

Factors related to the use of internet for health care management among university students

Mamoon Rashid¹, Maham Mohammed Arshad^{1*}, Salman Ali¹, Ameer Al Shizawi¹, Shatha Al Sharbatti²

¹MBBS Student, ²Professor, Department of Community Medicine, Gulf Medical University, Ajman, UAE

*Presenting Author

ABSTRACT

Objectives: To determine the frequency of using internet for diagnosis and treatment of medical conditions; to identify the most frequent (websites) resources used for self-diagnosis and treatment of medical conditions; to assess the awareness of inaccuracy of information on internet for self-diagnosis of medical conditions

Materials and Methods: A cross-sectional study was done including students in the GMU using validated self-administered questionnaire. The questionnaire includes in addition to socio-demography of participants, information about the use of internet for self health management, most common website searched, history of complication following the use and if they had verified the diagnosis with treating physician. Informed consent was taken from participants and the confidentiality of the participants was maintained. Data was analyzed using SPSS V.20 and Chi-Square test was done.

Results: The results showed that 93.6% of the participants were using internet for healthcare management and the main reason was the ease of accessing medical information online. In 75.9% of respondents who had used the internet for self-management, the diagnosis was verified with a doctor, and 49.7% of them found that it was inaccurate. 43% of the participants took medication listed online followed by their internet-based self-diagnosis. Specialized medical websites were the most credible source as 57.10% of the study sample using this successfully verified their diagnosis with a doctor.

Conclusion: Most of the participants were using the internet for self-diagnosis and management and 49.7% of respondents found that the diagnosis was inaccurate after it had been verified by a doctor. Specialized medical websites were the most credible source. It was identified that students do realize how inaccurate the internet can be

Keywords: Internet for health care, health care management

INTRODUCTION

Internet has grown tremendously over the past few years; access to the internet has become cheaper and easier over time. The evolution from the old heavy desktop computer to the touch screen tablets and the new Wi-Fi technology have made internet accessible at the touch of fingertips.¹As with most things in this digital age, medical information can be easily researched online, but as the saying goes, “a little knowledge can be highly dangerous”.

Patients are increasingly using the internet to search for health related information. Many people can become addicted to the Internet, constantly seeking out information and creating pseudo-diagnoses for themselves. This can create a constant atmosphere of paranoia and anxiety.

It's well known that a huge amount of information can be accessed on the internet and can be easily edited by anyone according to their knowledge, hence the quality of information one finds on various search engines may vary a lot and there are risks, including finding inaccurate or scary information or missing the best sources.²

The main aim of this research is to see whether there is a similar trend of online 'self-diagnosis' in the UAE as seen in other countries especially the USA. As medical students, we have seen many patients who visit doctors and present their own diagnosis to the doctor and try to discuss their own treatment plan with their doctor.

At times, their 'self-diagnosis' is incorrect with no similarity to their actual diagnosis. The medications they self-prescribe is at times of low ineffective doses or either high toxic doses.

Some patients may even ask the doctor to write down their diagnosis for them so that they can go home and research more on the topic. On follow-up these patients may come prepared with massive medical information which not only confuses them but they end up wasting the physician's time who try to quell their concerns. With this research, we want to assess the intensity of this practice and the factors that might affect it. Hopping that those doing this practice will get aware of the inaccuracy of information on the internet and it cannot be compared to a doctor's visit.

This study aims to assess the frequency and the most frequent (websites) resources of using internet for diagnosis and treatment of medical conditions, and to assess the awareness of inaccuracy of information on internet for self-diagnosis of medical conditions.

MATERIAL AND METHODS

The study was conducted as a cross sectional study for a period of 6 months in a medical university, the students of 1st, 2nd, 3rd 4th years in DMD, Pharm D and BPT programs and above 18 years old were included in this study, and those enrolled in the MBBS program were excluded. A self-administered questionnaire was used in this study which was validated by two experts in the area, and pilot test was done to finalize it. The predictor (independent) variables included the age, gender, year and program of education, nationality and duration of Internet usage per day. The outcome (dependent) variable included the practice of self- diagnosis and management based on the internet findings. After obtaining the approval from the Gulf Medical University Ethics Committee, student who fulfilled the inclusion criteria and signed the consent form were recruited in the study.

The data collected was coded and entered into excel sheet, and then transferred to SPSS version 20, data was presented in the form of tables and inferential statistics were done using Chi square.

