

## Health information seeking behavior of the population in Majmaah, Saudi Arabia

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### ABSTRACT

**Background:** The internet nowadays is the most popular and time-saving tool for gaining a lot of information. This is true for health knowledge also, because almost everyone is keen to know about their health disorders, treatment, healthcare centers and also how to stay healthy. There was a felt need to study the prevalence among the population of the access to internet for health-related information. **Objectives:** The main objective of this study was to investigate the different health information seeking behaviors among the population of the Kingdom of Saudi Arabia. **Methodology:** This is a cross-sectional, observational and population-based study in Majmaah city. Based on the (prevalence rate = 50%) previous articles, the sample size was calculated equal to 384. Data was collected by pre-tested, close ended, interviewee-based questionnaire to know people behavior in seeking health information. **Results:** The majority are using the internet as a source of health information (71.3%, n=321) followed by friends who are health workers (31.3%, n=140). Internet search engines (Google, Yahoo, etc.) being the most commonly used to gain health information through internet (68.2%, n=307) followed by Social media (9.8%, n=44). **Conclusion:** This study revealed that internet use for seeking health information is in increasing manner with internet search engines (Google, Yahoo...etc) being the most used source. We conclude that internet use for seeking health information is still a common behavior in the population.

**Keywords:** Health information, internet, social media, medical treatment, Saudi Arabia

### 1. INTRODUCTION

The internet nowadays is the most popular and time-saving tool for gaining a lot of information. This is true for health knowledge also, because almost everyone is keen to know about their health disorders, treatment, healthcare centers and also how to stay healthy. In addition, many people are using social media and internet websites to share health-related knowledge and also their own experiences. Even though internet is the most common medium being used for gathering health related information, there are inadequate



studies that can point out cultural differences in awareness about user-generated, experience-based knowledge and evidence-based information sources (Song et al., 2016). Sixty percent of people who are using internet spend most of that time to gain more health knowledge about various aspects and for different purposes (Alshakhs & Alanzi, 2018; Ventola, 2014).

Social media websites are not an exception as they are increasingly becoming one of the sources for health information. However, much more is still unknown about the way people interact with health information provided by internet websites and social media (Iftikhar & Abaalkhail, 2017). The important role of social media in health information communication has been recognized by various governmental, social, educational and health institutes. However, there is still an inability to control and regulate this type of health information communications by different regulatory institutes and inadequate educational programs to promote the community's ability to recognize reliable and approved sources of health knowledge especially among non-health workers and commoners. In addition, large amount of health information provided through social media accounts and websites are provided by non-specialized people. They also share opinions as facts and question the evidence-based health information which indirectly deteriorates both public health and the relationship between scientific health institutes and the general population.

Awareness of evidence-based health information sources is a valuable tool that can be used to improve the preventive measures contributing to public health promotion. Knowledge about the main sources of health information among population is important especially in case of social media websites which can help scientific and reliable health institutes to allocate and increase their educational activities in the most used website. The spread of unproven, non-evidence-based health knowledge by various unreliable and non-scientific social media accounts or websites has a large and dangerous impact on public health.

Social media can be defined as internet-based communication tools which allow easy and low cost communication with huge number of users from distant geographic area (Appel et al., 2020). As health information availability on the internet is increasing in a fast manner, there is associated increase in online seeking behavior of health information among people. A study among 1002 respondents showed that 57% of them use internet for seeking health information (Ghweeba et al., 2017). Moreover, worldwide studies found that 72% of the USA population and 71% of Europe population seek health information by using internet sources (Nangsangna & da-Costa Vroom, 2019).

