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## The Impact of Pregnancy and Childbirth on Sexual Behaviors: A Systematic Review

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*The purpose of this review was to examine and synthesize the available quality evidence to provide researchers, educators, and clinicians an overview of what is known about sexual behaviors during pregnancy and the year after childbirth. Search engines were used to identify peer-reviewed, English-language articles that met the inclusion criteria. A total of 56 prospective, retrospective, and qualitative studies published after 1996 were reviewed. A gradual decline in vaginal intercourse from prepregnancy to first trimester to third trimester was found. Most couples resume vaginal intercourse by eight weeks after childbirth, but this behavior does not occur at prepregnancy frequencies until closer to 12 months postchildbirth. Future studies should consider assessing sexual behaviors beyond vaginal intercourse and increase efforts in recruitment of diverse samples including non-White, nonheterosexual pregnant individuals, and partners of pregnant individuals.*

The science on sexuality during and after pregnancy has grown as researchers and clinicians increasingly acknowledge the importance of healthy sexual relationships within intimate partnerships. Sex is important to many individuals and their relationships, and pregnant couples are no exception (Pastore, Owens, & Raymond, 2007). Considering the profound physiological, psychological, and physical changes that occur from implantation through the postpartum period, the presence of changes in sexual behavior during this time is hardly surprising. Further, sexual patterns are rooted in culture and socially constructed; this is also true during pregnancy and the postpartum period. Many religions and cultural traditions offer prescriptions of the sexual practices that are considered acceptable during pregnancy and after childbirth (Anzaku & Mikah, 2014; Desgrées-du-Loû & Brou, 2005; Ekabua, Ekabua, Odusolu, Agan, & Etokidem, 2010; Odar, Wandabwa, & Kiondo, 2003; Poma, 1987, Leviticus 12.2, New International Version; Radziah et al., 2013). While all cultures are likely to have their attitudes toward sex during pregnancy and the postpartum period affected by these traditions to some extent, we speculate that more conservative, religious, or patriarchal regions might be more likely to have these instituted as strongly established societal norms and practices, because these regulations speak more on the nature of the pregnant and postpartum woman rather than precautions

against practices that might harm the pregnancy. For example, in the New American Bible, the pregnant and early postpartum woman is considered unclean, “as in the days of her menstruation she [the pregnant woman] shall be unclean” (Leviticus 12.2) and, therefore, sexual intercourse is “prohibited.” We speculate, however, that it is possible the opposite might also be seen, where stronger patriarchal values result in greater sexual objectification of women, creating an environment where pregnant and postpartum women feel conscious or subconscious pressure to maintain prepregnancy levels of sexual activity.

For these reasons, while everyone experiences ebbs and flows in frequency and quality of sexual activity, pregnant and postpartum individuals might be particularly susceptible to prolonged sexual changes. Although changes in sexual patterns are not inherently a problem, long pauses in sexual activity have the potential to impact intimate relationships as sexual satisfaction and sexual frequency are closely linked (Haavio-Mannila & Kontula, 1997; Laumann, John, Michael, & Michaels, 1994; Richters, Grulich, de Visser, Smith, & Rissel, 2003; Smith et al., 2011; Waite & Joyner, 2001). Relationship satisfaction has been frequently linked to sexual satisfaction among the general population (Byers, 2005; Yeh et al., 2006), and pregnant couples appear to follow the same pattern (de Judicibus & McCabe, 2002; van Brummen, Bruinse, van de Pol, Heintz, & van der Vaart, 2006; Witting et al., 2008). Considering these factors, it is important to scientifically understand the sexual behaviors of pregnant and postpartum individuals/couples, the factors associated with changes during this time, and the perceived or real impact of these changes.

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Many studies have been conducted to better understand sexual behaviors during pregnancy and after childbirth, but no recent systematic review has detailed the findings from these studies into a cohesive synthesis. High-quality systematic reviews have been conducted (Abdool, Thakar, & Sultan, 2009; Johnson, 2011; Serati et al., 2010), but these focus primarily on sexual function. Traditionally, sexual function has been described as how the human body responds within the phases of the sexual response cycle and typically includes the domains of desire, arousal, pain/discomfort, orgasm, and sometimes sexual satisfaction and sexual behaviors (Rosen et al., 2000; Syrjala et al., 2000). Multidimensional measures of sexual function that include sexual behaviors often group all activities into one domain, and previous reviews do not provide detailed findings and synthesis on specific sexual behaviors in both pregnancy and postpartum.

One meta-analysis was conducted of literature published from 1950 to 1996 (von Sydow, 1999). Many relevant studies have been published since this meta-analysis was conducted. The broad purpose of our review was to examine and synthesize the available quality evidence in peer-reviewed, English-language journals to provide researchers, educators, and clinicians an overview of what is known about sexual behaviors during and after pregnancy and what is yet to be determined. Specifically, there were three primary aims of our review:

1. to synthesize the available literature and describe what is scientifically known on the impact of pregnancy and childbirth on sexual behaviors;
2. to provide commentary on findings of these studies from a broad perspective, taking into account implications of the various approaches, samples, research questions, and fields of practice these findings emerge from; and
3. to offer suggestions on how to move forward with future research.

## Method

In our review, we examined and synthesized the available evidence in peer-reviewed, English-language journals to determine how sexual behaviors change through the course of pregnancy and after childbirth. Studies considered for inclusion were identified by searching for the terms: “sex/sexuality/sexual function/sexual behavior/sexual activity/sexual practices/sexual relationship/sexual satisfaction/sexual intercourse/vaginal intercourse/oral sex/masturbation/cunnilingus/fellatio/kissing/anal sex” and “pregnancy/childbirth/caesarean section/delivery mode/breastfeeding/peripartum/pueriperium/primiparous/antenatal/postpartum” in Google Scholar, PubMed, and PsychINFO by both authors independently. Duplicates among databases were removed

using EndnoteX5 Reference Manager. The authors narrowed the pool by first examining titles of the identified citations followed by abstracts and full texts. References of the identified studies were also examined for potential citations. Finally, previously published reviews (e.g., Abdool et al., 2009; Johnson, 2011; Serati et al., 2010; von Sydow, 1999) were read to identify any new citations and to ensure the current review was contributing significantly in terms of new perspectives and commentary. Every remaining identified full text was then read to determine if the study was relevant to our review. Studies were excluded if (a) the methodology was not described; (b) sexual behaviors were assessed, but the authors did not specify which sexual behaviors either in data collection or in reporting findings; (c) the study was retrospective and published in 1996 or earlier, considering von Sydow (1999) would have included these older studies; (d) a sample had fewer than 100 participants for retrospective quantitative studies only (larger samples are needed to show differences by trimester or by participant characteristics; smaller samples also have larger margins of error, particularly when stratifying the sample by an independent variable [(Creswell, 2014)]; this same criterion was not applied to prospective or qualitative studies; and (e) data were collected from participants who were more than two years postpartum or partners of individuals who were more than two years postpartum. Impact and change due to pregnancy and childbirth is difficult to measure accurately with retrospective designs, and this becomes more suspect as the years after childbirth increase. Self-report data on sexual behaviors is shown to be less accurate with increasing amounts of time between the event being measured and data collection due to increasing cognitive demand and recall bias (Graham, Catania, Brand, Duong, & Canchola, 2003; Jaccard, McDonald, Wan, Dittus, & Quinlan, 2002; Kauth, St. Lawrence, & Kelly, 1991). Reporting frequency of sexual behaviors is most accurate within the past seven days and loses significant reliability and validity after six months (Jaccard et al., 2002).

