An evaluation of the contents and quality of menopause information on the World Wide Web

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Received 13 April 2004; received in revised form 19 July 2004; accepted 20 July 2004

Abstract

Objective: To evaluate the content and quality of currently available World Wide Web based information about menopause.

Design: A sample of the 100 top sites obtained with the search engine Google for the key word “menopause” was evaluated according to predefined general and specific criteria, content type, language, and quality. The Internet popularity was established by the number of links to each website. Using a systematic scoring tool each site was assessed on factual information provided and quality of site.

Results: The websites studied were heterogeneous in content and quality. The most frequent type of website has commercial content with low quality, biased or useless information. Few sites provided comprehensive medical information about menopause. The scientific societies not always provided complete information about the possible adverse events related with hormone replacement therapy. The results of the Women’s Health Initiative (WHI) and the Million Women (MW) studies are discussed by very few websites. Internet popularity did not correlate with measures of quality such as display of authorship, attribution or references, currency of information, and disclosure.

Conclusion: The content and quality of the websites concerning menopause are widely varied and sometimes biased to commercial goals. The dominant medical information is of low quality and do not comply with general quality scores although the most informative sites have comprehensive content about the menopause including the recent results of the WHI and MW studies.

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Keywords: Menopause; World Wide Web; Internet; Hormone replacement therapy; Women’s Health Initiative; Million Women study; Google

1. Introduction

Menopause is a natural part of life, not a disease or a health crisis. Physical changes do occur with menopause and with aging. The changes that happen during this period can be minimized by healthy living and a sense of purpose in life. However, peri- and postmenopausal women may deal with several problems related with their low steroid levels. Short term hormone replacement therapy (HRT) is an option for vasomotor symptoms, urogenital and skin changes, and perhaps for the prevention of bone mass decay. The recent publications demonstrating increases in...
breast cancer risk and in cardiovascular events have changed the scenario for HRT [1,2]. The Women's Health Initiative (WHI) trial of combined oestrogen plus progestin was stopped early when overall health risks, including invasive breast cancer, exceeded benefits [3–5]. The risk of breast cancer has also been reported in the observational Million Women (MW) study [6]. Many women seek alternative and herbal medicines to ameliorate their condition and quality of life or to improve well-being [7–9]. On the other hand, many women are not bothered enough by menopausal symptoms to seek medical help, and other women barely notice it is happening.

The World Wide Web is potentially a very powerful and dynamic vehicle for providing patient education. It is widely believed that a patient who is educated about her health-related condition will better adhere to treatment plans and have improved health outcomes [10]. Patient self-management is an important component of menopause management. Furthermore, the Internet information affects the choice of treatments although the quality of information is variable. The quality of the information concerning menopause and HRT has been reported in a previous study of a small sample of very selected websites appearing in several engine listings [11]; this study was performed prior to the publication of the WHI and MW studies. I tried to evaluate the quality and content of unselected web based information on the menopause in the new scenario, and whether the results form recent scientific publications about HRT adverse events are included.

2. Methods

2.1. Selection of websites

I used the Google (www.google.com) engine, accessed on 14 November 2003, to generate a list of the top 100 sites—of approximately 1,030,000 sites found—for the general term “menopause”. The analysis did not include the commercial advertisements (the so-call sponsored links). Google was selected because it is the most popular search engine, examines all aspects of a page’s content and the content of the pages linking to it, no one can buy a higher ranking with their software, which makes it an easy way to find high-quality sites. In addition, it may found many pages that are off-line for many other search engines, it updates their index very often by recalculating the page rankings of each of the websites and the fluctuations usually occurs towards the end of the month [12–14].

Two website were not accessible in three occasion with a week interval and at different clock times, and they were excluded for the evaluation. Another site appeared two times in the search, and it was evaluated only in the first appearance. The used languages in the available websites were English (n = 83), bilingual English and Spanish (n = 4), bilingual English and French (n = 1), bilingual English and German (n = 1), German (n = 4), French (n = 4), and Danish (n = 1). The 92 websites edited in English, Spanish and/or French were analysed by the author within six weeks of the original search.

2.2. Determination of type of content and popularity

Type and quality content were recorded for each website. Affiliation was determined on the basis of the information provided by the site and divided into four categories: government related, professional (universities, major medical centres), non-profit organisation (societies, foundations and medical journals), and commercial (all others). There was not any professional website in the search list studied.

I used the Google rank of links reported to determine the site popularity. I obtained the number of links in Google by entering each site’s universal resource locator (URL) into the search string “link:URL” [15,16].

