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Health information seeking: A review of measures and methods

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ABSTRACT

Objective: Outlines the methods and measures commonly used to study active health information seeking and prescribes important considerations in advancing the study of patient information seeking.
Methods: A systematic review of the literature from 1978 to 2010. A single bibliometric database, *PsychInfo*, identified 648 articles of health information seeking. The 129 articles included in the review were coded by type of sample, measures ($n = 12$) utilized to study health information seeking, and types of study methods ($n = 5$).
Results: A majority of studies used non-clinical samples and measured general health information seeking (i.e., whether the participant engaged in a search for health information) through cross-sectional study designs.
Conclusions: There are varying samples, measures, and designs used to identify those who do or do not seek health information. Future research should look into how health information seeking influences health management and should uncover the social and relational functions of health information seeking using more advanced (and less routinely applied) measures and methods of studying health information seeking.
Practice implications: More people are actively searching for health information and health providers should address this in their discussions with patients.

1. Introduction

Current trends in the study and practice of medical communication indicate that practitioners have moved away from a paternalistic model of patient–provider interaction [1]. Instead, contemporary models of patient–provider communication emphasize the incorporation of values into decision-making processes and the participation of informed patients in medical interactions [1–3]. Specific practices stressed within such frameworks include shared decision-making [4] and active involvement in health-related decisions [5]. Crucial to patients' participatory role in healthcare is the practice of health information seeking. Not only is health information seeking common, with the Pew Internet and American Life Project [6] estimating that 113 million Americans have searched the Internet for health information, but it is also appropriate in today's healthcare system. Information gathering is noted as a critical component of shared decision-making [2] and scholars encourage patients to share information with their healthcare practitioners [7]. Given the prevalence of health information seeking behaviors and the trend toward patient involvement in healthcare, a review of the methods and measures utilized to study health information seeking is both necessary and timely. Such a review aims to provide readers with (a) an overview of how health information seeking is currently studied, and (b) recommendations for advancing the study of health information seeking.

The current review adopts Niederdeppe et al.'s definition of health information seeking as "...active efforts to obtain specific information in response to a relevant event (p. 54) [8]." Thus, information seeking is viewed as a purposeful and goal-oriented activity, rather than the result of passive exposure to information in one's environment.

As a method for conceptualizing the current review, consider Fig. 1, which demonstrates the basic functioning of health information seeking. Developed by the authors based on a review of the literature, Fig. 1 suggests that predisposing characteristics of an individual may lead to engagement in health information seeking behaviors, which are in turn, predictive of associated outcomes. Similar to Johnson and colleagues' Comprehensive Model of Information Seeking [CMIS] [9], the current framework

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suggests that individual characteristics (e.g., race, education, sex) are associated with choices in the search for health information. Under the CMIS [9], antecedent characteristics (i.e., demographics, beliefs, salience, experience) are specifically proposed to influence channel selection (i.e., information carrier factors), which in turn, influence information seeking actions in the form of search scope and depth. In contrast, the current framework considers both the selection and the use of information sources to be mediating factors in the relationship between predisposing characteristics and relevant health outcomes (e.g., adherence). The following sections provide a summary of the three areas introduced in Fig. 1. The summary is by no means exhaustive and is intended to highlight the types of research questions being explored by scholars in each area of health information seeking. Such an overview identifies key associations between study variables and is necessary to provide readers with a context in which to examine the methods and measures employed in the study of health information seeking.

1.1. Predisposing characteristics of health information seekers

Much attention in the research literature is focused on identifying who actively seeks health information (and who does not). Research considering the characteristics of health information seekers converges on the finding that disparities exist in access to, and use of, health information. Particularly with regard to use of the Internet, females [10,11], those with higher levels of education [12–14], and greater income [15–17] are more likely to search for health information. In addition, health information seeking is often associated with being of a Caucasian racial background [18,19], a younger age [15,17,20], or of greater health literacy [21]. Such difference in access to information on the basis of socioeconomic factors is known as the digital divide [22]. Thus, studies considering the predisposing characteristics of health information seekers often consider which populations may be more likely to engage in a search for health information [23,24].

1.2. Characteristics of health information seeking behaviors

In considering the practice of health information seeking, scholars document nuances of the search process itself. Health information seeking is more than merely engagement in a search for information, but involves complexities such as characteristics of the information seeker, the environment, context, current events, and the search process. Studies of health information seeking behaviors consider factors such as channels utilized for an information search (e.g., physician, searching the Internet for health information, friends), content of information sought, credibility of information obtained, self-efficacy to engage in the search process, or characteristics of the search process (e.g., time spent searching for information, number of sources consulted).