The literature search process yielded 56 studies. A PRISMA flowchart (Figure 1) was created to document each step of the literature search (Moher, Liberati, Tetzlaff, Altman, & the PRISMA Group, 2009). Because of the focus on impact and change, conclusions were first drawn using findings from prospective studies, with retrospective studies discussed as supplemental. Particular attention was also given to studies limited to primiparous participants, as parity can be a confounding variable in studies examining changes during and after pregnancy.

## Sexual Behaviors During Pregnancy

A total of 38 of the 56 articles included discussed sexuality during pregnancy. The studies were published between 1981 and 2015. Further, an article that is under review was also included. Three of the studies used qualitative research methods, 34 used quantitative research methods, and one used mixed research methods. Several fields of study were represented,

PRISMA 2009 Flow Diagram

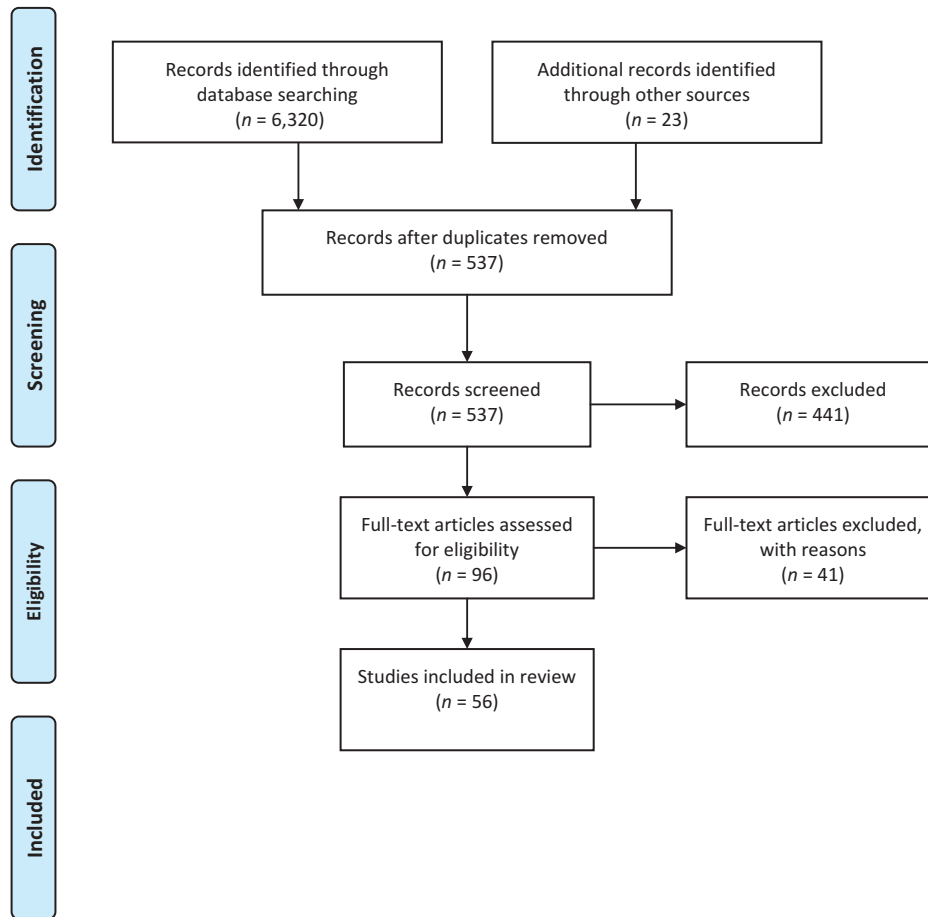


Figure 1. PRISMA flow chart documenting steps of the literature search.

such as obstetrics and gynecology (total = 14), nursing (total = 4), psychiatry (total = 2), psychology (total = 2), public health (total = 2), urology (total = 2), and urogynecology (total = 2). Studies included were also geographically diverse with multiple studies from: Turkey (total = 7), the United States (total = 7), Nigeria (total = 4), Australia (total = 2), Brazil (total = 2), Croatia (total = 2), England (total = 2), Iran (total = 2), and Thailand (total = 2). Studies from each of the following countries were also included: Austria, Canada, China, Germany, Pakistan, Poland, Portugal, and Taiwan.

Many of the studies required participants to have a specific relationship type as an inclusion criterion, while others simply provided details regarding their participants' relationship statuses. Four studies required participants to be married to opposite-sex partners (Eryilmaz, Ege, & Zincir, 2004; Reamy, White, Daniell, & Le Vine, 1982; Senkumwong, Chaovitsaree, Rugsao, Chandrawongse, & Yanunto, 2006; Uwapusitanon & Choobun, 2004), and five studies required participants to be married but did not specify partner sex (Afshar, Mohammad-Alizadeh-Charandabi, Merghti-Khoei, & Yavarikia, 2012; Corbacioglu, Bakir, Akbayir, Cilesiz Goksedef, & Akca, 2012; Kumar, Brant, & Robson, 1981; Leite et al., 2009; Liu,

Hsu, & Chen, 2013). Further, one study did not list having an opposite-sex partner as an inclusion criterion, but women who lived apart from their husbands were excluded (Shojaa, Jouybari, & Sanagoo, 2009). Nine studies required participants to be partnered with an opposite-sex partner (Barclay, McDonald, & O'Loughlin, 1994; Corbacioglu Esmer, Akca, Akbayir, Cilesiz Goksedef, & Bakir, 2013; Elliott & Watson, 1985; Erol et al., 2007; Hyde, DeLamater, Plant, & Byrd, 1996; Jawed-Wessel et al., 2016; Jawed-Wessel, Santo, & Irwin, 2017; Nakic Rados, Soljacic Vranes, & Sunjic, 2015; von Sydow, Ullmeyer, & Happ, 2001). Two studies required participants to have a partner but did not specify the partner's sex (Aslan, Aslan, Kizilyar, Isphai, & Esen, 2005; Bartellas, Crane, Daley, Bennett, & Hutchens, 2000). Three studies did not present specific inclusion or exclusion criteria but asked partner-related questions that did not specify the partner's sex (de Judicibus & McCabe, 2002; Fok, Chan, & Yuen, 2005; Nakic Rados, Soljacic Vranes, & Sunjic, 2014). One study did not present specific inclusion or exclusion criteria but had a question regarding male sexual initiation (Sacomori & Cardoso, 2010). Another study did not present specific inclusion or exclusion criteria but had a question regarding the participant's reaction to husband's

sexual desire (Gokyildiz & Beji, 2005). Across the majority of these studies, information on sexual orientation was not provided and heterosexuality appeared to be assumed.