RESULTS

The study included a total of 235 participants and the following results are based on all the participants in the study. 53.2% of the participants were above the age of 20. The percentage of Arabs and Asians was 38.3% for each, and other nationalities constituted 23.4%. 73.2% of the participants were female and 46.8% were from the DMD Program, 31.9% and 21.3% for PharmD and BPT program, respectively. 49.4% of the participants were from 1st Year. 48.1% of the participants used internet for less than 6hours per day and 63.4% of the participants considered online information to be moderately accurate whereas 29.8% considered it to be highly accurate. 97.3% of the participants used internet at home followed by 81.4% who used internet at the University.

Table1. Association between the dependent and the independent factors

Independent Variable	Groups	The use of internet for self-diagnosis				P value	
		Users		Non users			Total
		No.	%	No.	%		
Age	<20 years	103	93.6	7	6.4	110	NS
	≥20 years	117	93.6	8	6.4	125	
Total		220		15			
Gender	Male	58	92.1	5	7.9	63	NS
	Female	162	94.2	10	5.8	172	
Total		220		15			
Nationality	Arab	84	93.3	6	6.7	90	NS
	Asian	86	95.6	4	4.4	90	
	Others	50	90.9	5	9.1	55	
Total		220		15			
Program	BPT	47	94	3	6	50	NS
	PharmD	71	94.7	4	5.3	75	
	DMD	102	92.7	8	7.3	110	
Total		220		15			
College Year	First Year	105	90.5	11	9.5	116	NS
	Second Year	66	100	---	---	66	
	Third Year	29	90.6	3	9.4	32	

	Fourth Year	20	95.2	1	4.8
Total		220		15	

Table 1 show that 93.6% of the students were using the internet for healthcare management. Females (94.2%) and Asians (95.6%) were using the internet more frequently for self-diagnosis compared to the males (92.1%) and other nationalities. For students in PhamD, BPT and DMD program the percentage was 94.7%, 94% and 92.7%, respectively. The utilization of internet for selfcare management was maximal for student in the 2nd Year (100%) while from other year it was less.

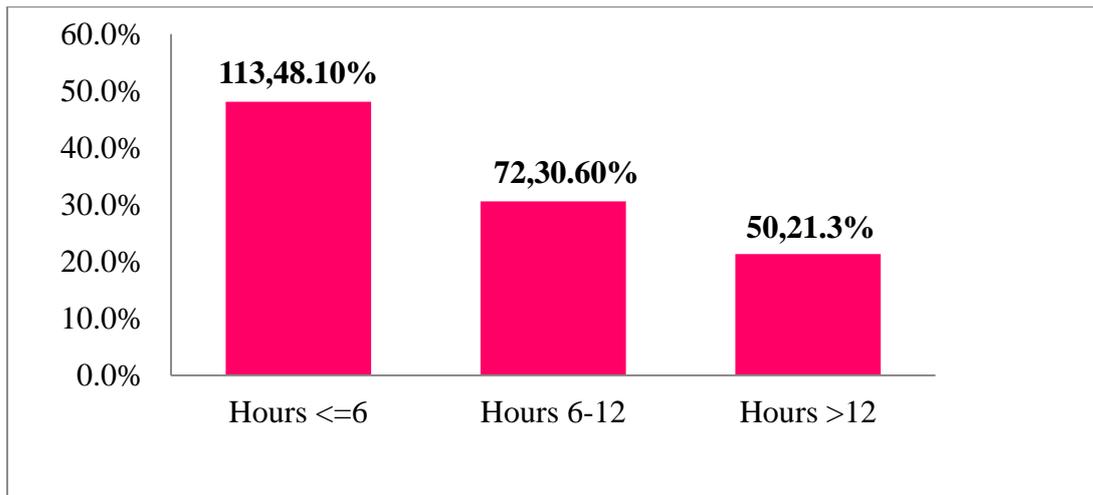


Figure 1. Distribution of participants by the duration of the internet usage

Figure 1 show the hours of internet usage among the participants. 48.10% students used internet for less than 6 hours. 30.60% students use it for about 6 to 12 hours. Finally, 21.30% students use internet for more than 12 hours.

