



Men's health on the web: an analysis of current resources

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Abstract

Introduction Men's health research covers a broad range of topics. Men and women face different barriers to health, with men almost universally having a lower life expectancy than women. Access to high-quality information on men's health topics is potentially an important part of engaging men with medical services. We aim to assess the quality of men's health resources available on the internet across 4 developed countries using a tier-based rating system as well as the World Health Organisation Health on the Net (HON) standards.

Methods The Google search engine imbedded with the Health on the Net toolbar was used to assess 357 websites across Australia, Canada, America and United Kingdom using the search term 'men's health'. The websites were further subdivided into 3 tiers by 2 independent investigators, with tier 1 websites defined as government or health organisation sponsored, tier 2 websites defined as being sponsored by health services such as private clinics and insurance providers, and tier 3 websites being websites that did not meet criteria for the first 2 tiers.

Results Overall, 28% of websites were rated as tier 1, 26% as tier 2 and 46% as tier 3. The HONcode accreditation was overall 39% of tier 1 websites. The majority of websites reviewed were in the tier 3 category, and 35% of overall websites being non-health or non-medically related.

Discussion The lack of 'relevant' and HONcode-accredited websites relating to men's health should be appreciated by health care professionals.

Keywords Internet · Health information seeking · Men's health · Men · Adult

Introduction

Men and women face different barriers to health. Gender differences in health are multifactorial, and are attributable to a combination of biological, social and behavioural factors [1]. In 2006, The World Health Organisation released a report detailing that almost universally women have a longer

life expectancy than men [2]. Given the recent nature of this transition, the processes driving it cannot be purely biological, and likely relate to social factors. In recent decades, men's health as a whole has lagged behind the growth seen in women's health [3]. There have been several explanations offered to explain this discrepancy, such as men being less likely to seek treatment from a general practitioner or other health professional, and are less likely to have in place supports and social connections needed when they experience a physical or mental health problem [4]. Thus, access to high-quality information on men's health topics is potentially an important part of engaging men with medical services. Men's health research covers a broad range of topics ranging from mental health, prostate, testicular and penile-related disease, reproduction and sexual function [5]. In addition, men have a higher risk of developing chronic illnesses, such as ischaemic heart disease, type-2 diabetes and obesity [6]. Recently, we have seen an increase in the number of men's health-related online resources worldwide, creating opportunity for greater awareness of the issues affecting health

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outcomes in men. Although the internet is a powerful tool, much of the information fails to meet a generally accepted standard for medical information—namely the World Health Organisation Health on the Net (HON) standards [7], which are a reasonable measure of the commitment of medical websites to provide quality information regarding health-related websites.

We aim to assess the quality of men's health resources available on the internet across 4 developed countries using a tier-based rating system as well as the World Health Organisation Health on the Net (HON) standards.

Methods

We performed an English-language web search using the Google search engine in May 2018 using previously published methods [8, 9]. The term 'men's health' was searched in 4 country domains: Australia, United Kingdom, United States and Canada. These countries were included in the search as they covered a large portion of the English language-speaking developed world. On the basis of the observation that patients rarely access more than the first page of search results, the first 10 search pages, returning 357 websites in total, yielded by each search were screened and grouped into 3 tiers by 2 independent investigators [10]. Tier 1 websites were defined as government, health organisation or educational institution websites. Tier 2 websites were those sponsored by health services (such as hospitals, private clinics, and health insurers), health awareness sites, and unofficial health information sites. The tier 1 and 2 sites were screened for quality as defined by the HON foundation using the HONcode toolbar function. The HON toolbar connects in real time to the HON server to verify the certification status of health/medical websites. Websites that have HON certification have been assessed by an independent regulator to contain reliable and credible information relating to health [7]. The HON function has been validated in

several studies, and is deemed to be a high calibre tool [11]. Tier 3 websites were the remaining sites that did not meet the first 2 tier criteria, and consisted of sites of minimal medical relevance and websites sponsored by commercial health supplementation groups.

In addition, the websites were grouped as 'relevant' or 'irrelevant' based on key website content of: medical conditions or issues specific to men (such as prostate, penile or testicular disease), male sexual dysfunction, male mental health, general health information specifically targeting men. In addition, the accessibility, provision of reliable health information, and easily comprehensible language used in these websites were scored using binary variables (yes or no). These factors were independently assessed by 2 medically trained assessors. Websites which were deemed to be 'relevant' by one assessor but 'irrelevant' by the other were referred to a third independent medically trained assessor.

Results

We found 28% of websites overall were rated as tier 1, 26% were tier 2 and 46% tier 3. Out of the 4 countries analyzed, the US contained the highest number of 'relevant' and HONcode-accredited tier 1 sites. In contrast, the UK contained the lowest number of 'relevant' and HONcode-accredited tier 1 sites. Australia had the highest number of 'irrelevant' tier 1 sites followed by Canada (Fig. 1). The HONcode accreditation overall was 39% of tier 1 websites, and 4% of tier 2 websites. In addition, 11% of tier 2 websites were health related but were not HONcode accredited (Table 1).