While the literature is geographically diverse, racial demographics were rarely provided in studies conducted outside of the United States and Canada. The majority of the participants in seven studies identified as White (Bartellas et al., 2000; Connolly, Thorp, & Pahel, 2005; Jawed-Wessel et al., 2016; Jawed-Wessel et al., 2017; Pauleta, Pereira, & Graca, 2010; Reamy et al., 1982; Sacomori & Cardoso, 2010). More than half (51%;  $n = 55$ ) of the participants in Pauls, Occhino, and Dryfhout's study (2008) identified as African American. A total of six studies included data from the partners of pregnant women.

### **Vaginal Intercourse Frequency Drops in Mid to Late Third Trimester**

Thirteen studies examined changes in sexual behavior during pregnancy from a prospective approach (Afshar et al., 2012; Aslan et al., 2005; Barclay et al., 1994; de Judicibus & McCabe, 2002; Elliott & Watson, 1985; Galazka, Drosdzol-Cop, Naworska, Czajkowska, & Skrzypulec-Plinta, 2015; Kumar et al., 1981; Pauls et al., 2008; Reamy et al., 1982; Sayle, Savitz, Thorp, Hertz-Picciotto, & Wilcox, 2001; Trutnovsky, Hass, Lang, & Petru, 2006; Uwapusitanon & Choobun, 2004; von Sydow et al., 2001). Across 10 of these studies (Aslan et al., 2005; Barclay et al., 1994; de Judicibus & McCabe, 2002; Elliott & Watson, 1985; Galazka et al., 2015; Kumar et al., 1981; Reamy et al., 1982; Orji, Ogunlola, & Fasubaa, 2002; Sayle et al., 2001; Trutnovsky et al., 2006; Uwapusitanon & Choobun, 2004; von Sydow et al., 2001) the frequency of vaginal intercourse decreased as the pregnancy progressed, with the greatest decreases occurring between pre-pregnancy and the first trimester, and a sharp drop between the second trimester and the third trimester. The exception to this trend was found in Paul et al.'s study (2008), with no significant change in frequency of vaginal intercourse between the first and third trimester among a sample of 70 U.S. women. The somewhat gradual decline in vaginal intercourse found in prospective studies is also seen in the retrospective and qualitative studies included in this review (Adeyemi et al., 2005; Bartellas et al., 2000; Corbacioglu Esmer et al., 2013; Erenel, Eroglu, Vural, & Dilbaz, 2011; Erol et al., 2007; Eryilmaz et al., 2004; Fok et al., 2005; Gokyildiz & Beji, 2005; Liu et al., 2013; Naim & Bhutto, 2000; Nakic Rados et al., 2014, 2015; Onah, Iloabachie, Obi, Ezugwu, & Eze, 2002; Orji et al., 2002; Pauleta et al., 2010; Sacomori & Cardoso, 2010; Sayle et al., 2001; Senkumwong et al., 2006; Shojaa et al., 2009).

Rates of intentional abstention from vaginal intercourse due to pregnancy are difficult to synthesize across studies as the data collection points vary considerably and data are rarely stratified by gestational week: A participant who abstained from vaginal sex in her first trimester may reinstate this behavior in the second or third trimester. Examining only studies with data from the full pregnancy (data collected either prospectively through the third trimester or retrospectively after childbirth) also proved difficult,

as some of these studies simply did not report these data (e.g., Elliott & Watson, 1985). Of the available data, abstaining from vaginal intercourse during pregnancy ranges from 1.6% among a sample of puerperal Portuguese women (Pauleta et al., 2010), 14% of Canadian women with median gestational week of 22 (Bartellas et al., 2000), and 38.6% of Chinese women with median gestational week of 17 (Fok et al., 2005). One retrospective Turkish study found rates of abstention to increase with each trimester, from 5.1% in the first trimester, to 13.4% in the second, and 58.6% in the third trimester (Erenel et al., 2011).

### **Little to No Change in Noncoital Sexual Behaviors**

Five prospective studies examined changes in sexual behaviors beyond vaginal intercourse (Afshar et al., 2012; Barclay et al., 1994; Galazka et al., 2015; Pauls et al., 2008; von Sydow et al., 2001). Two of these studies included data collected by the male partners of pregnant participants (Barclay et al., 1994; von Sydow et al., 2001). No statistically significant change was found in the frequency of oral-genital, genital-anal, masturbation, kissing, and fondling/petting behaviors in the first two trimesters (Afshar et al., 2012) or all three trimesters (Galazka et al., 2015). Pauls et al. (2008) also found no statistically significant changes in these same behaviors, with the exception of oral sex, which declined between the first and third trimester. Similar results were obtained by von Sydow et al. (2001), but frequencies at each trimester were not tested for statistically significant changes. One study reported reduction in frequency and range of behaviors, but no specific results for each behavior were provided (Barclay et al., 1994).

Eight retrospective studies in this review collected data on frequency of sexual behaviors beyond vaginal intercourse (Bartellas et al., 2000; Bello, Olayemi, Aimakhu, & Adekunle, 2011; Fok et al., 2005; Hyde et al., 1996; Jawed-Wessel et al., 2017; Liu et al., 2013; Pauleta et al., 2010; Shojaa et al., 2009). Two of these studies included data collected from male partners of pregnant participants (Hyde et al., 1996; Jawed-Wessel et al., 2017). As with prospective studies, the majority of these retrospective studies that examined differences in frequency by trimester (Bartellas et al., 2000; Fok et al., 2005; Pauleta et al., 2010; Shojaa et al., 2009) found no significant difference in sexual behaviors by trimester (Bartellas et al., 2000; Fok et al., 2005; Pauleta et al., 2010). Shojaa et al. (2009) found no difference between the first and second trimester but a significant decrease in frequency in the third trimester. Further, Pauleta et al. (2010) distinguished between sexual behaviors during the third trimester and the birth week. While 80% reported sexual activities in the third trimester, 61% reported no sexual activity in the birth week specifically. It is likely frequency results will differ based on when in the third trimester data was collected.

