



## Cyberchondriasis: Fact or fiction? A preliminary examination of the relationship between health anxiety and searching for health information on the Internet

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### ABSTRACT

This study examined the relationship between health anxiety and searching for health information online, a phenomenon dubbed 'cyberchondria'. The majority of those with 'high' ( $n = 46$ ) and 'low' ( $n = 36$ ) levels of health anxiety reported seeking health information online. However, those with higher levels of health anxiety sought online health information more frequently, spent longer searching, and found searching more distressing and anxiety provoking. Furthermore, more responses in the high than low health anxiety group related to searching for information on diagnosed and undiagnosed medical conditions, descriptions of others' experiences of illnesses and using message boards/support groups, although the largest proportion of responses in both groups was accounted for by seeking information on symptoms. Linear regression ( $n = 167$ ) revealed significant relationships between health anxiety and the frequency, duration and distress and anxiety associated with searching for health information online. This preliminary data suggests that searching for health information online may exacerbate health anxiety.

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### 1. Introduction

The advent of the Internet has provided the general public with easy access to over 100,000 health information websites (Eysenbach, Sa, & Diepgen, 1999), ranging from government regulated information sites (e.g. NHS direct, NIH) and websites run by medical professionals (e.g. Patient UK, NetDoctors), to commercial search facilities (e.g. Boots WebMD, Healthline) and patient-led groups (e.g. Health Boards). The majority of the US and UK population have access to the Internet (Fox & Jones, 2009; Office for National Statistics, 2010) and research indicates that it is a popular source of health information used by 60–80% of Internet consumers (Fox, 2011; Office for National Statistics, 2010). Indeed, seeking for health information is one of the most popular online pursuits, exceeded only by the use of and search engines (Fox, 2011).

Although the Internet provides a useful source of health information for many, it has been suggested that searching online for health information can fuel health anxiety, a phenomenon dubbed 'cyberchondria' (Ryan & Wilson, 2008; Stone & Sharpe, 2003; Taylor, 1999, 2002, 2010; White & Horvitz, 2009). Severe health anxiety, or 'hypochondriasis' (DSM-IV-TR: American Psychiatric Association, 2000), affects up to 5% of the population (Asmundson,

Taylor, Sevgur, & Cox, 2001; Gureje, Üstün, & Simon, 1997) and is characterized by a persistent pre-occupation with the fear that one has or will develop a serious disease. Health anxiety not only causes great suffering for the patient and those around them but is also costly in terms of higher medical care utilization (Barsky, Ettner, Horsky, & Bates, 2001). Hence, it is a priority for the sake of both patients and healthcare service providers to understand factors that contribute to health anxiety. Whilst the concept of 'cyberchondria' has attracted a great deal of media attention (e.g. BBC News, 2001; Meriden, 2000; Omaha, 2010; Osborne, 2009; Valley, 2001; WebMD, 2002), there is a paucity of research investigating whether seeking health information online does in fact fuel health anxiety. This exploratory study therefore seeks to examine the relationship between health anxiety and searching for health information online.

Cognitive behavioral models specify reassurance seeking by repetitively checking sources of medical information as a maintaining factor in health anxiety (Salkovskis & Warwick, 1986; Taylor & Asmundson, 2004; Warwick & Salkovskis, 1990). Whilst there are many sources of medical information (e.g. books, magazines, medical journals), anecdotal clinical observations suggest that patients with health anxiety are increasingly using the Internet as a source of medical information (Taylor & Asmundson, 2004). Consistent with this observation, a study investigating the use of a Canadian health website found that participants who showed a greater concern for their personal health used the site more frequently (Lemire, Paré, Sicotte, & Harvey, 2008). Additionally, individuals with somatoform illnesses (e.g. indigestion, irritable bowel, back pain) also report

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more frequent use of online health information sources (Haviland, Pincus, & Dial, 2003). Hence, there is some evidence to suggest that individuals with higher levels of health anxiety may use the Internet to seek health information more frequently.

How people with health anxiety typically use the Internet to seek health information has yet to be examined. Existing research indicates that the most common method of obtaining online health information is via general search engines (Eysenbach & Köhler, 2002; Morahan-Martin, 2004; Ybarra & Suman, 2006), and that individuals typically seek information about symptoms of concern (Nelson, Murray, & Kahn, 2010; Nicholas, Huntington, Gunter, Withey, & Russell, 2003; Rice, 2006). However, White and Horvitz (2009) found that searching for non-specific symptoms on general search engines provided a disproportionate amount of information on serious and rare medical explanations, and that 70% of individuals who initially search for common, innocuous symptoms progress to searching for information on rarer, more serious conditions. Although it is not known what impact this had on participants' health anxiety, these results suggest that using search engines as a diagnostic tool is likely to disproportionately expose users to information about serious, chronic, life-threatening illnesses and thus has the potential to exacerbate health anxiety.

