Relationships Between Gender and Online Health Information Seeking: An Analysis of Large-scale US Surveys

By
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Lori Evarts, my adviser, demonstrated the utmost commitment to her charge and her work. She epitomized a great educator and an astute mentor. I could in no way have asked for anyone better nor have dreamt of any greater guidance, assistance, and even discipline, than that which she provided me. Lori, I owe you a debt I fear I may never settle.

Over the many years of our friendship, the great Andy Hall’s constant, healthy skepticism taught me that for every answer there must be more questions. Andy, I truly miss you and hope we meet again in that place of greater understanding you now inhabit. For his life’s mate, Brandon, thank you for being my inspiration and thank you for continuing on in your work as a healer, even after losing such a large chunk of your heart.

My employer, Western Carolina University, its students, and employees provide me with a sense of purpose and make me believe that by spreading the word about good and bad information (and all information can be “bad” at some point), I am doing something meaningful.

Last, but of course not least, my beloved and my partner, Chad, deserves more thanks than I could ever give to him for his support, patience, love, and most of all his humor. Well, his love is a biggie, too. But the humor really nails it. Thank you, babe.
Abstract
Research indicates males are less likely than females to seek health information online, even though males have traditionally been more active users of the internet. This analysis synthesized data from surveys dealing with online health information seeking and gender. Age and relationship status, two additional variables linked in the literature with health information, were also analyzed in relation to gender. Surveys were identified through searches of health, information, and social sciences data repositories. The most recent iterations of US surveys having 2,000 or more respondents released between January 2007 and May 2013 were considered. Measurement of individual and weighted mean effect sizes from the five selected surveys supported previous findings that males were less likely than females to seek health information online. Further, males and females between the ages of 19 and 44 and those identifying as married or in a domestic partnership were more likely to seek health information online than older individuals and individuals not in such relationships. Despite males’ comparative reticence to seek health information online, both males and females were more likely to use the internet than any other resource to find this information, signaling that health communications professionals would be well served by increasing and improving messages and interventions spread through the online medium.
Gender is a socio-cultural construct both tied to and separate from the biological framework underpinning sex (Archer & Lloyd, 2002). As a characteristic, gender is one of the most defining facets of one’s interaction with the world and affects issues from the effectiveness of medical interventions (Mave, Gahunia, Frontini, Clark, & Mushatt, 2011) health care spending (Cylus, Hartman, Washington, Andrews, & Catlin, 2011) life expectancy (World Health Organization, 2012), and political power (World Bank, 2013). Separating biological, psychosocial, and socioeconomic effects of gender presents nearly as great a challenge as identifying all those effects (Cherepanov, Palta, Fryback, & Robert, 2010).

Gender also plays an important role in information seeking (Ramkissoon & Nunkoo, 2012; Spence, Lachlan, Nelson, & Shelton, 2010). While data on relationships between gender and the search for health information are plentiful, many investigations study a small number of subjects, focus on very specific populations (e.g., vocalists), or over represent female respondents. For example, classically-trained female singers were more likely than male singers to search for voice-related health information (Petty, 2012). Among people with vasculitis, women were more likely to use online and print health information resources than men who were more likely to consult spouses for such information (Carpenter et al., 2011). In a study of cancer patients, women were more likely than males to visit websites dealing with cancer (Seçkin, 2010).

Interviews with 32 lesbian, gay, bisexual and transgender people between the ages of 16 and 24, suggested individuals identifying as male sought sexual health information online more often than individuals identifying as female (Magee, Bigelow, DeHaan, & Mustanski, 2012).

Previous research also indicates females are more likely than males to search for health information for others (Abrahamson, Fisher, Turner, Durrance, & Turner, 2008; Powell, Inglis,
RONNIE, & LARGE, 2011). The caregiving role females often assume offers a possible reason behind this pattern (DEL BONO, SALA, & HANCOCK, 2009; FAMILY CAREGIVER ALLIANCE - NATIONAL CENTER ON CAREGIVING, 2012). Though parents and caregivers of both genders are more likely to search for health information for others (SADASIVAM ET AL., 2013), analysis of data from one 2006 PES INTERNET AND AMERICAN LIFE survey indicated women were more likely than males to access health information and search for more diverse types of health information, independent of parental status (STERN, COTTON, DRENTEA, NETER, & BRAININ, 2012).

