Research Trends in Mothers’ Health Information Seeking Behaviors: A Review of the Literature

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ABSTRACT
This study aims to identify and examine research trends relating to mothers’ health information seeking behaviors from 1994 to August 2015. Eighty-seven articles from multiple disciplines were selected systematically and reviewed in diverse aspects: characteristics of the articles, use of theories, information sources, and seeking strategies. This research topic has been given numerous attention since 1994. In particular, the number of publications skyrocketed since 2013. Twenty-two different theories and models have been utilized in examining mothers’ health information seeking behaviors. Furthermore, four seeking strategies of mothers were recognized as asking questions, utilizing multiple sources, borrowing medical literature from libraries, and sharing experiences with friends. Implications for future research in this topic are discussed.

Keywords
Mothers, Information seeking behaviors, Research Trends, Health information.

INTRODUCTION
In the last couple of decades, health-related information has been widely disseminated via numerous online and offline channels. In accordance with the trends, health information seeking has grown considerably in popularity. According to a report from the Pew Research Center (Fox & Duggan, 2013), approximately 72% of American adult Internet users have used the web to seek out health information within the past year. This research illustrates that the expansion of the Internet has enabled the public to access health information much more easily.

Health information seeking has been considered an important facilitator for promoting, maintaining, and returning people’s health (Johnson & Case, 2012). In particular, researchers have noted mothers’ roles as active health information seekers because mothers have been traditionally more involved in managing health for their family members (Lee, 2015; Skranes, Løhaugen, Botngård, & Skranes, 2014; Yoo, 2004). Some researchers have paid attention to the transition to parenthood, which represents a time when women start to seek information actively in the context of health (Bernhardt & Felter, 2004; Plantin & Daneback, 2009). Moreover, Hearn and her colleagues (2013) highlighted the research trends because the first two trimesters of pregnancy and the first 3 months post-birth are the times when change is greatest for women and new information in the context of health is most needed.

Although there have been several studies on mothers’ health information seeking behaviors in multiple disciplines, no researchers have specifically synthesized findings from the diverse disciplines. Therefore, the goals of this study are twofold: (a) to identify research trends in mothers’ health information seeking behaviors from 1994 to August 2015, and (b) to outline and synthesize the findings from various fields under the theme of mothers’ health information seeking behaviors.

RESEARCH METHODS

Search strategy
In September and October 2015, the researcher conducted a systematic search using eight databases: Library and Information Science Abstracts (LISA), Library, Information Science and Technology Abstracts (LISTA), Library & Information Science Source (LISS), MEDLINE (PubMed), Cumulative Index to Nursing and Allied Health Literature (CINAHL), PsycInfo, Engineering Village (EV), and ProQuest Dissertation & Global. The purpose of including such a wide range of tools is to retrieve and synthesize information from diverse disciplines such as library and information science, health/medicine, nursing, health communication, psychology, and engineering. The search strategies for the databases are specifically described in Table 1. The researcher decided to review the articles published from 1994 since the public started to utilize the Internet browser since then (Ryan, 2010). In order to include the most relevant literature, logical searching strategies using both keywords and subject terms were used.

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Table 1. Search strategies and results for databases

<table>
<thead>
<tr>
<th>Database</th>
<th>Limits</th>
<th>Query</th>
<th>Total citations retrieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Library and Information Science Abstracts (LISA)</td>
<td>Peer-reviewed; Publication date from 19940101 to 20150831, English</td>
<td>(mother* OR parent* OR wom<em>n) AND (su(health) OR (med</em> OR nurse*)) AND &quot;information seeking&quot;</td>
<td>40</td>
</tr>
<tr>
<td>2 Library and Information Science and Technology Abstracts (LISTA)</td>
<td>Peer-reviewed; Publication date from 19940101 to 20150831, English</td>
<td>&quot;information seeking&quot; AND ( mother* OR parent* OR wom#n ) AND ( health OR med* OR nurs* )</td>
<td>72</td>
</tr>
<tr>
<td>3 Library &amp; Information Science Source (LISS)</td>
<td>Peer-reviewed; Publication date from 19940101 to 20150831, English</td>
<td>&quot;information seeking&quot; AND ( mother* OR parent* OR wom#n ) AND (SU health OR ( med* OR nurs* ))</td>
<td>63</td>
</tr>
<tr>
<td>4 MEDLINE (PubMed)</td>
<td>Publication date from 19940101 to 20150831, English</td>
<td>{&quot;information seeking&quot; OR &quot;information seeking behavior&quot;[MeSH Major Topic]} AND {&quot;parents&quot;[MeSH Major Topic] OR &quot;woman&quot; OR &quot;women&quot;}</td>
<td>361</td>
</tr>
<tr>
<td>5 CINAHL</td>
<td>Peer-reviewed; Publication date from 19940101 to 20150831, English</td>
<td>MM &quot;Information Seeking Behavior&quot; AND ( mother* OR parent* OR wom* )</td>
<td>143</td>
</tr>
<tr>
<td>6 PsycInfo</td>
<td>Peer-reviewed; Publication date from 19940101 to 20150831, English</td>
<td>&quot;information seeking&quot; AND ( mother* OR parent* OR wom#n ) AND (SU health OR ( med* OR nurs* ))</td>
<td>262</td>
</tr>
<tr>
<td>7 Engineering Village</td>
<td>Peer-reviewed; Publication date from 19940101 to 20150831, English</td>
<td>&quot;information seeking&quot; AND ( mother* OR parent* OR wom* ) AND (health* OR med* OR nurs* )</td>
<td>24</td>
</tr>
<tr>
<td>8 ProQuest Dissertation &amp; Global</td>
<td>Publication date from 19940101 to 20150831, English</td>
<td>&quot;information seeking&quot; AND (mother* OR parent* OR wom<em>n) AND (med</em> OR nurs*) AND su.exact(health)</td>
<td>117</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>1,082</td>
</tr>
</tbody>
</table>

