Implications for Nurses and Researchers of Internet Use by Childbearing Women

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Abstract:

The purpose of this article is to share the growing body of literature on Internet use by childbearing women and to present findings of our pilot study done to learn more about this population's information-seeking behaviors. In our sample of 42 women, 97 percent used the Internet to seek health information. They searched for the purposes of decision making, anticipatory guidance, connecting and for general information. Nurses and other health care providers should anticipate that women are using the Internet for health information and should be proactive in referring them to reputable websites and helping them identify trustworthy websites as part of routine prenatal care and childbirth education. Because so many women use the Internet, this is also a feasible venue for nursing research recruitment and potential intervention delivery.

Keywords: childbearing | health education | health information | Internet | pilot study | pregnancy

Article:

Seeking information and advice during pregnancy and early childrearing is no longer limited to talking to one's own mother, picking up a copy of *What to Expect When You're Expecting* (Murkoff & Mazel, 2008) and signing up for prenatal classes. Twenty-first century childbearing women turn to the Internet for information of all types, but little is known about exactly where they go and what information they are seeking.

Our purpose is to share the research on Internet use by pregnant women and present the findings of our pilot study, which aimed to learn more about this population's information-seeking behaviors to aid nurses' assessments of their learning needs. What we present here will inform nurses about the primacy of the Internet as an information source and help them assess patients' use of the Internet as part of health education. Additionally, the Internet holds great potential as a source of data and recruitment sites for nurse researchers.

Seeking Knowledge and Role Models of Pregnancy

Recent studies indicate that many women use the Internet for knowledge—and role model—seeking. Lagan, Sinclair, and Kernohan (2006) reviewed the literature and found evidence of health information gathering and discussion board participation by pregnant women in the United States, Canada, Australia, Finland and the United Kingdom, but didn't find data on the extent of Internet use. Figures ranging from 84 percent to 90 percent (Lagan, Sinclair, & Kernohan, 2010; Larsson, 2009) were reported of pregnant women using the Internet in 24 different countries (primarily in Europe, North America and Oceania); pregnant women were found to be one of the highest users of the Internet for health information (Eriksson-Backa, 2003).

Among the reasons reported why women turn to the Internet as an information source were dissatisfaction with their health care providers' advice and lack of time to ask questions during provider visits. Lowe, Powell, Griffiths, Thorogood, and Locock (2009) described how women in the United Kingdom turn to the Internet when they learn that they have an abnormality in their pregnancy. The Internet was used to gain knowledge quickly about prenatal and fetal topics not available in books. In their qualitative study of low and moderate-income primiparous women in the United States, Martin, Bulmer, and Pettker (2013) found that none of their participants planned to attend childbirth classes, instead relying on information found on the Internet and from family and friends, leading the researcher to speculate that childbirth classes as currently designed may be becoming obsolete. While attendance at childbirth education classes, traditionally taught by registered nurses, was once seen as a rite of safe passage among first time pregnant women (Côté-Arsenault, Brody, & Dombeck,2009), attendance is on the decline. Women report using the Internet instead as a source of information and community (Romano, 2007).

Prenatal health care providers, including nurses, midwives, nurse practitioners and physicians should consider their role in guiding women's interpretation of Internet findings

Although more women use the Internet to access information, findings are mixed regarding whether the Internet has supplanted health care providers as the primary source of information in pregnancy. In the latest Listening to Mothers online survey, among a U.S. sample of 2,400 women who had recently given birth, 59 percent of women reported taking childbirth classes with at least one of their pregnancies, and more than 75 percent identified health care providers as the most important sources of information during pregnancy, followed by childbirth classes and Internet sources (Declercq, Sakala, Corry, Applebaum, & Herrlich, 2013). Across the globe, a study in Australia found that women were more likely to ask their health provider questions than to use the Internet to seek health information in pregnancy, and this was even more true for women from non-English-speaking backgrounds (Grimes, Forster, & Newton, 2014). Conversely, researchers in Spain and China have found that the majority of women use the

Internet for health information on pregnancy rather than asking health care providers (Gao, Larsson, & Luo, 2013; Lima-Pereira, Bermúdez-Tamayo, & Jasienska, 2012).