2.3. Evaluation of websites

Links within each site were pursued until all medical information about the topic was evaluated. A median of six pages (range 1–18) were evaluated for each site.

The medical scientific content of the website was compared to balanced information concerning the menopause [1,2,17,18]. In addition the inclusion of information concerning the WHI and MW studies was also evaluated [3,6]. The specific quality criteria on menopause medical facts were classified in 11 aspects as indicated in the Table 1 and scored on a four point scale: 3 = comprehensively explained, 2 = briefly explained, 1 = mentioned, 0 = not mentioned. I calculated the total score (0–33) for each website to
determine which sites could be considered the most informative.

To evaluate the general quality I used the scale proposed by Sandvik [19] with seven items scored 0–2: ownership, authorship, source, currency, interactivity, navigability, and balance. This procedure is based on the Silverg et al. [20] criteria and the Health On the Net (HON) principles [21]. I also documented whether each site displayed a HON seal, an Utilization Review Accreditation Commission (URAC) seal [22], or a credential of government endorsement. The inclusion of the HON or URAC seals assure that the health websites fulfills the respective criteria of quality [21,22], but their success will depend on increasing the public’s awareness of the value and limitations of such systems.

Statistical analysis was performed by Statistical Package for the Social Sciences (SPSS, Chicago, IL), Version 11.5. Baseline characteristics were compared between therapy groups by analysis of variance (ANOVA). Mean levels were compared by Scheffé test. Statistical significance was set at the 0.05 level. Results are presented as mean ± standard error of the mean (SEM).

3. Results

The results are presented in Tables 2 and 3. There were seven government related websites (five from the United States and two from the United Kingdom), 15 non-profit organisations, and 70 commercial sites.
The Google search engine provided the number of linking sites (range 0–1170) for the 92 studied websites to calculate the popularity index. The mean index was higher—although not significantly—for the organisation webpages as compared to the other two groups. The website placed in number one in the Google search was that from the North American Menopause Society with 517 links. However, the site with the highest number of links is the American Society of Reproductive Medicine with 1170 links although it was placed in position 61 of the Google selection. Eight commercial websites with popularity index ranging from 290 to 108 were distributed between the place 2 and 96 of the top 100 site list.

The mean medical content score for the commercial websites was significantly lower than for the organisation (Table 2). The websites with at least 25 point scores in medical content are presented in Table 3. They have good scientific information although sometimes addressed to professional rather than for consumers. They also overemphasize the use of HRT. The webpages from other medical societies—not included in the table—do not have information for consumers or they are devoted to criticize the results from the WHI studies. The consumer oriented webpage with the most balanced and complete information is that from the Canadian Women’s Health Network Canadian although this site has a popularity index of 7. At the time of evaluation, only four websites (Doctor’s Guide, Australasian Menopause Society, The Canadian Women’s Health Network, and Medscape) have information covering all the topics evaluated about menopause, including the results of both the WHI and the MW studies.

The Google search engine was used because is one of the most popular and effective to obtain general information. It is also one of the largest and most comprehensive index with over 4 billion pages and tackles around 200 million searches a day [25,26]. Google assess over 100 features of a webpage and combines complex algorithms with sophisticated text-matching techniques to classify relevant pages for order of ranking [13]. Every few weeks, it updates their index by recalculating the ranking of each webpage; it is the so-call Google Dance for the fluctuations due to the continuous evaluation of websites [14]. Therefore, this search engine might detect changes like those occurring about the menopause management and the recent results on HRT that were published after the study by Reed and Anderson [11]. However, Google also has shortcomings—for example, many irrelevant links turn up in its search output.

In the present study, the sample of the top 100 sites may be considered as representative of the information that would visit a regular user of Internet. The term

4. Discussion

The great amounts of information present in World Wide Web have implications for society on a global level.

Sociologists warned for the big divide between people off and on line. But even people who have access to the Internet will not necessarily get the information they want. Once one has targeted some information, it is difficult to assess its reliability and veracity. The access to the health information allows the Internet users to decide which approach to use prior to the clinical encounter or to use alternative medicines. Therefore, people are free to define their preferences and intentions. The health information in the World Wide Web is available for almost everyone and everywhere all over the world across cultures and countries.

In 2001, Risk and Dzenowagis [23] retrieved over 60 million pages entering the word “health” in a generic search engine like Google. At the time of the present study the amount the sites found for that general term were more than 120 million, while the amount of websites retrieved for the term “menopause” were also very important and variable according to the search engine.

