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Sexual Touching and Difficulties with Sexual Arousal and Orgasm Among U.S. Older Adults

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Abstract

Little is known about the non-genitally-focused sexual behavior of those experiencing sexual difficulties. The objective of this study was to review the theory supporting a link between sexual touching and difficulties with sexual arousal and orgasm, and to examine associations between these constructs among older adults in the United States. The data were from the 2005–2006 National Social Life Health and Aging Project, which surveyed 3,005 community-dwelling men and women ages 57–85 years. The 1,352 participants who had had sex in the past year reported on their frequency of sexual touching and whether there had been a period of several months or more in the past year when they were unable to climax, had trouble getting or maintaining an erection (men) or had trouble lubricating (women). Women also reported how of ten they felt sexually aroused during partner sex in the last 12 months. The odds of being unable to climax were greater by 2.4 times (95% CI 1.2–4.8) among men and 2.8 times (95% CI 1.4–5.5) among women who sometimes, rarely or never engaged in sexual touching, compared to those who always engaged in sexual touching, controlling for demographic factors and physical health. These results were attenuated but persisted after controlling for emotional relationship satisfaction and psychological factors. Similar results were obtained for erectile difficulties among men and subjective arousal difficulties among women, but not lubrication difficulties among women. Infrequent sexual touching is associated with arousal and orgasm difficulties among older adults in the United States.

Keywords

Sexual arousal; Demography; Orgasm; Sexual behavior; Sexual dysfunctions

Introduction

As the literature on sexual difficulties has proliferated, inquiry at the population level into the sexual behavior patterns of those experiencing these difficulties has been conspicuous by its absence. In particular, there has been little examination of differences in non-genitally-focused sexual behavior between those who do and do not experience difficulties with sexual arousal and orgasm. This omission is surprising, because existing theory and evidence strongly suggest that non-genitally-focused sexual behavior is very important to many people's arousal, enjoyment, and orgasm. Non-genitally focused sexual behavior, referred to popularly as "foreplay" and in this article as "sexual touching," is a broad category of activities which are usually undertaken with the goal of increasing one's own

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and/or one's partner's sexual arousal and pleasure. These activities can include, but are not limited to, kissing, stroking, massaging, and holding anywhere from one part to the entirety of a partner's body.

While degree of engagement in sexual touching may be an important factor in the etiology of *many* sexual difficulties, difficulties with arousal and orgasm are of particular interest for two reasons. First, the theory and evidence on the link between this kind of behavior and this realm of sexual difficulty is particularly strong, as will be discussed in the following sections. Second, the potential link between these constructs may be of particular importance to clinical practice, as a result of a key specification in the manual used to diagnose sexual dysfunctions. According to the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-IV-TR*), in order to diagnose sexual arousal and orgasm disorders, it is necessary to determine the *adequacy* of sexual stimulation (American Psychiatric Association, 2000). The *DSM-IV-TR* states, "If sexual stimulation is inadequate in either focus, intensity or duration, the diagnosis of Sexual Dysfunction involving excitement or orgasm is not made" (American Psychiatric Association, 2000, p. 536). In the absence of adequate sexual stimulation, a difficulty which meets all other diagnostic criteria for arousal or orgasmic dysfunction is a (possibly dyadic) behavior problem but not a dysfunction. If sexual touching is important to many people's sexual arousal and orgasm, then assessment of the (clinician- and/or patient-perceived) adequacy of such behavior would constitute an important step in the diagnosis of sexual excitement and orgasm dysfunction. It could also inform treatment for arousal and orgasm difficulties. While this is true for all age groups, the older age groups are of particular interest, since older men are more likely and older women are equally likely to report these sexual difficulties, compared to their younger counterparts (Herbenick et al., 2010; Laumann, Das, & Waite, 2008; Laumann, Paik, & Rosen, 1999; Schick et al., 2010; Waite, Laumann, Das, & Schumm, 2009).

This article does not aim to test for a causal link between sexual touching and sexual arousal and orgasm difficulties or to establish how much sexual touching, if any, is necessary for "adequate" sexual stimulation. Unfortunately, such an investigation is precluded by the limited data currently available. Instead, the objective of the present study was to test for the strength of an association between sexual touching and difficulties with sexual arousal and orgasm among older adults in the United States, after reviewing the theories that support such an association. The U.S. population was chosen in part because the most readily available population data collected from adults in the desired age range on the topics of interest were collected in the United States. U.S. data are particularly appropriate for this study, because the theories supporting the link between the constructs of interest have been developed using evidence gathered primarily in this country. By testing specific limited hypotheses concerning the associations between the constructs of interest, this study is intended to lay the groundwork, and provide the rationale, for future investigations into this topic.