Although study results vary regarding the primacy of the Internet as a source of health information, the literature suggests that the role of health care providers as health educators is dramatically changing. No longer are health care providers necessarily the first source of information for women. Women are seeking information increasingly from other sources that may not be accurate, and they aren't always discussing new information with their health care providers. Prenatal health care providers, including nurses, midwives, nurse practitioners and physicians should consider their role in guiding women's interpretation of Internet findings.

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Concern exists regarding the variable quality of materials found online due to open access. Anyone can post information online and the information posted may not be correct. There are reputable online sites that provide accurate information about pregnancy, but few women report checking publication dates or references of information found on the Internet (Six-Means, 2010). Assessing credibility of a website requires evaluation of the accuracy of content, whether or not sources of information are cited, currency of information, presence of health expert oversight of information, presence of disclaimers related to health advice and contents of external links to the site (Lorence & Abraham, 2008). Additionally, a voluntary, self-regulating seal from the Health on the Net Foundation Code of Conduct (HONcode) can be displayed on sites, which indicates periodic review for compliance to a code of conduct that includes accuracy and credibility of information, as well as protection of the privacy of consumer information (Health on the Net Foundation, 2013).

The Utility of the Internet for Researchers

Researchers need to recruit participants from where they can be found. Healthy childbearing women don't cluster in clinics or hospitals; they reside in their homes and communities, and they're on their computers and Internet-enabled mobile devices. Because pregnant and parenting women are accessing the Internet for health information, it's a logical place to go to recruit this population. A small body of literature is developing about the best ways to recruit and collect data on the Internet. Barrera, Kelman, and Muñoz (2014) suggested that certain keywords may be effective for Internet study. Social media and commercial websites have been used to recruit pregnant and postpartum women for a study of postpartum depression (Maloni, Przeworski, & Damato, 2013). Online surveys have been used to collect data and follow up with respondents (Smith, Wilde, & Brasch, 2012). Researchers can also analyze existing data from the Internet and useful tools are beginning to be developed to assist with this analysis (Steinmetz, 2012). However, there's still need for additional information about practical and feasible methods to recruit, enroll and collect data from healthy populations for research studies using the Internet.

Our Study

Purpose

The purpose of our study was twofold. First, to explore childbearing women's information-seeking behaviors on the Internet and social media. Second, to assess the feasibility of recruitment of childbearing women via the Internet for survey research.

Methods

We recruited participants by sampling networks of our professional and personal contacts from eight U.S. states who were likely to interact with the target population. Network sampling, often called “snowball” sampling, involves asking people likely to know the population under study to seek participants for the study from within their social networks (Browne, 2007). We asked our contacts to forward our recruitment e-mail to women who met the following criteria: women 18 years or older and were either pregnant, trying to get pregnant or have a baby younger than 1 year of age. Participants were asked to forward the e-mail to others who met the study criteria. The recruitment e-mail included a link to a brief survey. A survey with open-ended questions was constructed in Qualtrics (www.qualtrics.com/). Women were asked whether or not they used the Internet to find information about pregnancy, infant care and parenting. If so, they were asked to identify the top five websites they visited, and for what information they visited these sites. They were also asked how they learned about informational websites, and if they used other types of social media to get health-related information. Finally, to assess the usefulness of recruiting future samples via the Internet, they were asked to list any factors that would make them unwilling to participate in future Internet surveys.

Exempt status was obtained from the university's Institutional Review Board. Waiver of informed consent was granted to ensure participant anonymity.

