found that younger

age, female gender, higher education, marital status, higher income, and longer duration of Internet usage were associated with more online health-related information-seeking behaviors ^[36]. This finding is also considered in contrast to what was reported in the current study. This Saudi study showed that only 39.0% of the type 2 diabetic patients were Internet users, a percentage which is far lower compared to the rate found in the current study. Additionally; the authors reported that 71.6% of them used the Internet for seeking health-related information, which is also lower compared to our finding ^[36].

Strengths and limitations

Data exploring primary care patients' online health information-seeking behavior in Saudi Arabia is scarce. The current study provides a general picture of online health information seeking which might help primary care doctors to understand their patients' health information needs. The current study as all other studies have its limitations including the cross sectional design which provides a snapshot during the study period, on patients' online health information seeking behavior. Further longitudinal studies are needed to unravel changes in internet use patterns among patients. Additionally, future research studies are needed to better understand the awareness of health information resources, and then investigate whether increased awareness of different resources would lead to better health related decisions. Results of such studies would provide insights into the impact of online health information on health care system in Saudi Arabia. Furthermore, the consequences of online health information-seeking behavior on the power of the traditional health professional and patient relationship should also be the subject of future research.

References

1. Marton C, Wei Choo C. A review of theoretical models of health information seeking on the web. *J Documentation*. 2012; 68(3):330-352. [doi:10.1108/00220411211225575]
2. Ghweeba M, Lindenmeyer A, Shishi S, Abbas M, Waheed A, Amer S *et al.* What Predicts Online Health Information-Seeking Behavior among Egyptian Adults? A Cross-Sectional Study. *Journal of Medical Internet Research*. 2017; 19(6):e216.
3. Lambert SD, Loisel CG. Health information seeking behavior. *Qual Health Res*. 2007; 17(8):1006-1019. [doi:10.1177/1049732307305199] [Medline: 17928475]
4. Bahkali S, Almainan R, El-Awad M, Almohanna H, Al-Surimi K, Househ M *et al.* Exploring the Impact of Information Seeking Behaviors of Online Health Consumers in the Arab World [Internet]. Ebooks. iospress.nl. 2016 [cited 7 January 2019]. Available from: <http://ebooks.iospress.nl/Publication/Descendants/44144?page=4>
5. Kontos E, Blake K, Chou W, Prestin A. Predictors of Health Usage: Insights on the Digital Divide From the Health information national trends survey 2012. *Journal of Medical Internet Research*. 2014; 16(7):e172.
6. Broom A. Virtually Healthy: the impact of internet use on disease experience and the physician -patient relationship. *Qual Health Res*. 2005; 15:325-45.