Proportions of participants engaging in specific behaviors shows considerable variation among studies:

1. Anal sex: Zero to 21% of participants reported engaging in anal sex (Afshar et al., 2012; Galazka et al., 2015; Hyde et al., 1996; Jawed-Wessel et al., 2017;

Pauleta et al., 2010; von Sydow et al., 2001). Most of these samples reported proportions of participants less than 7% engaging in anal sex (Bartellas et al., 2000; Fok et al., 2005; Galazka et al., 2015; Pauleta et al., 2010; von Sydow et al., 2001). Larger proportions were found in one Iranian sample (11%, Afshar et al., 2012) and one U.S. sample (21%, Jawed-Wessel et al., 2017); both studies collected data in early pregnancy (before 14 weeks).

2. Oral sex: In all, 30% to 59% of participants reported engaging in cunnilingus and 36% to 85% reported fellatio. Fellatio was consistently more common than cunnilingus (Afshar et al., 2012; Hyde et al., 1996; Jawed-Wessel et al., 2017; von Sydow et al., 2001). Eight studies did not differentiate between cunnilingus and fellatio; among these, 3% to 55% of participants reported oral sex behaviors. “Oral sex” was less common in one Nigerian sample (3% to 4%, Bello et al., 2011), one Polish sample (16% to 21%, Galazka et al., 2015), and one Chinese sample (17%, Fok et al., 2005) and more common in Canadian (55%, Bartellas et al., 2000), U.S. (39%, Pauls et al., 2008), and Portuguese samples (38%, Pauleta et al., 2010).

3. Masturbation: In all, 6% to 64% of women reported masturbating (Bartellas et al., 2000; Galazka et al., 2015; Hyde et al., 1996; Jawed-Wessel et al., 2017; Pauleta et al., 2010; Shojaa et al., 2009; von Sydow et al., 2001). Masturbation was highest in one German sample (93%, von Sydow et al., 2001) and lowest in two Chinese samples and one Polish sample (9.1%, Fok et al., 2005; first trimester = 10.1%, second trimester = 11.3%, third trimester = 8.3%, Galazka et al., 2015; 6%, Shojaa et al., 2009). The remaining samples ranged between 20% and 38% of participants engaging in this behavior (Bartellas et al., 2000; Jawed-Wessel et al., 2017; Pauleta et al., 2010); 83% to 89% of men masturbated at some point in the pregnancy (Jawed-Wessel et al., 2017; von Sydow et al., 2001).

4. Sexual enhancement products. Barclay et al. (1994) reported two out of 25 couples used a vibrator vaginally. It was not reported at which trimester vibrator use occurred or how it changed through the pregnancy. No other prospective study in this review included sex toy use data. Jawed-Wessel et al. (2017) found 13% of men and women used a sex toy alone in the past month while aware of the pregnancy, and the same proportion used a sex toy with a partner during the same time frame. One-third of men and women used personal lubricant in the past month.

Almost all studies reporting specific frequencies of behaviors found vaginal intercourse to be more common than oral sex or anal sex at each trimester examined (Bartellas et al., 2000; Bello et al., 2011; Fok et al., 2005; Galazka et al., 2015; Hyde et al., 1996; Pauleta et al., 2010; Pauls et al., 2008; Shojaa et al., 2009; von Sydow et al., 2001). There was one exception: In a U.S. sample, more couples in their first trimester engaged in fellatio than vaginal intercourse (Jawed-Wessel et al., 2017).

### **Rear-Entry Position Increases but Missionary Remains Popular**

Barclay et al. (1994), Galazka et al. (2015), Uwapusitanon and Choobun (2004), and von Sydow et al. (2001) prospectively assessed variations in intercourse positions at each trimester and found an increase in rear-entry positions (either side-by-side “spooning” or with the pregnant woman on hands and knees) through the pregnancy, although the missionary position remained common into the third trimester. Reamy et al. (1982) and Uwapusitanon and Choobun (2004) reported the missionary position to persist as the most common position even into the third trimester. Seven retrospective studies also investigated changes in frequency of sexual positions (Bartellas et al., 2000; Bello et al., 2011; Gokyildiz & Beji, 2005; Pauleta et al., 2010; Sacomori & Cardoso, 2010; Senkumwong et al., 2006; Shojaa et al., 2009) and found similar results. Sacomori and Cardoso (2010) also reported that while side-by-side rear entry was the most common position (45%) in the third trimester, missionary (37.9%) was still more frequent than other side or rear entry positions, such as the woman on hands and knees. Jawed-Wessel et al. (2016) did not examine sexual positions specifically; however, this particular study asked pregnant women and their partners how the pregnancy influenced the sexual positions they use. The majority of men and women (65.9%) at least somewhat agreed that there were several sexual positions they could no longer use because of the pregnancy. This is particularly interesting considering the couples in this sample were less than 13 weeks pregnant and therefore these changes were likely not due to accommodate a growing pregnant belly. Afshar et al. (2012) conducted an intervention study to examine changes in sexual behavior after sex education. Missionary position was most popular in both groups of Iranian women in early pregnancy (eight to 14 weeks). After two sex education classes, women in the intervention group were significantly less likely to report use of the missionary position and significantly more likely to report the “woman on top” position than the control group who did not receive information on safe sexual practices.

### **Concerns About Having Sex During Pregnancy are Common**

Across the majority of the studies available, misconceptions and fears about negative outcomes of having sex during pregnancy (e.g., miscarriage, harm to the fetus, preterm labor, infection) appear to permeate multiple cultures but at different rates. Fok et al. (2005), Liu et al. (2013), and Senkumwong et al. (2006) found almost all of their respective Chinese, Taiwanese, or Thai participants held strong concerns related to negative obstetric outcomes from having sex. Concerns about negative obstetric events are also seen commonly in Canadian, U.S., Turkish, Pakistani, Croatian, and Austrian populations as well, but not as frequently (Bartellas et al., 2000; Corbacioglu et al., 2012; Jawed-Wessel et al., 2016; Naim & Bhutto, 2000; Nakic Rados et al., 2014; Pauls et al., 2008; Trutnovsky et al., 2006). Approximately half of the

women in U.S. and Canadian samples expressed concerns or anxiety about sexual activity harming the pregnancy/fetus (Bartellas et al., 2000; Jawed-Wessel et al., 2016; Pauls et al., 2008), and about 45% of Pakistani, Iranian, and Turkish women held beliefs about adverse effects of sexual activity (Corbacioglu et al., 2012; Eryilmaz et al., 2004; Naim & Bhutto, 2000). A qualitative study of 51 Iranian women found many of the misconceptions related to sex during pregnancy reflected a poor understanding of pregnancy anatomy, such as fetal exposure to sperm or rupturing the hymen of a female fetus (Shojaa et al., 2009). Portuguese women also held medical concerns about sex during pregnancy but at lower rates than those previously mentioned, with one study finding 23.4% of 194 women feared negative obstetric outcomes of sexual intercourse (Pauleta et al., 2010). Nigerian women, on the other hand, rarely held such beliefs, with only 6% to 12% indicating sexual intercourse could cause miscarriage, harm to the fetus, or membrane rupture (Adeyemi et al., 2005; Bello et al., 2011; Orji et al., 2002). Trutnovsky et al. (2006) used a semiquantitative prospective design with interviews in early and late pregnancy with Austrian women. Concern about possible obstetric complications was mentioned repeatedly by these women, and some expressed frustration: "On the one hand I feel sexual desire, but on the other hand I don't really dare to have sex. This can be quite frustrating." This conflict between desire and concerns with safety should be explored further in various populations.