A study conducted in Croatia among 978 respondents showed that the most common source of health information was the internet while friends and family came in the second place as well as friends who are health worker. 77% of respondents used internet to find answers to their health-related questions. 89% of those who used internet as a source of health information used search engines like Google and yahoo, 3.1% used PubMed and 5% used specialized evidence-based medicine databases. 19% of respondents reported that they had heard of evidence-based medicine 25% of them were city residents and 13% were rural areas residents. In addition, the study showed that higher level of awareness of evidence-based health information was in urban areas compared rural areas as well as higher educational level and occupational status. 129 respondents answered question to write their own description of evidence-based medicine meaning, 102 respondents described it as research-based, confirmed medicine that has been tested on huge number of cases. 5 respondents described it as western, European medicine or non-alternative or recognized medicine. Others described it as the use of some medical interventions (Nejašmić et al., 2017).

A study conducted in 2005, where a research readiness self-assessment was given to 400 college students included multiple-choice questions and problem-solving questions prepared to measure the respondents' abilities regarding the evaluation of health information. The study showed that only 50% of the respondents were able to recognize the most reliable health information source. 84% of the respondents classified their search abilities as ranging from good to excellent; however, many were unable to evaluate the creditability of health information sources (Ivanitskaya et al., 2006). Regarding another aspect of this area of research, a study was conducted to analyze twitter as an effective tool for evaluating public awareness in emergency conditions such as H1N1 uprising in 2009. They found by analyzing more than two million tweets that tweets were containing evidence-based information (Chew & Eysenbach, 2010).

A study of 299 respondents conducted in Saudi Arabia about health information sources showed that physicians and pharmacists were the first and most important source of health information while social media was in the second place followed by friends and TV shows. In addition, the study showed that people who are over 40 years old were more dependent on social media as a source of health information while those who are less than 30 years old were more dependent on twitter (Alduraywish et al., 2020).

### Study objectives

The main objective of this study was to investigate the different health information seeking behaviors among the population of the Kingdom of Saudi Arabia.

**Specific objective**

- To determine the extent of internet use for seeking health information among the population.
- To determine the main sources of health information used among the population.
- To demonstrate the knowledge of the population about the evidence-based health sources.
- To identify the reasons behind using the internet as a source of health information.

**2. METHODOLOGY****Study design**

This is a cross-sectional, observational and population-based study.

**Study settings**

The study was conducted in the Majma'ah city in the kingdom of Saudi Arabia, which is located near the capital city of Saudi Arabia Riyadh. King Khalid hospital in Majma'ah city is the main provider of health care services along with other health care centers. The study was carried out during the period from 1<sup>st</sup> July to 31<sup>st</sup> December 2019.

**Study population**

The study participants included in this study were the local population of Majmaah city particularly targeting those visiting the public places like malls, parks and local eateries.

**Sampling**

A method of simple random sampling was preferred to include the study participants in popular places like malls, public parks and local markets.

**Sample size**

Based on the prevalence rate of internet search for treatment at 50% as found in previous articles, the sample size was calculated equal to 384

According to the formula:

$$n = \frac{z^2 \times pq}{d^2}$$

(n= sample size, z=standard normal deviate =1.96, p=prevalence, q=1-p, d=error accepted=0.05).

**Duration of the study**

The duration of this study from preparation of the proposal, ethical approval, data collection and writing the result and discussion was six months.

**Data collection**

Data was collected by pre-tested, close ended, interviewee-based questionnaire to know people behavior in seeking health information.

**Data analysis**

Data was analyzed by using computer software (SPSS). Frequency distribution test was done to identify the socio – demographic characteristics of the study population. Chi square test was used to find out any significant difference in the variables measured within the participants.

*Inclusion and exclusion criteria:* -

We targeted the local population except:

- Health care workers and medical students in addition to other health care fields' students.
- Those under 18 years old and above 60.

**Ethical considerations**

Informed consent was taken from respondents after explaining to them the significance of this study and they were assured that the all the information gathered will be confidential. The ethical approval was taken form the ethical committee in Majmaah university before starting the survey.