Theoretical Background

Theoretical support for the hypothesized link between sexual touching and arousal/orgasm difficulties comes from three different but related perspectives. The first, based on sexual script theory, is sociological. The second, based on the Dual Control model, is neurobiological and psychological. The third, based on Basson's sexual response model, is psychological and relational.

Sexual Touching as American Sexual Script Element—According to Simon and Gagnon's (1986) sexual script theory, the behaviors that lead to sexual arousal and pleasure are those behaviors that are identified in the culture's sexual stories, or scripts, as

appropriate, arousing, and pleasurable. The power of these society-level scripts is not absolute, since interpersonal and intrapsychic scripts, particular to couples and individuals, develop alongside and sometimes even in opposition. However, this theory predicts that, in general across a population, there will be substantial agreement as to whether sexual touching is a standard part of the sexual script. If it is, then couples who limit or omit sexual touching from their repertoire are neglecting an important step in their learned behavior pattern that leads to sexual arousal. By doing so, they increase their chances of experiencing difficulties with both arousal and orgasm. Evidence that the mainstream American sexual script includes an expectation of sexual touching can be found in the texts that provide instruction in sexual interaction and in studies of the actual sequence of sexual behaviors enacted by Americans.

Sexual touching, in the form of "pre-coital erotic activities," has been prescribed as an appropriate and sexually arousing behavior in American "marital advice" literature since the beginning of the twentieth century (Laipson, 1996). By the 1960s, when today's older adults would have been in the early decades of their marriages, marriage manuals specified a man's responsibility to caress his partner both before and after coitus (Brisset & Lewis, 1970). The pre-coital caressing was understood as an expression of love, an invitation to further intimacy, and a mechanism of arousal. The modern equivalents of "marital manuals" include entire chapters on non-genitally-focused sexual touching, describing it as an arousing and affectionate activity appropriate for both men and women (e.g., Comfort, 2002; Goddard & Brungardt, 2000; Kerner, 2008; Winks & Semans, 2002).

Evidence for the enactment of this sexual script at the population level is limited because sexual touching has rarely been studied in this way. Population studies of sexual behavior among adults in the United States have neglected to examine sexual touching. The National Longitudinal Study of Adolescent Health, however, included questions on sexual touching (in the form of kissing and touching under/without clothing), and found that it was part of the dominant sexual script (O'Sullivan, Cheng, Harris, & Brooks-Gunn, 2007).

Sexual Touching as a Stimulant of the Sexual Excitation and Inhibition Systems—The second theoretical perspective can accommodate the sexual script perspective, but also suggests a precise neurological mechanism which could link sexual touching and sexual arousal/orgasm. Bancroft and Janssen's (2000) dual control model of sexual response posits that sexual response, including arousal and orgasm, is the product of the interaction of the neurobiological sexual excitation and inhibition systems (see Bancroft, Graham, Janssen, & Sanders, 2009). The inhibition system has two branches: the tendency towards an inhibitory response to perceived external threats and "inhibitory tone," the basal level of inhibition that persists in the absence of external sexually-relevant threats (Bancroft, 2009; Bancroft & Janssen, 2000; Graham, Sanders, & Milhausen, 2006) According to this model, variability in neurophysiological and psychological propensity for sexual excitation and sexual inhibition, determined by genetics and early learning and thus stable by adulthood, explains variability in human experience of sexual arousal. This variability has, in fact, been found among both men and women, in studies using convenience samples and in a population-based twin sample in Finland (Carpenter, Nathanson, & Kim, 2009; Graham et al., 2006; Janssen, Vorst, Finn, & Bancroft, 2002; Varjonen et al., 2007).

In this framework, behaviors that trigger the sexual excitation system will increase arousal, whether the behavior is relevant due to sexual scripts or for some other reason. At the same time, behaviors that lead to a reduction in the inhibitory response will indirectly facilitate sexual arousal by reducing the effect of sexual inhibition. Such inhibitory response-reducing behaviors include those that reduce, eliminate, and distract attention from perceived threats.

The question of interest, therefore, is whether sexual touching is an important form of any of these kinds of arousal-increasing behaviors.