Three studies provided insight into the frequency of concerns among men who are partnered with pregnant women. Jawed-Wessel et al. (2016) found no significant gender difference in a dyadic analysis between U.S. men and their partners in attitudes toward having sex during pregnancy. It is possible Croatian men are more likely to have fears related to sex during pregnancy than Croatian women (Nakic Rados et al., 2015). Although statistical tests of difference are not available, examining the two studies in the Croatian population show that 81% of men (Nakic Rados et al., 2015) and 57% of women (Nakic Rados et al., 2014) feared intercourse might harm the fetus. This difference in men and women was even more pronounced in two Nigerian samples. Only 6% to 12% of Nigerian women held fears about sexual activity during pregnancy (Adeyemi et al., 2005; Bello et al., 2011; Orji et al., 2002), compared to 47.6% of Nigerian men who thought intercourse could cause miscarriage (Onah et al., 2002). In the Trutnovsky et al. (2006) semiquantitative study, some women expressed frustration directed toward their partner's attitudes: "My partner acts as if I was fragile. He thinks of the baby inside me, and doesn't want to touch my body." Few conclusions can be drawn regarding men's attitudes or concerns about sexual activity, however, due to the limited studies reporting this information.

Findings from many of the studies included in this review indicate that negative attitudes toward having sex during pregnancy impact sexual activity. The majority of participants in four studies reported concern for the well-being of the fetus as the main reason for sexual abstinence (Galazka et al., 2015; Liu et al., 2013; Nakic Rados et al., 2014, 2015). In one study, women described wanting to place the baby's safety before

their own or their partner's pleasure. These women also detailed alternative behaviors, such as receiving massage, more gentle intercourse, manual stimulation of each other's genitals, and their partners masturbating instead of vaginal intercourse as more acceptable and safer (Liu et al., 2013). Similar results were also found statistically. Participants who held negative attitudes toward having sex during pregnancy or believed it would lead to adverse effects on the pregnancy were less likely to engage in sexual activity during pregnancy and vice versa (Jawed-Wessel et al., 2016; Onah et al., 2002). The literature examined suggests simply being aware of the pregnancy might impact attitudes toward sexual behaviors and avoidance of sex during pregnancy. Turkish women who were unaware of their pregnancy were found to have significantly higher frequency of vaginal intercourse in the first trimester compared to those who were aware at the time they engaged in sex (Corbacioglu et al., 2012). Close to half of the women in the aware cohort reported being concerned about adverse effects of sexual activity on the pregnancy or the fetus, and about 10% avoided vaginal intercourse because of these fears. These findings should not, however, diminish the role fatigue, decreased desire, or vaginal and pelvic pain also play as common reasons for avoiding sex during pregnancy (Bartellas et al., 2000; Bello et al., 2011; Eryilmaz et al., 2004).

Finally, some studies also indicate women might feel pressured to engage in sexual activity to maintain their relationship. In one study, the most common reason for Nigerian women to maintain the same frequency of vaginal intercourse during pregnancy as prepregnancy was to prevent infidelity, followed by marital harmony (Orji et al., 2002). Another similar study among Nigerian women reported the top reason for having vaginal sex during pregnancy was that it would make labor easier/facilitate delivery, followed by marital harmony (Bello et al., 2011). A smaller proportion of Pakistani women (13.3%) also believed sex during pregnancy protected the relationship from infidelity (Naim & Bhutto, 2000). The top three reasons given by Turkish women for having vaginal sex when they did not feel sexual desire was to avoid hurting, offending, or angering their partner (Erenel et al., 2011). Conclusions are difficult to draw, however, as the remaining studies in this review may have asked for reasons for abstaining from sex but not reasons for having sex.

### **Pregnancy Discussion**

Across the literature reviewed, we found a gradual decline in vaginal intercourse from prepregnancy to first trimester and again between second to third trimester, although one prospective study found no significant change in frequency of vaginal intercourse in a small U.S. sample (Pauls et al., 2008). There is likely significant variation in frequency of vaginal intercourse depending on the gestational week of the third trimester. In other words, one study might find little to no difference in frequency of vaginal intercourse from second trimester to early third trimester but find a steep decline if the data had been collected after 37 weeks. Therefore, it is important researchers indicate clearly at which gestational week data on sexual

frequency are collected, particularly in early and late pregnancy.

Several studies in this review confirm the occurrence of various sexual behaviors beyond vaginal intercourse, and there is little evidence to suggest the frequency of these behaviors are significantly impacted by the pregnancy. As with vaginal intercourse, there is likely variation in frequency of sexual behaviors at different points in the third trimester, particularly early third trimester compared to 37 weeks and beyond. It is important to note that many studies examining sexual function during pregnancy used the Female Sexual Function Index (FSFI; Rosen et al., 2000) to measure this construct. The FSFI scores “no sexual activity” in the past four weeks as a 0 for the domains of pain, lubrication, orgasm, and arousal; lower domain and overall sexual function scores indicate poorer functioning. Our findings indicate a sharp decline in sexual activity in the final weeks of pregnancy. Researchers using the FSFI to measure sexual function in pregnant populations should be careful to note that declines found in their sample might be due to when in the third trimester data were collected. A significant drop in sexual function in the third trimester might be due to fewer individuals engaging in sexual activity in the third trimester and not because they are experiencing pain or difficulties with arousal and lubrication to a much higher degree. A drop in sexual activity does not always mean poorer sexual functioning or that these changes are bothersome or reflective of a clinical problem. Previous researchers have offered suggestions on amendments to the FSFI to reduce this bias (Meyer-Bahlburg & Dolezal, 2007).

Findings from this review also indicate couples rely on more varied sex positions during pregnancy than prior, but the missionary position is still used often. This is surprising considering the general recommendations from prenatal care providers for pregnant individuals to avoid lying on their back after approximately 27 weeks gestation due to the weight of the uterus placing pressure on major veins, therefore obstructing blood flow to the heart (American College of Obstetricians and Gynecologists, 2016; Lewis & Black, 2006). Studies that examine sexual positions during pregnancy might appear unimportant to health practitioners and childbirth educators, however, if across the literature many pregnant individuals are having sex while lying on their backs. Health practitioners and childbirth educators may need to review the literature to address sexual behaviors with their pregnant patients. Further, one Iranian study described earlier found sex education during pregnancy to be effective in changing this practice (Afshar et al., 2012), suggesting prenatal care providers have the opportunity to effectively educate patients in the third trimester on safer, possibly more comfortable, sexual positions, and should take the time to do so.