Decision-making was the most common reason for searching; in this case, women were seeking facts in order to make a decision about health promotion, such as pregnancy behaviors, breastfeeding and child care

Data Analysis

Descriptive statistics were used to analyze demographic data and responses to close-ended questions using Microsoft Excel. Textual responses to open-ended questions were analyzed by both investigators using qualitative content analysis as described by Morgan (1993). Qualitative content analysis is characterized by use of a consistent set of codes to group similar material into categories; counting or use of frequency is consistent with this method. Most women gave numerous responses, so the total number of responses far exceeds the number of women. Responses were initially coded and grouped by shared topic; no a priori coding system was imposed. We recognized that we needed a more parsimonious result than our initial 16 categories. Therefore, both investigators returned to the raw data independently read each response again seeking broader concepts and hand-sorted each response into piles. The

investigators came to consensus on placement of the data into four newly revealed exhaustive and mutually exclusive categories.

Findings

Forty-two women were recruited using network sampling of 16 via e-mail, thus yielding approximately three participants per initial contact. The women ranged in age from 25 to 40, and were from eight states; 30 percent of the women were currently pregnant, 12 percent were trying to get pregnant and 63 percent had babies younger than 1 year old. Ninety-seven percent of participants said they used the Internet to seek information related to pregnancy, parenting and child care.

A total of 35 different websites were identified where women sought information, and two women listed the generic term “blogs.” The top three websites identified were: BabyCenter.com (*n* = 28), Parenting.com (*n* = 7) and TheBump.com (*n* = 7). Women identified specific reasons for searching the Internet that fit into four categories (see Box 1).

Box 1. Four Categories of Reasons for Searching the Internet

1. Decision-making
2. Anticipatory guidance
3. Connecting
4. General information

Decision-making was the most common reason for searching; in this case, women were seeking facts in order to make a decision about health promotion, such as pregnancy behaviors, breastfeeding and child care. In the second category, they were seeking anticipatory guidance about pregnancy and infants—information about milestones and “what to expect” in pregnancy and infancy. Connecting was the third category where women sought to discover what other people were experiencing related to childbearing or parenting. Wanting to hear the experience of others was a social goal and allowed the women to compare their experiences to those of others. The fourth category was general information, where the woman was looking for information unrelated to health issues, such as children's activities or baby names. See Box 2 for examples of data that were included in the categories.

Completion of our survey conveyed these women's willingness to participate in some research. With regard to likelihood to participate in Internet research in the future, participants replied that they were unlikely to participate if the survey was too long, the questions were unclear or the researchers requested too much personal information.

Box 2. Categories and Examples of Information Sought

Category	Questions asked by Women	Examples of information sought

Decision-making (*n* = 57 responses)	"What do I need to know to make a decision?" "What are the pros, the cons?"	• Breastfeeding information • Parenting tips • Is Prozac safe to take during pregnancy?
Anticipatory guidance (*n* = 31 responses)	"What is going on with me and my baby?"	• Weekly and monthly milestones • Child development information • What to expect
Connecting (*n* = 11 responses)	"What are others doing?" Is what I am experiencing normal?	• Chatter among moms of kids the age of mine to see other experiences and compare • What others are experiencing; real feedback
General Information (*n* = 7 responses)	"What else is out there?"	• Shopping sites • Local family events • Baby names

Implications for Practice and Future Research

The topics women sought on the Internet are not unusual or unexpected; however, they're indicative of the active process women currently undertake to seek information. This is a definite role change for women that has evolved over the past five decades and coincides with second-wave feminist thinking and movement toward ownership of one's own health in the context of women taking control of their own lives (Haslanger, Tuana, & O'Connor, 2012; Young, 1982). It also reflects a change in relationships with physicians and other health care providers who used to be the holders of knowledge (Rubin, 1984).

Pregnancy and infant care are new and unique experiences for each individual woman that require new knowledge and informed decision-making. These experience lead to the questions such as, *What should I expect to feel/experience? Is this normal? Which is the best choice?* While the questions aren't new, the fact that women go to the always available, often anonymous Internet implies that these questions may not be asked of nurses, physicians, midwives, nurse practitioners and prenatal educators as they once were. The Internet is a relatively new source of information, advice and communality.

Although women search for information on the Internet, they may not be skilled in finding information that they need. A study in Australia that asked women about the keywords they would use to search for information showed that although the keywords would generate websites, the websites were sometimes difficult to navigate, and the women weren't able to find the information they actually sought (Buultjens, Robinson, & Milgrom, 2012). Health care providers who have contact with pregnant and parenting women have an important educational role both in steering women to reputable sources and also discussing information women find on the Internet to correct misperceptions and provide additional information.