Studies of health information seeking behaviors add greater specificity to the literature by considering how predisposing characteristics of individuals influence varied search practices. For example, scholars have considered how the content of information sought varies based on sex [25], education [26], or age [27]. Similarly, racial background has been explored with reference to trust in information channels [28], while health literacy has been found to influence channel selection [21].

Alternatively, studies of health information seeking behaviors also consider how search processes may fluctuate in response to environmental phenomena. For example, Carolsson [29] documents an increase in cancer patients' use of particular information channels over time. In relation to specific events, Cooper et al. [30] note that Internet search activity for cancer terms is positively correlated with news coverage of the topic, while Kennedy et al. [31] note that calls to a STD/AIDS hotline increase following a soap opera on the condition. Thus, methods and measures associated with health information seeking behaviors consider when and where health information is sought, as well as how information is evaluated.

1.3. Outcomes associated with health information seeking

The study of health information seeking is important as various elements of the search process may be associated with advantageous, or disadvantageous, health outcomes. Rather than viewing health information seeking behaviors as a final outcome, the current review proposes that appropriate methods and measures should be used to identify the effects of health information seeking behaviors on the outcomes associated with health management. Supporting such assertions, studies document that health information seeking is associated with discussion of search results with physicians [32–35], patient satisfaction [36], knowledge of treatment options [37], and treatment decisions for the self or others [35,38]. In contrast, health information seeking is also associated with self-diagnosis [39] and non-adherence [40]. Methods and measures considering outcomes must be shaped to determine how specific health information seeking practices influence behaviors, or alternatively, should consider the mediating role of health information seeking behaviors in the relationship between pre-disposing characteristics and outcomes.

1.4. Methods and measures in information seeking

There are at least three reasons to undertake the current review of measures and methods used in research on health information seeking. First, the process of reviewing the relevant literature will reveal which aspects of health information seeking have received comparatively more or less attention in the literature. In so doing, the review process draws attention to areas in need of additional research. Second, given the vast scope of the literature on health information seeking and the likely expansion of research as Internet use becomes even more prevalent (e.g., through cell phone access), a review provides a baseline description of measures available for use in future studies. Third, a summary of research methods can assist researchers in further developing and expanding the basic organizational model presented in Fig. 1. For example, while cross-sectional studies may be useful for drawing associations between predisposing factors and health information seeking behaviors, observational studies would be more useful for characterizing aspects of the search itself (e.g., time spent in search, websites accessed). Reviewing the methods used to study health information seeking to-date may identify important threats to validity (e.g., ecological validity) in this area of inquiry.

2. Methods

2.1. Inclusion/exclusion criteria

Articles included in the current review conceptualize health information seeking as an active and purposeful activity. Thus, studies whose focus is on general sources of learning about health [41] or passive exposure to health information [42] (e.g., attention paid to health information in the media) are excluded. In addition, the review excludes non-empirical papers on the topic of health information seeking, as well as studies employing qualitative methods. While qualitative studies are certainly valuable in describing the phenomenon of health information seeking, their methods and measures are less easily replicable than those with a quantitative focus. Finally, studies that fail to present adequate

