

# Health Information Behavior of Expectant and Recent Fathers

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## Abstract

Given the importance of paternal involvement in maternal and child health, the current investigation takes a closer look at expectant and recent (E/R) fathers' health information behavior during pregnancy, childbirth, and child care. A total of 186 E/R fathers (68 low-income) completed a survey gauging information needs, sources of information, and information-seeking behavior. Results are summarized in four statements that may help low-income E/R fathers get the information they need during a partner's pregnancy or after a child is born: (a) paternal information needs are diverse, (b) information needs change across stages of child development, (c) interpersonal sources are important before and after birth, and (d) relationships matter.

## Keywords

health information seeking, information sources, information needs, paternal involvement, fathers, low income

Paternal involvement increasingly proves an important and modifiable risk factor in maternal and child health. An examination of vital records data from births between 1998 and 2005 reported a lack of paternal involvement (i.e., a father's name on birth certificate) to result in lower birth weights, preterm births, and increased complications during birth (Alio, Mbah, Kornosky, Wathington, Marty, & Salihu, 2011; Alio, Salihu, Kornosky, Richman, & Marty, 2010). Similarly, infant mortality rates for unmarried mothers are 73% higher than for married mothers (Mathews, MacDorman, & Thoma, 2015), suggesting the consequential influence of a father's presence on infant vitality at birth. A father's involvement positively associates with infant health (Carr & Springer, 2010), cognitive outcomes (Bronte-Tinkew, Carrano, Horowitz, & Kinukawa, 2008), weight gain and developmental test scores (Coleman & Garfield, 2004), as well as a child's access to health care (Gorman & Braverman, 2008). Conversely, the lack of a partner affects maternal health in terms of increased depression and stress (Cairney, Boyle, Offord, & Racine, 2003).

Paternal *health information behavior*, or the totality of an individual's information needs, sources of information, and seeking behavior (Wilson, 1999), remains relatively unexamined in maternal- and child-health research. Lima-Pereira, Bermúdez-Tamayo, and Jasienska (2011) conducted a preliminary report on topics/websites of interest as well as sources of information about pregnancy among expectant fathers living in Spain. T.K. Smith, Tandon, Bair-Merritt, and Hanson (2015), offering

the most comprehensive account of information behavior at the time of this publication, examine the information needs and preferred sources of information of urban, African American fathers. While Lima-Pereira et al. (2011) reported similarities in information needs and sources among women and men, T. K. Smith et al. (2015) provide rich and descriptive insights into the information behavior unique to fathers raising a young child.

The current investigation draws from Wilson's (1997) model to examine paternal information behavior with regard to maternal health during pregnancy or a child's health after birth. Beyond the work of Lima-Pereira et al. (2011) and T. K. Smith et al. (2015), few studies examine the health information behavior of fathers—at any income level—expecting a baby or raising a young child. Thus, the study seeks to expand on extant research by not only conducting further inquiry into paternal information needs, seeking behaviors, and intervening variables but also by making comparisons across income groups to uncover distinct processes and characteristics of information behavior. The health information behavior of fathers from low-income households receives particular attention to improve targeted, community-based information dissemination and health-promotion campaigns.

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## Paternal Health Information Behavior

Wilson (1999, 2000) considers information behavior to encompass all of the human actions related to resolving a need for information: from identifying a need, to consulting sources and channels of information both actively and passively, to using or transferring the information found. His 1997 model explores three main components of information behavior: information needs, information-seeking behavior, and intervening variables (Wilson, 1997). An *information need* functions as a subjective experience of a desire to satisfy some goal (Wilson, 2000). Needs may emerge from cognitive goals (e.g., to find, expand on, or confirm information), value-related goals (e.g., to expand on or confirm beliefs or values), or expansion goals (e.g., simply to build knowledge of a subject; Wilson, 1997). *Information-seeking behavior* involves a purposive search for information to satisfy the need (Wilson, 2000); the need compels an information user to “make demands upon formal or informal sources or services, which result in success or failure to find relevant information” (Wilson, 1999, p. 251). The search for information may involve: passive attention to information, a passive search, an active search, or an ongoing search for more information after an initial search has been conducted (Wilson, 1997). *Intervening variables* consist of those psychological, demographic, interpersonal, environmental, and information-source impediments that may stymie the information search after a need has been recognized. Each of the three components—information need, information-seeking behavior, and intervening variables—influences the use and processing of information based on the identified need.

Despite the relative absence of research on paternal information behavior, a small corpus of extant research examines the prenatal and antenatal information needs, seeking behaviors, and intervening variables of expectant and recent (E/R) mothers from which questions and predictions regarding paternal information behavior may emerge.

### Information Needs

Maternal information needs receive some attention in the literature, particularly in examining needs emerging before the birth of a child. A study of expectant women in Sweden (Larsson, 2009) identified fetal development and stages of childbirth as the two primary topics of interest. Shieh, McDaniel, and Ke (2009) reported the top-five information needs of 84 low-income pregnant women to be early labor, danger signs, growth and development of baby, medications, and stress management. When choosing from a list of 22 pregnancy-related information

topics, a sample of low-income expectant women selected (a) government/community resources and (b) jobs as the top two interest areas (Song, Cramer, McRoy, & May, 2013). Dervin, Harpring, and Foreman-Wernet (1999) reported the primary informational concerns of 10 pregnant, drug-addicted women to be the effects of drugs on the fetus, getting help, the behavior of others, and legal consequences. Stage of pregnancy also demonstrates a substantial impact on the type of information needed (Benn, Budge, & White, 1999).

According to Lima-Pereira et al. (2011), both expectant fathers and mothers share information needs related to fetal development, stages of pregnancy, breastfeeding, naming the baby, and zodiac information. Compared with women, men searched for information about pain and childbirth, health care, caring for women after childbirth, and emotional/relational issues to a greater extent. The 21 urban, African American fathers participating in the focus groups conducted by T. K. Smith et al. (2015) reported appreciating information after the birth of a child about child rearing, developmental milestones, communicating effectively with children, and health information.