A recent blog illustrates the popularity and the pitfalls of searching the Internet for information about pregnancy (Owen, 2013). The author discusses the stress of determining how to filter information found on the Internet and speaks of “obsessing” about symptoms. However, she also points out that the Internet is available around the clock if a question arises, whereas health care providers typically are not unless the question is considered an emergency.

Of the websites identified as most popular by women in our sample, only one (BabyCenter.com) had an easily identifiable editorial team that included health care personnel. This site was also the only one that included a general site disclaimer that the information was not intended to substitute for professional health care advice. This same website was noted by Australian women as a favorite venue for pregnancy information in a study conducted at about the same time we were conducting ours (Rodger et al., 2013). Although all of the websites identified in our study had current general copyright dates, when information about “morning sickness” was sought in all three sites, none of the specific information had a copyright date. All of these sites are commercial sites and contain advertisements for baby-related products. None of the sites claim to be governed by the HONcode.

Clearly, women go to the Internet for information about pregnancy and parenting. To provide quality care for childbearing women, perinatal nurses and other health care providers should be aware of websites offering accurate patient information and direct them to these sites. Lists of reputable Internet sources of information should be included in prenatal care information and in child care information distributed to women with babies and young children. Examples of sites that include evidence-based information are listed in Box 3.

Women sought to discover what other people were experiencing related to childbearing or parenting

Box 3. Examples of Online Sources of Credible Information

American Academy of Pediatrics (AAP)
patiented.aap.org
American College of Nurse-Midwives (ACNM)
www.midwife.org/Share-With-Women
American Congress of Obstetricians and Gynecologists (ACOG)
www.acog.org/Patients
Association of Women’s Health, Obstetric and Neonatal Nurses (AWHONN)
www.awhonn.org/awhonn/content.do?name=02_PracticeResources/2H_PatientHandouts.htm
Centers for Disease Control and Prevention
www.cdc.gov
Healthy Mom&Baby (published by AWHONN)
www.health4mom.org
March of Dimes
www.marchofdimes.com
Mayo Clinic

www.mayoclinic.com/health-information National Institutes of Health health.nih.gov

This study also has implications for conducting research on the Internet. The risk of obtaining biased samples is large when relying on the Internet for research recruitment. Although Internet access is becoming more common by both computer and mobile devices, such as smartphones and tablets, a recent study done in Philadelphia found that medically underserved individuals tend to use the Internet less to access health information than do more affluent individuals (Zach, Dalrymple, Rogers, & Williver-Farr, 2011). A survey conducted by the Pew Internet and American Life Project found that minority use of the Internet currently rivals that of Caucasians; however, significant populations who are less likely to use the Internet still exist. These include older people, those with low educational attainment, those having a low household income and those who chose to take the survey in Spanish (Zickuhr & Smith, 2012).

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Despite this risk, according to the Pew Internet and American Life Project (2014), 93 percent to 97 percent of adults ages 18 to 39 use the Internet, and many of these adults are likely to be women seeking health information. The delivery of interventions via the Internet is a new area of research and care delivery that is in its infancy. A Finnish study (Salonen, Pridham, Brown, & Kaunonen, 2014) tested an Internet online peer and expert support and informational intervention with pregnant women and new mothers. Although the intervention showed no significant effect on postpartum depression or parenting satisfaction, the delivery of the intervention over the Internet was shown to be feasible in this population. The Internet is fertile ground for research with childbearing women. New methods of recruitment, data collection and intervention delivery need to be explored.

Conclusion

The Internet-using, tech-savvy childbearing population is large, with clear implications for nursing research and practice. Practicing nurses, nurse practitioners and midwives should be aware of the health information-seeking behaviors of their clients, and begin to offer health education using the Internet as the important resource it has become. Researchers should explore ways to answer pressing questions in research with childbearing women using the Internet as a new venue for participant access and interaction. **NWH**

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