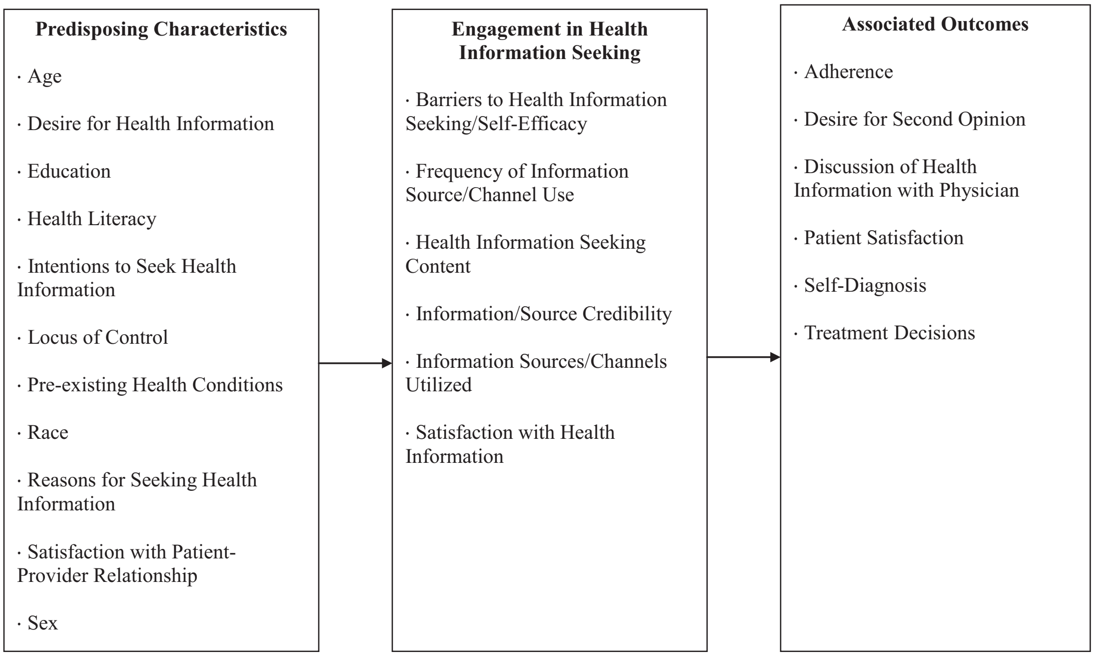

Fig. 1. General overview of information seeking in the context of health.

information on study measures (e.g., sample items, total number of items) are excluded.

2.2. Search procedures

A bibliometric search was conducted in the *PsychInfo* database using the terms "information seeking" and "health." *PsychInfo* was selected to represent this vast body of the literature as the authors view health information seeking as a social psychological, as opposed to medical, construct. No date restrictions were imposed on search procedures. The massive scope of the literature on the topic of health information seeking alone necessitates both the narrow definition of health information seeking adopted and the use of a single database. The current review can thus be considered a representative review of the research on health information seeking in the psychological literature.

As documented in Fig. 2, the initial search resulted in the identification of 648 records for review. After exclusion of

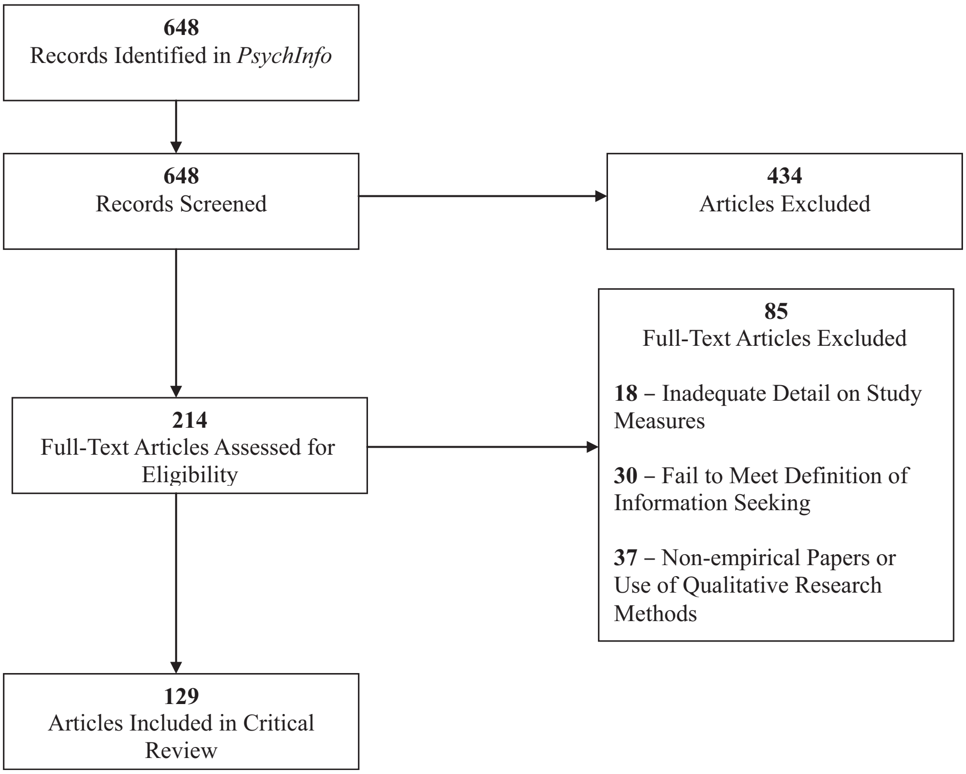

Fig. 2. Articles reviewed.

irrelevant records (N = 434) and full-text articles that failed to meet the study's inclusion criteria (N = 84), 129 articles remained for evaluation.

2.3. Article coding

Pertinent information on each study was recorded, including: (1) article author(s), (2) date of publication, (3) journal, (4) sample participants, (5) items included in study measures, (6) use of an intervention, (7) measure type, and (8) method employed. To develop the coding scheme for capturing the type of study samples, methods, and measures employed, one author inspected a subset of articles and developed a scheme based on his/her observations. Another author reviewed a sample of cases to ensure the scheme had integrity. Finally, the articles were divided between the two individuals for coding.