There is substantial evidence in this review on the considerable variation in (a) the proportion of participants engaging in behaviors beyond vaginal intercourse, such as oral sex, masturbation, and anal sex, and (b) the attitudes and

concerns related to having sex during pregnancy. There is also evidence to suggest statistically significant relationships between attitudes toward having sex during pregnancy and frequency of behaviors. These variations suggest psychosocial and cultural factors play a significant role in how pregnant individuals and their partners express their sexuality. The diverse regions conducting research in this area allow for a more complex understanding of these relationships, but many more studies in multiple regions are needed to draw specific conclusions. For example, studies in Nigeria, Pakistan, and Turkey (Erenel et al., 2011; Naim & Bhutto, 2000; Orji et al., 2002; Bello et al., 2011) suggest women have sex during pregnancy even when they might not want to for their own sexual fulfillment. Similar circumstances might also be found in other or all regions, but this question is simply not asked.

There is also not enough research to conclude whether partners of pregnant individuals hold more or less concerns about sex during pregnancy or if there are any gender differences in attitudes. Studies appear to have contradictory findings (e.g., Jawed-Wessel et al., 2016; Nakic Rados et al., 2015), but it is highly possible this difference in findings is due to time of data collection (first trimester versus third trimester) or to cultural backgrounds (e.g., U.S. men versus Croatian men). Finally, it is important to note that some women abstain from vaginal intercourse simply because it is uncomfortable or not pleasurable during pregnancy, particularly in the third trimester.

### Postpartum Sexual Behaviors

A total of 26 of the 56 articles included discussed sexuality after childbirth. The studies were published between 1981 and 2015. Two of the studies used qualitative research methods, and 24 studies used quantitative research methods. Several fields of study were represented, such as obstetrics and gynecology (total = 4), Healthy Mothers Healthy Families Research Group (total = 2), psychology (total = 2), psychiatry (total = 2), and urogynecology and reconstructive pelvis surgery (total = 2). Studies included were also geographically diverse, with multiple studies from the United States (total = 7), England (total = 4), Australia (total = 3), Iran (total = 2), Scotland (total = 2), and Sweden (total = 2). Studies from each of the following countries were also included: Austria, Germany, Israel, Kuwait, the Netherlands, and Turkey.

One postpartum study required women to be married to an opposite-sex partner (Safarinejad, Kolahi, & Hosseini, 2009), and one study required women to be married but did not specify the partner's sex (Kumar et al., 1981). Further, one study required women to be married but did not specify the partner's sex; however, one participant in the study referred to her husband (Alder, Cook, Davidson, West, & Bancroft, 1986). Four of the studies required participants to have an opposite-sex partner (Ahlborg, Dahlöf, & Hallberg, 2005; Elliott & Watson, 1985; Hyde et al., 1996; von Sydow et al., 2001). Van Brummen et al. (2006) required all participants to



identify as heterosexual. Three studies did not require participants to have a partner, but partner questions were asked that did not specify the sex of the partner (Brubaker et al., 2008; de Judicibus & McCabe, 2002; Williams, Herron-Marx, & Knibb, 2007). The majority of the participants in five of the studies identified as White (Barrett et al., 2000; Brubaker et al., 2008; Connolly et al., 2005; Rogers, Borders, Leeman, & Albers, 2009; Signorello, Harlow, Chekos, & Repke, 2001). More than half (51%;  $n = 55$ ) of the participants in Paul et al.'s study (2008) identified as African American. A total of five studies included the partners of pregnant women.

### **Vaginal Intercourse Resumes Six to Eight Weeks Postpartum**

A total of 25 studies investigated sexual behaviors during the postpartum period. The majority of these studies, however, focused on determining the amount of time to resumption of vaginal intercourse as opposed to documenting proportions of participants engaging in behaviors and their frequencies. Fifteen of these studies approached this issue from a prospective design, many with pregnancy-level baseline data. The average time of resumption of vaginal intercourse was consistently between six and eight weeks postpartum (Alder et al., 1986; al Bustan, el Tomi, Faiwalla, & Manav, 1995; Glazener, 1997; Hyde et al., 1996; Lurie et al., 2013; McDonald & Brown, 2013; Pauls et al., 2008), with 78% to 90% resuming vaginal intercourse by 12 weeks postpartum (Alder et al., 1986; Connolly et al., 2005; Elliott & Watson, 1985; Glazener, 1997; Hyde et al., 1996; Kumar et al., 1981; Lurie et al., 2013; McDonald & Brown, 2013; McDonald, Gartland, Small, & Brown, 2015; Rogers et al., 2009). It is unclear if many of these studies documented the proportion of women who engaged in vaginal intercourse prior to six weeks, but one explicitly reported 29% of their sample fell into this group (Pauls et al., 2008). Retrospective studies confirm these results, but with median time to resumption of intercourse leaning toward later in the early postpartum period, six to 12 weeks (Acele & Karacam, 2011; Bello et al., 2011; Heidari, Khoei, & Asiabar, 2009; Pastore et al., 2007; Trutnovsky et al., 2006; Williams et al., 2007).

Delivery-related outcomes appear to be the greatest predictor of variations in time to resumption of vaginal intercourse. Women who birthed vaginally but without instrumental assistance, an episiotomy, or sutured perineal tear (typically second, third, or fourth degree), and those who birthed via caesarean section (elective or emergent), were significantly more likely to resume sex on average between 4.5 and 6 weeks earlier (Hyde et al., 1996; Lurie et al., 2013; McDonald & Brown, 2013; Safarinejad et al., 2009; Signorello et al., 2001; van Brummen et al., 2006; Williams et al., 2007). Two retrospective studies found no significant difference between mode of delivery and time to resumption of vaginal intercourse (Brubaker et al., 2008; Pastore et al., 2007); however, most retrospective studies included in this review did not examine the relationship between delivery details and time to resumption. Maternal age also played a factor, with one study reporting women age 35 or older

waiting on average 2.5 weeks longer to resume vaginal intercourse than those younger than age 25 (Signorello et al., 2001). In addition, one prospective study found non-breastfeeding women more likely to resume intercourse later than breastfeeding women (Hyde et al., 1996). Although this difference was statistically significant, the delay in resumption was by one week on average and no other differences in behaviors or time points were found between breastfeeding women and nonbreastfeeding women (Hyde et al., 1996). While breastfeeding does not appear to have a strong impact on time to resumption, there is some evidence to suggest it reduces the frequency of sexual activity (Ahlborg et al., 2005; De Judicibus et al., 2002; Heidari et al., 2009).