The current investigation examines informational needs of fathers associated with income and across the health continuum, from pregnancy to child care. Examining data from a larger study sample than previous work and using primarily quantitative research methods, the following research questions are posed:

**Research Question 1:** Do the information needs of E/R fathers differ based on income?

**Research Question 2:** Do information needs of low-income E/R fathers change between a partner's pregnancy and childbirth?

### Information-Seeking and Intervening Variables

Courtright (2005) describes health-related information seeking as “locating both health care resources and information about health issues” (para. 15). Courtright's (2005) definition assumes intentional behavior on the part of the information user, although Wilson (1997) distinguishes between passive search modes, such as attending to a television program or happening on relevant information when doing or searching for something else, and active or ongoing searching. The current investigation presumes active searching on the part of the information user, aligning with Courtright's (2005) definition and Maibach, Weber, Massett, Hancock, and Price (2006) operationalization of the construct. Indeed, previous studies have reported connections between active health information-seeking behavior and efficacy, health knowledge and proactivity, physician visits, and confidence when talking with physicians, patient satisfaction, and

treatment decision making (Hay et al., 2008; Murray et al., 2003; Nicholson, Gardner, Grason, & Powe, 2005; Rimal, 2001; Taha, Sharit, & Czaja, 2009; Warner & Procaccino, 2007; Zhao & Cai, 2009).

A dearth of research exists on the outcomes of information-seeking behavior of E/R fathers, regardless of income, but some insights can be gleaned from similar research with low-income expectant women. For example, Shieh et al. (2010) conducted a cross-sectional study of 143 low-income pregnant women examining linkages among health information seeking, self-efficacy, health literacy, and internal fetus health locus of control. Significant positive correlations were observed between pregnant women's health information-seeking behavior and self-efficacy, as well as health information-seeking behavior and internal fetus health locus of control. Women able to obtain health information and resources felt increased confidence in their ability to handle pregnancy-related issues and increased control over the health of the fetus.

Inherent to the act of information seeking is consultation with information- or computer-based systems or other information sources, including interpersonal (Wilson, 1999, 2000). Moreover, the characteristics of the information source, as well as interactional issues arising from interpersonal information sources, may serve as variables hindering or helping the search (Wilson, 1997). Previous research points to the link between pregnant women's socioeconomic status (SES) and the sources relied on for information. An early study reported associations between pregnant women's income level and source of health information, with low-SES women relying less on books and more on advice and suggestions from family members (Aaronson, Mural, & Pfoutz, 1988). Lewallen (2004) discovered low-income pregnant women to rely primarily on other people for information in addition to audiovisual and written material. A study of a community-based breast and cervical cancer-screening program for low-income women (Marshall, Smith, & McKeon, 1995) disclosed that participants shared a preference for one-to-one interpersonal channels, such as telephone calls, when receiving persuasive messages. Recent work by Shieh, McDaniel, and Ke (2009) confirms that health care professionals and family members are consulted by low-income pregnant women more frequently than newspaper, magazines, or the Internet, although books and brochures are also consulted to a slightly greater extent than family.

Wilson (1997) argues that, "interpersonal problems are likely to arise whenever the information source is a person" (p. 559) due to, for example, the attitude of the source consulted or the presence of others in the context of the search. Reliance on interpersonal sources of information among low SES, minority ethnic populations may be attributed to the digital divide. Digital divide research has revealed key disparities in both Internet use and access across income,

education, and ethnicity (Zickuhr & Smith, 2012). For example, expectant women with low health literacy reported an infrequent or lack of use of the computer to learn about pregnancy and health (Shieh, Mays, McDaniel, & Yu, 2009). Wilson (1997), noting that "the lack of an easily accessible source may inhibit information-seeking altogether, or may impose higher costs than the [inquirer] is prepared to pay" (p. 561), regards lack of access as a source characteristic intervening in a successful search.

The fathers in T. K. Smith et al.'s (2015) study learned about parenting primarily from interpersonal sources such as relatives, community members, home, and members of a church community. Participants also obtained information from books, brochures, and other written documents. Use of technology to obtain information prompted conflicting perspectives:

technology as a medium received mixed reviews and [fathers] preferred to learn from other people more directly. Fathers found technology an impersonal method for learning about parenting and endorsed in-person instruction with a teacher or educator as more interactive. (T. K. Smith et al., 2015, p. 324)

Conversely, the Internet was the second-most consulted source of information in the study of Spanish men conducted by Lima-Pereira et al. (2011).

Due to the tendency for urban, African American fathers to prefer interpersonal sources of information, the researcher predicts that E/R fathers of lower SES and who are ethnic minority will rely on interpersonal sources of information more than fathers of higher SES and who are not ethnic minorities.

**Hypothesis 1:** E/R fathers of lower income will rely more on interpersonal sources of information than E/R fathers with higher income status.

**Hypothesis 2:** E/R fathers with lower education will rely more on interpersonal sources of information than E/R fathers with higher education.

**Hypothesis 3:** Ethnic minority E/R fathers will rely more on interpersonal sources of information than E/R fathers who are not ethnic minorities.

Given the lack of research regarding the sources of information E/R fathers consult, Research Question 3 concerns whether potential changes in information needs based on a child's developmental stage (see Research Question 2) lead fathers to consult different sources of information along the health continuum.

**Research Question 3:** Do sources E/R fathers use to obtain information change along the health continuum (i.e., during pregnancy and after the child is born)?