Table 1. Search strategies and results for databases

Selection criteria and process
The article selection process is illustrated and visualized in Figure 1. Research articles, theses, and dissertations published between January 1994 and August 2015, written in the English language, were collected from eight online databases in multiple disciplines. Book reviews, opinions, editorials, and letters were excluded. However, literature reviews were included. One thousand and eighty-two articles’ titles and abstracts were screened to determine studies that would receive a full-text document review (see Figure 1). The selection criteria for inclusion in the full-text document review were abstracts that involved information relating to identifying health information seeking behaviors of mothers. It was noted if the studies focused on mothers with at least one child. Therefore, studies only focusing on first-time pregnant women were excluded. When the characteristics of the participants were not clear, the articles were excluded. For example, research implemented among women that did not specify whether they had children was excluded. After removing the duplicates, 237 articles were retained for the full-text review. After the title and abstract screening process, the same inclusion and exclusion criteria were applied to the full-text screening to determine eligibility. The researcher conducted a detailed review of the set. Seventy-two items were removed because they were duplicates and 78 were additionally excluded because of their discordance with the focus of the topic. For example, there were a number of studies which did not focus on mothers’ information seeking behaviors (e.g. Clarke, Sheppard, & Eiser, 2008; Kowal, 2015). A few studies did not concentrate on health information (McConkey, 2003), while some other research did not fit with the definition of “mothers” for this study (e.g. Johnson, 2015; Renahy, Parizot, & Chauvin, 2010). As a result, 87 journal articles and doctoral dissertations were included for analysis.
FINDINGS

Research trends in mothers’ health information seeking behaviors

The sample included 82 articles and 5 doctoral dissertations published from January 1994 to August 2015. As shown in Figure 2 below, the number of publications between 1994 and 2010 was somewhat stable, ranging from one to five each year. The number of studies on the health information seeking behaviors of mothers gradually increased from 2011. In particular, the peak appeared in 2013, with 22 (25.28\%) articles published in that year. This topic is still receiving much attention from multiple disciplines, since twelve articles have been published in the first 8 months of the year 2015.

Studies on health information seeking behaviors of mothers were published in a wide range of journals. Except for the 5 doctoral dissertations, the 82 articles were published in 62 unique journals. The journals that published the highest number of articles were the Journal of Health Communication (4 articles), Journal of Medical Internet Research (4 articles), Maternal and Child Health Journal (4 articles), and Midwifery (4 articles). Interestingly, a few journals in the field of library and information science also constantly published articles on mothers’ health information seeking behaviors: Health Information and Libraries Journal (2 articles), Information Research (2 articles), and Journal of the Association for Information Science and Technology (2 articles).

When it comes to study locations, studies of mothers’ health information seeking behaviors were conducted in 23 different countries. About half (n = 40, 45.97\%) studied mothers/participants in the United States, while researchers in Canada (n = 7, 8.04\%), Australia (n = 7, 8.04\%), the United Kingdom (n = 4, 4.59\%), Netherlands (n = 3, 3.44\%), and Ireland (n = 3, 3.44\%) were also active in studying this topic. Among the 87 articles, 2 articles (2.29\%) were multinational studies which were conducted in 24 countries (Lagan, Sinclair, & Kernohan, 2010) and 19 countries (Hämeen-Anttila et al., 2014), respectively.

A variety of research methodologies were utilized to investigate mothers’ health information seeking behaviors. Interestingly, quantitative and qualitative research methods were used almost equally. Thirty-nine articles (44.82\%) used quantitative research methods, 38 articles (43.67\%) used qualitative research methods, and only 10 articles (11.49\%) used mixed research methods. In this study, the mixed-methods approach is considered as a research orientation that “combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, and inference techniques) for the broad purposes of breadth and depth of understanding or corroboration” (Johnson, Onwuebuzie, & Turner, 2007, p. 123).