Sample participants were coded as belonging to one of five groups: (1) *clinical population*, including samples of individuals with chronic or current diseases/health conditions, former diseases/conditions, or a condition common to the study sample (e.g., pregnancy), (2) *general population*, including studies of adults of any age range or sex distribution, as well as samples recruited from primary care or family care facilities, (3) *college students*, (4) *users of an information seeking service*, such as a cancer information hotline or online health resource, and (5) *miscellaneous samples*, such as adolescents, caregivers, or samples composed of multiple groups that failed to fit into the above-outlined scheme (e.g., adolescents and parents).

Measures utilized to study information seeking were categorized into one of twelve measure types: (1) information sources/channels utilized, (2) barriers to health information seeking/self-efficacy, (3) frequency of source/channel use, (4) outcomes of health information seeking, (5) intentions to seek health information, (6) satisfaction with health information seeking, (7) health information or source/channel credibility, (8) health information seeking content, (9) general health information seeking, (10) desire for health information, (11) reasons for seeking health information, and (12) miscellaneous.

Study methods were identified as belonging to one of five categories: (1) cross-sectional surveys/interviews, (2) retrospective reviews/cohort studies, (3) naturalistic interventions/observations, (4) experiments/quasi-experiments, and (5) longitudinal studies.

3. Results

3.1. Description of included studies

The current review characterizes the methods and measures employed by a sample of 129 studies of health information seeking. Studies were published between 1978 and 2010, with *PsychInfo* returning no records prior to 1978. As indicated in Fig. 3, the number of publications shows an increasing linear trend over time, with 22.6% (N = 65) of studies occurring in the last five years (i.e., 2006–2010).

Only 15 studies (11.6%) employed an intervention. Interventions ranged from those designed to promote information seeking in naturalistic settings (e.g., patient–provider interactions) [43] to manipulations employed in experimental settings for the purpose of determining factors predictive of information seeking (e.g., situational uncertainty) [44].

Studies most commonly surveyed non-clinical samples (N = 63; 48.8%). Samples of individuals with clinical, chronic, or common conditions (N = 34; 26.4%) and users of information seeking services (e.g., Cancer Information Service hotline; N = 12; 9.3%) were also popular. Samples of college students (N = 9; 7.0%) and miscellaneous samples (N = 12; 9.3%) were less frequent.

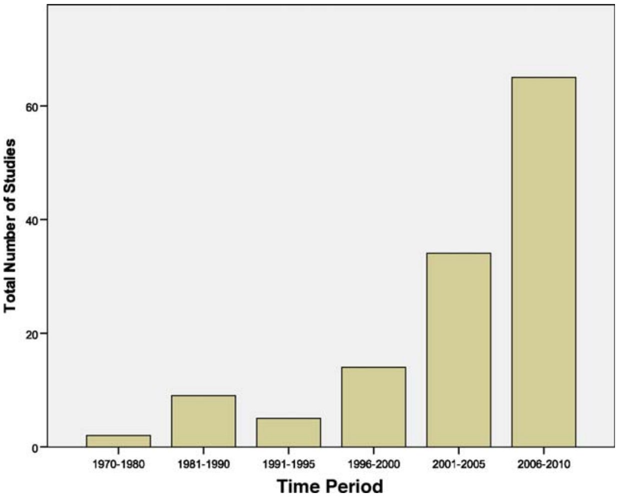

Fig. 3. Studies on health information seeking (1978–2010).

3.2. Measures of health information seeking

Table 1 documents the twelve different types of measures utilized to study health information seeking. Included measures may be associated with any response format (e.g., Likert-type self-report scale, participant observation, dichotomous response option). The table provides a detailed description of each type of measure, focusing on how researchers are measuring important constructs in the area of health information seeking. In addition, representative examples of each measure type are provided. The order of listed measures is according to the frequency with which each measure occurs in the research literature. Most studies employed more than one type of measure in studying health information seeking. In the instance that a study employed more than one measure of the same type (e.g., two measures of *general health information seeking* within a single study), that study is counted only once with respect to the relevant category.

Most frequently, studies employed *general health information seeking* (N = 53; 41.2%) measures that queried respondents to determine if they had engaged in a search for information in the past. Measures of general health information seeking were predominantly self-report (i.e., the participant did or did not engage in an information search). A minority of studies in this area (N = 7; 13.2%) employed behavioral measures of general health information seeking. For example, studies recorded the number of instances of information seeking during patient–provider interactions [45] or the number of callers to a health information hotline [46]. Measures of general health information seeking were most often employed as outcome variables, with predisposing factors (e.g., race, age) used as associated predictor variables.

