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An Instrument for Consumers to Discriminate Inaccurate Information on the Internet

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Abstract

People retrieve health information from the Internet that is unfiltered and not always accurate. In order to assist health care consumers, we tried to develop a simple instrument to discriminate inaccurate information. We hypothesized that accurate statements were likely to be repeated and inaccurate statements were likely to be refuted when multiple results from the same search were reviewed. We investigated information on irritable bowel syndrome (IBS), which is common around the world. We identified inaccurate statements on websites displaying information about this syndrome and counted the number of websites supporting and refuting each inaccurate statement. For each inaccurate statement displayed on English and Japanese sites, there were more refuting sites than supporting sites retrieved by the same search (0.93 vs. 0.0 in English sites and 0.15 vs. 3.35 for Japanese sites).This indicates that health care consumers can confirm online information by comparing multiple sites found on the same search.

Keywords:

irritable bowel syndrome, internet, medical informatics, patient satisfaction

Introduction

Thirty two percent of patients in the United States [1] and 22% of patients in Japan retrieved health information from the Internet [2]. Information on the Internet affected the decision making of 70% of patients in the United States in 2000 [3]. However, information on the Internet lacks peer-review and is not always accurate. Thirty two percent of bladder cancer websites [4] and 14% of melanoma sites [5] were found to be inaccurate. One quarter of complementary alternative medicine sites displayed information that could lead to physical harm if acted upon [6]. Quality assessment instruments such as DISCERN and QUICK attempt to help users identify false or misleading health information online. However, none of them can help a user determine whether a specific statement is true or false. Lay persons cannot be expected to determine whether a particular statement is true and may act based on false or inaccurate information resulting in poor outcomes such as delay of diagnosis or refusal of conventional treatment.

We hypothesized that false information displayed by a website was likely to be refuted by other websites identified by the same consumer search. If our hypothesis is correct, then consumers can be taught to validate facts by looking for confirmation on a sample of websites rather than a single site. We investigated information on irritable bowel syndrome (IBS), a common condition around the world.

Methods

Keyword and website selection

The English and Japanese keywords related to IBS most frequently used by consumers searching for health information online in June 2006 were selected using the Overture keyword tools. Websites were identified using Google between 12 July and 9 August 2006. Twelve keywords in English and Japanese were selected. Since consumers are most likely to review only the first page of results [8], only the top 10 websites were reviewed for each keyword.

Numbers of websites that support and refute inaccurate statements

Statements were considered inaccurate if they contradicted the published literature [9-12]. The numbers of websites that supported and refuted each inaccurate statement were counted.

Statistics

Differences between the numbers of websites that support and refute each inaccurate statement were tested by two-sided Wilcoxon`s rank test on Statcel2 (OMS publishing Inc., Saitama, Japan). Difference with $p < 0.05$ was considered significant.

Results

After exclusion of duplicates, inaccessible, irrelevant, testimonial advertising, and foreign language sites, 48 English and 31 Japanese websites were extracted.

Definitely inaccurate statements were identified: 13 statements from 9 English sites in categories of diagnosis (7 statements), signs/symptoms (2), and treatment (4); 12 statements from 11 Japanese sites in categories of epidemi-

ology (1), pathophysiology (6), diagnosis (2), signs/ symptoms (1), prognosis (1), and treatment (1). For each inaccurate statement in both language sites, there were more refuting sites than supporting sites in the selected sites as well as in the same search results (Table 1).

Table 1 - Number of sites supporting and refuting each innaccurate statement

	(mean ± SD)	
	Supporting sites	**Refuting sites**
In the selected sites:		
English 48 sites	0.77 ± 0.73	5.07 ± 1.85
Japanese 31 sites	1.00 ± 1.48	11.75 ± 8.75
In the same search results:		
English sites	0.00 ± 0.00	0.93 ± 0.16
Japanese sites	0.15 ± 0.05	3.35 ± 2.12

Discussion

We found that websites are likely to confirm accurate information and refute inaccurate information. We have shown here, for the first time, that the number of websites supporting each inaccurate statement is smaller than that of websites refuting it. Our result indicates that lay persons can precisely assess the accuracy of a specific statement on the Internet by looking for confirmation by other sites within the same set of search results. Consumers cannot identify a specific inaccurate statement even using conventional quality assessment instruments such as DISCERN because they apply to whole websites rather than to individual statements.

Since we studied a single health topic (IBS), using a single search engine (Google), our findings must be considered preliminary and require confirmation. However, Google is the most popular search engine in the English-speaking world and is widely used in Japan: suggesting that our findings apply to typical searches requested by consumers in English and Japanese. Further, Overture keyword tools report the actual frequency with which keywords are used to search. Since we selected the most commonly used keywords, we retrieved websites that are likely to be encountered by lay persons.

Conclusion

Consumers may be able to validate statements by looking at websites retrieved by the same search. Statements with more refuting sites than supporting sites will be inaccurate.

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