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# The Age of Cyberchondria

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# The age of cyberchondria



## Abstract

The internet is a source of valuable medical information. However, it has the potential to increase anxiety in people who have no medical training, when it is employed as a diagnostic procedure. While hypochondriasis is a condition that is familiar in the medical literature, there is little research into the effects of technology on health anxiety and hypochondria. The literature supports the view that technology impacts on the management of one's health and on the traditional doctor-patient relationships. Anxiety induced by health-related online search is an increasingly differentiated activity and is known in the field of cyberpsychology as cyberchondria. This literature review aims to evaluate a broad range of research studies concerning health anxiety, hypochondria, online medical information seeking and the emerging phenomenon of cyberchondria. Themes identified include: technology-facilitated health information seeking; the impact of medical online search on traditional doctor-patient relationships in the consultation process; the need for better health management; and, medical knowledge empowerment of patients. Aspects of health-related information-seeking behaviour relevant for cyberpsychology are also considered. The latest recommendations of the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders V (DSM-V) working party regarding future classification of hypochondria and technology-facilitated symptom seeking are reported. Recommendations for further research include a large-scale study to assess the prevalence and nature of cyberchondria. The findings of the review are relevant for healthcare professionals, as the impact of the internet on patient behaviour and healthcare management is likely to increase steadily over time.

**Key words:** Medical search online; anxiety; hypochondria; cyberchondria; internet.

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## Introduction

The internet is a source of useful medical information. Intuitive diagnostic websites, such as Webmd.com and Diagnose-me.com, may shed some light on symptoms that concern people. However, *caveat quaeror* – let the searcher beware: the use of the web for self-diagnosis may increase anxiety in people who have no training in the health professions.<sup>1</sup> The 2006 Pew Internet

and American Life Project (n=2,928) reported that 80% of American internet users have searched for health-related information online. This translates to about 113 million American adults over the age of 18 years.<sup>2</sup> Two-thirds of health information seekers began their last online health inquiry on search engines such as Google or Yahoo; however, just 15% checked the source and date of the information.<sup>2</sup> Large volumes of

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health-related information are available online, but some of it is erroneous and may mislead patients.<sup>1</sup> Such information may mislead not only the searcher but others as well; a recent study found that 51% of participants felt eager to share their new medical knowledge with others.<sup>2</sup>

The prevalence of hypochondriasis has been reported as 4-9% in general medical practice.<sup>3</sup> However, a new distinct cohort of those who experience anxiety when conducting health-related searches online has emerged. This is known in the field of cyberpsychology as cyberchondria.<sup>1</sup> While there are many positive aspects to the availability of information on the internet, increasing access to medical information online may lead to medical knowledge overload in the general population.<sup>4</sup> Cyberchondria is defined by White and Horvitz as “the unfounded escalation of concerns about common symptomatology, based on the review of search results and literature on the web”.<sup>1</sup> Historically, health anxiety has been described as “fears and beliefs, based on interpretations, or perhaps more often, misinterpretations of bodily signs and symptoms as being indicative of a serious illness”.<sup>5,6</sup>

This paper reviews the available literature on cyberchondria, evaluates evidence for the existence of the phenomenon, considers its impact on health-related anxiety, and discusses the implications for health management. The impact of technology on traditional doctor-patient relationships and the role of technologies such as the internet as a platform for self-health management are considered. Cyberpsychology studies investigating the impact of emerging technology on human behaviour are also discussed.

### Review methodology

A review of literature relating to the emerging phenomenon of cyberchondria was conducted. Relevant research was identified by searching medical, technology and social sciences databases for primary material. Ten research databases were searched for publications from 1985 to the present, with key articles obtained primarily from PsychINFO, MEDLINE and Academic Search Premier. Non-English abstracts and technology-based papers that were more than five years old were excluded. Search terms utilised were broad and included: medical search online; anxiety; hypochondria; and, cyberchondria. Over 500 abstracts were selected and approximately 200 full papers were then reviewed, of which 27 are considered in this article. A number of key themes were identified, including: online escalation; impact of technology on information seeking; knowledge-empowered challenges to medical opinion; and, cyberpsychology of health-related information-seeking behaviour.