Besides the evidence that sexual touching is a standard part of the American sexual script, most of the evidence for the proposition that sexual touching is experienced as sexually exciting and pleasurable is found in international studies. The empirical evidence that foreplay is important to sexual pleasure among men and women in the United States comes from community studies which utilized convenience samples (Frank, Anderson, & Rubinstein, 1978; Hite, 1976; Seal, Smith, Coley, Perry, & Gamez, 2008). However, international population studies have found evidence that suggests that this association is pervasive. Dissatisfaction with amount of foreplay has been linked to the likelihood of arousal/orgasm difficulties among reproductive-aged women in Finland, and duration of foreplay has been linked to physical pleasure among men and women 40–80 in 29 countries (Laumann et al., 2006; Witting et al., 2008). Also, erotic films that show substantial foreplay elicit significantly higher subjective arousal from both men and women than do erotic films that show almost no foreplay and instead skip directly to intercourse (Laan, Everaerd, Vanbellen, & Hanewald, 1994; Quackenbush, Strassberg, & Turner, 1995). Besides its physically stimulating effect, sexual touching may also increase sexual excitation and arousal when it is interpreted as a sign of ardent passion. Qualitative studies suggest that women, in particular, interpret sexual touching as a signal of passionate desire and therefore feel more desired by their partner when their partner engages in the activity (Brotto, Heiman, & Tolman, 2009; Graham, Sanders, Milhausen, & McBride, 2004). Feeling desired is, in turn, a cue for arousal among both men and women (Brotto et al., 2009; Graham et al., 2004; Janssen, McBride, Yarber, Hill, & Butler, 2008; Zurbriggen & Yost, 2004).

Sexual touching may also lead to a reduction in sexual inhibition, via three pathways. First, it may do so by refocusing attention away from perceived situational or sexual threats. For example, worries about erection difficulties among men and worries about appearance among women are known to contribute to sexual arousal inhibition (Bancroft, 2009; Dove & Wiederman, 2000). Engaging in sexual touching may distract from these and other worries, particularly if the sexual touching is carried out with a focus on affection, and without arousal or other goals in mind. Second, sexual touching may lead to a decrease in sexual inhibition by triggering a cascade of neurophysiological changes that result in bodily sensations that signal safety and danger. Sexual touching, as a kind of positive touch similar to massage and “warm partner contact” may decrease biological mediators of stress and increase biological mediators of calm and contentment (Carter, 1998; Light, Grewen, & Amico, 2005; Moyer, Rounds, & Hannum, 2004). As calm replaces stress, sexual inhibition would have the chance to fall. The third way that sexual touching may lead to a reduction in sexual inhibition is by promoting trust and connection, as will be discussed in the next section. Increased trust and connection has, in turn, been linked to reduced sexual inhibition in women and reduced risk for erectile dysfunction in men (Leiblum & Rosen, 1991; McCabe, 1997).

Sexual Touching as Signal of Affection and Desire for Greater Intimacy—A third possible role that sexual touching may play in the pathway to sexual arousal is suggested by Basson’s cyclical, recursive model of sexual response (Basson, 2000, 2001, 2002a, b). Although it is best known as a model of women’s sexual response, this model was originally proposed as a model of *human* sexual response, with gender differences apparent but decreasing with age (Basson, 2001, 2008). The core mechanism in Basson’s model is the desire for emotional intimacy. In this model, the experience of emotional intimacy within a relationship produces both the desire for more emotional intimacy through sex, and the willingness to seek out sexual stimuli in order to become sufficiently sexually aroused to engage in penetrative sex with the partner (Basson, 2001, 2002a). Partnered behaviors that

increase emotional intimacy and positive affect thus facilitate desire for further, and appreciation of more explicit, sexual stimuli. This process culminates in high levels of sexual arousal and orgasm, both of which are ultimately enjoyed in large part as a form of emotional intimacy. Basson suggests that overtures from a partner, in the form of low-key sexual stimuli, such as sexual touching, may be one important partnered behavior that begins this cycle. According to this theory, sexual touching would not primarily increase excitation or reduce inhibition of sexual arousal, but rather it would increase the appeal of seeking and responding to stimuli that would have such effects. In the same way, its absence could slow or halt the cycle, leading to difficulties with arousal and orgasm.

