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## ORIGINAL ARTICLE

# The impact of obesity related websites on decision making among students in Saudi Arabia



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## KEYWORDS

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**Abstract** *Background & Objectives:* The present study was to investigate the use of the internet among university students accessing obesity health information and further to measure their satisfaction and in decision-making. *Methods:* A cross sectional study, among students at King Saud University (KSU), Riyadh, Saudi Arabia. This study received ethical clearance from Institutional Review Board, College of Medicine, KSU. Female and male of undergraduate and postgraduate, enrolled through a random sampling. The survey questionnaire was self-administered and consisted of two sections. *Results:* A total of 448 students (177 males and 271 females) participated in this study. The response rate was 66.86. The study showed that the prevalence of overweight and obesity was more common among male compared to female students. Majority of the students (58.7%) were of normal Body Mass Index (BMI). It also revealed that 187 (41.7%) reported *always* acquire obesity health information from the internet whereas 203 (45.35) *sometimes* use the internet. Half of the respondents reported using a search engine to seek information. Forty-five percent reported spending at least an hour per week. Nearly 52.2% of participants are taking decision related to their lifestyle and showed statistical significant ( $P = 0.0001$ ). More than half of the students believed that the obesity information in the websites are very useful. Furthermore, 84.4% reported, language presented in the websites are easy to understand. With respect to quality,

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46.9% rated as excellent whereas 39.5% as average. *Interpretation & Conclusions:* The present study findings have demonstrated that university students are using internet in higher rates for finding obesity health information and are satisfied with the decision they are making. Finally, the study concludes that the internet online health information considered as an essential tool for health promotion among student population regarding weight control or managing obesity.

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## 1. Introduction

The use of internet and social media among students is increasingly day after day in today's life. Many of them are searching for information and knowledge to answer their questions and queries in different life aspects including health related issues. Students and youth are more expected to seek health information themselves for their own health care. Using the internet for health information has a variety of advantages (Rice and Katz, 2001). The internet is becoming an essential source of health information for the public as well (Scott et al., 2005). Previous study showed the influence of internet on the patients' health status as a way to deliver the health related valuable information (Castelnuovo and Simpson, 2011). Health information defined as information of being in good health, taking precautionary measures to prevent and managing disease; and making other decisions related to health and health care services (Rippen and Risk, 2002). The most comprehensive source of information about the use of internet for health information is from the Pew Internet and American Life Project. It was reported from this project that in any ideal day there were seven millions looking for health or medical information online (Fox and Duggan, 2013).

The internet provides volumes of health information for consumer health education and further potential for improving individual health. The use of internet; social networking sites especially Facebook and Twitters has influenced various aspects of people's life in the society and have been integrated into the daily lives of web users (Lampe and Ellison, 2008). Furthermore, social networking sites allow individuals to share personal health information (Fox, 2011). Social network site gives people with medical issues the opportunity to communicate with internet groups that designed to promote the adherence of recommended lifestyles changes such as weight loss (Heidelberger et al., 2011).

Before the development of the internet, people gathered health information by visiting their doctors, from various health professionals, media and other traditional social communication (Barrak et al., 2013). The internet has quickly become a great source of information for those who are accessing to it and the demand for online health information is unstoppable (Shaw, 2009). Online health information is now available in many forms such as basic health related information, disease particular information; interactive patient group and scientific journal databases. Such information is available in the form of data, texts, audio, images and videos (Rippen and Risk, 2002).

The increasing rate of obesity is a major public health problem in both developed and developing countries. In Saudi Arabia, obesity is a rising health problem among children's

and adolescents (El Mouzan et al., 2010). In the last decade, use of internet has become a widespread phenomenon among youngsters in Saudi Arabia. The use of internet for health information among obese such as weight loss procedure, dietary and surgical treatments available for information seeking and decision-making become more common. In contrast, there is a lack of evidence available regarding usage of health information among students in Saudi Arabia. An extensive review of literature did not yield any result of usage of health related websites in Saudi Arabia. Therefore, the main objective of this study was to evaluate the access of obesity health related websites and further to measure the satisfaction and the effect of these websites in their decision-making among college students.