7. Henwood F, Wyatt S, Hart A, Smith J. Ignorance is bliss sometimes: constraints on the emergence of the informed patient in the changing landscapes of health information. *Sociol Health Illn.* 2003; 25:589-607.
8. Murray E, Lo B, Pollack L *et al.* The impact of health information on the internet on health care and the physician-patient relationship: national U.S. survey among 1,050 US. Physicians. *J Med Internet Res.* 2003; 5:e17.
9. Diaz JA, Griffith RA, Ng JJ, Reinert SE, Friedmann PD, Moulton AW *et al.* Patients' use of the internet for medical information. *J Gen Intern Med.* 2002; 17(3):180-185. [Free Full text] [Medline: 11929503]
10. Bundorf MK, Wagner TH, Singer SJ, Baker LC. Who searches the internet for health information? *Health Serv Res.* 2006; 41(3 Pt 1):819-836 [Free Full text] [doi: 10.1111/j.1475-6773.2006.00510.x] [Medline: 16704514]
11. Beck F, Richard J, Nguyen-Thanh V, Montagni I, Parizot I, Renahy E *et al.* Use of the internet as a health information resource among French young adults: results from a nationally representative survey. *J Med Internet Res.* 2014; 16(5):e128. [Free Full text] [doi: 10.2196/jmir.2934] [Medline: 24824164]
12. Al-Shorbaji N. E-health in the Eastern Mediterranean Region: a decade of challenges and achievements. *East Mediterr Health J.* 2008; 14 Suppl:S157-S173. [Medline: 19205616]
13. AlSaadi MM. Evaluation of internet use for health information by parents of asthmatic children attending pediatric clinics in Riyadh, Saudi Arabia. *Ann Saudi Med* 2012; 32(6):630-636. [doi: 10.5144/0256-4947.2012.630] [Medline: 23396028]
14. Kohn LT, Corrigan JM, Donaldson MS, editors. *To Err Is Human: Building a Safer Health System.* IOM Institute of Medicine. Washington: National Academies Press, 1999.
15. Breu R, Sztipanovatis J, Ammenwerth E. Model Based design of trustworthy health Information Systems. *Methods Inf Med.* 2008; 47(5):389-91.
16. Huziah M. Hon.ch. Assessment of online health information for Arabic sites. 2010, URL:http://www.hon.ch/Global/pdf/Press/Assessment_of_Arabic_Sites_Report_17-09-09.pdf [accessed 2017-02-15] [WebCite Cache ID 6oIJVgVIZ]
17. Van Riel N, Auwerx K, Debbaut P, Van Hees S, Schoenmakers B. The effect of Dr. Google on doctor-patient encounters in primary care: a quantitative, observational, cross-sectional study. *BJGP Open.* 2017; 1(2):BJGP-2017-0833.
18. Banna S, Hasan H, Meloche J. A subjective evaluation of attitudes towards E-health. The 2010 International Conference on Innovation and Management IAM, 2010, 1-12. Taiwan: EBRC.
19. Wong DK, Cheung MK. Online Health Information Seeking and eHealth Literacy among Patients Attending a Primary Care Clinic in Hong Kong: A Cross-Sectional Survey. *J Med Internet Res.* 2019; 21(3):e10831.
20. Tennant B, Stellefson M, Dodd V, Chaney B, Chaney D, Paige S *et al.* Health literacy and Web 2.0 health information seeking behaviors among baby boomers and older adults. *J Med Internet Res.* 2015; 17(3):e70. doi: 10.2196/jmir.3992. PMID: 25783036; PMCID: PMC4381816.
21. Moreland J, French TL, Cumming GP. The Prevalence of Online Health Information Seeking Among Patients in Scotland: A Cross-Sectional Exploratory Study. *JMIR Res Protoc.* 2015; 4(3):e85. doi: 10.2196/resprot.4010. PMID: 26177562; PMCID: PMC4526998.
22. NW 1615 L. St, Suite 800 Washington, Inquiries D 20036USA202-419-4300 | M-857-8562 | F-419-4372 | M. The Social Life of Health Information, 2011 [Internet]. Pew Research Center: Internet, Science & Tech. 2011, [cited 2020 Mar 1]. Available from: <https://www.pewresearch.org/internet/2011/05/12/the-social-life-of-health-information-2011/>
23. Dutton WH, Blank G. Next Generation Users: The Internet in Britain. SSRN Electronic Journal [Internet]. 2011 [cited 2020 Mar 1]; Available from: <http://www.ssrn.com/abstract=1960655>
24. Dutton WH, Blank G. Cultures of the Internet: The Internet in Britain, 64.
25. Bujnowska-Fedak MM, Węgierek P. The Impact of Online Health Information on Patient Health Behaviours and Making Decisions Concerning Health. *Int J Environ Res Public Health.* 2020; 17(3):880. Published 2020 Jan 31. doi:10.3390/ijerph17030880
26. Escoffery C, Miner KR, Adame DD, Butler S, McCormick L, Mendell E *et al.* Internet use for health information among college students. *J Am Coll Health.* 2005; 53(4):183-8.
27. Siow TR, Soh IP, Sreedharan S, Das De S, Tan PP, Seow A *et al.* The Internet as a source of health information among Singaporeans: prevalence, patterns of health surfing and impact on health behaviour. *Ann Acad Med Singap.* 2003; 32(6):807-13.
28. Bamidis P, Kerassidis F, Pappas K. Health information on the internet: evaluating greek health portals and depicting users' attitudes in West Macedonia, Greece. *Stud Health Technol Inform.* 2005; 116:885-90.
29. Yan YY. Online health information seeking behavior in Hong Kong: an exploratory study. *J Med Syst.* 2010; 34(2):147-53.
30. Barnes MD, Penrod C, Neiger BL, Merrill RM, Thackeray R, Eggett DL *et al.* Measuring the Relevance of Evaluation Criteria among Health Information Seekers on the Internet. *J Health Psychol.* 2003; 8(1):71-82.
31. Escoffery C, Miner KR, Adame DD, Butler S, McCormick L, Mendell E. Internet use for health information among college students. *J Am Coll Health.* 2005; 53(4):183-8.
32. Hu X, Bell R, Kravitz R, Orrange S. The Prepared Patient: Information Seeking of Online Support Group Members before Their Medical Appointments. *Journal of health communication.* 2012; 17:960-78.
33. Li J, Theng YL, Foo S. Predictors of online health information seeking behavior: Changes between. *Health Informatics J.* 2002-2016; 22(4):804-14.
34. Oh YS, Cho Y. Examining the relationships between resources and online health information seeking among patients with chronic diseases and healthy people. *Soc Work Health Care.* 2015; 54(2):83-100.
35. Li N, Orrange S, Kravitz RL, Bell RA. Reasons for and predictors of patients online health information seeking following a medical appointment. *Fam Pract.* 2014;

- 31(5):550-6.
36. Jamal A, Khan SA, AlHumud A, Al-Duhyyim A, Alrashed M, Bin Shabr F *et al.* Association of Online Health Information-Seeking Behavior and Self-Care Activities Among Type 2 Diabetic Patients in Saudi Arabia. J Med Internet Res. 2015; 17(8):e196.