**3. RESULTS**

Table 1 presents the distribution of participants according to the main used sources of health information and internet use. Among those participants who have searched about health information in place other than physicians (83.4%, n=371) the majority are using the internet as a source of health information (71.3%, n=321) followed by friends who are health workers (31.3%, n=140) and scientific researches (9.6%, n=43) with (2.9%, n=13) considering promotional materials of pharmaceutical companies as a source of health information. Figure 1 presents the distribution of the study participants according to age and gender. The participants of the study were aged between 18-60 years with the majority being between 18-25 (38%, n=171) followed by those aged between 26-35 (30%, n=135). The majority of the respondents were males (73.54 %,n= 331) and ( 26.45%, n=119) were females.

**Table 1** Distribution of participants according to internet use

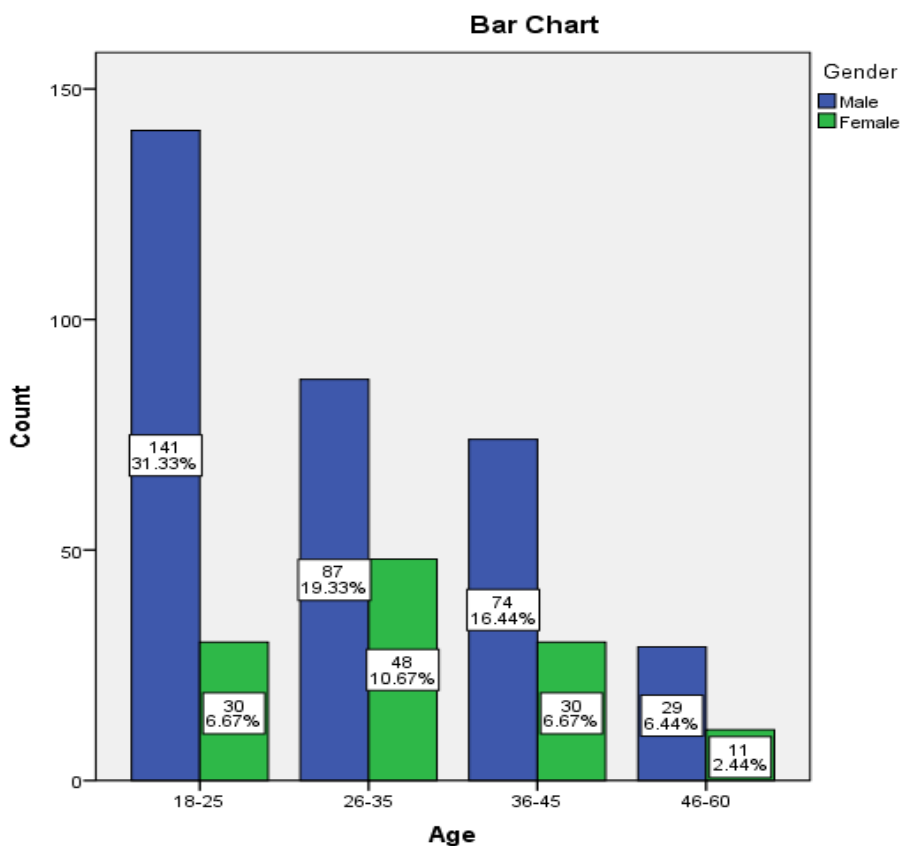
		Gender		Total	p value
		Male	Female		
Did you ever search for health information about your diagnosis or therapy in places other than a physician?	Yes	271 (60.2%)	100 (22.2%)	371 (83.4%)	X <sup>2</sup> = 0.282 p = 0.595
	No	60 (13.3%)	19 (4.2%)	79 (17.6%)	
Total		331 (73.6%)	119 (26.4%)	450 (100.0%)	
Friends who are health workers	Yes	116 (25.8%)	24 (5.3%)	140 (31.1%)	X <sup>2</sup> = 9.039 p = 0.003
	No	215 (47.8%)	95 (21.1%)	310 (68.9%)	
Total		331 (73.6%)	119 (26.4%)	450 (100.0%)	
References from books	Yes	16 (3.6%)	6 (1.3%)	22 (4.9%)	X <sup>2</sup> = 0.008 p = 0.928
	No	315 (70.0%)	113 (25.1%)	428 (95.1%)	
Total		331 (73.6%)	119 (26.4%)	450 (100.0%)	
Public medical journals	Yes	28 (6.2%)	11 (2.4%)	39 (8.7%)	X <sup>2</sup> = 0.068 p = 0.794
	No	303 (67.3%)	108 (24.0%)	411 (91.3%)	
Total		331 (73.6%)	119 (26.4%)	450 (100.0%)	
Searching the internet	Yes	231 (51.3%)	90 (20.0%)	321 (71.3%)	X <sup>2</sup> = 1.461 p = 0.227
	No	100 (22.2%)	29 (6.4%)	129 (28.7%)	
Total		331 (73.6%)	119 (26.4%)	450 (100.0%)	
Searching scientific researches	Yes	27 (6.0%)	16 (3.6%)	43 (9.6%)	X <sup>2</sup> = 2.832 p = 0.092
	No	304 (67.6%)	103 (22.9%)	407 (90.4%)	
Total		331 (73.6%)	119 (26.4%)	450 (100.0%)	
Promotional material of pharmaceutical companies	Yes	12 (2.7%)	1 (0.2%)	13 (2.9%)	X <sup>2</sup> = 2.42 p = 0.120
	No	319 (70.9%)	118 (26.2%)	437 (97.1%)	
Total		331 (73.6%)	119 (26.4%)	450 (100.0%)	