Evidence that this meaning for sexual touching is found in the mainstream American sexual script can be found in studies of popular media and in studies of the meaning of tactile communication. The dual role of kissing and touching as a signal of love and sexual intent is found in mainstream films, sexually explicit movies, and television programs (Dempsey & Reichert, 2000; Kunkel, Cope, & Biely, 1999; Lowry, Love, & Kirby, 1981; Quackenbush et al., 1995; Ward, 2003). Echoing this pattern, American participants in studies of tactile communication consistently identify holding, stroking, and kissing as ways of communicating affection and passion (Bello, Brandau-Brown, Zhang, & Ragsdale, 2010; Gallace & Spence, 2010; Gulledge, Gulledge, & Stahmann, 2003; Hertenstein, Verkamp, Kerestes, & Holmes, 2006). When individuals enact this affectionate behavior, they communicate to their partner that subsequent sexual interactions will be expressions of love as well (Gallace & Spence, 2010; Hertenstein et al., 2006; Tolhuizen, 1986). A review of studies of non-verbal courtship behavior noted that even couples in established relationships can use kissing and touching to deepen intimacy (Moore, 2010). Conversely, reduced kissing and petting during sex may signal relationship conflict and alienation (Blumstein & Schwartz, 1983; Santtila et al., 2008).

Due to data limitations, the current study could not test any of these hypothesized mediating mechanisms of the sexual touching-sexual difficulties association. Appropriate measures would include sexual touching characteristics, as well as beliefs and feelings related to sexual touching. This theoretical back-ground was presented as a rationale for the primary hypotheses of the study, and to explain the choice to model sexual difficulties and pleasure as functions of sexual touching. Instead of testing for the relative validity of these mechanisms, this study will simply test for the existence of the association–an existence supported by all of these theories.

Gender and Sexual Touching

While the theories discussed above support an association between sexual touching and sexual arousal among both men and women, three theoretical perspectives suggest that the association between touching and arousal may be stronger among women than men.

First, sexual touching may be less relevant to men's sexual response because they are more easily aroused. This theoretical perspective is found in the last century's marriage manuals (Brisset & Lewis, 1970; Laipson, 1996). Current research suggests that men face fewer barriers to arousal than compared to women, and may find memories and visual stimuli more than adequately arousing (Carpenter, Janssen, Graham, Vorst, & Wicherts, 2008; Janssen et al., 2002; Laan et al., 1994; Laumann, Gagnon, Michael, & Michaels, 1994; Rupp & Wallen, 2008; Varjonen et al., 2007; Waite et al., 2009). If this is the case, men may have less need for the instrumental effects of sexual touching to facilitate the arousal process.

Second, sexual touching may actively hinder men's sexual arousal and orgasm because men may be more likely to experience it as an expression of lack of empathy and affection. The frequent, powerful sexual desire and arousal that many men experience may become

frequent, powerful sexual frustration. A man who is seeking expeditious relief from uncomfortable sexual tension may perceive a partner's insistence on non-genitally-focused sexual touching as an indication of the partner's lack of empathy and caring. Instead of serving as a path to increased intimacy, then, sexual touching would actually increase such a man's resentment of and perhaps even alienation from his partner. According to Basson's theory, sexual touching would in this case detract from men's arousal, orgasm, and pleasure.

A third possibility is that men's internalized *gendered* sexual scripts will override the general cultural script regarding the meaning of sexual touching. Masculinity ideology includes the beliefs that men should take charge of sexual encounters, provide their partner with pleasure, be always erect, and be primarily interested in vaginal intercourse (Fracher & Kimmel, 1995; Gagnon, 1990; Mosher & Tomkins, 1988; Pleck, Sonenstein, & Ku, 1993, 1994). According to sexual script theory, the degree of enjoyment derived from any given sexual encounter will depend on the extent to which the individual feels that he or she is fulfilling his or her socially-defined role and ought to be feeling pleasure in that situation (Simon & Gagnon, 1986). Because men may feel that sexual touching requires too much cooperation, submission or loss of control, or because men may fear the increased expectations for performance that accompany this activity (either the performance of the touching itself or its extension of the amount of time they are expected to maintain an erection), or because they may feel that any non-penetrative sexual activity diminishes their masculinity, sexual touching may detract from men's arousal and pleasure.