Additional demographic, economic, and psychographic factors may serve as intervening variables in information seeking. Accordingly, some studies take into account the socioecological contexts in which individuals acquire information (Zhang & Kudva, 2012). Williamson and Manaszewicz (2002), for example, discovered ecological factors such as age, ethnicity, residence, disease stage, and physical health promoted or impeded information seeking about breast cancer. Calvert, Aidala, and West (2013) identified poverty level, the number of neighbors, and education to predict Internet health information-seeking behavior.

Particularly, given maternal and child health outcomes associated with paternal involvement, exploring the influence of a father's physical and social environment on health information behavior proves worthwhile.

**Research Question 4:** Do additional intervening variables (age, income, employment, education, relationship status, ethnicity, number of children, relational closeness) motivate or hinder paternal information seeking?

### Information and Involvement

The final component of Wilson's (1997) model concerns information processing and use, or the extent to which the information is "incorporated into the users' framework of knowledge, beliefs, or values." Given the impact of paternal involvement on maternal and child health outcomes (for a review, see National Fatherhood Initiative, 2014), a question arises as to the relationship between a father's information-seeking behavior and the extent to which the use of the information associates with a father's level of involvement in the life of a child. A strong relationship between information seeking and paternal involvement may uncover opportunities either to (a) engage less-involved fathers through information dissemination or (b) enhance information sources for fathers seeking increased involvement.

**Research Question 5:** Does health information-seeking behavior associate with paternal involvement?

## Method

### Procedures

After institutional review board approval was obtained from an urban, public university in the Midwest, study recruitment commenced on October 1, 2013 and was completed by January 15, 2014. Eligibility criteria for participation stipulated individuals must be an expectant father of biological child (*expectant*) or a father with a

youngest biological child from birth to age 3 (*recent*). Survey completion required participants to speak English, read at an 8th-grade level or higher, and be 18 years of age or older. Nonrandom convenience sampling was used via three recruitment pathways to maximize the number of low-income E/R fathers participating in the study.

**Men's Health Referral Network.** Participants were recruited through contacts of the Milwaukee Health Department's Men's Health Referral Network. The network comprises individuals from outreach agencies in the Milwaukee area invested in improving health and access to services for low-income men in the community. A 40-item paper survey, including a consent form, was distributed to participants attending agency workshops and the 8th Annual Milwaukee Fatherhood Summit. Walgreens gift cards of \$5 were distributed on-site to individuals who completed the surveys.

**Communication, Research, and Theory Network Listserv and Researcher Contacts.** A recruitment message was posted to the listserv of the Communication, Research, and Theory Network, managed by the National Communication Association. The researcher also recruited participants by posting a call for participants on her Facebook page. A link to an online survey, including a consent form, was included in both recruitment messages. The online survey contained the exact same content as the paper survey distributed via Pathway 1. In a separate survey (link provided at the end of the study), participants were given the opportunity to enter a raffle to win one of four \$25 Walgreens gift cards.

**Contacts of Undergraduate Students.** A recruitment message was sent to students in undergraduate communication courses. The recruitment message asked students who met eligibility criteria to complete the survey or to forward to a personal contact(s) who met the study eligibility criteria. Extra credit was awarded at the discretion of the course instructor. Participants were also given the opportunity to enter the raffle to win a \$25 Walgreens gift card.

### Measures

The survey contained measures gauging information needs, sources, and seeking behavior, as well as demographic information, paternal involvement, and perceived relational closeness with the participant's partner (see appendix in supplementary material for a complete list of measures, available online at <http://journals.sagepub.com/doi/suppl/10.1177/1557988316637576>).

**Information Needs.** To answer Research Questions 1 and 2, the survey included the following prompt: "Below are

some topics of information about caring for your child, childbirth, or your partner's pregnancy. What topics are you interested in learning more about? Place a check mark next to the topics below." Participants were able to check as many items as they wanted from a list of 20, and could also write in additional topics. Topics included "Signs and symptoms of an abnormal pregnancy for my partner," "How to help my partner during childbirth," and "Jobs in my community." The list was adapted from a similar measure generated by Milwaukee Health Department nurses and used in previous work with low-income expectant women (Song et al., 2013).

**Sources of Information.** Hypotheses 1 to 3 as well as Research Question 3 addressed the sources of information E/R fathers use for information about pregnancy and child care. Accordingly, using a scale developed by (Song et al., 2013), participants rated how often they used the following sources of information related to (a) pregnancy and childbirth and (b) caring for a child (5-point Likert-type scale, 1 = *never*, 5 = *always*): partner/baby's mother, doctors/nurses, friends, church and other community resources, Internet, TV/movies/magazines, books, and other (adapted from Song et al., 2013). Measuring information sources at two phases (pregnancy/childbirth and child care) arose from the rationale that sources of information may change for E/R fathers from a partner's pregnancy to after the child is born. Higher scores indicated increased reliance on the information source.

**Demographic Factors.** To assess intervening variables, participants in the study reported demographic information such as age, income, education, ethnicity, relationship status, and access to technology. Participants also reported whether they were expecting a child or if they had a child younger than 3 years of age.

**Relational Closeness.** A measure of relational closeness was featured among a list of demographic questions addressing the influence of contextual factors on information seeking (Research Question 4). Perceived closeness to the mother of the baby was measured using four items developed by the researcher: "I feel close to the mother of my baby," "The mother of my baby and I talk to each other a lot," "I relate to the mother of my baby well," and "The mother of my baby and I get along." Because the measure was developed by the researcher, results were subjected to exploratory factor analysis to extract reliable latent constructs. Factors were extracted using principal component method and varimax rotated. Excluding cross-loaded items, items with factor loadings lower than .50, and factors defying interpretation for subsuming conceptually unrelated items, a single component was extracted including all four items in the measure. The

measure demonstrated good internal consistency (Cronbach's  $\alpha = .96$ ) and higher scores reflected an increased sense of closeness E/R fathers perceive with partners.