Measures of *health information seeking content* (N = 30; 23.3%) were also frequently used in studies and focus on the specific topics (e.g., health/fitness, symptoms, treatment) sought during an information search. Although predominantly measured through self-report scales (e.g., Likert-type responses, checklists of topics, dichotomous measures), several studies used an open-ended question and/or content coding scheme to more extensively characterize the information sought by participants.

Measures of *desire for health information* (N = 23; 17.8%) determined participants' general tendency toward engaging in health information seeking behavior. Frequently employed scales of this form include Miller, Leinbach, and Brody's [47] Miller

Table 1
Measures of Health Information Seeking.

Measure type	Definition	Response scale	Example (s)
General health information seeking ($N=53$; 41.2%)	Measures whether respondents engage in a search for information using a specific source or in search of a specific topic. Also includes behavioral measures (e.g., question asking, total calls to hotline) that describe the search process.	Dichotomous (Yes/No)	"Have you ever used the Internet to look for advice or information about your health or health care?" (p. 1296) [14]
		Likert (1 – definitely disagree/6 – definitely agree)	"I rely on a number of sources for health information besides my doctor" (p. 7) [59]
		Dichotomous (Yes/No)	"Did you ever seek cancer information from any source?" (p. 133) [60]
Health information seeking content ($N=30$; 23.3%)	Measures of the specific content sought by respondents in their search for information. May also include measures of the frequency with which individuals search for multiple forms of content.	Open-ended response (Hours/ Minutes)	"About how much time do you spend during a typical week obtaining health information related to...treatments; medications; parenting; diet; exercise; illness or disease; medical or dental insurance benefits; medical or healthcare equipment?" (p. 1376) [40]
Desire for health information ($N=23$; 17.8%)	Measures preference to have information or pre-disposition toward information seeking	Dichotomous (Yes/No)	"I usually do not ask the doctor or nurse many questions about what they're doing during a medical exam; I'd rather have doctors and nurses make the decisions about what's best than for them to give me a whole lot of choices; Instead of waiting for them to tell me, I usually ask the doctor or nurse immediately after an exam about my health; I usually ask the doctors or nurse lots of questions about the procedures during a medical exam; It is better to trust the doctor or nurse in charge of a medical procedure than to question what they are doing; I usually wait for the doctor or nurse to tell me the results of a medical exam rather than asking them immediately; I'd rather be given many choices about what's best for my health than to have the doctor make the decisions for me" (p. 980) [49]
Frequency of source/channel use ($N=22$; 17.1%)	Measures how frequently respondents use a given source to seek health information. Also includes behavioral measures of time spent with a particular source/channel.	Likert (1 – not at all/4 – two or more times per week)	"How often have you...read health information on the Internet in the past 30 days? Read about health issues in newspapers or general magazines? Watched special health segments of television newscasts? Watched television programs (other than the news) which address health issues or focus on doctors or hospitals? Talked with family or friends about health issues?"(p. 373) [61]
		Likert (1 – more than once a week/6 – never)	"During the past year, how often did you look on the Internet for information or advice about health or healthcare?" (p. 1823) [24]
Information sources/channels utilized ($N=21$; 16.3%)	Measures of use of various mass mediated or interpersonal sources of health information. Such measures often tally total use of all sources examined.	Dichotomous (Yes/No)	"In the last 3 months, have you, or a family member used any of the following resources...a self-care book, a telephone advice service, a health information computer program?" (p. 113) [62]
Satisfaction with health information seeking ($N=21$; 16.3%)	Measures satisfaction with either information obtained from a search or with experiences using an information source. Note that measures may include items examining source characteristics (e.g., accuracy, accessibility) or respondents' frustrations with a search, but are intended to measure overall satisfaction.	Likert (1 – very helpful/4 – not at all helpful)	"How helpful was the Cancer Information Service in helping you understand or make sense of the information that was found on the Internet?"(p. 40) [18]
Outcomes of health information seeking ($N=17$; 13.2%)	Measures actions taken by respondents as a result of engaging in information seeking. May include outcomes such as adherence, patient–physician communication, online purchases, and seeking a second opinion.	Dichotomous (Yes/No)	"Has the respondent...talked to his or her physician about information found on the Internet? Changed his or her treatment because of information learned from the Internet? Stopped taking medications because of information learned from the Internet?" (p. 1005) [16]
		Checklist	

Table 1 (*Continued*)