No studies have directly tested any of these theories or even conducted statistical tests for gender differences in the association of sexual touching with arousal, pleasure or orgasm. There is much more evidence that women (as opposed to men) experience dissatisfaction with the amount of time spent on foreplay and other kinds of sexual touching, but only because four of the six studies that have asked about it examined only women (Carvalheira, Brotto, & Leal, 2010; Hite, 1976; Hurlbert, Apt, & Rabehl, 1993; Witting et al., 2008). The studies that measured this construct and included both men and women found that *both* men and women were dissatisfied and wanted more—though women's dissatisfaction was greater (Frank et al., 1978; Santtila et al., 2008). While this paper cannot test any of these theories of gender interaction directly, it will test the hypothesis supported by these theories: that sexual touching will be more strongly associated with orgasm and pleasure among women than among men.

Sexual Touching and Sexual Pleasure

Three of the pathways by which sexual touching may impact the likelihood of experiencing sexual arousal and orgasm involve increases in pleasurable feelings. Feelings of calm and contentment, feelings of trust and connection, and feelings of being desired by a loved one are all generally experienced positively (Basson, 2001; Graham et al., 2004). Evidence that sexual touching is associated with lack of pleasure or degree of pleasure would provide evidence in support of further inquiries into these particular hypothesized mechanisms.

Potential Confounders

In order to explore whether any associations identified can be explained by other factors, the final models controlled for constructs that are associated with arousal and orgasm difficulties and may also predict frequency of sexual touching. These factors included age (Laumann et al., 2008), physical health (Bancroft, Loftus et al. 2003; Laumann et al., 1999, 2008), stress (Laumann et al., 2008), depression or depressive symptoms (Laumann et al., 2008), use of selective serotonin re-uptake inhibitors (SSRI's) anti-depressant medications (Ferguson, 2001; Montgomery, Baldwin, & Riley, 2002), and relationship satisfaction (Dennerstein, Lehert, & Burger, 2005; Hawton, Catalan, & Fagg, 1992; Laumann et al.,

2008). Anxiety symptomology was included despite the mixed evidence of anxiety's association with arousal and orgasm difficulties because, like the other factors listed, it may contribute to a disinclination to engage in, or lack of energy for, sexual touching, as well as potentially contributing to arousal and orgasm difficulties (Bancroft, Janssen et al., 2003; Bradford & Meston, 2006; Laumann et al., 2008; Lykins, Janssen, & Graham, 2006; McCabe et al., 2010; Meston & Bradford, 2007).[1]

As is standard in population studies, race/ethnicity, educational attainment, and relationship status were also included in the models. An indicator of erectile dysfunction medication use was also included in the male models.

Hypotheses

This article tests the following hypotheses:

Hypothesis 1 motional satisfaction with the relationship will be positively associated with frequency of sexual touching.

Hypothesis 2 Frequency of sexual touching will be negatively associated with difficulty with erection among men.

Hypothesis 3 Frequency of sexual touching will be negatively associated with difficulty with vaginal lubrication among women.

Hypothesis 4 Frequency of sexual touching will be negatively associated with likelihood of infrequent subjective sexual arousal among women (Data were not available on men's subjective arousal).

Hypothesis 5 Frequency of sexual touching will be negatively associated with the likelihood of experiencing lack of orgasm among both men and women.

Hypothesis 6 Frequency of sexual touching will be 6a. Negatively associated with the likelihood of experiencing lack of pleasure from sex but 6b. Positively associated with degree of sexual pleasure in the relationship among both men and women.

Hypothesis 7 The associations found in the analyses testing hypotheses 2–6 will persist after psychological and relationship satisfaction measures are added to the models.

Hypothesis 8 The associations found in the analyses testing hypotheses 5 and 6 will be stronger among women than among men.

Method

Participants

The data used were from the 2005–2006 National Social Life Health and Aging Project, which surveyed 3,005 community-dwelling men and women ages 57–85 years in their homes in the United States (O'Muircheartaigh, Eckman, & Smith, 2009; Smith et al., 2009). The survey was a national probability sample, with an unweighted response rate of 74.8% and a weighted response rate of 75.5%. Details of the study design are reported elsewhere (O'Muircheartaigh et al., 2009; Smith et al., 2009). This study's sample consisted of the

[1]Although sexual excitation and inhibition are associated with erectile problems and arousal and orgasm difficulties among women, measures of these factors were not available in the dataset and are therefore not included in the analysis (Bancroft, Carnes, Janssen, & Long, 2005; Sanders, Graham, & Milhausen, 2008).

1,352 participants who reported having had sex in the past year. Most of these reported having sex twice a month or more, and a third reported having sex once a week or more (Laumann et al., 2008).