**Information-Seeking Behavior.** Maibach et al.'s (2006) measure of information-seeking behavior (see Research Question 5) was adapted as a four-item measure, including statements such as "I make a point to read/watch stories about pregnancy or child care" and "I like to get information about pregnancy or child care from lots of sources." Participants rated the extent to which they agreed with the statements using a 5-point Likert-type scale (1 = *strongly disagree*, 5 = *strongly agree*). The measures demonstrated acceptable internal reliability (Cronbach's  $\alpha = .83$ ) and higher scores signified increased information-seeking behavior.

**Paternal Involvement.** To assess the relationship between perceived levels of paternal involvement and health information seeking, as described in Research Question 5, the researcher developed a measure asking participants to indicate on a 10-point scale (1 = *not involved*, 10 = *totally involved*) the degree to which they felt involved in their partner's pregnancy or the care of their child. Statements asked participants to rate how "Involved you are in your partner's pregnancy or the care of your child" and "Involved you are in decisions about your partner's pregnancy or the care of your child." Exploratory factor analysis procedures (described above) produced a single-component extraction involving all four items. The measure indicated good internal reliability (Cronbach's  $\alpha = .83$ ). Higher scores reflected increased levels of paternal involvement.

## Sample

A total of 216 participants were recruited for the survey, reduced to 186 ( $N = 186$ ;  $n_{\text{paper}} = 33$ ,  $n_{\text{online}} = 153$ ) due to incomplete survey responses or study eligibility criteria. Thirty-six percent of the sample (68 individuals) reported household incomes of less than \$40,000 per year. Given the average number of children (about 2) and the majority of the larger sample living together or married (83%,  $n = 148$ ), the researcher examined federal poverty guidelines for a household of four (father, mother, and two children). An annual income of \$40,000 for a household of four is 170% of the 2013 Federal Poverty Guidelines (Families USA, 2013). The Census Bureau considers below 200% of poverty as "in poverty" (United States Census Bureau, 2013). As a result, household incomes of <\$40,000 were characterized as low income. The remainder of the sample ( $n = 118$ ) was characterized as higher income. Demographic information for the total sample (total, low income, high income) is reported in Table 1.

**Table 1.** Demographic Information for Participants.

Variable	Total, % (n) or M (SD)	Low income, % (n) or M (SD)	High income, % (n) or M (SD)
Age (years)	30.1 (6.3)	27.0 (6.4)	32.0 (5.4)
Race/ethnicity			
Non-Hispanic White	62% (116)	40% (27)	77% (88)
Black	20% (37)	35% (24)	10% (12)
Hispanic/Latino	6% (11)	10% (7)	3% (3)
Asian	6% (11)	9% (6)	4% (5)
Other/decline	7% (12)	6% (4)	7% (7)
Relationship status			
Not in romantic relationship	7% (13)	13% (8)	5% (5)
Committed, living apart	7% (13)	6% (10)	3% (3)
Married or committed and living together	83% (148)	76% (42)	92% (103)
Divorced or separated	3% (4)	5% (3)	1% (1)
Expecting a child			
Yes	36% (65)	36% (24)	36% (41)
Total children (includes pregnancy)	1.7 (1.2)	1.9 (1.6)	1.6 (0.8)
Annual household income			
>\$20,000	16% (29)	43% (29)	—
\$20,000-\$39,999	21% (39)	57% (39)	—
\$40,000-\$59,999	18% (33)	—	29% (33)
\$60,000-\$79,999	18% (33)	—	29% (33)
\$80,000-\$100,000	8% (15)	—	13% (15)
\$100,000+	19% (34)	—	30% (34)
Education			
No/some/all high school/GED	18% (33)	37% (27)	4% (5)
Some college	25% (47)	31% (21)	23% (26)
College graduate (2 year or 4 year)	36% (66)	24% (16)	42% (49)
Graduate	21% (39)	6% (4)	30% (35)
Employment			
Employed/self-employed full-time	74% (139)	53% (36)	89% (102)
Employed/self-employed part-time/other paid work	17% (35)	29% (102)	8% (9)
Unemployed	9% (17)	18% (12)	4% (4)
Cell phone owner			
Yes	99% (182)	96% (65)	99% (114)
Cell phone use			
Never or rarely	3% (6)	6% (4)	2% (2)
Monthly	1% (2)	—	2% (2)
2-3 Times a week	3% (6)	7% (5)	1% (1)
Daily	93% (172)	87% (59)	96% (110)
<i>Internet on phone?</i>	88% (162)	84% (56)	90% (103)
Internet use			
Never or rarely	4% (8)	11% (7)	1% (1)
Monthly	2% (3)	3% (2)	—
2-3 Times a week	7% (12)	12% (8)	4% (4)
Daily	88% (161)	75% (50)	96% (109)
<i>Computer at home?</i>	96% (174)	89% (59)	99% (112)
<i>Internet access at home?</i>	95% (170)	88% (56)	99% (111)

Note. Italicized questions and corresponding values in table reflect "yes" responses.

A majority of the low-income sample was composed of individuals from ethnic minority groups such as Black (35%,  $n = 24$ ), Hispanic/Latino (10%,  $n = 7$ ), and Asian (9%,  $n = 6$ ). Thirty-seven percent ( $n = 27$ ) of the sample reported no, some or completed high school/GED as the highest level of education achieved, compared with 31% ( $n = 21$ ) with some college, 24% ( $n = 16$ ) with a college degree, and 6% ( $n = 4$ ) with a graduate degree. Forty-seven percent ( $n = 32$ ) of the sample reported being in part-time, other paid work or unemployed. Finally, more participants (21%,  $n = 11$ ) from the low-income sample reported being divorced, separated, or not in a committed relationship with their partner.