Use of theories and models

Among the 87 articles, 62 studies (71.26\%) did not utilize theoretical frameworks in their research. Only 25 studies (28.73\%) used theories or models, and consequently, 22 theories and models were used in understanding mothers’ health information seeking behaviors. Among those, the top five most frequently cited theories and models that were used are summarized in Table 2. Five studies used more than one theory or theoretical model, so their theories/models were counted individually.

Table 2. Use of the theories and models in mothers’ health information seeking behaviors

<table>
<thead>
<tr>
<th>Name of the Theory/Model</th>
<th>Frequencies</th>
<th>Citing Papers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Theory of Planned Behavior</td>
<td>4</td>
<td>• Austvoll-Dahlgren, Falk, &amp; Helseth, 2012; • Harmsen et al., 2013; • Yoo, 2004; • Yoo &amp; Robbins, 2008.</td>
</tr>
<tr>
<td>2 Uses and Gratification Theory</td>
<td>4</td>
<td>• Holtz, Smock, &amp; Reyes-Gastelum, 2015; • Willcox et al., 2015; • Yoo, 2004; • Yoo &amp; Robbins, 2008.</td>
</tr>
</tbody>
</table>
In this paper, the literature review of 87 studies was systematically conducted to identify how mothers seek health information both online and offline. Since mothers have been traditionally more involved than other family members in managing family health, understanding mothers’ health information seeking behaviors is significant. Results indicated that this research topic has been given numerous attention since 1994. In particular, the number of publications on this topic has constantly increased and skyrocketed since 2013. The findings demonstrate that mothers are ceaselessly noted as active health information seekers, health managers, and primary caregivers for their family members (Lee, 2015; Skranes et al., 2014; Yoo, 2004).

When titles of the published journals were investigated, 62 unique journals were identified. Several journals from healthcare and communication studies have been the most active and contributive to this research topic. It signifies that there is a possibility for LIS researchers to consider this topic more closely and reach out more to other disciplines in order to share their knowledge with scholars in other disciplines as well as to learn from other diverse perspectives. With regard to study locations, the research on mothers’ health information-seeking behaviors was conducted in 23 different countries. It is also notable that only two articles (2.29%) were multinational studies. More multinational studies are needed to compare and contrast mothers’ health information seeking behaviors in different regions.

In terms of used theories and theoretical frameworks, twenty-two theories and models were utilized in understanding mothers’ health information seeking behaviors. Of those, the top five most frequently cited theories that were used are as follows: Theory of Planned Behavior (n = 4), Uses and Gratification Theory (n = 4), Wilson (1996)’s Information Seeking Model (n = 3), Diffusion of Innovations Theory (n=2), and Kuhlthau (1993)’s Information Seeking Model (n = 2). It indicates that diverse theories from public health, information sciences, and communication studies have been used and need to be expanded in the future research.

When mothers’ information sources were examined, 26 research (29.88%) exclusively focused on mothers’ information seeking behaviors on the web. However, only two recent articles identified social media as the mothers’ health information sources (Balkhi, Olsen, Lazaroe, Silverstein, & Geffken, 2015; Holtz et al., 2015). Meanwhile, among the 87 articles in this sample, researchers in 46 studies (52.87%) noted both the Internet and offline sources such as health care providers (e.g. Hämeen-Anttila et al., 2014), midwives (e.g. McKenzie, 2004), family/spouse (e.g. Criss et al., 2015), friends (e.g. Harmsen et al., 2013), libraries (Baker et al., 2007; Starke & Möller, 2002), books (Lwoga & Mosha, 2013; Wilcox et al., 2015), newspapers (Liec hty et al., 2015), and magazines (Bakar, 2011). There were also 12 studies (13.79%) that emphasized only offline resources as mothers’ health information sources and 3 studies (3.44%) did not specifically mention their participants’ information sources.

Mothers’ health information seeking strategies
Among the 87 articles, only 15 studies (17.24%) clarified mothers’ health information seeking strategies. Based on the 15 studies’ findings, four seeking strategies were identified. First, mothers actively asked questions (n = 7, e.g. Dillard, Shen, Robinson, & Farrell, 2010; Oprescu et al., 2013.). Second, mothers utilized multiple sources to “cross-check” or “weed through” conflicting information (n = 6, e.g. Hämeen-Anttila et al., 2014; Kearney et al., 2013). Third, mothers borrowed medical literature from libraries (n = 1, Starke & Möller, 2002), and fourth, mothers shared experiences with friends who also had children (n = 1, Nordfeldt, Ångarne-Lindberg, Nordwall, & Krevers, 2013).

DISCUSSION
In this paper, the literature review of 87 studies was systematically conducted to identify how mothers seek
With regard to the limitations of the study, this paper might have missed a few research on mothers’ health information seeking behaviors which were conducted before the year of 1994. Additionally, despite my efforts to include diverse studies from multiple disciplines, articles which were not retrieved via those eight online databases may have been excluded.

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REFERENCES