Table 2 shows the distribution of Internet search engines and websites used by the participants where Internet search engines (Google, Yahoo, etc.) being the most commonly used to gain health information through internet (68.2%, n=307) followed by Social media (9.8%, n=44) and Specialized databases for Evidence-based medicine (4.0%, n=18). Table 3 demonstrates distribution of opinion on information gathering through internet by the participants where the majority of the participants (76.9%, n=346) prefer internet use for seeking health information because of the ease of access followed by cost effectiveness as the second reason for

seeking health information through internet use (21.8%, n=98). Lastly, 14.9% (n=67) are using internet as a source of health information because it is trustable.

Table 4 presents the distribution of dependency on medical information sources by the participants. Participants were asked to rate five sources of health information based on their reliability. Physicians' and health workers' opinions and advices was rated the most reliable source of health information with 54.2% (n=244) considering it as completely reliable source of health information, 29.6% (n=133) said it was mostly reliable and 10.4% of the participants (n=47) rated it as sometimes reliable, 3.3% (n=15) as mostly unreliable and lastly, 2.4% (n=11) considered it as completely unreliable source of health information respectively. Social media was the most unreliable source of health information among five health information sources with 16.7% (n=75) rating it as mostly unreliable source of health information and 12.7% (n=57) completely unreliable while 17.6% (n=79) of the participants consider social media as a completely reliable source of health information.

**Distribution of study participants according to age and gender**



**Figure 1** Distribution of study participants according to age and gender

**Table 2** Distribution of Internet search engines used by the participants

	Gender		Total	p value
	Male	Female		
Internet search engines (Google, Yahoo, etc.)	227 (50.4%)	80 (17.8%)	307 (68.2%)	$\chi^2 = 2.046$ $p = 0.563$
Specialized databases for Evidence-based medicine	11 (2.4%)	7 (1.6%)	18 (4.0%)	
Social media	31 (6.9%)	13 (2.9%)	44 (9.8%)	
Others	62 (13.8%)	19 (4.2%)	81 (18.0%)	
Total	331 (73.6%)	119 (26.4%)	450 (100.0%)	