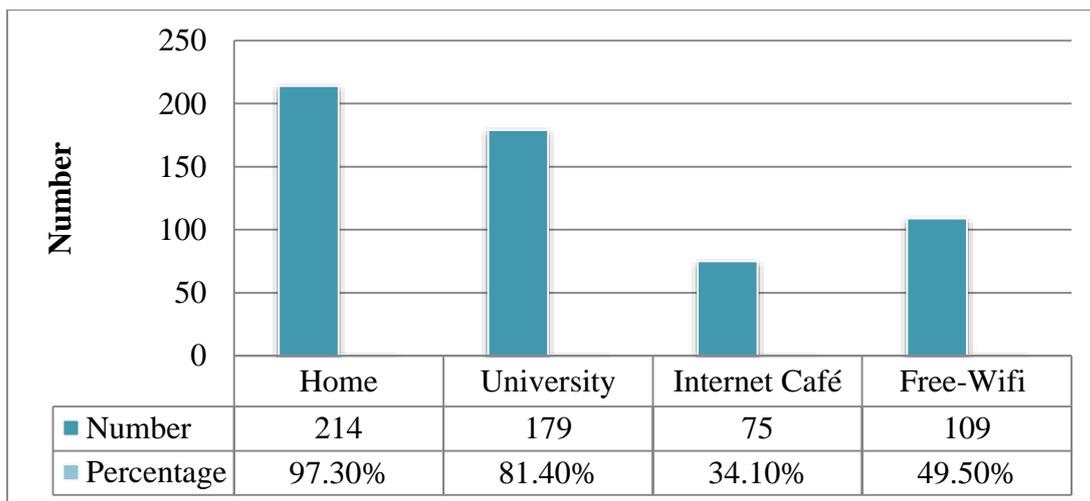


Figure 2. Distribution of the participants by the site of using the internet

Figure 2 shows the distribution of the participants by the site of using the internet, 34.1% of participant use internet at internet café. 49.5% of participant use free Wi-Fi in places such as malls and airports. Most participants use internet at more than one place.

Table 2: The reasons given by the students for getting medical diagnosis from the internet

Primary reason to choose the internet	Number	Percentage
Unavailability of doctor	14	6.40%
To save consultation charges	21	9.50%
Fear of visiting doctor	12	5.50%
Embarrassing Medical condition	18	8.20%
To Save waiting times at clinics/hospitals	34	15.50%
Medical Information easily available	69	31.40%
To be informed before going to a doctor	48	21.80%
Other Reasons	4	1.80%
Total	220	100.00%

Table 2 shows the most frequent reason (31.40%) reported by the participants for choosing the internet for self-diagnosis instead of visiting a doctor was that they felt that medical information was easily available on the internet, followed by their desire to be informed about their problem before going to a doctor (21.8%), next reason was their desire to save waiting times at clinics/hospitals (15.5%).

Table 3. Distribution of participants by the information source used for internet-based self-diagnosis

Source	Number	Percentage
Use random links from Google/Yahoo/Bing etc	100	45.50%
Use Specialized medical Websites(WebMD, Medscape etc)	79	35.90%
Medical Apps	22	10.00%
Others/No specific searching	19	8.60%
Total	220	100.00%

Table 3 portrays the various sources available to aide in self diagnosis that were used and the frequency of each source used, which in turn provided a result allowing us to identify the most frequently used source. In the above mentioned table it is seen that 45.5% of people used random links from search engines(Google, Yahoo, Bing, etc) and 35.9% used specialized medical websites(WebMD, Medscape, etc). A further 10% indicated that they preferred using medical apps.