Measure type	Definition	Response scale	Example (s)
			"Have you ever done these behaviors because of something seen on the Internet?" "Taken an over-the-counter medicine or supplements, for example, vitamins, minerals, or nutritional supplements? Started an alternative or complementary treatment, for example, massage or acupuncture? Made an appointment with a doctor for a check-up? Requested preventive care, like a screening or blood test? Changed your doctor, hospital, or other health care? Talked to a healthcare professional about concerns or worries you have about your own health?" (p. 336) [15]
Information or source credibility (*N* = 11; 8.5%)	Measures perceptions of source quality or credibility. May also include dimensions such as believability, comprehensiveness, quality, or trust in information obtained during a search experience.	Likert (1 – strongly disagree/4 – strongly agree)	"I trust the health information I get from my doctor; I trust health information I read on the Internet; I trust the health information I read about in the newspaper; I am more likely to trust information I get from the Internet than I am the information I get from my friends; I am more likely to trust information I get from the Internet than I am the information I get from my doctor" (p. 1007) [16]
		Likert (1 – strongly disagree/7 – strongly agree)	"Health information on the Web is...high quality; believable; accurate; informative; correct; untrustworthy; biased; low quality" (p. 9) [63]
Barriers to health information seeking/self-efficacy (*N* = 10; 7.8%)	Measures perceived barriers to seeking health information. Also includes measures of self-efficacy, or respondents' perceived capabilities to overcome barriers to find, understand, and/or utilize health information.	Likert (1 – disagree very much/4 – agree very much)	"I wanted health information that I did not know how to get; I needed health information that I could not afford the time or effort to get; I needed health information that I could not afford to pay for" (p. 407) [64]
		Likert (1 – strongly disagree/5 – Strongly agree)	"I am able to find good health information when I need it; The amount of health information available today makes it easier for me to take care of my health" (p. 76) [65]
Intentions to seek health information (*N* = 8; 6.2%)	Measures willingness to seek health information, either in general, or from a particular source	Likert (1 – definitely will not use [0%]/11 – definitely will use [100%])	"Estimate the likelihood of using the Web to search for health information in the future" (p. 9) [63]
		Likert (−2 – very unlikely/+2 – very likely)	"How likely is it that you will talk with a doctor to get information about prostate cancer in the next 12 months?" (p. 126) [66]
Miscellaneous (*N* = 8; 6.2%)	Additional measures not captured by above coding scheme. Includes measures of the timing of information searches, the recipient of information, and respondent's perceptions of being informed or the perceived availability of information	Likert (1 – no information/5 – lots of information)	"How much information did you have before the diagnosis regarding...causes and prevention? Symptoms? Treatment options?" (p. 146) [67]
		Multiple choice	"Do you usually look for health information..." "Before visiting a doctor or clinic for an examination/consultation; After visiting a doctor or clinic; Instead of visiting a doctor or clinic; Unrelated to a visit to a doctor or clinic" (p. 803) [35]
Reasons for seeking information (*N* = 5; 3.9%)	Measures why respondents chose to engage in information seeking	Open-ended question	"Why did you seek further information on your daughter's condition?" (p. 249) [68]

Note: N signifies the number of articles that included at least one measure of the identified form. Articles may have included multiple measures of the same form and are counted only once.

Behavioral Style Scale [MBSS], Ende, Kazis, Ash, and Moskowitz's [48] Autonomy Preference Index [API], and Krantz, Baum, and Wideman's [49] Health Opinion Survey [KHOS]. This subset of measures focused on the importance of, or tendency to acquire, health information in various settings (e.g., patient–provider interaction).

Two types of measures, *health information sources/channels utilized* (N = 21; 16.3%) and *frequency of source/channel use* (N = 22; 17.1%) examine the specific information channels referenced by information seekers and how often each information source/channel is consulted in an information search. Of measures of health information source/channel utilized, approximately 54.5% (N = 12) employed checklists of available information sources (e.g., Internet, primary care physician, television) to determine the unique sources and total number of sources consulted by participants. In contrast, measures of frequency of source/channel use were almost always utilized with a Likert-type response scale that documented the varying amounts of time allotted to the use of a specific source/channel. Measures of frequency of source/channel use also included observational measures of the amount of time spent utilizing a particular information channel [50].

Measures of *satisfaction with health information seeking* (N = 21; 16.3%) and *information/source credibility* (N = 11; 8.5%) focused on participants' evaluations of information sources/channels (e.g., Internet) or information identified during the search process. Measures of satisfaction were primarily focused on evaluations of information obtained or a source/channel as useful, satisfying, or helpful, while measures of credibility tended to focus on aspects of quality, comprehensiveness, or trust. Admittedly, some measures intended to document participant satisfaction [51] likely also include items that are associated with aspects of source credibility (e.g., information quality).