Marital status appears to affect both men’s and women’s health information seeking practices as well. Married individuals are more likely to seek health information than are unmarried individuals (CANGELOSI, RANELLI, & MARKHAM, 2009).

Usage of credible and up-to-date health information by health care consumers and professionals can offer improved health outcomes for both sexes (D’ADAMO, FABIC, & OHKUBO, 2012; KILPELÄINEN ET AL., 2012; LUSTRIA, SMITH, & HINNANT, 2011; RANI & BUCKLEY, 2012). Research also indicates that searching for health information online increases one’s likelihood of obtaining formal medical treatment (SUZIEDELYTE, 2012).

While information comes in myriad formats (audio, print, electronic, etc.), the growth of internet access through media from personal computers to smartphones has greatly expanded information access. More than three-quarters of US adults now use the internet (ZICKUHR & SMITH, 2012), with males consistently accessing the internet as much as, and usually more, than females (PES INTERNET AND AMERICAN LIFE, 2012B). Notably, while males are more likely to use the internet, females are more likely to search for health information online (LORENCE & PARK, 2007). The objective of this analysis is to determine whether gaps in online health information seeking
between the genders are as pronounced as current research indicates and whether additional factors (age and marital or domestic partnership status) mediate gender’s effects.

**Methods**

This analysis considered findings from multiple surveys, a method that broadens applicability of findings by drawing from multiple surveys to account for information missing within individual surveys (Schenker & Raghunathan, 2007). To strengthen analysis methodology, guidelines from the Cochrane Collaboration-endorsed “Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement” (Liberati et al., 2009) were followed. PRISMA’s checklist is provided in the Appendix of this paper. PRISMA guidelines meshed easily with this analysis of survey data though the format diverged from traditional meta-analytic pathways of extraction and synthesis of data from reports and articles (Glass, 1976). Guidelines required adaptation primarily in regard to PRISMA’s “Item 10: Data Collection Process,” in that data were primarily not extracted from reports. Further guidance on the application of meta-analytic methodology to analysis of survey data was drawn from “Meta-analysis of Survey Data: Application to Health Services Research” (Rao et al., 2008), “A Framework for the Meta-analysis of Survey Data” (Fox, 2010), and examples from information science (Ackermann, 2008) and medical literature (Fanelli, 2009).

**Eligibility Criteria**

The analysis drew from survey data released between January 2007 and May 2013. Per published recommendations of the World Health Organization (Lwanga & Lemeshow, 1991), only surveys with 2,000 or more respondents providing usable responses were considered in order to estimate effect sizes with a high level of relative precision (20%). Searches were
restricted to surveys of the US population. The most recent iteration of survey data was used unless older versions included pertinent variables absent from current ones. All surveys identified for inclusion provided publicly available datasets or full data reports.

**Information Sources and Search Strategy**

Searches of data repositories were conducted to find relevant survey data. Data repositories and providers including the US federal government’s *Data.gov*, the Inter-university Consortium for Political and Social Research (ICPSR), the Institute for Quantitative Social Science’s (IQSS) Dataverse Network, and the Pew Research Center were searched. The author also consulted data repository listings from Databib and Open Access Directory and sought guidance from a statistical services reference librarian. Keyword and phrase searches of Google were undertaken throughout the process to locate additional gray literature.

To locate background literature and find references to relevant surveys not already identified through data repository searches, the following databases were explored using both individual database and integrated search methodology (Hallyburton & Marcus, 2012): *Academic Search, Business Source, Communication and Mass Media, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Education Resource Information Center (ERIC), Education Source, Google Scholar, Library Literature and Information Science Technology (LISTA), MEDLINE, PsycINFO, Science Citation Index, SocINDEX*, and the US government’s official web portal, *USA.gov*. Books were searched using the international catalog *WorldCat*.

Searches of data repositories and databases were conducted using keyword, wildcard character (to find variant terms), phrase, and resource-specific subject heading searching to identify relevant surveys and articles (Table 1). All searches were performed by the author, a medical and
general reference librarian with more than a decade’s experience in the field. Where applicable, references found in selected resources were back-searched.