Tier 2 websites accounted for a total of 26% of overall websites identified. Australia had the highest number of 'irrelevant' tier 2 websites, followed by UK, Canada and USA (Table 1).

The majority of the assessed websites were in the tier 3 category. In total, 34% of the websites were commercially

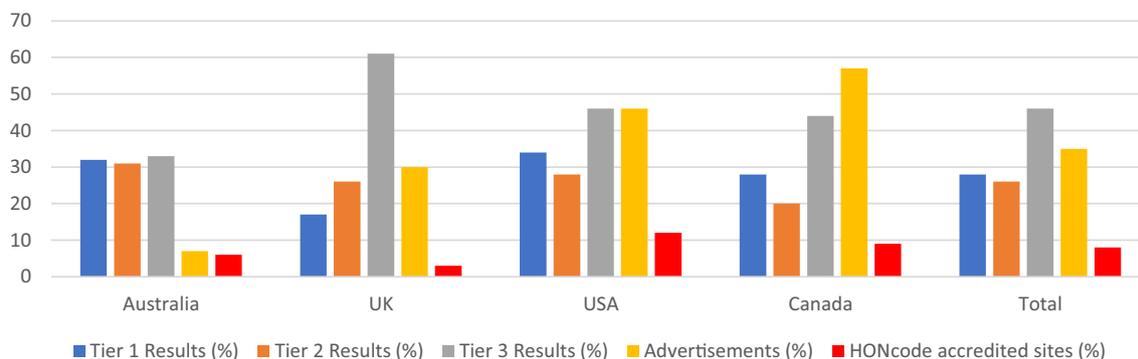


Fig. 1 Overall number of search results by country

Table 1 Breakdown of search results by tier and countries

Tier level	Quality of website	Australia	UK	USA	Canada	Total
Tier 1	'Relevant' websites (%)	13	10	22	13	15
	'Irrelevant' websites (%)	19	7	11	15	13
	HONcode-accredited sites (%)	2	1	8	4	39
Tier 2	'Relevant' websites (%)	4	9	6	1	5
	'Irrelevant' websites (%)	17	6	2	6	8
	HONcode-accredited health information sites (%)	3	2	4	4	4
Tier 3	E-commerce sites (%)	9	17	6	13	34
	Non-medically related sites (%)	25	44	40	30	35

sponsored and 35% of websites were non-health or medically related (Table 1).

Discussion

Tier one websites

We found that 13% of tier 1 websites provided 'relevant' information, and of the 'relevant' websites, only 16% of those were HONcode accredited. The 'relevant' men's health websites in this category were largely focused on research and health service provision rather than patient education. The main issues identified in the 'irrelevant' websites were a lack of primary focus on men's health-related topics as well as being inaccessible to the public, either with the need for paid membership or for use by medical professionals only. Websites such as Royal College of General Practitioners (RACGP) and National Institute for Health and Care Excellence (NICE) provide guidelines useful for health professionals, but at an unsuitable level for general population understanding [12, 13]. Other websites such as the Australian Men's Health Forum focus on creating men's health awareness events but provide limited information on men's health specifically. However, several outstanding websites were identified for their focus on men's health, easy navigation and provision of quality information. These websites include *Men's Health Forum*, *Men's Health Network*, *Young Men's Health*, *Andrology Australia* and *Men's Health Australia* [14–18].

Men's Health Forum prioritized its content on providing information on conditions, services and treatments relevant to men. Articles and frequently asked questions (FAQ) related to men's health could also be found [14]. Lastly, award-winning "Man Manuals" that focus on different aspects of men's health (general, mental and sexual health) could be freely accessed through the website. *Men's Health Network* provides ample health information, guides and fact sheets on men's health [15]. The majority of the information could be located within the same tab, allowing for easy

navigation [15]. *Young Men's Health* provided clearly presented information on general health, sexual health, medical conditions, nutrition, fitness and mental health for men. The website also focused on helping adolescent males' transition into adulthood [16]. *Andrology Australia* provided patient-accessible information on many key topics in men's health and aimed to raise awareness on these issues (8). Physical resources such as brochures on men's health-related conditions were also readily available (8).

The lack of 'relevant' and HONcode-accredited websites relating to men's health should be appreciated by health care professionals as patients use information on the internet throughout all stages of life and online tools can provide patients with a sense of empowerment and contribute to the healthcare process [19]. Internet use can be primarily patient driven or guided by medical teams. Clinicians involved in the care of these patients should participate in the development of informative and reliable health websites and direct patients to them. The greatest barrier on the internet is not the difficulty of finding healthcare information, but rather the difficulty of finding valid and reliable information [20]. The lack of quality online information has been noted in several urological areas [21].