Measures of *outcomes of health information seeking* (N = 17; 13.2%) are concerned with the actions that information seekers take as a result of their information search. Although some studies correlated information seeking behaviors with general measures of behavior (e.g., intention to carry out a health behavior), measures of outcomes of health information seeking focused specifically on how health information was applied to a behavioral outcome (e.g., speaking with a doctor about information located, changing a treatment decision on the basis of information sought).

Aside from miscellaneous measures (N = 8; 6.2%), the least frequently employed measures included barriers to seeking health information/self-efficacy (N = 10; 7.8%), intentions to seek health information (N = 8; 6.2%), and reasons for seeking health information (N = 5; 3.9%). Measures of barriers/self-efficacy examine respondents' lack of confidence in their abilities to locate information, while measures of reasons for engaging in information seeking document why individuals may choose to actively search for health information.

3.3. Methods of studying health information seeking

Studies primarily rely on *cross-sectional designs* (N = 94; 72.9%), employing a survey or structured interview to document health information seeking experiences. A cross-sectional design characterizes the information seeking behaviors of a group of participants at a single point in time, providing a "snapshot" of how information is typically sought. It is worth noting that 16 of the studies employing a cross-sectional method utilized data from the Health Information National Trends [HINTS] 2003 or 2005 datasets. The HINTS datasets rely on a national sample to describe the public's cancer information seeking behavior and clearly represent a fair portion of the work on health information seeking behavior.

Thirteen studies (10.1%) utilized a *retrospective review* or *cohort design* to study health information seeking. Retrospective reviews rely on previously collected datasets, while cohort studies compare similar information on samples collected at alternate points in time. For example, Jefford et al. [46] compared the number of callers and topics sought by callers to the Cancer Helpline at two different points in time. Alternatively, Cooper et al. [30] retrospectively examined the use of cancer search terms on a major Internet search engine to draw associations between searches and cancer incidence, mortality rates, and news coverage. Although such studies fail to track the information seeking behaviors of a single group of individuals, they provide some evidence as to how health information seeking behaviors evolve over time.

Twelve studies (9.3%) relied on *naturalistic interventions/observations* to study health information seeking behavior. Such studies take place in a natural setting and often involve time- and labor-intensive methods to characterize the information seeking behaviors of a group. For example, Cegala et al. [52] trained a group of patients to more effectively communicate with their physicians. By analyzing transcripts of patient–provider interactions, Cegala et al. [52] noted that trained patients asked more questions (i.e., sought more information) in a medical interaction than non-trained patients. As an alternative example, Lee et al. [53] provided a group of breast cancer patients with at-home access to an online information-seeking system known as CHESS. Women's information-seeking behaviors were characterized by examining their total log-ins to the CHESS system, time spent searching the system, and websites visited. Although naturalistic studies require a multitude of resources (e.g., time, money, labor), they benefit by offering ecological validity in that health information seeking behaviors are captured in the environment in which they ordinarily occur.

Far fewer studies relied on *experiments/quasi-experiments* (N = 5; 3.9%) or *longitudinal designs* (N = 4; 3.1%) to examine health information-seeking behavior. Experiments/quasi-experiments occur in a non-naturalistic setting and generally manipulate a factor to determine its effect on information seeking behavior. For example, Rosen and Knauper [44] manipulated situational uncertainty to determine its influence on college students' information seeking behavior (i.e., Did the student request information on the fictitious disease presented?). Such studies benefit by controlling for extraneous factors and may be useful for determining causation, but may be less representative of naturally occurring information seeking behaviors. Although rarely employed, longitudinal designs track the health information-seeking behaviors of a single group of individuals over time. For example, Hawkins et al. [54] tracked the perceived adequacy of information available to cancer patients before and after their diagnosis. Such studies can account for the influence of a disease's progression or the general passing of time on information seeking behaviors.

4. Discussion and conclusion

4.1. Discussion

A review of the literature on health information seeking indicates a swell of research articles on the topic in the past 5–10 years (see Fig. 3). The current examination considered only a single bibliometric database and used a more concise definition of health information seeking that includes only studies of active, purposeful, and goal directed searches for information. Despite this limited definition and exclusion criteria, over 200 articles were identified, with more than 60 articles published on the topic since 2005. Thus, the current review is a representative snapshot of the literature in this area of scholarship. Within the included sample of studies, the current review focuses on the measures and methods used to study health information seeking. The reader is encouraged to consult the first author for a spreadsheet that details the 129 studies included in this review and the relevant measures and methods pertaining to each study.