Table 1. Examples of Terms Searched by Concept

<table>
<thead>
<tr>
<th>Gender (including plural forms)</th>
<th>Health</th>
<th>Information</th>
<th>Search (multiple tenses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>female, gender, intersex,</td>
<td>health, medical,</td>
<td>data,</td>
<td>access, acquire, desire, find,</td>
</tr>
<tr>
<td>male, man sex, transgender,</td>
<td>medicine,</td>
<td>information,</td>
<td>locate, look, retrieve, search,</td>
</tr>
<tr>
<td>woman</td>
<td>wellness</td>
<td>knowledge</td>
<td>seek</td>
</tr>
</tbody>
</table>

Survey Selection, Data Collection, Data Items, and Risk of Bias

Public availability of all data meant institutional review board review was not required.

Information extracted from surveys pertained to survey methodology and characteristics of survey participants regarding health information seeking behavior, gender, age, and marital or domestic partnership status. Transgender and intersex were not offered as gender variables in selected surveys.

The “Cochrane Collaboration’s Tool for Assessing Risk of Bias” (J. Higgins & Altman, 2008) informed bias assessment within and across surveys. The author identified the following additional biases and set corresponding controls.

- Surveys with large representations of a particular age group may under (older) or over (younger) represent online health information seeking habits, dependent upon that group’s level of internet adoption. To control for this issue, surveys with respondents predominantly from one age group were omitted from some mean calculations.
• Landline telephones are no longer ubiquitous. To control for this issue, surveys conducted primarily by telephone had to provide clearly defined sampling methodology with equitable balance between landline and mobile telephone participants.

• Findings from surveys conducted on dissimilar populations compromise generalizability. To control for this issue, data derived primarily from one swath of society were used only if the sampling population provided a complement for populations in other surveys (Rao et al., 2008) or provided a forward look at societal trends (e.g., college students).

• Caregiving responsibilities within marriages or domestic partnerships (child-rearing, caring for a spouse with health concerns) may confound results relating relationship status to online health information seeking. To control for this issue, variables pertaining to personal information seeking were used where applicable.

• Respondents seeking health information for pre-existing health conditions may over-represent societal usage of health information. To control for this potential bias, frequent and infrequent users of online health information were grouped.

• Survey data may go unpublished or be suppressed. To control for this issue, analysis was restricted to large surveys with multiple administrations.

**Summary Measures and Planned Methods of Analysis**

SPSS software, manual calculations, and effect size calculators were used in mathematical inquiries. Calculations were verified by a second assessor using SAS software and Excel.

Odds ratio (OR) and 95% confidence intervals (CI) were used to measure the strength of associations between gender and online health information seeking. Risk ratio (RR) and 95% CIs were tabulated to provide additional clarity on effect sizes. Weighted mean effect sizes for both OR and RR were tabulated combining measures across surveys (Hedges & Olkin, 1985).
Weighting mean effect sizes provided a more accurate measure than simply pooling data across studies; simple pooling can afford large studies undue influence in synthesized findings. Analyses covered dichotomous variables for participant gender (male/female) and whether participants had sought health information online (yes/no). A fixed effect method was used for the OR due to similarity of variables and observations of strong homogeneity in initial effect size calculations. A random effects method was applied to the RR as sample effect sizes were found not to be fixed on a common mean (Ellis, 2010). Heterogeneity among surveys was measured using $I^2$, the statistic favored by the Cochrane Collaboration (Higgins, Thompson, Deeks, & Altman, 2003). This measure, which offers percentage of total variation across surveys caused by heterogeneity instead of chance, was calculated by subtracting degrees of freedom from Cochran’s heterogeneity statistic, dividing this number by Cochran’s heterogeneity statistic, and then multiplying the result by 100% (Higgins, Thompson, Deeks, & Altman, 2003). To correctly obtain the sought subset of data for specific questions of interest, cases were omitted from analysis when multiple responses were recorded to queries requiring a single response, responses were marked as “errors” in datasets, or where relevant variables were unrecorded.