### Data Analysis

Data collected via paper surveys were entered manually into Excel and then combined in Excel with exported data from the online survey program. Combined data were subsequently uploaded to SPSS (version 22) for analysis. To answer Research Questions 1 and 2, the researcher ran a frequency analysis of the 21 information topics used to gauge information needs of E/R fathers. For Research Question 1, the SPSS data file was split based on income (1 = *low*, 2 = *high*) and topics with the highest frequencies were compared by income status. Each topic frequency was subsequently divided by the number of participants in each income group (low or high) to obtain a percentage of the number of E/R fathers interested in the topic based on income. For Research Question 2, the data file was split based on whether participants were expecting a child with a partner (0 = *no*, 1 = *yes*). Topics with the highest frequencies were compared by partner pregnancy status. Each topic frequency was divided by the number of participants in each group (expectant or recent) to obtain a percentage of the number of E/R fathers interested in the topic based on partner expectancy.

For Hypotheses 1, 2, and 3, descriptive analyses were first conducted to observe means and standard deviations for each source of information about (a) pregnancy and (b) child care. Then, means were compared using independent sample *t* tests based on income (1 = *low*, 2 = *high*), education (1 = *no college degree*, 2 = *college degree*), and minority status (1 = *nonminority*, 2 = *minority*) groups. Testing each hypothesis involved two steps: (a) *t* tests comparing means for interpersonal sources (e.g., partner/the baby's mother, health care professionals, family, friends, and church and community resources) and (b) *t* tests comparing means for noninterpersonal sources (e.g., Internet, books, TV/movies/magazines). Significant *t* test results were reported at  $p < .05$ . Addressing Research Question 3 also warranted the use of independent sample *t* tests to evaluate mean differences in the use of information sources between fathers

expecting a child (0 = *no*, 1 = *yes*) and those whose child already had been born.

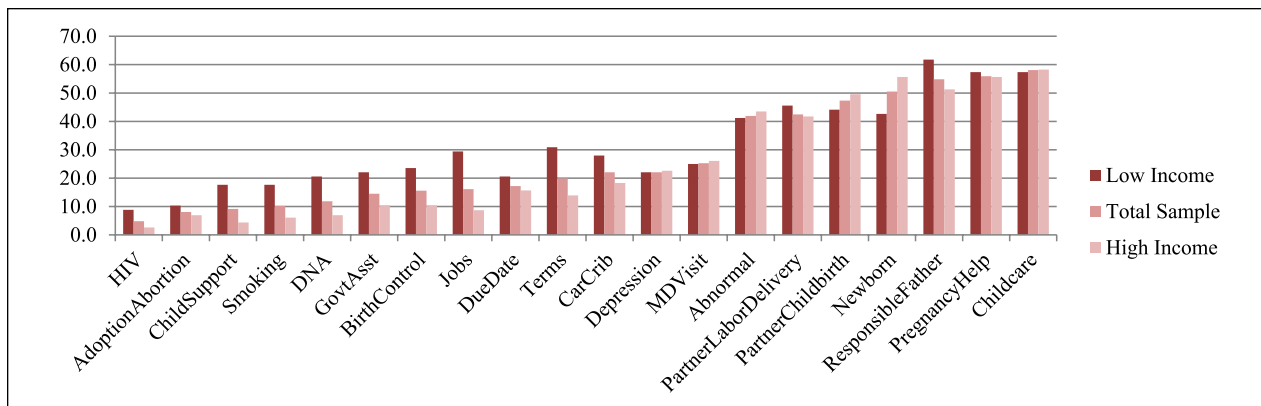
Multiple regression was conducted to assess the influence of contextual factors (Research Question 4). For multiple regression, health information-seeking operated as the criterion variable and predictor variables included income, employment, education, relationship status, ethnicity, number of children, and relational closeness. For Research Question 5, bivariate correlations detected associations between self-reported paternal involvement and health information-seeking behavior.