In considering the implications of the current review, readers' attentions are again drawn to Fig. 1. The present review identified a series of methods and measures that can be useful in exploring the relationship between information seekers' pre-disposing characteristics, health information seeking behaviors, and associated outcomes. By examining the frequency with which various methods and measures are employed, results suggest there are at least four reasons why the study of health information seeking is currently limited: (1) Most studies of health information seeking use a cross-sectional design, examining behavior at a single point in time; (2) The majority of studies utilize measures of engagement in health information seeking behavior (i.e., general health information seeking, information seeking content), rather than studying relevant outcomes associated with the search process; (3) Only approximately 26% of studies include clinical or patient populations; and (4) Studies rarely employ naturalistic interventions/observations or longitudinal methods in the study of health information seeking.

To summarize, many studies of health information seeking may lack ecological validity. The "typical" study of health information seeking behavior utilizes a cross-sectional design to characterize the behaviors (e.g., general health information seeking, information seeking content) of the general population, using a self-report format. This combination of methods and measures could certainly characterize health information seeking behaviors for single-time, or preventive, behaviors (e.g., researching a vaccine). However, such methods and measures may leave unanswered questions about how specific patient populations seek health information, how health information might be sought with respect to ongoing health conditions (e.g., diet, exercise, chronic illness), and how health information is sought in a naturalistic setting (e.g., patient–provider interaction, search of the Internet for online health information). Furthermore, the rarity with which some measures of health information seeking (e.g., barriers to health information seeking/self-efficacy, reasons for seeking health information, intentions to seek health information) are employed suggests there is room for greater depth in understanding the health information seeking process.

4.2. Conclusion

Two recommendations are advanced for future study designs that seek to uncover novel findings in the area of health information seeking. First, it is recommended that studies better reveal the importance and role of health information seeking in the management of health. Toward this end, studies would benefit by examining health information seeking over an extended period of time, using longitudinal study designs. Although longitudinal designs are certainly time-consuming, costly, and subject to high attrition rates, they may tell a more complete story of the health information seeking process. Of particular importance is consideration of the role of health information seeking among patients with chronic illness (e.g., diabetes, arthritis). Such patients may engage in numerous searches for health information or act upon such information differently (e.g., adherence/non-adherence) based on the trajectory of their illness. In considering the effects of health information seeking behaviors, scholars might consider tracking the time and content of searches for health information on the Internet and comparing findings to patients' diagnoses or communications with providers [55,56]. Another promising method to more adequately characterize health information seeking is to require individuals to record diaries [57] of their health information seeking activities and relevant reactions.

A second recommendation is to study the social or relational function of health information seeking. Katz and Lazarsfeld's two-step flow model [58] is a useful starting point in this line of inquiry. The two-step flow model argues the media's role in personal influence is largely mediated by interpersonal communication. That is, a select group of individuals ("opinion leaders") who attend to media on a certain topic are more apt to discuss what they have learned with salient others. Such "opinion leaders" would be a useful sample for initiating the study of the social transmission of health information. Clearly, health information seeking does not occur in a social vacuum and interpersonal communication plays an important role in information sought and interpretations of information received. Current study measures and methods are limited and do not consider the social milieu where individuals actively search for health information.

4.3. Practice implications

Results of the current review are relevant to patients, healthcare practitioners, and public health communicators. First, if the rapid growth of studies on health information seeking is any indication as to the prominence of such behaviors, practitioners would do well to recognize health information seeking as an integral part of the healthcare management experience. Practitioners are encouraged to determine if their patients have engaged in a search for information, the channels utilized, evaluation of information obtained, and perhaps most critically, how patients intend to act on the results of their information search. As outcomes associated with health information seeking can be positive (e.g., adherence) or negative (e.g., self-diagnosis), practitioners should realize their patients may be receiving health information outside of the healthcare visit. Additional research can help draw associations between which patients may be most likely to act inappropriately upon obtained information and assist practitioners in identifying those healthcare visits in which discussions of health information seeking may be most warranted.

Second, public health communicators may do well to pre-emptively educate the general public about how to obtain and evaluate health information. Certainly, credible sources of health information exist and practitioners may wish to direct patients to such information sources/channels. Public health communicators can provide healthcare practitioners, clinics, or college health centers with lists of credible information sources for interested parties. In addition, public health communicators might develop interventions to train patients in health information seeking skills, particularly among low health literacy populations. Additional research using the more novel methods and measures presented herein can identify the most influential aspects of the health information seeking process and lend more specific recommendations to patient care.

Conflict of interest

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