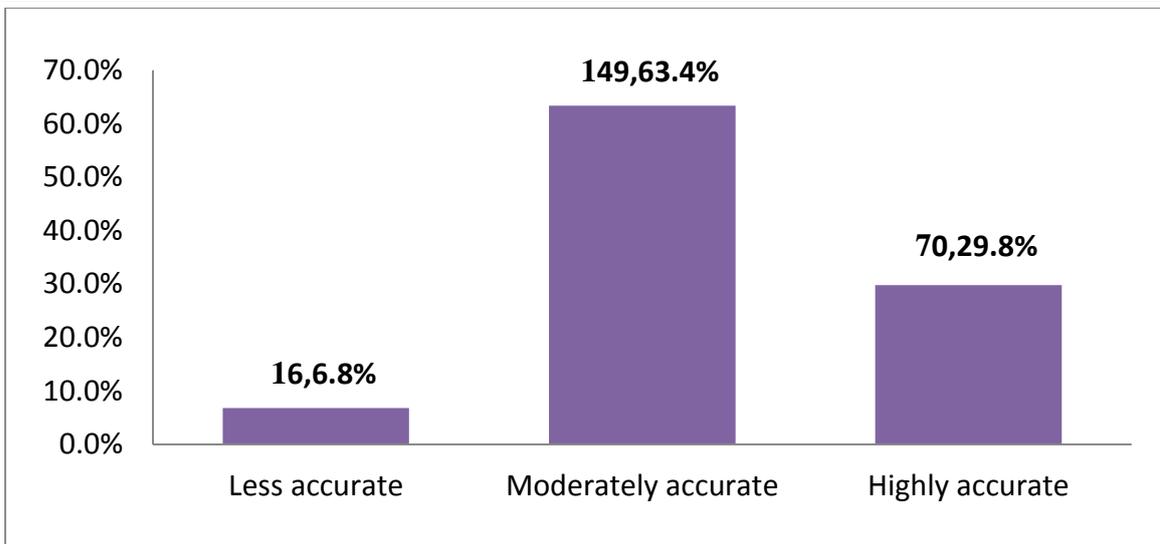


Figure 3. Distribution of participants by opinion of the internet information accuracy

Figure 3 shows the accuracy of information on the internet with percentage. 63.40% of students have rated that accuracy of information is moderately accurate. 29.80% of students have rated accuracy to be highly accurate. Only 6.80% students have rated it to be less accurate.

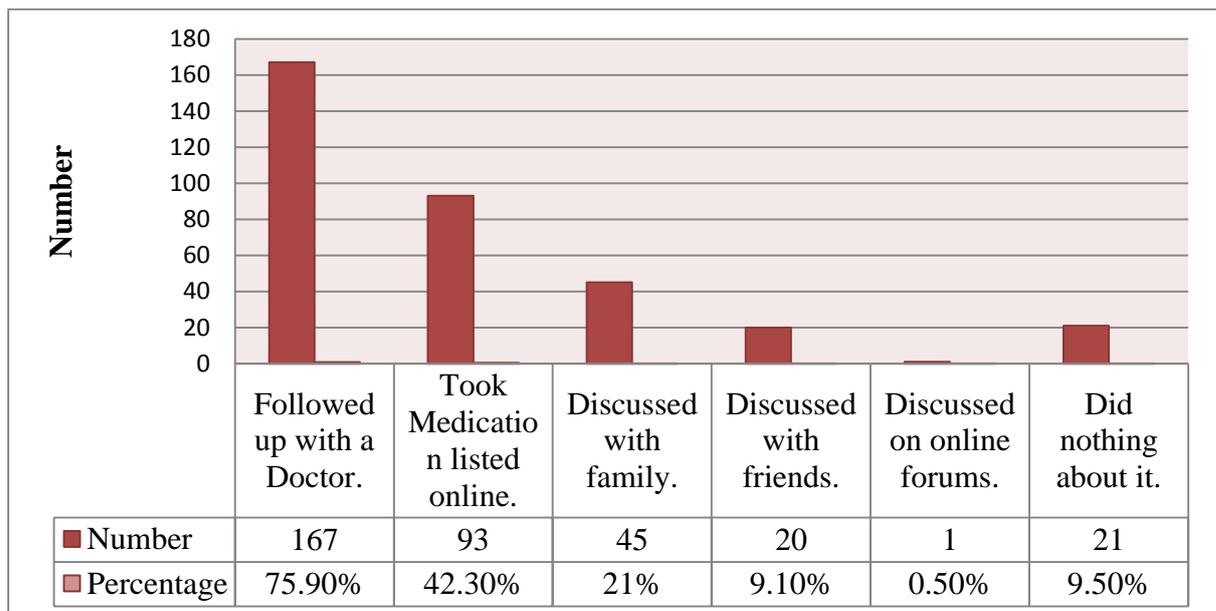


Figure 4. The frequency of various actions taken by the student after self diagnosing via the internet

It can be seen that 167 participants i.e. 75.9% of those who diagnosed on the internet followed up with a Doctor at some point of time, whereas 9.5% of participants did not do anything about it.