## 2. Methods

This is a cross sectional study conducted among students at King Saud University (KSU), Riyadh, Saudi Arabia, from March 2013 to April 2013. Ethical clearance for this study obtained from ethical committee, College of Medicine, KSU. All participants signed an informed consent and assured the participants of full confidentiality. Students of all age group both male and female, Undergraduate and postgraduate were enrolled through a random sampling.

A self-administered questionnaire, was distributed randomly to students at the campuses of the King Saud University. The questionnaire was designed based on the literature review and validated by a panel of expert professors at King Saud University. A sample of 670 students were administered self-reported questionnaire. Out of the total, 222 were excluded because of the incomplete information. The response rate was 66.86. The questionnaire was adopted in English only. The questionnaire consists of mainly two sections. First section included student demographics. The response to the height and weight measurement questionnaire was self-reported from the students. We did not use any kind of instrumental measurements. Self-reported height and weight were used to calculate Body Mass Index (BMI;  $\text{kg}/\text{m}^2$ ). According to guidelines stated by the National Institutes of Health, weight status was classified into four categories. They are underweight, normal weight, overweight and obese (BMI). The second section included 15 multiple choice questions about utilization of obesity health related website and the effect of these information in their decision-making.

The statistical package for social sciences versions 20 was used for data analysis. All parameters were expressed in numbers and percentages. For comparison between genders of categorical data, the chi square test was used. Differences were considered statistically significant at  $p < 0.05$ .

**Table 1** Demographic characteristics of students.

Gender		Weight	Height	BMI
Male	N	177	177	177
	Mean	81.3	174.2	26.9
	Std. Deviation	21.7	5.8	7.9
	Minimum	49.0	162.0	14.4
	Maximum	177.0	191.0	80.0
Female	N	271	271	271
	Mean	60.3	160.5	23.4
	Std. Deviation	14.5	5.7	5.3
	Minimum	37.0	146.0	15.6
	Maximum	165.0	178.0	62.5
Total	N	448	448	448
	Mean	68.6	165.9	24.8
	Std. Deviation	20.4	8.9	6.7
	Minimum	37.0	146.0	14.4
	Maximum	177.0	191.0	80.0

### 3. Results

A total of 448 students (177 males and 271 females) participated in this study. Table 1 shows the characteristics of the participants. The study showed that majority of the students (58.7%) were of normal Body Mass Index (BMI). The prevalence of overweight and obesity was more common among male students compared to females (24.3% and 26.0% vs. 16.2% and 9.2%) respectively. Table 2 shows the prevalence of obesity among male and female students.

Table 3 shows the usage of obesity health related websites among the students. The results showed that 29.2% of students (Male 34.5%; Females 25.8%) assumed that they are currently under obesity category. Students (22.8%) reported that they were obese or overweight during their teenage group. The study revealed that 187 students (41.7%) reported *always* getting obesity health information from the internet whereas 203 (45.3%) *sometimes* use the internet and showed significant differences ( $P = 0.001$ ). Most of the students get obesity health information other than internet; from books (17.3%), friends or families (32.5%) and media (34.3%). Nearly 50% of the students reported finding obesity related information using a search engine. Approximately 201 (45%) of the students reported that they spend at least an hour per week, searching for health information and noted significant ( $P = 0.001$ ).

In the present study, 42.9% of the students reported accessing health related websites to find new information about health where as 12.8% used it to pass the time. Majority of the students reported (52.2%,  $n = 234$ ) taking decision related

to their lifestyle after obtaining information from websites and showed statistical significant ( $P = 0.0001$ ). In addition, more than half of respondents (54.3%,  $n = 243$ ) reported taking decision *sometimes* on obesity management based on information from health websites are beneficial. Furthermore, more than half of respondents (59.1%,  $n = 265$ ) believed that the information that they found about obesity in health websites are very useful. Most of the students (84.4%) reported that the language presented in the websites is easy to understand and found significant ( $P = 0.007$ ). With respect to the quality of the content of the health websites, nearly 46.9% students rated as excellent whereas 39.5% as average.