Measures

Dependent Variables

Sexual Difficulties: Participants were asked whether during the last 12 months there had ever been a period of several months or more when they "were unable to climax (experience an orgasm)" or "did not find sex pleasurable, even if it was not painful." Men were asked whether they had "trouble getting or maintaining an erection" and women were asked whether they had "had trouble lubricating."

Sexual Arousal: In addition, women, but not men, were asked how often they felt sexually aroused ("turned on") during sexual activity with their partner in the last 12 months: always, usually, sometimes, rarely, or never. In the analysis, the rarely and never responses were combined into a single category to ensure adequate cell size.

Sexual Pleasure: In addition to the item about not finding sex pleasurable for a period of several months or more during the last 12 months, participants were also asked how physically pleasurable they found their relationship: extremely, very, moderately, slightly, or not at all. In the analysis, the moderately, slightly, and not at all categories were combined into one to ensure adequate cell size.

Independent Variables

Sexual Touching: Participants were asked, "When you had sex with (PARTNER) in the last 12 months, how often did your activities include kissing, hugging, caressing, or other ways of sexual touching?" Response options were always, usually, sometimes, rarely or never. Since less than 2% of men and less than 3% of women reported either rarely or never, in the analysis the last three categories were collapsed into one. The section in which this question appeared was introduced by the explanation, "By 'sex' or 'sexual activity,' we mean any mutually voluntary activity with another person that involves sexual contact, whether or not intercourse or orgasm occurs."

Covariates—Sociodemographic measures included age, race/ethnicity, educational attainment, and relationship type. Participants rated their own physical health (excellent, very good, good, fair, or poor. Stress was measured using a modified index version of Cohen's four-item Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). Depressive symptoms were measured using an 11 item scale based on the 11 item Iowa form of the Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977; Shiovitz-Ezra, Leitsch, Graber, & Karraker, 2009). This validated scale is a well-known measure of depressive symptomology and had good reliability in this sample (Cronbach's alpha = 0.80) (Shiovitz-Ezra et al., 2009). Anxiety symptoms were measured using a modified version of the seven item anxiety subscale of the Hospital Anxiety and Depression Scale (HADS-A) (Snaith & Zigmond, 1986; Zigmond & Snaith, 1983). This validated scale is a well-known measure of anxious symptomology in the older adult population and had good reliability in this sample (Cronbach's alpha = 0.76) (Shiovitz-Ezra et al., 2009). The text of the items of the subscale was unchanged from the original but the response categories were modified to match those of the CES-D in order to ease participant burden and increase consistency. Whether participants were taking SSRI antidepressants or medication for erectile dysfunction was determined using medication data collected during the in-home survey. Field staff first recorded the names found on the packaging of all the participant's

medications. A clinical pharmacist then translated these names to generic drug names and coded them using the Multum© drug classification database (Qato, Schumm, Johnson, Mihai, & Lindau, 2009). Lastly, participants reported how emotionally satisfying they found their relationship: extremely, very, moderately, slightly, or not at all. In the analysis, the moderately, slightly, and not at all categories were combined into one to ensure sufficient cell size.

Procedure

The analysis consisted of three sections. First, frequency of sexual touching was modeled as a function of all predictors, one at a time and then all together, in ordered logistic regression models. Second, the likelihood of reporting difficulties with sexual arousal and orgasm was modeled as a function of frequency of sexual touching, controlling for covariates, using logistic regression. Third, not finding sex pleasurable and overall level of physical pleasure in the relationship were modeled as functions of frequency of sexual touching using logistic and ordered logistic regression, respectively, controlling again for covariates. Covariates were added to the models in blocks: first, the demographic and physical health variables were entered, then the psychological factors were added, and then the measure of emotional satisfaction with the relationship was added. All analyses were first estimated separately by gender, and then those which could be re-estimated using the pooled sample and a sexual touching-gender interaction term were so re-estimated. All analyses were adjusted for survey design and were conducted with the Stata 11 statistical package (Stata Corp., College Station, Texas, USA).