Compared to other health information sources (e.g. medical textbooks, health information leaflets), the Internet contains a large amount of unregulated health information. Indeed, the majority of studies examining health websites report significant problems with the quality, accuracy and completeness of the information (Eysenbach & Diepgen, 1998; Kunst, Groot, Latthe, Latthe, & Khan, 2002; Rajani, Mukherjee, & Chambers, 2007). Using the Internet as a source of health information may therefore increase the likelihood that users will be exposed to conflicting or confusing information or to unreliable, inaccurate or outdated information. Despite the prevalence of misinformation, most Internet users fail to check basic credentials such as the validity of the source or the date of publication (Eysenbach & Köhler, 2002; Morahan-Martin, 2004) and view online health information as reliable and of 'good' or 'excellent' quality (Diaz et al., 2002; Murray et al., 2003; Peterson & Fretz, 2003). Given that individuals with high levels of health anxiety have been shown to attribute greater accuracy to diagnostic information (Hadjistavropoulos, Craig, & Hadjistavropoulos, 1998), this positive view of online health information may be further inflated in individuals with health anxiety. Hence, individuals seeking health information online may not only be exposed to unreliable misinformation but may fail to recognize it as such, resulting in unnecessary worry and anxiety.

In summary, although there is some evidence to suggest that individuals with high levels of health anxiety may seek health information online more frequently and that this behavior could serve to fuel health anxiety, this has yet to be explicitly examined. Hence the current study utilizes an analogue sample to (i) investigate the relationships between participants' level of health anxiety and the frequency, impact and methods of searching for health information online and (ii) examine whether there were any differences between the frequency, impact and methods of searching for health information online in participants with high and low levels of health anxiety.

Specifically, the study had 5 aims:

1. Use of the Internet as a source of health information:  
To determine whether participants with high health anxiety are more likely to use the Internet to seek health information than those with low health anxiety, and whether the reasons for choosing not to search online for health information differs between those with high and low health anxiety.
2. Frequency and duration of searching for health information online:

Within those participants that do report using the Internet to search for health information, to determine whether those with high health anxiety search for health information online more frequently or for longer periods than those with low health anxiety, and whether there is a relationship between participants' level of health anxiety and the frequency and duration of searching online for health information.

3. Impact of seeking health information online:

To determine whether, compared to those with lower health anxiety, participants with high health anxiety experience more distress and anxiety when searching for health information online, and whether there is a positive relationship between participants' health anxiety and the levels of distress and anxiety experienced when searching for health information online.

4. Type and source of health information sought online:

To determine whether there is any difference between those with high and low levels of health anxiety in the type of health information sought online and/or the sources used to access health information online.

5. Perceived accuracy of online health information:

To determine whether there is any difference between those with high and low health anxiety in how accurate they perceive online health information to be, and whether there is a relationship between participants' level of health anxiety and the perceived accuracy of health information obtained online.

## 2. Method

### 2.1. Participants

Non-clinical, largely student, participants ( $n=187$ ) were recruited through advertisements at local Universities. In addition, in order to extend the range of those with significant health anxiety, individuals ( $n=55$ ) from a database of people who had previously participated in a randomized controlled trial of Mindfulness-based cognitive therapy or treatment-as-usual for health anxiety within the University (McManus, Surawy, Muse, & Williams, submitted for publication) were invited to participate, and 32 of the 55 accepted the invitation, making a total of  $N=219$  participants. In order to establish 'high' and 'low' health anxiety groups, participants' scores on the SHAI were rank-ordered and the bottom and top quartiles of participants were identified using cut-off scores of  $<9$  and  $>17$  respectively. The demographic and clinical characteristics for the 'high' ( $n=55$ ) and 'low' ( $n=53$ ) health anxiety groups, and the sample as a whole, are outlined in Table 1. There were no significant differences between the high and low health anxiety groups in age, gender ratio or level of education. As expected, the high health anxiety group scored significantly higher than the low health anxiety group on the measure of health anxiety (short health anxiety inventory: SHAI). The mean SHAI score of participants in the high health anxiety group (25.51) was just below those reported in samples of patients with a clinical diagnosis of hypochondriasis (e.g. 30 reported in Wattar et al., 2005). The mean SHAI score of participants in the low health anxiety group (6.19) was below mean scores reported in non-clinical samples (e.g. 10.36 reported in Fergus & Valentiner, 2009).

### 2.2. Measures

#### 2.2.1. Short health anxiety inventory (SHAI)

The SHAI (Salkovskis, Rimes, Warwick, & Clark, 2002) consists of 18 self-report items measuring health anxiety, each rated on a Likert scale from 0 to 3. This scale has been shown to have high internal consistency and to have good sensitivity and specificity (Abramowitz, Deacon, & Valentiner, 2007; Salkovskis et al., 2002)

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