### 4. Discussions

In today's world, use of health related websites have become extensively common among internet users. The online health information sites provide information about the health and various diseases, information about the lifestyle, medicines and supplements. In the present study, our aim was to evaluate the use of obesity health related websites. This is the first study in Saudi Arabia that measures the utilization of health websites and effectiveness of this information in their decision-making among college students. Because college students are, the most users who spend more time online to retrieve any information related to their subjects (Anderson, 2001).

In this study, we found that majority of the students (58.7%,  $n = 263$ ) were of normal BMI. This interesting result clearly indicates that the college students are maintaining their health status through the information they retrieve online particular from obesity health related websites. Further, the study results revealed that the prevalence of overweight and obesity was more common among males compared to females respectively. Female students are more dependent online information than male in maintaining the health status. Similar study reported that the internet users had gone online for health information was more among women than men (Fox and Fallows, 2003). Nearly 22.8% of the students reported that they were obese or overweight during teenage. We believe that these students currently maintained the health status after accessing the online obesity websites and are under normal weight control. Our finding supports the results of the Pew research that many internet users use online information for the health purposes (Fox and The social life of health information. Washington, 2011).

One of the most significant finding in this study that 41.7% of students *always* use the internet to obtain the obesity health information from various websites. Whereas 45.3% students reported, *sometimes* use internet in getting the information.

**Table 2** Prevalence of obesity among students.

BMI (kg/m <sup>2</sup> )	Males ( $n = 177$ )		Females ( $n = 271$ )		Total ( $n = 448$ )		P value
	N	%	N	%	N	%	
Less than normal (< 18.5 kg/m <sup>2</sup> )	5	2.8	22	8.1	27	6	0.0001
Normal (18.5–24.9 kg/m <sup>2</sup> )	83	46.9	180	66.5	263	58.7	
Overweight (25–29.9 kg/m <sup>2</sup> )	43	24.3	44	16.2	87	19.4	
Obese ( $\geq 30$ kg/m <sup>2</sup> )	46	26	25	9.2	71	15.9	
Total	177	100	271	100	448	100	