Additional Analyses

Sensitivity analyses were performed to assess robustness of findings (Higgins & Green, 2011). Four re-calculations of weighted mean OR and four re-calculations of weighted mean RR were conducted by removing one survey in each re-calculation from the five-survey grouping to measure effects of individual survey findings on overall results.

Chi-square calculations were then used to measure significance in relationships between gender and online health information seeking in conjunction with variables of age (grouped according to National Library of Medicine subject heading descriptions of “young adult,” “adult,” etc.) and
marital or domestic partnership status. Simple percentages were tabulated for gender and marital
or domestic partnership status to provide a more nuanced interpretation of health information
seeking patterns. Dating relationships were not included as similar data were unavailable in all
but one survey, the 2008 NCHA.

Simple percentages of respondents’ use of health information formats other than online were
compared with simple percentages regarding online health information seeking. Calculation of
simple percentages was done due to marked differences in information type variables outside of
internet sources (e.g., physician, magazine, television).

Results

Survey Selection and Characteristics
Searches yielded possible surveys for inclusion as follows: Data.gov, 42 surveys; ICPSR, 99
surveys; IQSS, 63 surveys; and Pew Internet and American Life Project, 8 surveys. Of these,
four surveys were identified that met inclusion criteria. Full text review of 177 relevant articles
identified one additional survey.

Five surveys (Table 2) were chosen for inclusion in the analysis. Four surveys’ samples were
representative of the US population per their stated methodologies. The fifth survey sample, the
2008 NCHA, was representative of US college students per its stated methodology. All tools
displayed evidence of rigorous testing for reliability and validity. Four of the five surveys used
survey data from the most recently released (as of May 2013) survey iteration. In the case of the
NCHA, the 2008 version was used as this was the final year NCHA used specific health
information source queries.
<table>
<thead>
<tr>
<th>Survey</th>
<th>Method</th>
<th>N</th>
<th>Online Health Info Seeking Question(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>National College Health Assessment I (NCHA I)(American College Health Association, 2008)</td>
<td>Web, some paper</td>
<td>Male – 27,035</td>
<td>“Do you usually get health information from any of the following sources?” Variable selected: “Internet/world wide web”</td>
</tr>
<tr>
<td>Health Tracking Household Survey (HTHS) (Center for Studying Health System Change, 2010)</td>
<td>Random-dialed landline &amp; cellular phone</td>
<td>Male – 6,147 Female – 7,435</td>
<td>“During the past 12 months, did you look for or get information about a personal health concern on the internet?”</td>
</tr>
<tr>
<td>National Health Interview Survey (NHIS) (National Center for Health Statistics, 2011)</td>
<td>In-person by Census worker</td>
<td>Male – 14,663 Female – 18,020</td>
<td>“During the past 12 months, have you ever used computers for any of the following . . ..” Variable selected: “Look up health information on the Internet”</td>
</tr>
<tr>
<td>Health Information National Trends Survey (HINTS) (National Cancer Institute, 2012)</td>
<td>Computer assisted telephone interview &amp; mailed questionnaire</td>
<td>Male – 1,549 Female – 2,292</td>
<td>“Do you ever on-line to access the internet or world wide web, or to send/receive email?” Variable selection for “Yes” triggers options including: “In the past 12 months, have you used the internet to look for health or medical information for yourself?”</td>
</tr>
<tr>
<td>Health Tracking Survey (Pew Internet and American Life, 2012a)</td>
<td>Random-dialed landline &amp; cellular phone</td>
<td>Male – 1,474 Female – 1,540</td>
<td>“Now, we’d like to know if you’ve looked for information online about certain health or medical issues, either for yourself or someone else. Specifically, in the last 12 months, have you looked online for information about . . ..”</td>
</tr>
</tbody>
</table>
Most analyzed variables dealt with participants’ search for information for personal health needs. Four of the five surveys limited performance of such searches to the previous 12-month period. The 2008 NCHA included no such time limitation. For the Pew survey, in which multiple variables branched from a root question, each respondent who selected at least one offered variable was counted. In surveys where online health information seeking data included only responses from self-identified internet users, the author added non-internet users to non-seeker totals to limit over-representation of information seeking behavior in the general US population.