## Results

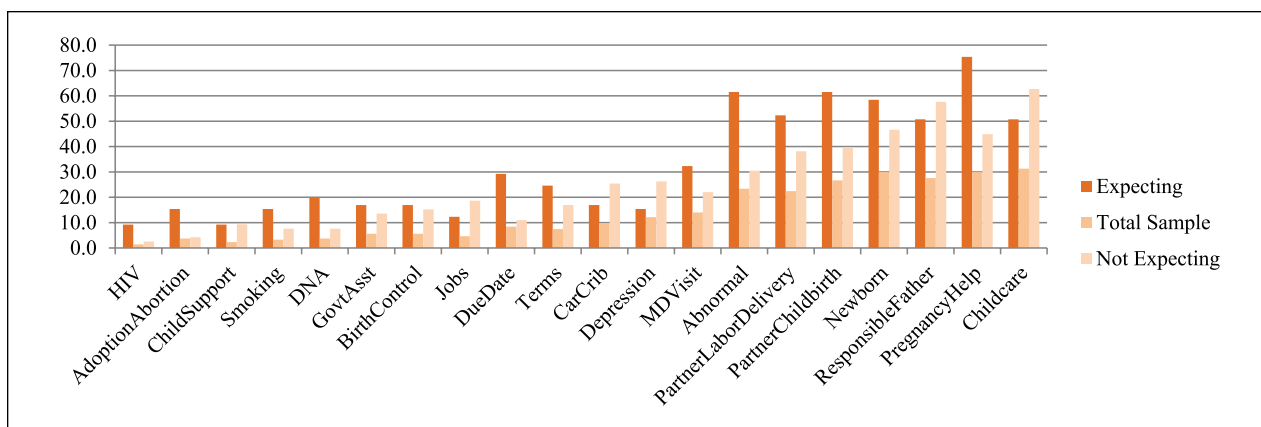
### Information Needs

Results of Research Question 1 indicated the topics of greatest interest among low-income fathers were (a) being a responsible father ( $n = 42$ ), (b) caring for a child as he or she grows up ( $n = 39$ ), and (c) how to help a partner during pregnancy ( $n = 39$ ). The topics of least interest were HIV and other STDs ( $n = 6$ ), adoption or abortion ( $n = 7$ ), smoking and drug use during pregnancy ( $n = 12$ ), and child support case review ( $n = 12$ ). In general, however, greater percentages of participants in the low-income group were interested in more of the topics mentioned in the survey, as depicted in Figure 1. In particular, the low-income sample reported greater comparative interest in HIV/STDs, adoption or abortion, smoking and drug use during pregnancy, child support case review, government and community resources, birth control, jobs, calculating due dates, understanding medical terms, where to find inexpensive cribs and car seats, what to expect during labor and delivery, helping a partner during pregnancy, and being a responsible father. E/R fathers in the high-income group reported greater comparative interest in caring for a child, caring for a newborn, helping a partner during childbirth, signs of an abnormal pregnancy, depression, and what to expect during doctor and home visits.

Research Question 2 results demonstrate changes in informational needs between a partner's pregnancy and childbirth. The topics of greatest interest among expectant fathers were (a) helping a partner during pregnancy ( $n = 49$ ), (b) helping a partner during childbirth ( $n = 40$ ), and (c) signs of an abnormal pregnancy ( $n = 40$ ). Among recent fathers, the topics of greatest interest were caring for a child as he or she grows up ( $n = 74$ ), being a responsible father ( $n = 68$ ), and caring for a newborn ( $n = 55$ ). Greater percentages of expectant fathers were interested in more of the topics mentioned in the survey (Figure 2): HIV/STDs; adoption or abortion; smoking during pregnancy; DNA testing; government and community resources; birth control; calculating due date; understanding medical terms;



**Figure 1.** Percentage of E/R fathers interested in health topics by income group (low-income, total, and high-income samples). Note. E/R = expectant and recent.



**Figure 2.** Percentage of E/R fathers interested in health topics by partner expectancy (expecting, total, and not expecting samples). Note. E/R = expectant and recent.

what to expect during doctor and home visits; signs of an abnormal pregnancy; what to expect during labor, delivery, and childbirth; caring for a newborn; and how to help a partner during pregnancy. Recent fathers tended to be more interested in jobs, where to find inexpensive cribs and car seats, depression, being a responsible father, and caring for a child as he or she grows up.

**Information-Seeking and Intervening Variables**

Across the sample, participants reported their partner/the baby’s mother to be the source consulted most for information about pregnancy and child care, followed by health professionals. The only exception to the trend was among nonminority E/R fathers, who indicated a partner to be a primary source of information about pregnancy ( $M = 4.15, SD = 1.07$ ), followed by the Internet ( $M = 3.76, SD = 1.08$ ).

Independent sample *t* tests were conducted to compare means between low-income ( $n = 68$ ) and higher income ( $n = 118$ ) fathers of information sources consulted during pregnancy and after the birth of a child (Hypothesis 1). No significant differences were detected for income except for relying on a partner/the baby’s mother for information about pregnancy,  $t(178) = -2.21, p < .05$ . E/R fathers in the lower income group ( $n = 68, M = 3.89, SD = 1.17$ ) were significantly less likely to rely on a partner for information about pregnancy than fathers in the higher income group ( $M = 4.22, SD = 0.96$ ).

To test Hypothesis 2, the sample was grouped into participants who had not received a college degree ( $n = 80$ , less education) and those who had received a college degree or beyond ( $n = 105$ , more education). Independent sample *t* tests detected a marginally significant difference in reliance on a partner for information during pregnancy,  $t(180) = -1.90, p = .06$ , with fathers with lower education



( $M = 3.94$ ,  $SD = 1.16$ ) relying less on a partner for pregnancy information than fathers with higher education ( $M = 4.23$ ,  $SD = 0.94$ ). However,  $t$  tests also indicated significantly reduced reliance among less-educated E/R fathers on the Internet,  $t(146) = -2.82$ ,  $p < .01$ , and books,  $t(181) = -2.56$ ,  $p < .05$ , than more educated fathers for pregnancy information.<sup>1</sup> Less-educated E/R fathers ( $M = 2.55$ ,  $SD = 1.28$ ) also used books,  $t(148) = -2.30$ ,  $p < .05$ , to a lesser extent than more educated fathers ( $M = 3.00$ ,  $SD = 1.13$ ) for information about child care.<sup>2</sup>

Hypothesis 3 predicted ethnic minority E/R fathers to rely more on interpersonal sources of information than nonminority E/R fathers. The sample was categorized based on identification as White/Caucasian ( $n = 115$ , dominant) or Black, Hispanic/Latino, and Asian ( $n = 66$ , nondominant). Results of independent sample  $t$  tests indicated ethnic minority E/R fathers to consult individuals from their church or community significantly more than ethnic majority fathers for information about pregnancy,  $t(178) = 2.45$ ,  $p < .05$ , and child care,  $t(107) = 2.82$ ,  $p < .01$ .<sup>3</sup> Similar to Hypothesis 2, nondominant ethnic fathers consulted the Internet to a lesser extent than dominant ethnic fathers for information about pregnancy,  $t(111) = -3.17$ ,  $p < .01$ , and child care,  $t(177) = -2.16$ ,  $p < .05$ .<sup>4</sup>

For Research Question 3, independent sample  $t$  tests were used to evaluate mean differences between participants expecting a child with a partner (0 = no,  $n = 118$ ; 1 = yes,  $n = 65$ ) in the use of information sources consulted about pregnancy and child care. Significant differences were detected in two areas. Fathers whose children already had been born ( $M = 3.48$ ,  $SD = 1.10$ ) were significantly less likely to rely family members for information about pregnancy than those expecting a child ( $M = 3.85$ ,  $SD = 1.08$ ),  $t(178) = -2.17$ ,  $p < .05$ . Moreover, recent fathers ( $M = 4.38$ ,  $SD = 0.80$ ) were significantly more likely to rely on a partner for information about child care than expectant fathers ( $M = 4.09$ ,  $SD = 1.12$ ),  $t(177) = 2.00$ ,  $p < .05$ .