**Table 3** Usage of obesity health related websites among students.

Questions	Levels	Males (%)		Females (%)		Total (%)		P value
		N	%	N	%	N		
1. Are you currently obese or overweight/	1) Yes	61	34.5%	70	25.8%	131	29.2%	0.026
	2) No	96	54.2%	181	66.8%	277	61.8%	
	3) I do not know	20	11.3%	20	7.4%	40	8.9%	
	Total	177	100%	271	100%	448	100%	
2. Have you ever been obese or overweight during the given period?	1) At childhood	22	11.5%	41	14.5%	63	13.3%	0.0353
	2) At teenage	42	22.0%	66	23.3%	108	22.8%	
	3) At adulthood	24	12.6%	14	4.9%	38	8.0%	
	4) Never	103	53.9%	162	57.2%	265	55.9%	
	Total	191	100%	283	100%	474	100%	
3. If you need information about obesity, do you use health related website to get it?	1) Always	60	33.9	127	46.9	187	41.7	0.001
	2) Sometimes	82	46.3	121	44.7	203	45.3	
	3) Never	35	19.8%	23	8.5%	58	12.9%	
	Total	177	100%	271	100%	448	100%	
4. Other than internet which resources are you using? <sup>a</sup>	1) Books or journals	39	18.1%	66	16.9%	105	17.3%	0.1858
	2) Friends or family	71	32.9%	126	32.2%	197	32.5%	
	3) Magazines or Newspaper	25	11.6%	52	13.3%	77	12.7%	
	4) Media (TV or Radio)	69	31.9%	139	35.5%	208	34.3%	
	5) Other	12	5.6%	8	2.0%	20	3.3%	
	Total	216	100.0%	391	100.0%	607	100.0%	
5. Is there any difference between the information provided by health and other resources mentioned in question 4?	1) Yes	64	36.2%	109	40.2%	173	38.6%	0.318
	2) No	36	20.3%	58	21.4%	94	21.0%	
	3) I am not sure	77	43.5%	101	37.3%	178	39.7%	
	NA	0	0.0%	3	1.1%	3	0.7%	
	Total	177	100%	271	100%	448	100%	
6. Did you participate in any health related websites and/or social networks (e.g. Facebook, MySpace..., etc)?	1) Yes	69	39.0%	87	32.1%	156	34.8%	0.324
	2) No	106	59.9%	181	66.8%	287	64.1%	
	NA	2	1.1%	3	1.1%	5	1.1%	
	Total	177	100%	271	100%	448	100%	
7. How did you know about the health related websites which provide information about obesity?	1) By a friend or family member	30	16.9%	46	17.0%	76	17.0%	0.029
	2) By following the media (newspaper-TV-radio)	24	13.6%	32	11.8%	56	12.5%	
	3) By searching the internet	74	41.8%	150	55.4%	224	50.0%	
	4) My doctor advised me	13	7.3%	8	3.0%	21	4.7%	
	5) Other.	21	11.9%	19	7.0%	40	8.9%	
	NA	15	8.5%	16	5.9%	31	6.9%	
	Total	177	100%	271	100%	448	100%	
8. On average, how often do you use health related websites?	1) 0–1 h/week	66	37.3%	135	49.8%	201	44.9%	0.001
	2) 2–4 h/week	31	17.5%	70	25.8%	101	22.5%	
	3) 5–6 h/week	30	16.9%	24	8.9%	54	12.1%	
	4) 7–9 h/week	17	9.6%	14	5.2%	31	6.9%	
	5) 10–20 h/week	27	15.3	23	8.5	50	11.2	
	NA	6	3.4%	5	1.8%	11	2.5%	
Total	177	100%	271	100%	448	100%		
9. What do you think the reasons behind the people who get involved in health related websites <sup>a</sup>	1) To pass time	39	17.6%	37	9.9%	76	12.8%	0.0155
	2) To find new information	82	37.1%	173	46.4%	255	42.9%	
	3) To join support groups in order to lose weight	50	22.6%	99	26.5%	149	25.1%	
	4) Because of their popularity	22	10.0%	28	7.5%	50	8.4%	
	5) I do not know	28	12.7%	36	9.7%	64	10.8%	
	Total	221	100%	373	100%	594	100%	
10. Can you make a decision based on what you read from health related websites regarding obesity?	1) Always	44	24.9	90	33.2	134	29.9	0.067
	2) Sometimes	113	63.8	165	60.8	278	62.1	
	3) Never	16	9.0%	11	4.1%	27	6.0%	
	NA	4	2.3%	5	1.8%	9	2.0%	
	Total	177	100%	271	100%	448	100%	

**Table 3** (continued)

Questions	Levels	Males (%)		Females (%)		Total (%)		P value
		N	%	N	%	N	%	
11. What kind of decision you make after reading information from health related websites?	1) Decisions related to my lifestyle	65	36.7%	169	62.4%	234	52.2%	0.0001
	2) Decisions related to the treatment options that I have	24	13.6%	28	10.3%	52	11.6%	
	3) It did not affect my decision	29	16.4%	32	11.8%	61	13.6%	
	4) I do not know	51	28.8%	29	10.7%	80	17.9%	
	NA	8	4.5%	13	4.8%	21	4.7%	
	Total	177	100%	271	100%	448	100%	
12. How often your decisions on obesity management using health related websites are helpful?	1) Always	46	26.0	84	31.0	130	29.0	0.216
	2) Sometimes	93	52.6	150	55.3	243	54.3	
	3) Never	12	6.8%	10	3.7%	22	4.9%	
	4) I do not know	18	10.2%	16	5.9%	34	7.6%	
	NA	8	4.5%	11	4.1%	19	4.2%	
	Total	177	100%	271	100%	448	100%	
13. How useful is the information you find from the health related websites?	1) Useful	98	55.4	167	61.6	265	59.1	0.501
	2) Not useful	13	7.3	20	7.4	33	7.4	
	3) I do not know	55	31.1	73	27.0	128	28.6	
	NA	11	6.2%	11	4.1%	22	4.9%	
14. Is the language on the health is related websites easy to understand?	1) Easy to understand	138	78.0	240	88.6	378	84.4	0.007
	2) Not easy to understand	19	10.8	13	4.8	32	7.1	
	3) I do not know	12	6.8%	6	2.2%	18	4.0%	
	NA	8	4.5%	12	4.4%	20	4.5%	
	Total	177	100%	271	100%	448	100%	
15. How would you rate the quality of the content of health related websites?	1) Excellent	91	41.5	119	44.2	110	46.9	0.139
	2) Average	59	33.3%	118	43.5%	177	39.5%	
	3) Poor	11	6.2	10	3.7	21	4.7	
	4) I do not know	9	5.1%	9	3.3%	18	4.0%	
	NA	7	4.0%	15	5.5%	22	4.9%	
	Total	177	100%	271	100%	448	100%	

<sup>a</sup> The total is not same because the students rated more than one choice.

