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A multilingual evaluation of current health information on the Internet for the treatments of benign prostatic hyperplasia

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Purpose: To compare the quality of current Internet information on benign prostatic hyperplasia (BPH) and its surgical and medical managements across four Western languages and a comparative analysis of website sponsors. BPH Internet information quality is particularly relevant in an era of expanding, minimally invasive and surgical therapies. However, no comprehensive analysis exists.

Methods: World Health Organization Health on the Net (HON) principles may be applied to websites using an automated toolbar function. Using a search engine (www.google.com), 9,000 websites were assessed using keywords related to BPH and its medical and surgical treatment in English, French, German, and Spanish. The first 150 websites in each language had HON principles measured whilst a further analysis of site sponsorship was undertaken.

Results: Very few BPH websites had greater than ten per cent HON accredited with significant differences ($P < 0.001$) based on terms used for BPH, its medical and surgical management. Tertiles (thirds) of the first 150 websites returned differences in accredited websites ($P < 0.0001$). English language had most accredited websites. Odds ratios for different terms returning accredited websites also were significantly different across terms ($P < 0.001$). Websites were largely commercially sponsored.

Conclusions: A lack of validation of most BPH sites should be appreciated with discrepancies in quality and number of websites across diseases, languages and also between medical and alternate terms. Physicians should participate in and encourage the development of informative, ethical and reliable health websites on the Internet and direct patients to them.

Keywords: Prostate, Surgery, Internet, Patient education, Pharmacology

INTRODUCTION

In recent years, the Internet has become an accessible source of health related information for patients and their carers. Studies have shown that in 2010, an astonishing 80% of internet users which comprised of 59% of all American adults use the Internet to seek medical information [1,2]. The convenience of the Internet as a source of health information and the frequency with which it is used highlights the importance of assessing the quality and validity of Internet health information. As evident in the fields of oncology and uro-oncology the quality of health information published on the Internet is often variable [3,4].

Benign prostatic hyperplasia (BPH) is one of the most common benign conditions in men; its prevalence increases exponentially with age. In a recent estimate approximately

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6.5 million of the 27 million Caucasian men 50–79 years of age in the USA were expected to meet the criteria for discussing treatment options for BPH [5]. The acceptance of medical therapy as well as minimally invasive therapies for BPH meant various treatment options are available for patients. However patients are often faced with a vast array of Internet information that are unregulated which may negatively impact upon patients' expectations and informed decision-making [6,7].

Systems such as the Health on the Net (HON) Foundation [8] have been used as a tool to identify quality and reliable health information on the Internet. HON is an accreditation body supported by the World Health Organisation (WHO) that accredits websites according to its key principles of authority, complementarity, confidentiality, attribution, justifiability, transparency of authorship and sponsorship and advertising [8].

We aimed to assess and compare the quality of current Internet information on BPH and its surgical and medical managements across four Western languages: English, French, German and Spanish, utilising the HONcode criteria. We further aimed to perform a quality assessment and comparison based on the types of website sponsors.

MATERIALS AND METHODS

1. Internet searching for websites

Our methodology has been previously described and utilised in previous publications [4,9]. Using the Google search engine (www.google.com), in February 2013, we performed Internet searches for 15 terms associated with BPH and its treatment and assessed just over 9,000 websites. The terms searched were: "*Benign Prostatic Hyperplasia*"; "*Benign Prostatic Hypertrophy*"; "*BPH*"; "*Prostatomegaly*"; "*Benign Prostate Enlargement*"; "*TURP*"; "*Transurethral resection prostate*"; "*Prostatectomy*"; "*Laser prostate surgery*"; "*Greenlight laser prostate*"; "*Holmium laser prostate*"; "*Diode laser prostate*"; "*Medical therapy prostate*"; "*Alpha blocker prostate*" and "*Alpha reductase prostate*". English and equivalent terms in French, German and Spanish (translated from English through use of medical translation services and confirmed by laypersons and doctors having the non-English primary language as their primary language for term accuracy) were utilised.

2. Internet searching for accredited websites

Based on the observation that patients rarely access more than the first page of search results [10], the first 150 websites yielded by each search were then identified and sequentially screened for quality as defined by the HON Foundation. This was done by applying HON principles through the HONcode toolbar function (downloaded from http://www.hon.ch/) [8] for use on any personal computer and automatically activates or "lights-up" toolbar if a website is accredited by the HON foundation. The HON function has been used and assessed in several studies and was thus deemed to be a valid and high calibre tool [4,11].

3. Analysis of accredited websites likelihood of being viewed

A secondary analysis of the first 150 websites encountered for 'search term' was undertaken as previously described [4,9,12]. Firstly, all returned websites for each term were divided into tertiles (first, middle, and last 50). The proportion of accredited sites in each term and language was then analysed and compared using the chi-square test. The purpose of this analysis was to determine where accredited websites were appearing preferentially i.e., in the pages least likely (last 50) versus the most likely to be viewed (first 50).

4. Quality control

For quality control, an English search ("BPH"), had nonaccredited sites within the first 150 discovered websites manually evaluated using the HON criteria to determine their HON status to ascertain if they fulfilled the criteria despite not being "officially" accredited.

5. Logistic regression examining variables associated with HON status

This was conducted using the three major variables of search term, language, and tertiles of the first 150 returned. The referent groups for each variable were the English version and the first 50 websites respectively as these had the highest percentage and/or number of HON accredited websites.

6. Analysis of website sponsors

For all groups an analysis was undertaken from English language websites to determine the website sponsors and each was categorized according to prior studies of quality of websites on the Internet [3,4]. In summary, the sites were deemed sponsored by (1) lawyers, (2) nonprofit organizations, (3) government organizations/educational institutions, (4) commercial, (5) surgeons/physicians (and their professional organizations), (6) other health professionals, or (7) other. Sponsorship was determined independently by two examiners firstly by web page retrieved; if sponsorship was not obviously apparent, the website was explored until sponsorship

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