**Individual Survey Results and Syntheses of Results**

Across surveys, odds of males seeking health information online were lower than odds for females with a weighted mean OR of 0.7 (Table 3). Calculation of weighted mean RR indicated males were 86% as likely as females to seek health information online. Homogeneity among all five studies included in the analysis was signaled through calculations of the inconsistency measure $I^2$.

**Table 3. Online Health Information Seeking by Gender**

<table>
<thead>
<tr>
<th>Survey, Year</th>
<th>N</th>
<th>OR, Male/Female, 95% CI</th>
<th>RR, Male/Female, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCHA, 2008</td>
<td>77,382</td>
<td>0.7 (0.68-0.73)</td>
<td>0.92 (0.92-0.93)</td>
</tr>
<tr>
<td>HTHS, 2010</td>
<td>13,582</td>
<td>0.71 (0.66-0.76)</td>
<td>0.8 (0.76-0.83)</td>
</tr>
<tr>
<td>NHIS, 2011</td>
<td>32,683</td>
<td>0.7 (0.67-0.73)</td>
<td>0.82 (0.8-0.84)</td>
</tr>
<tr>
<td>HINTS, 2012</td>
<td>3,841</td>
<td>0.78 (0.68-0.89)</td>
<td>0.9 (0.85-0.95)</td>
</tr>
<tr>
<td>Pew, 2012</td>
<td>3,014</td>
<td>0.69 (0.6-0.8)</td>
<td>0.85 (0.8-0.91)</td>
</tr>
</tbody>
</table>

A graphic exploration of OR’s across studies (Figure 1) shows each survey’s CI ranges overlap across the weighted mean (0.7), further signaling homogeneity and providing justification for use of the fixed effects model in calculation of the weighted mean.
RR estimates had a higher degree of heterogeneity ($I^2 = 95\%$). Consequently, the random effects model was used to calculate the weighted mean RR of 0.86 (Figure 2).

Results of Additional Analyses

Sensitivity analyses indicated the greatest deviation in weighted mean effect size measures occurred with the removal of the largest survey, the 2008 NCHA. While the weighted mean OR remained the same with the removal of this group, the weighted mean RR decreased by 0.04,
indicates this large survey of college-aged respondents did somewhat skew results in favor of greater likelihood of online health information seeking in males.

Chi-square analyses were used to measure significance in relationships between online health information seeking, gender, age, and marital or domestic partnership status. Age was not analyzed for 2008 NCHA survey data as more than 90% of respondents fell under the age of 30, restricting depth of age-related analysis. Statistical significance at the level of <0.05 was found in remaining individual surveys with respondents aged 19 through 44 years more likely than older respondents to seek health information online. The pattern applied to both males and females and continued generational internet usage trends (Pew Internet and American Life, 2010).

In analyses of the relationship between gender, marital or domestic partnership status, and online health information seeking the 2008 NCHA survey was again omitted as only 8% of respondents described themselves as married or in a domestic partnership. Statistical significance at the level of <0.05 was found in each of the remaining surveys with respondents identifying as married or in a domestic partnership more likely to access health information online than respondents not in such relationships. Simple percentages (Figure 3) also indicated males who did not identify as married or in a domestic partnership were less likely than males in such relationships to seek health information online. However, females not identifying as married or in a domestic partnership still showed greater inclination than similarly situated males to seek this information.
How respondents rated health information and how they used that information were covered in varying degrees across four of the five surveys (NHIS did not provide applicable data). Sixty-five percent (n=17,568) of males and 67% (n=33,519) of females in the 2008 NCHA rated health information found online as “neither believable nor unbelievable.” Similarly, 2012 HINTS respondents were asked how much they trusted health information found online. Ten percent (n=142) of male and 7% (n=145) of female respondents stated they “did not trust at all” health information found online. Another 20% (n=296) of males and 17% (n=374) of females put “a little” trust in online health information. However, 55% of both groups (n=805 for males and n=1,194 for females) reported trusting this information “some” and 15% (n=223) of males and
21% (n=443) of females reported trusting the information “a lot.” Complicating interpretation of these questions is the extreme variability in resources available online, and through most other media; without further qualifiers (e.g., website provider, etc.), even hypothetical projections of credibility are difficult.