### Information and Involvement

Research Question 4 used multiple regression to determine if contextual factors such as age, income, employment, education, relationship status, ethnicity, number of children, relational closeness motivate, or hinder paternal information seeking. Contextual factors were entered stepwise into a regression model, with paternal health information-seeking behavior as the dependent variable. Results indicated perceptions of relational closeness to be the only predictor of health information-seeking behavior,  $\beta = .19$ ,  $t(142) = 2.39$ ,  $p < .05$ , removing the influence of the other contextual variables.

Research Question 5 examined the association between paternal health information-seeking behavior and involvement. Significant correlations were observed within the total sample between paternal information seeking and self-reported paternal involvement,  $r(179) = .33$ ,  $p < .01$ . A similarly strong correlation was detected within the low-income sample between paternal information seeking and involvement,  $r(64) = .32$ ,  $p < .01$ .

### Discussion

The current investigation represents an important step in examining the health information behavior of E/R fathers. Few studies have gathered data about paternal information needs, information-seeking behavior, and intervening variables with a particular focus on low-SES fathers. The study draws from a large sample of fathers across the health continuum and grounds its findings in a comprehensive model of health information behavior (Wilson, 1997). The study is also first to examine an association between health information seeking and paternal involvement—an important milestone in unraveling the mechanisms connected to the positive influence of a father in the life of a mother and child. Moving forward, examining the relationship between information seeking and paternal involvement may reveal opportunities either to (a) disseminate information to engage less-involved fathers or (b) enhance the quality and availability of information for fathers seeking increased involvement.

### Practical Applications

In reviewing the results of the study, four statements emerge that may inform health communication interventions encouraging the involvement of low-income E/R fathers by helping them get the information they need during a partner's pregnancy or after a child is born. Each statement offers direction to public health professionals connecting with E/R fathers in low-SES, minority communities.

**Paternal Information Needs Are Diverse.** E/R fathers from low-income communities desire information about being a responsible father, caring for children as they grow up, and helping a partner during pregnancy. However, low-income E/R fathers also are interested in information topics beyond pregnancy and childbirth. Comparatively, the low-income sample expressed more interest in government and community resources, employment, legal assistance (child support case review), as well as HIV/STDs, adoption/abortion, and birth control. Government and community resources may provide avenues for education, socialization, and financial support. Nearly half of

the low-income sample was in part-time, other paid work, or unemployed, so needs arise for information about jobs in the community. More participants in the low-income sample were not in a committed relationship with their partner; as a result, finding legal assistance with child support cases may be more of a priority. Moreover, due to relational status, information about STDs, birth control, and adoption/abortion becomes more relevant.

Health professionals should assist low-income E/R fathers in accessing informational resources covering a range of topics beyond pregnancy and childbirth. Fathers might benefit from learning more about how to manage finances, what resources are available in the community, and where to find employment. For dads who are expecting or raising a child but no longer in a relationship with the partner, health care professionals may want to share information about legal assistance, sexual health, and pregnancy choices. To ensure a diverse range of information needs are addressed comprehensively, health professionals might consider giving E/R fathers a list of information topics on which they can check topics of interest rather than asking, "What do you want to learn more about?" The checklist also might mitigate discomfort associated with questions about unemployment, financial issues, or sexual health.

*Information Needs Change Across Stages of Child Development.* Results confirm E/R fathers' information needs vary along a child's developmental stage, resonating with Wilson's (1997) contention that information needs are context dependent. Expectant fathers in the current sample desired more breadth of information, covering topics not only associated with pregnancy, such as helping a partner during pregnancy and signs of an abnormal pregnancy but also topics beyond pregnancy and childbirth, such as government and community resources, legal assistance, sexual health, and pregnancy choices. In addition to being a responsible father and caring for a growing child, recent fathers tended to focus more on economic concerns, such as jobs and where to find inexpensive cribs and car seats. Interestingly, recent fathers also were more desirous of information about managing depression. The researcher conjectures the fiscal realities of child care emerge after a child is born, which compel fathers to think more about saving money and finding consistent employment. Economic, relational, or other situational stressors may negatively affect fathers' mental well-being—especially after a child is born—which prompt needs for information about coping with depression.

To address fathers' information needs at different stages of a child's development, health care professionals might consider putting together information packets for fathers unique to expectant status. Resources for

expectant fathers might cover a broad range of topics and include a checklist of concrete activities fathers can engage in, such as accompanying a partner on medical visits or installing a car seat, to reduce uncertainty during the pregnancy months. Comparatively, resources for recent fathers would offer more in-depth information about fewer topics. Complementing information about child rearing and fatherhood responsibilities, the packet would emphasize ways to improve financial and mental health as well as include referral sources in the community for further assistance.

*Interpersonal Sources Are Important Before and After Birth.* Among the total sample, fathers consulted interpersonal sources of information—a partner/the baby's mother and health professionals—with the greatest consistency, confirming previous work by T. K. Smith et al. (2015). Moreover, the researcher hypothesized that low-income, less-educated, minority E/R fathers would consult interpersonal sources to a greater extent than those of higher income, education, and of nonminority ethnicity. Although the relationship between income level and sources of information produced inconclusive results, other demographic trends warrant discussion. E/R fathers from minority groups and those with lower education levels relied on the Internet and books significantly less than their higher educated, nonminority counterparts. Ethnic minority E/R fathers also consulted with people from church or community significantly more than ethnic majority fathers for information about pregnancy and child care.

