Relationships between online health information seeking and psychopathology

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1. Introduction

Individuals with higher levels of health anxiety tend to search for health information online more often and for greater amounts of time than others [1]. It is unclear to what extent people with elevated levels of general anxiety, depressive or obsessive-compulsive symptoms engage in online health information seeking (OHIS). Given that health anxiety frequently occurs alongside elevated levels of anxiety, depressive and obsessive-compulsive symptoms, the latter can also be expected to be associated with OHIS. Oh and Song [2] found depressive symptoms to predict OHIS, but did not assess anxiety symptoms. To the best of our knowledge, these relationships have not otherwise been investigated.

High levels of intolerance of uncertainty (IU) have been reported to be related to excessive OHIS [3]. This is understandable, given that individuals with prominent IU may attempt to reduce uncertainty and doubts about their health and symptoms by searching for health information online.

We aimed to determine the proportion of people who have engaged in recent OHIS; ascertain the relationships between OHIS on one hand and IU, health anxiety, anxiety, obsessive-compulsive and depressive symptoms, on the other; and determine whether OHIS is predicted by levels of health anxiety and/or IU, once other conceptually related variables are controlled for.

2. Methods

Adults (N=992) were recruited through an online research participation site. The study was approved by the [blinded-for-review] Human Research Ethics Committee and the [blinded-for-review]. The sample was restricted to participants from Australia, Canada, Ireland, New Zealand, the United Kingdom, and the United States of America to reduce linguistic, sociocultural and economic heterogeneity.

Participants were asked whether or not they had engaged in OHIS in the preceding three months and administered the following questionnaires: the Intolerance of Uncertainty Scale - Short Form (IUS-12 [4]); the Obsessive Compulsive Inventory Revised (OCI-R [5]); the Patient Health Questionnaire-9 (PHQ-9, a measure of depressive symptoms [6]); the Patient Health Questionnaire-15 Somatic Symptom Severity Scale (PHQ-15 [7]); the seven anxiety items of the Patient-Reported Outcomes Measurement Information System Emotional Distress–Short Form questionnaire (PROMIS [8]); and the Short Health Anxiety Inventory (SHAI [9]).

3. Results

Of the 992 participants in our study (67.4% female; 61.5% tertiary educated; 61.0% currently living with partner), 751 (75.7%) reported engaging in OHIS in the preceding 3 months. Demographic characteristics are summarised in Table 1, Supplementary data. 1. People who had engaged in OHIS had significantly higher levels of IU and all the symptoms assessed in the study (Table 1, Supplementary data).

Logistic regression analyses were conducted to identify independent predictors of OHIS. First, PHQ-15 and SHAI scores were entered because searching online is likely to be related to the presence of somatic symptoms (PHQ-15) and health anxiety (SHAI). Next, gender was included and at the final step, the PROMIS, PHQ-9 and OCI-R were entered. Only somatic symptoms showed an independent association with OHIS, such that higher levels of reported somatic symptoms were associated with a greater odds of OHIS (ExpB=1.12, $p < 0.05$; Table1, upper section).

We repeated the analysis with IUS-12 scores entered at the first step instead of SHAI (Table 1, lower section). Only somatic symptoms showed an independent association with

OHIS, such that higher levels of reported somatic symptoms were associated with a greater odds of OHIS (ExpB=1.13, $p < 0.05$).

4. Discussion

Our results suggest that OHIS is commonplace (76%), consistent with estimates from previous large samples (72%; [10]). Participants with a university or higher education were more likely to have engaged in recent OHIS. In line with previous studies [e.g., 1], we found that participants with recent OHIS had higher levels of health anxiety than others. OHIS was also associated with higher levels of all assessed psychopathological variables.

However, only somatic symptoms independently predicted OHIS when each of these other symptom domains were controlled for. Thus, somatic symptoms may (partially) explain the relationship between psychopathology and OHIS. This is broadly consistent with the finding that individuals with chronic medical conditions who are likely to have more severe somatic symptoms, are also more likely to engage in OHIS.

A limitation of our study was that our sample was not necessarily representative. However, our findings appear broadly consistent with the only representative survey we are aware of [10].

In conclusion, our study confirms that OHIS is common. The severity of somatic symptoms was found to be a unique predictor of this behaviour. Medical practitioners can thus expect that patients reporting prominent somatic symptoms are particularly likely to engage in OHIS, regardless of the presence of psychopathology.

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Table 1. Logistic regression analysis predicting engagement in online health information seeking (*N*=992).

Regression 1:

Predictor variables	Unstandardised B (SE)	Wald test (z-ratio)	Exp(B)	95% CI Lower	95% CI Upper
Step 1					
PHQ-15	0.12 (0.02)	33.72	1.13	1.08	1.18*
SHAI total	0.01 (0.01)	0.90	1.01	0.99	1.04
Step 2					
Gender	0.27 (0.16)	2.76	1.31	0.95	1.79
Step 3					
PHQ-9	-0.36 (0.21)	2.85	0.97	0.93	1.01
PROMIS total	0.01 (0.02)	0.47	1.01	0.98	1.05
OCI-R	0.0002 (0.008)	0.0005	1.00	0.98	1.02

Regression 2:

Predictor variables	Unstandardised B (SE)	Wald test (z-ratio)	Exp(B)	95% CI Lower	95% CI Upper
Step 1					
PHQ-15	0.13 (0.02)	41.78	1.14	1.09	1.18*
IUS-12	0.005 (0.008)	0.38	1.01	0.99	1.02
Step 2					
Gender	0.27 (0.16)	2.83	1.31	0.96	1.79
Step 3					
PHQ-9	-0.04 (0.02)	3.11	0.96	0.92	1.00
PROMIS total	0.01 (0.02)	0.38	1.01	0.98	1.05
OCI-R	-0.001 (0.009)	0.02	0.99	0.98	1.02

* $p < 0.001$.
CI=Confidence Interval; PHQ-15=Patient Health Questionnaire-15 Somatic Symptom Severity Scale; SHAI=Short Health Anxiety Inventory; PHQ-9=Patient Health Questionnaire-9; PROMIS=the PROMIS Emotional Distress – Anxiety - Short Form; OCI-R=Obsessive-Compulsive Inventory – Revised; IUS-12=Intolerance of Uncertainty Scale - Short Form.
Gender is coded 0=male, 1=female.