Queries on use of online health information provided more specific data. Usefulness of health information found online was rated in the 2010 HTHS. Less than 2% of both males (1.8%, n=32) and females (1.2%, n=33) in the assessment who reported having found personal health information online rated information they found as “not at all useful.” While 13% (n=226) and 14% (n=387) of males and females, respectively, rated the information as “a little useful,” 53% (n=946) of males and 49% (n=1,334) of females rated it “somewhat useful” and 32% (n=566) of males and 35% (n=947) of females rated it as “very useful.” The 2012 Pew survey found that, for individuals who stated they had gone online in the past 12 months to seek health information, 56% of males (n=405) and 59% of females (n=598) admitted that they had ever gone online specifically to diagnose either their own or someone else’s health condition. Of those individuals who went online to diagnose an issue, 43% of males (n=173) and 39% of females (n=234) had these online diagnoses confirmed by a medical professional.

When presented with questions on different health information resources, 74% (n=20,079) of males in the 2008 NCHA stated they “usually get health-related information” from the internet. The next most often consulted resource was “parents” at 70% (n=18,752). Other options, ranging from magazines and television to health center medical personnel and the ubiquitous “other,” at most garnered 55% (n=14,924), as in the case of the information resource “friends.” Females also rated the internet as the resource from which they most often obtained health information (80%, n=40,501). While only 29% (n=1,779) of male respondents to the 2010 HTHS stated they
used the internet to find health information, that resource was still more used than the next most often cited source, “friends,” at 24% (n=1,498). In the 2012 HINTS, 60% (n=608) of 1,011 males who specified where they had sought health information listed the internet as the first source consulted. The next most popular option was “doctor or health care provider” at 19% (n=190). Neither the 2011 NHIS nor the 2012 Pew survey provided applicable data.

Discussion

Evidence from this analysis supports findings of previous research indicating males seek health information online less frequently than do similarly situated (age, relationship status) females. Of note, in the largest representation of younger males (2008 NCHA), the difference between genders was smaller than noted by other studies. This may be explained by respondents’ levels of education; however, this information may still prove instructive in regard to future trends. While deeper analysis would be required to formulate statements on statistical significance in assessments of information quality, the author deemed relevant variables too imprecise. Overall, both males and females rated health information they found online useful.

Data indicated that both males and females used the internet more than any other source when looking for health information. After online resources, males most often consulted other people (parents, friends, health care providers) rather than other non-personal resources (television, magazines) for health information. This tendency toward personal interactions may increase males’ propensity toward online health information seeking as social networking technologies improve personalization options while still affording a degree of anonymity. Such changes present more opportunities for health professionals to communicate and personalize messages.
Limitations

Issues of socioeconomics and education likely play significant roles in health information seeking (Fox & Duggan, 2013); however, analyses of those factors and many others exceeded the scope of the current research. Differences in study populations, variables considered, and survey dates may have limited the analysis. Most notable among variations in study populations was the larger size and comparative uniformity of respondents to the 2008 NCHA. While effect sizes for this group were not markedly different from the other surveys’, the 2008 NCHA data did increase the appearance across surveys of males’ likelihood of seeking health information online. In addition, while variables for online health information seeking were very similar, they were not identical across surveys. Dates when surveys were prepared and conducted may also have affected results as information from surveys a few years old may be unduly dated due to rapid changes in technology access.

Narrowness of inclusion criteria further limited the analysis. While sample size criteria (more than 2,000 respondents) provided greater precision, smaller surveys may have offered additional depth in their exploration of health information searching. Using only US data decreased generalizability of findings outside of this population. A further limitation of the study involved what meanings survey participants (and survey makers) attributed to topics and materials falling under the scope of health information. The 2012 Pew survey queried respondents on whether they used the internet to search for information on how to lose or maintain weight, drug and food safety, and a host of other issues in its question dealing with online health searching; however, response options were not included for topics such as muscle building or increasing sexual performance, two issues related to health (though perhaps not identified as such by respondents) that may be of informational interest to males.
Conclusions

Better understanding of relationships between gender and health information seeking should enable health communication professionals, public health workers, and care providers to more effectively craft health messages, interventions, and research. Differences in information seeking behaviors can be as variable as individuals themselves, however. Until the ideal health communication tool becomes available -- one general enough to serve individuals equally but customizable to each individual’s desires, all while providing high quality resources -- gender provides just one formidable factor health professionals should consider when crafting messages.