### Health anxiety

Health anxiety frequently occurs transiently in otherwise medically fit populations.<sup>7</sup> However, many severe cases of health anxiety meet the American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) diagnostic criteria for hypochondriasis.<sup>8</sup> Hypochondriacal patients are likely to be avid readers of magazines and books on medical topics.<sup>3</sup> The volume and accessibility of health-related information online, along with

search facilities and intuitive medical diagnostic websites that may prompt awareness of symptoms, may make the web particularly attractive for those of a hypochondriacal disposition.

The highest scores on self-report measures of anxiety have been recorded in people awaiting the results of medical tests or diagnoses,<sup>5</sup> and this has implications for online self-diagnosis. Cline and Haynes<sup>9</sup> suggested that public health professionals should be concerned about the extent of online health information seeking. This is a particular concern given the quality of much of the content available online.<sup>10</sup> Fox found that 35% of participants (n=2,928) stated that health information sourced online affected decisions regarding medical consultation.<sup>2</sup> Bengeri and Pluye<sup>10</sup> argue that exposing non-medical personnel to complex terminology and detailed medical descriptions may put them at risk of harm from self-diagnosis and/or self-treatment. In order to mitigate these risks, it is important that health professionals are involved in the design, dissemination and evaluation of web-based health and medical information.<sup>10</sup>

### Health information seeking online

The web may be a major source of information for those who suffer from hypochondria and cyberchondria, allowing very detailed investigation of perceived symptoms and conditions. Health search technology impacts how information is disseminated because the results of online searches are ranked by frequency of search. Users have a tendency to gravitate to search more serious conditions; for example, one may commence a search for headache-type symptoms and subsequently escalate to reviewing material related to brain tumours. This escalation process impacts, in turn, on search rankings.<sup>1</sup> A large-scale, longitudinal, log-based study processed some 40 million web pages for medical queries (of which 10,000 were manually analysed), and data were supported by a survey of 515 individuals’ health-related search experience.<sup>1</sup> Surprisingly high rates of linkage of rare diseases, such as brain tumours, to common symptoms, such as headache, were detected.<sup>1</sup> Ranking algorithms used by search engines create a spurious hierarchy based largely on frequency of ‘diagnosis’, without consideration of the actual incidence or prevalence of the condition.

### Cyberchondria

Search engines, chat rooms, diagnostic internet sites, applications, and global health scares carried by media and television shows that demonstrate the intricacies of surgery all generate vast amounts of technology-supported medical information. However, patients searching online for reassurance become anxious, and Belling argues that cyberchondria has almost become a formal diagnosis.<sup>4</sup> Fox found that 10% of participants became frightened by the medically grave nature of information they encountered online.<sup>2</sup> Given the increasing move to have patients take responsibility for their own “health biographies”, the internet may be considered a useful resource for the self-managing healthy individual, but a source of considerable anxiety for susceptible individuals.<sup>1,2,4,11</sup>

### Hypochondriacal hermeneutics

Horvath and Greenburg emphasise the importance of the therapeutic alliance in healthcare – that is, collaborative aspects of the relationship between the therapist and client.<sup>12</sup> According to Kellner, people are often naturally concerned about health issues; they seek information in a responsible manner and accept outcomes with minimal levels of anxiety.<sup>7</sup> On the other hand, health anxiety is used to define hypochondria in the somatoform population.<sup>8</sup> Belling is sceptical of the traditional medical consultation model, labelling it a hermeneutic activity that, as an interpretive affair, lends itself to hypochondria.<sup>4</sup> She surmises that the medical outlook on somatoform-type disorders such as hypochondria is that enough investigation will eventually banish uncertainty, even if it does so by discovering that everyone is sick.<sup>4</sup> Positive education about the consequences of medical intervention can reduce the time spent in hospital. As long ago as the 1980s, it was shown that clearly written information provided to the patient prior to surgery led to a reduction in postoperative anxiety and length of hospital stay.<sup>13,14</sup> The enduring question is, how can technology best be used to deliver productive medical information in a manner that does not cause unnecessary anxiety?