### **Sexual Behaviors Become More Common After 12 Weeks Postpartum**

Two dyadic prospective studies (Hyde et al., 1996; von Sydow et al., 2001) and three retrospective studies (Barrett et al., 2000; De Judicibus et al., 2002; Pauls et al., 2008) reported on frequency of noncoital behaviors. Very few couples reported vaginal intercourse, masturbation, or cunnilingus within four weeks postpartum, but one-third of couples engaged in fellatio (Hyde et al., 1996). There is a fairly dramatic increase in frequency of behaviors at 12 weeks, four to six months, and one year postpartum (Hyde et al., 1996; von Sydow, 2001). At six months postpartum no sexual behavior (fellatio, cunnilingus, masturbation, vaginal sex) reached prepregnancy levels, and behaviors were slightly lower than pregnancy levels (Barrett et al., 2000; De Judicibus et al., 2002; Hyde et al., 1996; Pauls et al., 2008; von Sydow et al., 2001). Fatigue was reported as the most common reason for not engaging in sexual activity at six months postpartum (Barrett et al., 2000; Glazener, 1997; Olsson, Lundqvist, Faxelid, & Nissen, 2005; Trutnovsky et al., 2006). Interestingly, the proportion of fathers who reported masturbating was stable, around 45% from second trimester to 12 months postpartum, even with increases and decreases in partnered sexual activity (Hyde et al., 1996). Along these lines, von Sydow et al. (2001) found men's frequency of masturbation to be three to four times per month on average at one to three months postpartum, a rate similar to prepregnancy levels, further suggesting masturbation frequency does not fluctuate too much between pregnancy and after childbirth in many men. Masturbation for women rose to almost prepregnancy and pregnancy levels at four to six months postpartum (Hyde et al., 1996; von Sydow et al., 2001). It is possible masturbation, while practiced less often than partnered behaviors, is the first behavior to reach prepregnancy levels. No studies in this review documented use of sex toys or personal lubricant or frequency of mutual masturbation. This information on frequency of sexual behaviors suggests that while the proportion of couples having partnered sex at 12 weeks increases dramatically, they are likely not having sex as often as during pregnancy or prior to pregnancy until well after six months postpartum.

### **Orgasm Frequency Gradually Returns by One Year Postpartum**

In addition to sexual behaviors, five studies documented experiences of orgasm specifically (Alder et al., 1986; Barrett et al., 2000; Connolly et al., 2005; Heidari et al., 2009; Kumar et al., 1981). As with sexual behaviors, experiencing orgasms during sexual activity after childbirth declined significantly for some women (Alder et al., 1986; Connolly et al., 2005; Kumar et al., 1981), but there appears to be a gradual return to prepregnancy levels by 12 months postpartum (Kumar et al., 1981). Proportions of women experiencing orgasm were 39%, 60%, and 61% at six weeks, 12 weeks, and 24 weeks postpartum, respectively, with orgasms described as similar to prepregnancy or improved by 71%, 77%, and 83% at each time point (Connolly et al., 2005). Because only a percentage is given without specific numbers, it is unclear if these orgasm percentages are of the total number of participants or only of those who engaged in sexual activity at those time points. Barrett et al. (2000) also documented an increase in difficulty to reach orgasm; 15% experienced difficulty prepregnancy compared to 33% in the first 12 weeks postpartum and 23% at 24 weeks.

### **Dyspareunia is Common in Early Postpartum**

Despite most women across many samples having resumed vaginal intercourse by 12 weeks postpartum, a significant proportion (30% to 62%) felt pain with sex at this point (Acele & Karacam, 2011; Barrett et al., 2000; Connolly et al., 2005; Glazener, 1997; McDonald et al., 2015; Safarinejad et al., 2009; Signorello et al., 2001). Dyspareunia was reported most often at 12 weeks and declined by six months postpartum (Barrett et al., 2000; Connolly et al., 2005; McDonald et al., 2015; Safarinejad et al., 2009; Signorello et al., 2001). Further, Signorello et al. (2001) found the majority of all delivery outcome groups experienced pain during the first instance of postpartum intercourse, but women with intact perineum were more likely to describe the pain as mild instead of severe. Finally, Connolly et al. (2005) found no woman experienced pain severe enough to limit vaginal intercourse by six months postpartum. Examining the etiology of genitopelvic pain and dyspareunia was outside the scope of this review and, therefore, only the findings on pain with sexual behaviors reported in studies included in this review are presented.

### **Postpartum Discussion**

Findings from this review show resuming sex by six to eight weeks is common and almost all couples have at least attempted intercourse by three to six months postpartum, but partnered sex is not occurring at prepregnancy frequencies until beyond six months postpartum, likely closer to 12 months post childbirth. Prospective examination of sexual behaviors reveals interesting details about masturbation. While practiced less frequently than partnered behaviors, masturbation is likely to

reach prepregnancy levels earlier. It is possible that solo masturbating is easier to accomplish than partnered activities for many reasons, such as a new mother's possible body image self-consciousness, fear of pain from penetrative sex, or the presence of an infant that requires at least one adult's attention during many hours of the day and night.

Few studies document behaviors other than time to resumption of vaginal intercourse, however. Hyde et al. (1996) and von Sydow et al. (2001) provided the most detailed examination of specific behaviors in the postpartum period. It is possible, though, that the rates and frequencies of these behaviors have shifted in the 15 to 20 years since these studies were published; therefore, it is vital for contemporary studies to include measures of behaviors beyond vaginal intercourse and time to resumption of vaginal intercourse. Further, as seen in the pregnancy data, sexual behaviors are culturally varied, and two studies cannot provide enough evidence to generalize to all postpartum individuals.

Findings from this review also suggest variations in delivery mode might impact sexual activities. Simply examining the differences in vaginal versus caesarean delivery is likely too broad when studies have found assisted/instrumental vaginal deliveries as impactful as a major abdominal surgery (Hyde et al., 1996; Lurie et al., 2013; McDonald & Brown, 2013; Safarinejad et al., 2009; Signorello et al., 2001; van Brummen et al., 2006). There might also be differences in time to resumption based on spontaneous perineal tearing and episiotomy, or between perineal trauma requiring sutures and trauma that does not, regardless of whether it is spontaneous or performed as an episiotomy; but studies in this review did not distinguish trauma to this degree. Future studies should collect details of the mode of delivery if possible, as these variations will likely change their results. Some postpartum individuals might not be aware of the details of their delivery, however, so those researchers relying on self-report data might not be able to fully capture this.

More research is also needed on the impact of breastfeeding and lactation. It is possible a woman who is exclusively breastfeeding might undergo a different impact on her sexuality and sexual experiences than a woman who is bottle-feeding breast milk or formula solely or in addition to breastfeeding. These nuances in feeding may result in more or less sleep for new parents and, therefore, more or less fatigue, which was found in this study to be a common reason for not engaging in sexual activity.