In light of the findings, the results challenge past research claiming race to no longer be associated with the digital divide (Rice & Katz, 2003). Ethnicity and education operated as strong predictors of decreased Internet use. Subsequently, health care professionals working with underserved populations need to be careful about suggesting E/R fathers simply "go online" to access more information about helping a partner during pregnancy or caring for a child. Less-educated, minority E/R fathers may not be able to access the Internet (first-level divide), they may not possess skills to retrieve the information they seek online (second-level divide; Hargittai, 2002), or they simply may prefer interpersonal sources (T. K. Smith et al., 2015). A better approach might be to identify an influential lay person(s) in the community who serves as a trusted source of information, also known as a health information maven (Kontos, Emmons, Puleo, & Viswanath, 2011). Given minority E/R dads may rely on sources of information from church or the community, health information mavens may be uniquely positioned to provide timely and accurate information to E/R fathers.

The nonsignificant findings associated with income do suggest digital disparities associated with SES may be

waning. Eighty-eight percent of low-income participants were able to access the Internet at home, and 89% had a computer at home. Moreover, 99% of the low-income sample had a cell phone, and 84% reported using the Internet on a cell phone. National trends indicate more and more individuals are accessing the Internet from their cell phones, and one third of cell-Internet users mostly use their phone to go online (Duggan & Smith, 2013). “Cell—mostly Internet users” tend to be young, nonmajority and relatively low income. The cell phone, therefore, may function as a bridge spanning the digital divide. Providing low-income E/R dads with health information via cell phone, either through text messaging or the mobile web, can help equip them with needed information across the stages of a child’s development.

Sources of information also change across the stages of a child’s development. Expectant fathers use family members for information about pregnancy significantly more than recent fathers. In comparison, recent fathers were more likely to consult a partner for information about child care than expectant fathers. Thus, the family may offer valuable insights and suggestions as a father is preparing for the birth of the baby. On the baby’s arrival, however, the partner becomes the source of information relied on to an even greater extent. After the child is born, the researcher conjectures, information needs become specific and situational. The baby’s mother, who possesses the most knowledge about the baby, then serves as an optimal resource for addressing information needs.

**Relationships Matter.** The partner/baby’s mother was the source consulted most often for information about pregnancy and child care; however, low-income and less-educated E/R dads tended to consult their partners significantly less than dads of higher income. The finding may be attributed to the association between relational status, income and education, with E/R fathers of low income and education less likely to be in a committed relationship with the mother of the baby. Unfortunately, results also indicate perceptions of relational closeness with a partner to be the sole predictor of paternal health information seeking. E/R dads who perceived a closer relationship with a partner were more likely to search for information about pregnancy and child care. Conversely, a lack of perceived relational closeness may serve as a variable intervening in the search for information (Wilson, 1997).

Whether or not E/R dads are in committed relationships with the mother of the baby, health professionals should encourage the development of strong coparenting relationships between father and mother. Supportive coparenting tends to decrease over time among at-risk parents whose relationships have dissolved (Dush, Kotila, & Schoppe-Sullivan, 2011). Ineffective coparenting also

leads to increased behavioral problems among children (Goldberg & Carlson, 2013). Unpartnered parents should be educated about effective coparenting tools in the context of a committed relationship, breakup, separation, or divorce. For example, the *Together We Can* relationship and marriage education program has been associated with decreased coparenting disagreements and the social competence of children (Kirkland et al., 2011). E/R fathers, together with their partners, may benefit from information on sustaining a solid relationship—together or apart—during pregnancy or after the child is born.

### *Limitations and Future Directions*

The robustness of the study findings is qualified by several key methodological limitations. First, the data were drawn from three sources using convenience sampling methods, processes which calls into question the generalizability of the findings to a wider sample. Moreover, the smaller sample size of low-income E/R fathers ( $n = 68$ ) in the context of the larger sample ( $N = 186$ ), potentially affects the generalizability of study results to low-income demographic groups. Accordingly, future study should aim to recruit a larger sample by developing a shorter survey, increasing compensation, and relying to a greater extent on contacts from community-based agencies. Perhaps participation may increase if men from long-standing and well-respected agencies assisting low-income fathers facilitate recruitment.

Future work also would be enhanced with a more intentional and structured use of measures resonating with Wilson’s (1997) information behavior model. Specifically, Shieh, McDaniel, and Ke (2009) have developed scales measuring pregnancy health information seeking, pregnancy health information needs, and pregnancy health information barriers that connect more consistently to elements of Wilson’s (1997) theory.

The current investigation comprises Phase 1 of a two-part investigation examining health information behavior and technology use among low-income E/R fathers. The second phase of the study will consist of measuring outcomes associated with participation in a mobile health program targeting expectant or recent fathers. The research team conjectures the *utilization of mobile phones to be a viable approach to improving paternal access to quality health information as well as to increasing fathers’ participation and advocacy in the health care setting*. Text-based intervention can be especially important among low-income families due to lack of access to technology (Song et al., 2013) low literacy levels (Berkman et al., 2004) precluding understanding online materials or other resources, and high frequencies of cell phone use (A. Smith, 2010). As a result, cell phones may be a technology through which the information can be accessed

and the knowledge gap can be narrowed for E/R fathers, thereby operating as one among many interventions increasing paternal involvement in the lives of mother and child.

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### Notes

1. Levene's test indicated unequal variances in Internet as a source of information ( $F = 6.43, p = .012$ ) so degrees of freedom were adjusted from 182 to 146.
2. Levene's test indicated unequal variances in use of books ( $F = 6.25, p = .013$ ); degrees of freedom were adjusted from 176 to 148.
3. Levene's test demonstrated unequal variances in church/community sources for information about child care ( $F = 12.77, p = .000$ ); degrees of freedom were therefore adjusted from 177 to 107.
4. Levene's test of equal variances indicated inequality in the use of Internet for pregnancy information ( $F = 6.95, p = .009$ ), so degrees of freedom were adjusted from 178 to 111.

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