AN EVALUATION OF THE QUALITY OF ONLINE HEALTH INFORMATION FOCUSING ON WEIGHT MANAGEMENT

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ABSTRACT

Introduction: The purpose of this paper was to evaluate the quality of the websites about weight loss management information available on the World Wide Web. **Methods:** The study was conducted by searching keywords which were 'diet AND nutrition AND weight AND loss AND manage' into the selected search engine which was Google. All the results were evaluated against exclusion and inclusion criteria and further evaluated for the quality and readability using the Flesch Reading Ease test of the websites. **Results:** A total of 262 websites were evaluated, where 72 met the inclusion criteria and were selected as the sample for the assessment of quality and readability. Overall, 73.6% of the studied websites had low quality, 38% and 52.8% had no author's name or information, respectively, 100% were not updated within one month during the study period and only two websites had the Health on the Net logo. From the Flesch Reading Ease score, 43.1% of the websites were categorized as 'standard'. The quality scores were not correlated with the readability scores (r = -0.007, p = 0.954). Compared with non-commercial websites, the mean value of commercial websites was higher (3.907 ± 1.507 and 6.267 ± 2.352 respectively). The quality of most websites selected in this study was not satisfactory. **Conclusions:** This study showed that mean score for quality of the commercial websites was higher than non-commercial website. This study illustrates the importance of monitoring online health information to ensure that the public have access to reliable health facts.

KEYWORDS: Obesity, Diet, Health, Weight Management, Quality, Websites

INTRODUCTION

The obesity prevalence among Malaysians has increased and in order to improve eating and working habits, the transition from puberty to earlier adult life is recognized as important in recent years (Pell et al., 2016). The most worrying thing is that obese people contribute to various health problems which is non-communicable disease such as cardiovascular disease, diabetes and hypertension. Obesity in the general population is a well-established risk factor for cardiovascular disease. Data from the Information and Documentation System Unit of the Ministry of Health of Malaysia revealed that the main cause of death in government hospitals over the years was cardiovascular disease affecting between 23 and 26% of mortality from 1994 to 2001. Heart problems represented 14% to 16.6% (Zambahari, 2004).

Beside health problems, nowadays, body weight is not just a number for some people. Body weight or body image somehow shows a person's characteristics. Having a slim looking body is now a beauty parameter and this perspective has an impact where it makes some people resort to rapid weight lost program. Existence of gadgets makes the Internet as one of the main sources of information regarding how to lose weight. Therefore, the Internet users prefer to search for eating style on how to lose weight on the Internet without asking advice from the experts.

Some studies have been conducted previously related to online health information such as Health Literacy and the Internet: the study on readability of Australian online health information, conducted by Cheng & Dunn (2015). However, the previous study only focusing on readability although the quality and the credibility of online health information are very important to the Internet users. Misleading and inaccurate information may be found by the Internet users and they may misinterpret the information.

Besides the misleading information, lack of scientific explanation and unproven claims are another shortcomings of the information found from the internet (Benigeri & Pluye, 2003). This phenomenon leads to unsatisfactory of the quality of the online information. Eysenbach, Powell, Kuss & Sa (2002) reported that approximately 70% of the surveyed websites need some improvement on the quality of health information. However, more scientific studies on quality of health information focusing on weight management need to be done as obesity among Malaysian has increased in recent years.

METHODS

Study Design

This study used a method similar to those described by Shahar, Shirley & Noah (2013) in their study. This study was conducted in two phases. Phase 1 was conducted by searching identified keywords which were 'diet AND nutrition AND weight AND loss AND manage' into the selected search engine which was Google. All of the results were evaluated based on exclusion (duplicate website, websites involving research output (journals) and website that contain unrelated to the research topic) and inclusion (nutrition information about weight loss management and website that used English language) criteria, and further evaluated for the quality of the website (Shahar, Shirley & Noah, 2013). Then, the articles were divided into two categories which were non-commercial websites and commercial websites.

Phase 2 involved website quality assessment, described as 'characteristics of an entity that bear on its ability to satisfy the stated and implied needs' (Karapetrovic & Willborn, 1998). The attributes of quality in this study were adopted from a previous study (Shahar, Shirley & Noah, 2013), including the types of sources (primary/secondary), the availability of interactivity between the provider and the consumer, the types of interactivity (email/phone/address/fax/feedback form), the balance of the information (whether the information was intended to promote certain products), the statement of the author's name and background or qualifications, the credibility of the author and a statement of the author's field of expertise, the currency of the information, the frequency of information updates, links and access to other webpages, the types of blockage to the access, whether it was a supported/funded website, the readability of the text, and the availability of images/graphics, audio/sound, videos/animation and advertisements on the webpage.

In addition, the availability of the Health on the Net (HON) seal, the readability according to the Flesch Reading Ease test as used in a previous study by Trumbo (2004) and the content presentation in terms of images/graphics, audio/ sound, videos/animation and advertisements were evaluated. The evaluation was conducted by five senior dietetics students to avoid bias scoring.