### **Conclusions and Future Directions**

In this final section we offer our suggestions for future directions based on our overall critique of the methodological strengths and weakness apparent in studies.

1. Evidence presented in this review indicates there are many sociological and cultural influences on sexuality during pregnancy and postpartum, as opposed to physiological, and, therefore, future studies from fields that do not

automatically consider these sociocultural influences should try to incorporate a multidisciplinary approach. This recommendation has also been emphasized in recent previous reviews of the literature related to sexual function in pregnancy and postpartum (Johnson, 2011; Serati et al., 2010).

2. The science on sexuality in pregnancy and postpartum is greatly heteronormative in design. Many studies limited participant inclusion to heterosexual women or those partnered with men. Some even required the women be married to men. No studies in this review included same-sex/same-gender partners. These restrictions likely reflect the cultural differences from where the study originated. Nevertheless, readers should be careful when generalizing these findings to all pregnant or postpartum individuals. Studies limiting their samples to opposite-gender couples or women who are partnered with men should provide justification for these decisions and careful discussion of how the data and implications are limited due to these inclusion/exclusion criteria. The prioritization of vaginal intercourse is also indicative of the heteronormativity of the science in this field. Several studies sought to understand “sexual behaviors,” yet operationalized sexual behaviors via frequency of vaginal sex only. This is problematic for many reasons, but particularly because the authors assume vaginal intercourse to be the essential part of sexual relationships and as the sole marker for healthy intimacy between partners. Sexual partners engage in a variety of sexual behaviors, but when only one is captured it may be easy to conclude these individuals are sexually inactive. We must consider the possibility that penetrative sex might decline but other equally intimate and sexually fulfilling behaviors may take its place. Introducing new behaviors or behaviors previously overshadowed by penetrative sex, and incorporating new sexual positions, can all potentially build intimacy, communication skills, and satisfaction, particularly if educators and clinicians frame these changes positively to pregnant and postpartum couples.

3. There is also a need for more racially diverse samples. Participant samples from studies within the United States, Canada, and the United Kingdom are largely White. Greater efforts should be made to recruit non-White populations as well as participants from varying educational and socioeconomic backgrounds and studies that do not do so should carefully discuss how a homogenous sample limits their implications.

4. Rather than assuming changes in pregnancy and after childbirth are negative, to more accurately depict prevalence of sexual problems future researchers should gather data on whether these changes are perceived as bothersome, and if so to what extent, by incorporating measures of sexual distress into their studies. Johnson (2011) previously highlighted in her review the inherent limitation of the literature in this area due to publication bias, as scientific papers tend to frame the need for their study around morbidity and the presence of problems. As a result, studies on sexuality during and after pregnancy focus more on sexual dysfunction or eliciting information on sexual problems and

concerns as opposed to positive impact (Johnson, 2011; Serati et al., 2010). The primary purpose of this review was to document sexual changes. Changes are not inherently negative and not always indicative of an emerging problem. While couples may engage in vaginal intercourse less frequently, they may not find this decrease bothersome, as they are likely occupied with adjusting to life with a new baby. The literature on sexuality in pregnancy and postpartum typically does not attempt to capture changes overall but rather emergence of concerns or changes the authors have framed as problematic. Many of these studies were conducted by medical practitioners; therefore, it is even less surprising to find a problem-focused perspective, as problems are of more interest to the medical field. Moreover, childbirth educators and medical care providers should remind expectant parents that declines in sexual frequency in late pregnancy and through the first year postpartum reflect appropriate and common changes that occur in the majority of cases.

5. Authors should provide more details on procedures, measures, and information on how and why specific methodological decisions were made. For example, one study stated women who met the inclusion criteria were selected for participation; however, no specific inclusion/exclusion criteria were provided (Heidari et al., 2009). Others limited their samples to married women but did not justify why or discuss how this might impact their findings (e.g., Corbacioglu et al., 2012; Kumar et al., 1981; Leite et al., 2009; Liu et al., 2013; Senkumwong et al., 2006; Uwapusitanon & Choobun, 2004).

6. Studies should include pregnant women who are single or not currently partnered with anyone and the intimate partners of pregnant women. Pregnancy does not require a relationship partner, and these individuals are not necessarily void of sexuality. Only seven studies included in this review (Ahlborg et al., 2005; Hyde et al., 1996; Jawed-Wessel et al., 2016; Jawed-Wessel et al., 2017; Nakic Rados et al., 2015; Onah et al., 2002; von Sydow et al., 2001) included partner data, and only two (Jawed-Wessel et al., 2016; Jawed-Wessel et al., 2017) used dyadic analysis. While information on the sexual health of partners of pregnant individuals is valuable in and of itself, collecting data from both partners simultaneously and analyzing the data dyadically takes into account the interdependent nature of sexual and relational data. Dyadic study designs provide context-dependent information and data that more closely reflect the real lives of couples.

7. When possible, researchers should attempt to include more frequent follow-ups in longitudinal studies and extend beyond the first six months postpartum. In our review, five prospective studies collected data through at least 12 months postpartum (Elliot et al., 1985; Glazener et al., 1997; Hyde et al., 1996; McDonald & Brown, 2013; McDonald et al., 2015; Safarinejad et al., 2009; van Brummen et al., 2006). Results of this review demonstrate many participants continue to report potentially negative effects of childbirth at six months. Less

specific data are available between six and 12 months postpartum, and no longitudinal studies extended beyond one year. Although baseline data are tricky to obtain with this population, researchers might consider recruiting in early pregnancy to collect retrospective pregnancy data.

It is important to acknowledge that research on sexuality during pregnancy and after childbirth is difficult to conduct. Prospective, longitudinal studies are typically expensive and time-consuming but necessary when needing to document change over time. Findings from this review indicate that many of the retrospective studies found similar results in terms of proportions of individuals engaging in various behaviors and frequencies of specific behaviors, but with less consistency when compared to prospective studies. For example, prospective postpartum studies consistently found participants resuming vaginal intercourse six to eight weeks after childbirth, while retrospective studies were consistent but within a much wider range, six to 12 weeks. Researchers should take care to obtain a large enough sample when using retrospective design to stratify by trimester or weeks postpartum to produce more valuable, reliable, and easily comparable results and thereby produce more impactful data. If larger samples are not possible, researchers should consider limiting their sample to more specific demographic parameters depending on the purpose of their study. Dyadic sampling is often more expensive and more vulnerable to participant attrition. Partners of pregnant and postpartum individuals are difficult to recruit and retain as well, as they may not attend prenatal and postpartum clinic visits where participants are often recruited. Dyadic studies also require more complex data management and eliminate the possibility of participant anonymity if the researchers wish to link the partners. Researchers who have been successful in including partners or diverse populations might consider writing recommendations and guidance on how to recruit and retain these participants.

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