Our results strongly support the similar findings of Pew internet research where reported that 44% of patients use internet to gather health information ([www.pewinternet.org](http://www.pewinternet.org)). On the other side, very few students are dependent on books, family members and media as another source of retrieving information. Our finding clearly demonstrate that the college students are more dependent on the online information rather than the books. We assume that many students are exploring the social networking sites such as Facebook, and Myspace, which are the most popular forms of social media, and do not have enough time spending on books. It was reported that approximately 65% of internet users using a social networking sites for shaping their lifestyle and health related behavior ([Madden and Zickuhr, 2011](#)).

Nearly 50% of students reported finding obesity related information using a search engine option. Similar results reported but with higher percentage where 72.9% of college students used search engine to find health information ([Escoffery et al., 2005](#)). Over time spending, 45% respondents at least an hour per week for retrieving information and found statistical significant ( $P = 0.001$ ). Our study results showed higher percentage of time spending when compared to other studies ([Fox et al., 2003](#); [Fox and Rainie, 2000](#)). This could be due to the availability of free internet in the campuses of the university, where students can spend time in searching the information during their leisure time. In addition, students

are aware of skills in locating obesity health information with in the short time frame. Similarly, another study reported where 60% of the students are experienced with the internet and probably continue to use the internet for such information ([Escoffery et al., 2005](#)).

Use of the internet to retrieve health information is increasingly among various internet users. In the current study, students (42.9%) think that the people who are involved in the online information are using to find new information about the health where as 12.8% used it to pass the time. Using online health information can enable individuals to increase their health literacy. Sometimes online information can help people to identify medical errors and misdiagnoses. Further, encourage people to see their doctor early depending upon their cases and take appropriate action. Most respondents believed that the information that they found in the obesity health websites are very useful. Almost half of the students (52.2%) taking themselves decision related to their lifestyle after seeking online obesity information. This could be due to the availability of obesity health information conveniently about appropriate medical care, which increases the confidence among the internet seekers in better decision for an ideal healthy life. Similar results reported in which online health information is good for both patients and physicians in decision making to fast the treatment options ([Kendra et al., 2006](#)). Another study reported where 48% participants

reported that the advice from the internet improved their self-care and further reported that 70% were affected their health decisions with internet information (Fox and Rainie, 2000).

Many students (84.4%) reported that the language presented in the websites are clearly able to understand. Further 46.9% students rated the quality of the content in the health websites as excellent. However, the information on the internet is not at all verified for clarity or accuracy. The quality of information available is variable from evidence based to misleading information (Bovi, 2003). It was reported that the online health information quality may be variable due to differences in study methods, quality criteria, topic chosen and study results and conclusions (Eysenbach et al., 2002). Therefore, the online information have many potential advantages and disadvantages of using it.

Although the current study provides insight some of the important information about the online obesity health information, has some limitations. The use of a convenient sample limits the generalization of the results and findings of the study at a single university. The other limitation of this study is that it relies on data that measures only student self-reported perceptions, which may not always be entirely capable of providing accurate results. Further studies could be performed to examine other additional factors reported other than in this study.

The present study explores the use of online obesity health websites among college students. In conclusions, the study fulfills the objectives to examine the utilization of health website and intended of various obesity health information in the decision-making among university students. The present study findings have demonstrated that our university students are using internet in higher rates for finding obesity health information and are satisfied with the decision they are making. This is the fact that half of the college students in present study are under normal BMI. We assume that college students use of internet for the purpose of health information likely to be continue. Finally, the study concludes that the internet online health information can be considered as an essential tool for health promotion among college population regarding weight control or managing obesity.

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