**Table 3** Distribution of opinion on information gathering through internet by the participants.

		Gender		Total	p value
		Male	Female		
Cost effective	Yes	78 (17.3%)	20 (4.4%)	98 (21.8%)	X <sup>2</sup> = 2.347 p = 0.126
	No	253 (56.2%)	99 (22.0%)	352 (78.2%)	
Total		331 (73.6%)	119 (26.4%)	450 (100.0%)	
More confidentiality	Yes	29 (6.4%)	4 (0.9%)	33 (7.3%)	X <sup>2</sup> = 3.756 p = 0.053
	No	302 (67.1%)	115 (25.6%)	417 (92.7%)	
Total		331 (73.6%)	119 (26.4%)	450 (92.7%)	
Easy access	Yes	251 (55.8%)	95 (21.1%)	346 (76.9%)	X <sup>2</sup> = 0.789 p = 0.375
	No	80 (17.8%)	24 (5.3%)	104 (23.1%)	
Total		331 (73.6%)	119 (26.4%)	450 (100.0%)	
Trustworthy	Yes	46 (10.2%)	21 (4.7%)	67 (14.9%)	X <sup>2</sup> = 2.046 p = 0.563
	No	285 (63.3%)	98 (21.8%)	383 (85.1%)	
Total		331 (73.6%)	119 (26.4%)	450 (100.0%)	

**Table 4** Distribution of dependency on medical information sources by the participants.

		Gender		Total	p value
		Male	Female		
Others' experiences	completely reliable	109 (24.2%)	36 (8.0%)	145 (32.2%)	X <sup>2</sup> = 5.073 p = 0.280
	mostly reliable	103 (22.9%)	37 (8.2%)	140 (31.1%)	
	sometimes	87 (19.3%)	26 (5.8%)	113 (25.1%)	
	mostly unreliable	23 (5.1%)	13 (2.9%)	36 (8.0%)	
	completely unreliable	9 (2.0%)	7 (1.6%)	16 (3.6%)	
	Total		331 (73.6%)	119 (26.4%)	
Social Media	completely reliable	58 (12.9%)	21 (4.7%)	79 (17.6%)	X <sup>2</sup> = 4.448 p = 0.349
	mostly reliable	72 (16.0%)	26 (5.8%)	98 (21.8%)	
	sometimes	111 (24.7%)	30 (6.7%)	141 (31.3%)	
	mostly unreliable	53 (11.8%)	22 (4.9%)	75 (16.7%)	
	completely unreliable	37 (8.2%)	20 (4.4%)	57 (12.7%)	
	Total		331 (73.6%)	119 (26.4%)	
Physicians' and health workers' opinions and advices	completely reliable	171 (38.0%)	73 (16.2%)	244 (54.2%)	X <sup>2</sup> = 6.002 p = 0.199
	mostly reliable	100 (22.2%)	33 (7.3%)	133 (29.6%)	
	sometimes	38 (8.4%)	9 (2.0%)	47 (10.4%)	
	mostly unreliable	14 (3.1%)	1 (0.2%)	15 (3.3%)	
	completely unreliable	8 (1.8%)	3 (0.7%)	11 (2.4%)	
	Total		331 (73.6%)	119 (26.4%)	
Search engines (Google, Yahoo...etc)	completely reliable	61 (13.6%)	25 (5.6%)	86 (19.1%)	X <sup>2</sup> = 6.408 p = 0.171
	mostly reliable	92 (20.4%)	41 (9.1%)	133 (29.6%)	
	sometimes	114 (25.3%)	40 (8.9%)	154 (34.2%)	
	mostly unreliable	50 (11.1%)	8 (1.8%)	58 (12.9%)	
	completely unreliable	14 (3.1%)	5 (1.1%)	19 (4.2%)	
	Total		331 (73.6%)	119 (26.4%)	
Medical data bases (Pubmed, Uptodate...etc)	completely reliable	139 (30.9%)	56 (12.4%)	195 (43.3%)	X <sup>2</sup> = 8.172 p = 0.085
	mostly reliable	92 (20.4%)	42 (9.3%)	134 (29.8%)	
	sometimes	60 (13.3%)	14 (3.1%)	74 (16.4%)	
	mostly unreliable	25 (5.6%)	3 (0.7%)	28 (6.2%)	
	completely unreliable	15 (3.3%)	4 (0.9%)	19 (4.2%)	
	Total		331 (73.6%)	119 (26.4%)	



## 4. DISCUSSION

The study demonstrates the extent of internet use and the most used sources for seeking health information and support among the population of Saudi Arabia as well as the factors that favor health information seeking through internet and the knowledge about evidence based medicine. The study showed that most of the population 78% are using internet as a source of health information which is consistent with another local study conducted in 2017 which showed that about 70% of the respondents were using social media and Whatsapp being the most used application 83.8%. The study showed that 6% of the respondents use social media for seeking health information on daily basis while 18% on weekly basis (Alhaddad, 2018).