This research highlights the importance of online resources in communicating health care information. While health care consumers may take for granted that online health messages receive the level of attention and preparation afforded communications in other formats, for many initiatives (view any number of federal, state, and county health resource pages for examples), online information is simply copied-and-pasted from, or a digitized version of, print materials. These methods make suboptimal use of the interactive capabilities afforded by the internet and may further lessen the attraction male and younger adult populations have to the material and the message.

*No external funding was received for the conduct of this analysis.*
GENDER AND ONLINE HEALTH INFORMATION SEEKING ANALYSIS

References


GENDER AND ONLINE HEALTH INFORMATION SEEKING ANALYSIS


GENDER AND ONLINE HEALTH INFORMATION SEEKING ANALYSIS


GENDER AND ONLINE HEALTH INFORMATION SEEKING ANALYSIS


# Appendix


<table>
<thead>
<tr>
<th>Section/topic</th>
<th>#</th>
<th>Checklist Item</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TITLE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Title</td>
<td>1</td>
<td>Identify the report as a systematic review, meta-analysis, or both.</td>
</tr>
<tr>
<td><strong>ABSTRACT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structured summary</td>
<td>2</td>
<td>Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.</td>
</tr>
<tr>
<td><strong>INTRODUCTION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rationale</td>
<td>3</td>
<td>Describe the rationale for the review in the context of what is already known.</td>
</tr>
<tr>
<td>Objectives</td>
<td>4</td>
<td>Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).</td>
</tr>
<tr>
<td><strong>METHODS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protocol and registration</td>
<td>5</td>
<td>Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.</td>
</tr>
<tr>
<td>Eligibility criteria</td>
<td>6</td>
<td>Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.</td>
</tr>
<tr>
<td>Information sources</td>
<td>7</td>
<td>Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.</td>
</tr>
<tr>
<td>Search</td>
<td>8</td>
<td>Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.</td>
</tr>
<tr>
<td>Study selection</td>
<td>9</td>
<td>State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).</td>
</tr>
<tr>
<td>Data collection process</td>
<td>10</td>
<td>Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.</td>
</tr>
<tr>
<td>Data items</td>
<td>11</td>
<td>List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.</td>
</tr>
<tr>
<td>Risk of bias in individual studies</td>
<td>12</td>
<td>Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.</td>
</tr>
<tr>
<td>Summary measures</td>
<td>13</td>
<td>State the principal summary measures (e.g., risk ratio, difference in means).</td>
</tr>
<tr>
<td>Synthesis of results</td>
<td>14</td>
<td>Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.</td>
</tr>
</tbody>
</table>
### RESULTS

<table>
<thead>
<tr>
<th>Section/topic</th>
<th>#</th>
<th>Checklist item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk of bias across studies</td>
<td>15</td>
<td>Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).</td>
</tr>
<tr>
<td>Additional analyses</td>
<td>16</td>
<td>Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.</td>
</tr>
</tbody>
</table>

#### DISCUSSION

<table>
<thead>
<tr>
<th>Section/topic</th>
<th>#</th>
<th>Checklist item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary of evidence</td>
<td>24</td>
<td>Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).</td>
</tr>
<tr>
<td>Limitations</td>
<td>25</td>
<td>Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).</td>
</tr>
<tr>
<td>Conclusions</td>
<td>26</td>
<td>Provide a general interpretation of the results in the context of other evidence, and implications for future research.</td>
</tr>
</tbody>
</table>

### FUNDING

<table>
<thead>
<tr>
<th>Section/topic</th>
<th>#</th>
<th>Checklist item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding</td>
<td>27</td>
<td>Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.</td>
</tr>
</tbody>
</table>

For more information, visit: [www.prisma-statement.org](http://www.prisma-statement.org).*