Scoring System

A scoring system from a previous study by Shahar, Shirley & Noah, (2013) was used for the quality evaluation. One mark was given for each of the criteria stated on the website/webpage, and zero mark was given if there was no information. For the types of sources, one mark was given for a primary source (journal/research/presentation in a scientific meeting/textbook) and 0.5 marks were given for a secondary source (information obtained from an organisation/government/professional bodies/pamphlet/other website). For the frequency of information updates, one mark was given to websites that updated their information at least once a week, 0.75 marks were given to those that updated at least once a fortnight and 0.5 marks were given to those that updated their information at least once a month. Flesch Reading Ease score is tested by using Microsoft Word software. A block of word in the websites (a paragraph) is randomly chosen from the page. Then the score was computed and categorized as; 'very difficult' (0–29), 'difficult' (30–49), 'quite difficult' (50– 59), 'standard' (60–69), 'quite easy' (70–79), 'easy' (80–89) and 'very easy' (90–100).

Statistical analysis

This study used SPSS 12.0.1 for Windows. The independent t-test was used to compare the mean of the quality score with the categories of the websites. The relationship between the readability and quality score of the websites was tested using Pearson. Differences were considered significant at $p < 0.05$.

RESULTS

Website Characteristics

During the first phase, 262 websites were obtained as overall result from the search of the keyword 'nutrition AND diet AND weight AND manage' in the Google search engine. All the websites have been assessed according to the inclusion and exclusion criteria and only 72 websites were chosen for inclusion in this study as these satisfied all the inclusion criteria. Out of 262 websites, 190 websites (72.5%) did not fulfil the inclusion criteria.

Table 1. Results from Google engine search

Types of URLs	N	%
Duplicate	53	20.2
Journal/ Research	48	18.3
Website's content not related to the search topic	75	28.7
Books	14	5.3
Sample (met inclusion and exclusion criteria)	72	27.5
Total	262	100

The 100 websites included were categorized as commercial and non-commercial. Approximately, 62.5% (n=45) of the studied websites were commercial while 37.5% (n=27) of websites were non-commercial. Only 31.9% (n=23) of the studied websites provided references or sources of their information while the rest was unknown. Among the websites that provided source of information, there were 78.2% (n=18) of them using primary sources which included journal, research and textbook. Other than primary sources, only five websites were using secondary sources such as information obtained from organization, government, professional bodies, pamphlet or another website. For the interactivity with the viewers, a total of 52.8% of websites in the sample provided their email and contact number for further inquiries while the remaining provided feedback form, comment section and also social media platform.

Only 9.7% of studied websites promoted some products on their page. For the name of author, less than half (47.2%) of the samples provided it while 70.6% of them provided the background of the author whether the author has medical, nutrition and dietetics or other expertise. During the data collection, less than half of the studied websites (36.1%) mentioned if their website has been updated. Moreover, none of them were updated within a month. More than half of websites (77.7%) did provide the link to access to other website and all of them were easy to reach. Of 72 studied websites, only two of them provided Health on the Net (HON) logo. While for the presentation of the studied websites, a total of 72.2% of websites provide image/graphic for the viewers' attraction, 9.7% provided audio/sound and 8.3% had video/animation.

Readability and Quality

Most of the studied websites (43.1%) were categorized as 'standard' when the readability test was done. While 8.3% of the websites fell into 'very difficult', 20.8% were 'difficult', 25% were 'quite difficult', 2.7% were 'quite easy' and none of the websites fell into 'easy' or 'very easy' (Table 2).

Table 2. Results of readability score (n=72)

Level of Readability	Commercial websites	Non-commercial websites	N (%)
Very difficult	2	4	6 (8.3)
Difficult	9	6	15 (20.8)
Quiet Difficult	11	7	18 (25)
Standard	22	9	31 (43.1)
Quiet Easy	1	1	2 (2.7)
Easy	0	0	0 (0)
Very Easy	0	0	0 (0)
Total	45	27	72 (±100)

The result showed that most of the websites had poor quality. There was a significant difference of online health information between commercial and non-commercial websites ($p<0.01$). The mean quality score of commercial websites (6.267 ± 2.352) was higher when compared to the non-commercial websites (3.907 ± 1.507) (Table 4).

Table 3. Result of the quality of commercial and non-commercial websites (n=72)

Quality	Commercial Websites	Non-Commercial Websites	N (%)
Satisfactory	0	0	0 (0)
Moderate	19	0	19 (26.4)
Poor	26	27	53 (73.6)
Total	45	27	72 (100)

Table 4. Comparison of the quality score between commercial and non-commercial websites

Category of websites	n	Mean	SD	p-value
Commercial websites	45	6.267	2.352	
Non-commercial websites	27	3.907	1.507	< 0.001

The readability and the quality score of the studied websites undergone Pearson correlation. There was no association between the readability score and quality score for the websites ($r = -0.07$, $p = 0.954$) (Table 5).