In our study, easy access to internet and social media is the most favoring factor for seeking health information through internet and social media when compared to another study conducted in USA 2017 showed that privacy is the most chosen factor favoring internet use for seeking health information (Hausmann, 2017). A study conducted in 2016 suggested that a trust in social media based health information is the most important factor (Lin, 2016). In the context of the main used internet sources of health information by the population, the most used source was internet engines (Google, yahoo.. etc) 68.2%, compared with the local study mentioned before Alhaddad (2018) which showed that 70% of the respondents use social media in specific for seeking health information and whatsapp is the most common used application. Generally speaking regarding health information sources, our study showed that 71.3% of the respondents are using internet as a source of health information which is consistent with another local study conducted in Hail 2017, showed that 97.9% of the respondents are using internet for seeking health information (Fattah et al., 2017) and this is due to its easy access and to some extent being cost-effective.

In this study we have asked respondents to write their opinion about the definition or concept of evidence based medicine, and it showed that only 17.1% have a correct or nearly correct understanding of the evidence based medicine concept. In contrast to another study conducted in Croatia 2017 which showed that 79% of the respondents have a correct or nearly correct understanding of the evidence based medicine understanding (Nejašmić, 2017). Regarding the most and least trustable and reliable sources of health information, respondents were asked to rate different sources based on their reliability from completely reliable to completely unreliable and our study showed that physicians' and health workers' opinions and advices was rated the most reliable source of health information with 54.2% considering it as completely reliable source of health information, 29.6% rated it as mostly reliable and 10.4% of the participants rated it as sometimes and social media was the most unreliable source of health information among the health information sources with 16.7% rated it as mostly unreliable source of health information and 12.7% rated it as completely unreliable.

In comparison with the study mentioned above (Nejašmić, 2017), same result were found in the context of health information sources reliability and it showed that physician's opinions is the most reliable source of health information followed by systemic review, information form social media were ranked with the lowest reliability among other health information sources.

## 5. CONCLUSION

This study revealed that internet use for seeking health information is in increasing manner with internet search engines (Google, Yahoo...etc) being the most used source. We conclude that even though physicians' opinions are considered the most reliable source of health information and social media in addition to internet to be the most unreliable sources of health information, internet use for seeking health information is still a common behavior in the population as it is being easily accessible and providing more privacy with lowest costs and time consumption. In relation to evidence based medicine, we conclude that its concept is still unknown and not well understood by the majority of the population and needs more effort to rise the awareness about evidence based medicine which is a crucial thing in the context of increased online based health information seeking.

### Limitations of the study

Since this is a cross – sectional study, it cannot be used to analyze behavior over a period to time. Also, it does not help determine cause and effect. The timing of the study does not guarantee it to be representative to the whole population. Further cohort and follow up study are required to validate our preliminary findings.

### Recommendations

Since the internet use for seeking health information is nowadays a very common behavior among the population, this area of exchanging information should not be ignored and a lot of efforts and measures should be taken to prevent misleading and mistaken health information from spreading, which will affect the public health on long term. In addition, efforts also should be focused on raising the awareness regarding Evidence-based medicine and its concept.

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**Informed consent**

Informed consent was obtained from all participants included in the study.

**Ethical Consideration**

The study was approved by the Deanship of Scientific Research of the faculty of Medicine of Majmaah University, with approval number: MUREC-Dec.23/COM-2018/12.

**Author Contributions**

All the authors contributed evenly with regards to data collecting, analysis, drafting and proofreading the final draft.

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**Conflict of Interest**

There are no conflicts of interest.

**Data and materials availability**

All data associated with this study are present in the paper.

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