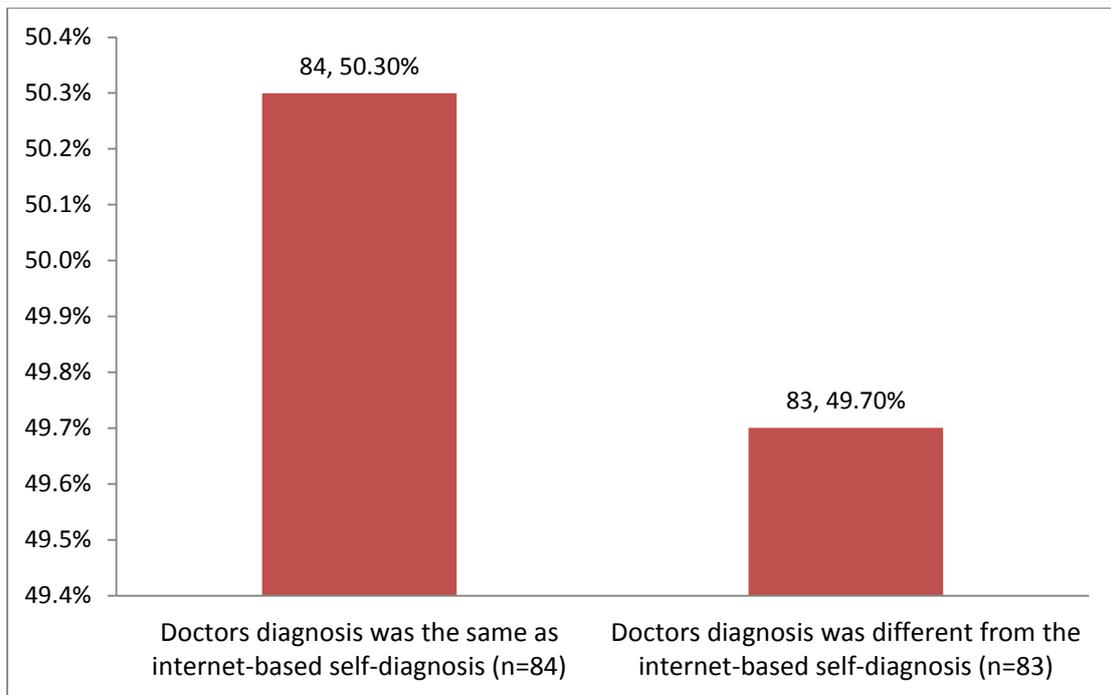


Figure 5. The credibility of the internet based self-diagnosis on verification by a Doctor

Figure 5 presents the credibility of the internet-based diagnosis on verification by a medical Doctor. 49.7% of the participants who diagnosed their medical condition online and later chose to follow up with a doctor found out their self-diagnosis to be incorrect.

Table 4. Association between credibility of the internet based self-diagnosis and participant satisfaction

	Satisfied, Will do it again		Dissatisfied		P Value
	Number	%	Number	%	
Same Diagnosis	40	74.10	44	38.90	P < 0.001
Different Diagnosis	14	25.90	69	61.10	

Table 4 shows that 38.9% of those who got their Diagnosis confirmed by a Doctor were still dissatisfied with the use of internet and 61.10% of those who got a wrong diagnosis were dissatisfied with the use of internet for healthcare management. A Significant Association was found with P Value <0.001.