Tier two websites

Our tier 2 websites were those sponsored by health services, such as hospitals, private clinics and health insurers. Interestingly, very few of these were HONcode accredited or contained 'relevant' websites for patients. This is concerning as patients often seek information from a trusted institution that is familiar to them, and if their health service is not providing appropriate information, they are forced to look elsewhere.

Other health information sites

Websites that provided relevant health information but were not sponsored by a government body or organisation were also ranked within the second tier. To further

differentiate between the credibility of these websites, the HONcode accreditation was used. HONcode is a system developed by the HON Foundation to signify the reliability and credibility of medical information provided online [7]. We identified 13 unofficial health information websites with HONcode accreditation and 19 without accreditation. Within the 13 websites with HONcode accreditation, 4 were repeated websites for *WebMD*, which was found across all country domains. Another repeated website with HONcode accreditation was *MedicineNet.com*. Regardless of accreditation, *CHAPs—the Men’s Health Charity* and *Trends in Urology & Men’s Health* (both HONcode unaccredited) were the only unofficial health information websites with a focus on men’s health. Websites such as *WebMD* and *MedicineNET.com* were similar to official sites such as *Medline Plus* and *Health Direct*, where adequate patient information can be found, but without a focus on men’s health.

E-commerce, other websites and advertisement

It must also be recognized that a website can be influenced by commercial interests, with 34% of overall websites found to have a commercial sponsor. The majority of these identified were online retail outlets for ‘health supplements. These websites provide little benefit to patients seeking medical information, and were, thus, considered not relevant or useful to the study. Advertisements, which are additional search results individually tailored to one’s cookie and search history, were not included in our study. This is due to the large variance of results one may receive depending on their search history. Despite this, several of the advertised websites were highly relevant to men’s health, with an emphasis on mental health. Some notable websites that were advertised include *malehealth.org*, *mindforlife.org*, *Reach-Out Australia*, *23degrees.org* and *Australian Men’s Shed*.

Ideal men’s health website

We propose key features of dedicated men’s health websites to help improve the overall quality of web information available. These features are: accessibility, relevant, reliable and easily comprehensible. Accessibility was an issue we identified during our search, with many well-designed and relevant websites only found on the 8th page of Google search. In addition, certain websites required paid membership to access information. Relevant and reliable information should be the foundation of any government or institutionally sponsored website. However, the cost associated with maintaining an up-to-date website can be a barrier to organisations lacking the resources.

Limitations

An inherent limitation of this study involves the search terms used. It cannot be guaranteed that patients would use these terms in their own research of health-related topics. However, given that the search terms used in this study are the formal and objective, informal search terms would likely defer to pages with the formal terms by the Google search algorithm. One solution to this limitation is to encourage clinicians to use the formal medical terms for their patients, thereby empowering patients more accurately research their areas of interest. Our search was also limited to the English language as well as being restricted to four country domains and a single search engine, Google. Although being the most commonly used search engine in most English-speaking countries, this may still introduce a selection bias in our results.

The HONcode is an indicator of high-quality websites, which has limitations. Health on the net certification is provided as a paid service which may introduce a selection bias. Thus, a proportion of websites with objectively high-quality information may not fulfil HONcode criteria. In addition, the HONcode is a measure of quality of the website and not necessarily the medical accuracy of the content in relation to specific health conditions; thus, it may lack relevant information about the disease on the website.

Furthermore, the analysis of web results was also subjective due to lack of prior studies or pre-established criteria for analysis. This was further compounded by the diverse methodologies for information delivery of websites (downloadable pamphlets, web information, external links). Different websites may also focus on different aspects of men’s health. Lastly, search results which were identified as online advertisements could not be included, as the presence of these results are influenced by individual search histories and cookies.

Conclusion

Men have a lower life expectancy than women in most countries. Current men’s health issues have evolved from the usual focus on andrology and sexual health to a rounded view that encompasses physical, mental, emotional, and social health needs of men in all stages of life. To address these issues, the worldwide men’s health gap should be closed in part by providing well written, trustworthy and up to date online resources for public access.

Convenience, anonymity and the volume of information that can be obtained on the internet make it an attractive option for many men seeking health-related information. We found a considerable lack of HONcode-accredited or ‘relevant’ websites when searching for men’s health. Health

care workers must also appreciate the lack of validation of a large number of web-based resources, and direct men to appropriate sites. Several websites including *Men's Health Forum*, *Men's Health Network*, *Young Men's Health*, *Andrology Australia* and *Men's Health Australia* were found to be easily accessible and provided relevant and credible information on men's health.

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Compliance with ethical standards

Conflict of interest Authors have no potential conflicts of interest to disclose.

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