Table 4.6. Correlation between the readability and quality score (n=72)

		Quality score	Readability score
Quality score	r	1	-0.07
	p-value		0.954
	N	72	72
Readability score	r	-0.07	1
	p-value	0.954	
	N	72	72

DISCUSSION

The Readability Evaluation of the Websites

The first objective for this study was to find whether the articles about weight loss management information in the websites were able to be used by the general population. Usability in this case was simplified as the level of the readability of each studied website. The finding of this study revealed that almost half of the sample (n= 31, 43.1%) were categorized as 'standard'. Internet users can find it slightly understandable to search for complete and accurate information on health issues and to understand the information on websites due to the average level of text reading. Contradictory to this finding, the study for quality of online information about cancer prevention showed nearly half of their studied websites were categorized as 'quite difficult' (Shahar, Shirley & Noah, 2013).

The Quality Evaluation of Commercial and Non-commercial Websites

This study found that most of the samples (n=53, 73.6%) were categorized as poor quality. None of them were fulfilled all of the quality criteria as the highest score among them is only 10 out of 16 criteria. Nearly 70% of the surveyed web sites in a systematic evaluation of web sites providing health statistics also indicated that the quality of health data needed to undergo some improvement (Eysenbach, Powell, Kuss & Sa, 2002). Other than that, the study that evaluated websites' health information related to cancer prevention also revealed they only obtained one website that satisfied almost all of the quality criteria (12 out of 15 criteria) out of 100 studied websites (Shahar, Shirley & Noah, 2013). There was also another study that evaluated websites' medical information related to chronic obstructive pulmonary disease (COPD) (Kunst & Khan, 2002) that obtained only two out of the 23 websites that satisfied all the quality criteria.

However, the systematic evaluation and the study on websites' medical information related to COPD revealed most of non-commercial websites were categorized as 'satisfactory'. Different to this study, the mean score of commercial websites was higher than non-commercial. In this case, the finding was unexpected as commercial ('.com') websites usually provide information without including scientific evidence or references for supporting scientific evidence. While non-commercial websites ('.gov' and '.org' sites) provide more accurate content than commercial ('.com') sites (Sutherland, Wildemuth, Campbell & Haines, 2005). Therefore, this study showed contradictory to other studies that performed an evaluation on online health information websites. This may be due to commercial websites were improving themselves from time to time. Moreover, the findings from the analysis on each website showed that non-commercial websites tend not to provide the name of authors as they are well-known organizations such as the World Health Organization's website.

Only 31.2% (n=23) from the sample provided the source of information and mostly it came from commercial websites. However, based on Kunst & Khan (2002), lack of information on commercial websites, which are typically mostly pleasing in terms of aesthetics, would be of greater concern as these pages did not have information on specific preventive treatments. Non-commercial websites were usually trusted organizations hence they tend not to provide external references. In contrast, the commercial websites need to gain trust from the internet users as they provided primary references for their writing in the articles.

According to Kommalage & Thabrew (2008), almost all the websites in their sample were not regularly updated during the preceding 30 days of the study period. The study by Shahar, Shirley & Noah (2012) also mentioned that none of the websites were updated regularly within 30 days or a month. These two findings were similar to this study as none of the studied website was updated regularly. Although 36.1% (n=26) of the studied websites updated their websites but this was exceeding 30 days from the date of evaluation. However, all the studied websites were updated in year 2020.

For the Health On the Net (HON) logo, only two studied websites provided HON logo. One website was a commercial website and another website was categorized as non-commercial website. From other study on cancer prevention website, just 14% of the nutrition details websites had the HON logo, 50% of which were commercial websites (Shahar, Shirley & Noah, 2012). In addition, the results were nearly the same as a previous study by Meric et al. (2002). Around 15% of breast cancer websites have the HON logo, with commercial websites more likely than non-commercial websites (NGO's and business organizations) to have the HON logo. Websites that display the HON logo promised to comply with the basic requirements of user quality and to raise pressure on commercial websites for such recognition.

The findings from this study revealed 73.6% (n=53) of studied websites included interactivity channel between the author and the internet users such as providing email address and contact number, comment section, feedback form and many more. The availability of interaction platforms result in a positive impact to the quality of the websites.

For the presentation of the sample websites, a total of 52 studied websites (72.2%) provide one of the highest criteria, which was providing image or graphic for users' attraction. Advertisement is also included in presentation criteria; however it should be clearly separated from the website concerned where users should be able to differentiate it as an advertisement and not part of the website content. In this study, more than half of the websites (n=38, 52.8%) provided advertisement and most of them are not related with the websites content.

Association between Quality and Readability of Website

The results showed that there was no association between the quality and the readability of the websites (r = 0.954, p > 0.05). These two main components were crucial for the Internet users. Readability of the websites did not include all aspects and criteria that are significant for the quality of the websites such as author's background information and vice versa.

CONCLUSION

There was a significant difference between the quality mean score of the non-commercial websites and commercial websites. This study illustrates the importance of monitoring online health information to ensure that the public have access to reliable health facts and avoid misleading information which may affect their health condition.

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