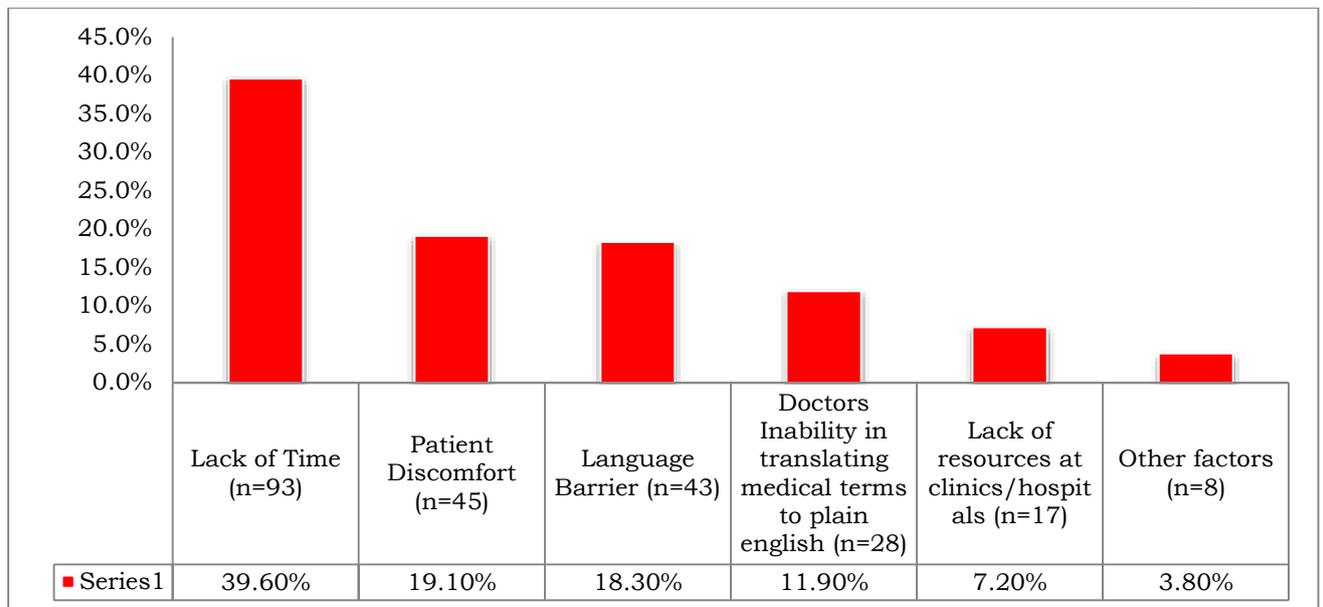


Figure 6. The participant’s opinion regarding barriers to a good doctor-patient relationship

Figure 6 shows 39.6% of the total participants considered lack of time to be a major barrier to a good doctor patient relationship, 19.1% felt discomfort

DISCUSSION

The use of internet for healthcare management is a growing trend and our study was done in order to assess the severity of this practice in our region, i.e. Ajman, UAE. The percentage of those who ever used internet for self-diagnosis is 93.62%. This is more than what was reported in the British Unified Provident Association Health Plus report involving 3000+ participants in 2011. It was reported by BUPA that 81% of the participants use internet for medical information³. A study in 2002 by The National Cancer Institute showed that only 44% of the participants used internet for healthcare management⁴. From these results it can be seen that the trend for using internet for the purpose of healthcare management is increasing and the number of people engaged in this practiced has more than doubled in the past few years.

The time an individual spent on the internet per day was a factor which was considered to affect the use of internet for health care management and it was seen that majority of our participants (48.10%) spent less than 6 hours per day on the internet. This result is similar to a study done in 2010 by American University of Sharjah on the use of internet where the most number of participants spent 5 hours per day on the internet⁵.

With regard to the location where internet was used, most of the participants in this study (97.3%) used the internet at home. This is in agreement with a study published in 2014, which showed that majority of the participants used internet most at home⁶.

The present results identified the most important reason which attracted participants towards using the internet was that the ease of obtaining information on the internet (31.4%). This result shows higher percentage than the study done by Wolkters Kluwer involving 12000+ participants in 2011, where only 23% of the participants used internet due to the ease of getting information⁷. This could also imply that the internet is becoming more accessible over the years.

It was seen in the current study that 21% of participants used internet for healthcare information prior to a consultation with a Doctor so that they could be more informed, this is much less than the 48% participants in Wolkters Kluwer study who did so for the same reason⁷.

Long waiting times at a medical centre is one of the reasons which will encourage an individual to use the internet for health information. The results from this study show that only 15.5% of the participants use internet due to the long waiting times, this is much less than the 29% in the Wolketrs Kluwer Health study⁷.

An important finding is that although 35.9% of our participants used specialized medical websites for self-diagnosis, the present results show that this source is the most credible source when the diagnosis was verified by a Doctor.

The current results show that 93.2% of the participants consider online information to be accurate which is higher when compared to a study done by Rice University USA in 2008 where only 59% of the participants in the study considered online information to be accurate⁸.

A trend of discussing the diagnosis on online forums cannot be seen in this study as seen in a Wolkters Kluwer health study where 9% of the participants discussed their self-diagnosis on online forums, for our study only 0.5% of the participants did so⁷.