### Doctor-patient relationship

According to a 2006 study of internet users (n=1,900), over 73% used the web for health advice, support and/or in preparation for an appointment.<sup>15</sup> Time constraints during the consultation may increase online health-related search behaviour, as the average general practice consultation lasts about eight minutes.<sup>16</sup>

Bastian postulates that since the knowledgeable patient takes up more time during the consultation, online medical search may be construed as a form of financial gain – that is, longer consultations may be construed as obtaining more value for one's money.<sup>17</sup>

Belling calls attention to the role of the media in disseminating medical information and enhancing patient autonomy, and points out that this may present challenges to the traditional gatekeepers.<sup>4</sup> She argues that, for these reasons, patients are now more likely to be hypochondriacal, which does not augur well for the doctor-patient relationship. Belling references a case of medical antipathy towards hypochondriacs, where the patient was “an infernal nuisance...violent hatred...I wanted to hit [the patient]”.<sup>4</sup>

The question remains, does pre-existing anxiety or hypochondriacal disposition play a role in cyberchondria? If so, what is its impact on the doctor-patient relationship? A conciliatory approach has been proposed, suggesting that doctors must be prepared to discuss health information, sourced online or elsewhere, and they should endeavour to process information for the patient, rather than simply provide it.<sup>18</sup>

### Health search behaviour

In 2010, a study of 12,262 people across 12 countries showed that nearly half used the search engine Google for self-diagnosis.<sup>19</sup> In Australia doctors warned of serious consequences following the publication of a recent international survey conducted by a health insurance company, which revealed that four out of five Australians turn to the web for health information, a percentage consistent with an earlier large scale study.<sup>2,19,20</sup> Health anxiety and hypochondria are complex psychological phenomena.

Use of emerging technology is similarly complicated, as witnessed by the current cyberpsychology debate on internet addiction.<sup>21-25</sup> The varying results associated with symptom search and self-diagnosis online arguably have intermittent reinforcement qualities that require further investigation. Notably, impulsivity has been associated with somatoform disorders.<sup>26</sup>

### Illness anxiety disorder

Aspects of online health information-seeking behaviour may present as hypochondriacal, typically characterised by primary and secondary gains.<sup>5</sup> However, the current DSM-V working party of the American Psychiatric Association reports that it may abolish the term hypochondria and replace it with a general classification of illness anxiety disorder, one feature of which is online symptom checking.<sup>27</sup> This development highlights the role online medical search plays in the development of hypochondriasis.

### Discussion

A review of the literature supports the contention that online health-related searches can lead to an escalation of search behaviour and anxiety.<sup>1,2</sup> There is a relationship between health anxiety and hypochondria, and medical searches online can lead to anxiety; this may lead to a relationship between anxiety, hypochondria and cyberchondria.<sup>1,5,8</sup> Knowledge, empowerment and reassurance may be considered positive aspects of health-related online searching, but it is debatable whether these benefits outweigh the anxiety that can be induced.<sup>1,4,16,17</sup>

Increasing access to information may lead to an individual being overloaded with medical knowledge.

Research shows that individuals searching for reassurance online often experience anxiety as a result of their escalating search behaviour.<sup>1,2,4</sup> Some authors argue that there has been a shift in responsibility for health management to the patient, and technology such as the internet is the perfect medium for the self-managing healthy citizen.<sup>11</sup> Further research is required to find a balance between positive aspects of online searching such as increased knowledge and reassurance, and the worry and anxiety that may be engendered. One possible solution is to have experts annotate online diagnoses with statistics on incidence and prevalence.<sup>10</sup>

The intricacies of the doctor-patient relationship in an increasingly technology-dominated world require further study. Concern expressed by the medical profession, coupled with the amendments recommended by the DSM-V work group, support an argument for exercising caution with regard to health information seeking.<sup>27</sup> The paucity of literature regarding the prevalence of cyberchondria needs to be addressed; an attitudinal research study of frontline healthcare professionals supported by a large-scale quantitative study would empirically assess the extent and nature of cyberchondria. Cyberchondria is relevant for healthcare professionals,

particularly with respect to patient care and management. There is a general consensus that technology has impacted positively on self-management of health and on the traditional doctor-patient relationship. The literature, however, highlights some negative aspects of the emerging online search trend, such as misinterpretation and anxiety. Open access to complex medical information may alter the traditional role of doctors as the conventional gatekeepers of knowledge and diagnostic expertise. However, can 'Dr Google' undertake to abide by one of the main tenets of the Hippocratic oath – *primum non nocere*?

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