The evaluation of the effect of the Internet on health and health care has never been easy, nor is it likely to become so in the near future [24]. In the present study the Google search engine was used because is one of the most popular and effective to obtain general information. It is also one of the largest and most comprehensive index with over 4 billion pages and tackles around 200 million searches a day [25,26]. Google assess over 100 features of a webpage and combines complex algorithms with sophisticated text-matching techniques to classify relevant pages for order of ranking [13]. Every few weeks, it updates their index by recalculating the ranking of each webpage; it is the so-call Google Dance for the fluctuations due to the continuous evaluation of websites [14]. Therefore, this search engine might detect changes like those occurring about the menopause management and the recent results on HRT that were published after the study by Reed and Anderson [11]. However, Google also has shortcomings—for example, many irrelevant links turn up in its search output.

In the present study, the sample of the top 100 sites may be considered as representative of the information that would visit a regular user of Internet. The term
“menopause” used in this study to generate a sample of websites may be considered demonstrative when “typ-
cical” users undertake a search of information. “Typi-
cal” users refer to those with limited Internet or medi-
cal knowledge. Other more precise terms—like HRT or
menopause health risks—would induce a more specific
and narrow topic search without considering a general
perspective about the management of menopause. A
previous study was concentrated on a small number
and very selected websites related with menopause and
the HRT [11]. In the present study the websites were
unselected considering all the documents found for the
word “menopause” in either English, Spanish and/or
French. Furthermore, the present study was carried out
after a significant change on the use of HRT [27] due to
the publications relating this treatment with significant
adverse events [1–6]. It seems clear that English is the
dominant language of Internet communication which
may constitute a significant barrier for people with low
knowledge of this language; however, Google returned
information from websites written in other languages.

The evaluated information in the present study was
defined to cover a wide range of topics and the recent
published papers from the WHI and MW studies. The
scientific content and quality of the World Wide Web
information about menopause studied here is very het-
rogenous, and few sites have all evaluated topics with
well balanced information. The majority of sites have
commercial content with very poor, useless or unre-
lated information to promote all type of sales. They are
placed among the theoretically top sites that would be
visited in a regular search. Therefore, Internet may dis-
seminate rapidly false or biased medical information
and potentially dangerous to a large audience and ex-
pose the public to uncontrolled risks. However, there
are also very useful and complete information both
concerning medical contents and the general quality
of web design as indicated in Table 3. Although some
these websites are in the 10 top sites and they would be
presumably visited by consumers in a general search,
others are difficult to identify them in the list of 100
top sites. Therefore, it seems that the popularity is not
always parallel to the medical quality content and ac-
curacy of information.

The websites from organisations have more infor-
mation on the menopause and HRT or other non-
 hormonal kind of therapy while they devote less in-
formation concerning alternative measures like herbal
medicine or lifestyle measures. Most menopausal
women do not choose the “medicalization” of the
menopause and need information regarding alterna-
tives such as exercise and nutritional changes; there-
fore, many commercial sites have a place to cover these
topics and at the same time promote different products
without scientific support.

There is no editorial control over material on the In-
ternet because there is no control over the Internet in
general. In an academic community, the function of ed-
itorial control is effected by a peer review process. The
idea of implementing an approval program is impossi-
ble undertaking the large number of pages for a subject
like menopause found with different search engines and
the ever-changing nature of the content of virtual web-
sites. The general public is more likely to understand
a “seal of approval” from an individual or group com-
monly perceived as credible [28–30]. In the present
study, it was found that many commercial websites do
not comply with Silverg et al. [20] nor the HON prin-
ciples [21]. The presentation of awards on health webs
may have controversial impact on patients’ assessment
of credibility [31]. The HON and URAC seals were
present in very few of the studied websites. Therefore,
the Internet users do not have a way to identify the
quality sites unless they have a medical background or
perform a scientific immersion in the topic. The exter-
nal accreditation of quality of health-related websites
is not an easy task. It would be an enormous and costly
task requiring a large staff with expertise in varying
fields to monitor thousands of health-related sites; it is
also vulnerable to fraudulent seals and claims, and may
shut out small producers who are unable to afford ac-
creditation fees. In the present study it was found that
some scientific societies and consumer organisations
give very good information may keep watch on the
new developments about the topic. Valid, accurate, and
balanced information requires disclosures of name of
company and/or authors, frequency of updates, and ref-
erences to the scientific literature. In the present study,
this kind of information was lacking in the majority
of commercial websites as deducted by its significant
lower quality score as compared with government and
organisation websites.

As a group, physicians use the Internet more than
do many other sectors of the general adult population.
It seems that Internet users feel that doctors recom-
mendations would make them more likely to trust a
health website. However, few Internet users receive recommenda-
tions from their health providers about high-

References