The percentage of participants who followed up with the doctor after self-diagnosing was 75.9% for our study, this is much more than the percentage of participants in the PEW research centre study where the percentage is 53%. This shows us that most people were unsure about the diagnosis they made online and wanted to have a second opinion from a clinician⁹.

49.7% of our participants who followed up with a Doctor found their internet based self-diagnosis to be completely incorrect, this number is however less than what was seen in a study published in 2014 where 59% of those who followed up with the doctor found out their self-diagnosis to be incorrect¹⁰.

This study shows significant association between successful verification of diagnosis by the doctor and satisfaction with the practice of using internet for health care management.

With this study we have gained insight into the intensity of the practice of using internet for healthcare management, the participants knowledge about the possibility of wrong diagnosis and inaccurate information on the internet and we have successfully identified the frequent barrier to a good doctor-patient relationship and what the reasons are which make participants chose internet as a choice for their healthcare management.

Through this study we also learned that a significant number of participants self-medicate themselves based on medication listed online. The most credible source of healthcare information on the internet was also identified.

LIMITATIONS

- The study was conducted in one university in Ajman which had limited the small sample size. In addition, results in this study cannot be generalized
- Missing of information for some variables because of the self-reporting method of data collection

CONCLUSION

Most of the participants were using internet for healthcare management. The internet based diagnosis was found to be inaccurate in 49.7% of participant who had verified the diagnosis by doctors. Specialized medical websites were identified to be the most credible source.

RECOMMENDATIONS

- To create awareness about the probability of inaccurate diagnosis.
- Education to inform about the consequences of taking wrong medication.
- Based on the study, those who refer online should select the most credible source of information.
- To repeat the study with the general population across all age groups and different backgrounds.

REFERENCES

1. Leiner BM, Cerf VG, Clark DD, et al. Brief History of the Internet [online]. [2011] [cited 2013 Jul 18]. Available from: URL: <http://www.internetsociety.org/internet/what-internet/history-internet/brief-history-internet#Leiner>
2. Hughes J, 5 reasons why using the Web to self-diagnose is risky [online]. [2012] [cited 2013 Jul 19]. Available from: URL: <http://www.phoenix.edu/forward/perspectives/2012/07/5-reasons-why-using-the-web-to-self-diagnose-is-risky.html>
3. McDaid D, Park AL. BUPA Health Pulse 2010:Online Health: Untangling the web [online]. [2010] [cited 2013 Jul 19]. Available from: URL: https://www.bupa.com.au/staticfiles/Bupa/HealthAndWellness/MediaFiles/PDF/LSE_Report_Online_Health.pdf
4. Fleisher L, Bass S, Ruzek SB, et al. Relationship of Internet Health Information Use With Patient Behavior and Self-Efficacy: Experiences of Newly Diagnosed Cancer Patients Who Contact the National Cancer Institute's Cancer Information Service. *Journal of Health Communication*. 2006;11(2):219-36.
5. Hashem ME, Smith S. Emirati youth's level of addiction to New Information Technology: Opportunities, challenges/dangers, and solutions. *Global Media Journal Arabian Edition*. 2010;1(2):28-48.
6. Luger TM, Houston TK, Suls J. Older Adult Experience of Online Diagnosis: results from a scenario-based thin-aloud protocol. *J Med Internet Res*. 2014;16(1).
7. Wolters Kluwer Health, Wolters Kluwer Health Q1 Poll: Self-Diagnosis [online]. [cited 2014 Mar 19]. Available from: URL: <http://www.wolterskluwerhealth.com/News/Documents/White%20Papers/Self-Diagnosis%20Poll.pdf>
8. Kortum P, Edwards C, Richards-Kortum R. The Impact of Inaccurate Internet Health Information in a Secondary School Learning Environment. *J Med Internet Res*. 2008; 10(2): e17.
9. Fox S, Duggan M. A project of the Pew Research Center [online]. 2013 [cited 2014 Mar 20]. Available from: URL: http://www.pewinternet.org/files/old-media/Files/Reports/PIP_HealthOnline.pdf
10. Umeffjord G, Petersson G, Hamberg K. Reasons for Consulting a Doctor on the Internet: Web Survey of Users of an Ask the Doctor Service. *J Med Internet Res* [serial online] 2003 [cited 2013 Jul 20]; 5(4): e26. Available from: URL: <http://www.ncbi.nlm.nih.gov/pubmed/14713654>