Results

Descriptive Results

Sample characteristics are shown in Table 1. The distribution of the measure of frequency of sexual touching during sex in the past 12 months was 79.8% (“always”), 12.9% (“usually”) and 7.3%(“sometimes” “rarely” or “never”) among men and 74.8%, 14.5%, and 10.6% among women. Men were more likely to report sex *always* included kissing, hugging, caressing, and other ways of sexual touching (79.7 vs. 74.4%, $p<.05$), while women were more likely to report that sex sometimes, rarely, or never includes these activities (10.6 vs. 7.3%, $p<.05$). While these gender differences were significant, the magnitude of the differences was small. Women were much more likely than men to report lack of pleasure from sex (22.9 vs. 4.8%, $p<.001$) and being unable to climax during sex (34.9 vs. 20.6%, $p<.001$). Over a third of men reported erection difficulties (37.1%) and over a third of women reported vaginal lubrication difficulties (39.0%). Among female participants, 8.9% reported being never or rarely aroused during partnered sex.

Correlates of Sexual Touching

To examine the sociodemographic and psychological correlates of sexual touching in the U.S. older adult population, each of the covariates was first entered one at a time in ordered logistic regression models of sexual touching frequency. The results, shown in the columns labeled “bivariate” in Table 2, were largely symmetrical across gender, with a few exceptions. None of the sociodemographic factors was associated with frequency of sexual touching among men, and only one was associated among women. Black women reported less frequent touching compared to White women (OR = 0.2, 95% CI 0.1–0.3). The indicators of physical and mental health, however, were more consistently associated with sexual touching. Men in excellent health and women with very good or excellent health reported more frequent sexual touching compared to their counter parts in fair or poor health (OR = 2.3, 95% CI 1.3–4.3; OR = 2.1, 95% CI 1.0–4.4; OR = 2.2, 95% CI 1.0–4.6). Similarly, stress was negatively associated with frequency of sexual touching among men

(OR = 0.7, 95% CI 0.5–0.9) and women (OR = 0.7, 95% CI 0.5–0.9), as were depressive symptoms (OR men = 0.5, 95% CI 0.3–0.8; OR women = 0.6, 95% CI 0.4–0.9). Anxiety symptoms were only associated with frequency of sexual touching among women (OR = 0.7, 95% CI 0.5–0.9).

In support of Hypothesis 1, emotional relationship satisfaction was the strongest correlate of sexual touching. Compared to those who were extremely emotionally satisfied with the relationship, those who were not, slightly or moderately satisfied reported much less frequent sexual touching (OR men = 0.1, 95% CI 0.08–0.3; OR women = 0.1, 95% CI 0.06–0.2). Similarly, compared to the same extremely satisfied group, those who were very satisfied also reported less frequent sexual touching (OR men = 0.4, 95% CI 0.2–0.6; OR women = 0.4, 95% CI 0.2–0.8).

When all covariates were entered at once in the ordered logistic models, the difference found for Black women and the association with emotional relationship satisfaction persisted, indicated by coefficients with identical magnitude and nearly identical 95% confidence intervals to those found in the bivariate models (Table 2, columns labeled “multivariate”). The association found with physical health was no longer statistically significant. Among women, the psychological factors were no longer significant predictors of frequency of sexual touching. Among men, a different pattern emerged. Depressive symptoms were still negatively associated with frequency of sexual touching (OR = 0.6, 95% CI 0.4–0.9), but the coefficient for stress was no longer significant, and the coefficient for anxiety, which was not significant in the bivariate model, was significant and indicated a *positive* association of anxiety symptoms with frequency of sexual touching in the men’s multivariate model (OR = 1.8, 95% CI 1.0–3.3). The evidence in support of Hypothesis 1—of a positive association between emotional satisfaction with the relationship and frequency of sexual touching—was unchanged in the multivariate models.

Sexual Touching and Difficulties with Arousal and Orgasm

The next set of models test for the existence of an association of sexual touching with arousal difficulties, orgasm difficulties, and sexual pleasure. Table 3 shows the results from the logistic regression models of the various indicators of difficulties with arousal on sexual touching. In support of Hypothesis 2, men who sometimes, rarely, or never engaged in sexual touching with their partner when they had sex had 2.4 times (95% CI 1.2–5.0) the odds of experiencing difficulty getting and maintaining erections and men who usually engaged in it had 2.2 times (95% CI 1.3–3.7) the odds of experiencing difficulty getting and maintaining erections, compared to men who always engaged in it. In support of Hypothesis 7, when the psychological factors were added to the model, these effects persisted (OR = 2.2, 95% CI 1.1–4.5; OR = 2.1, 95% CI 1.3–3.6). When emotional satisfaction with the relationship was added to the model, the first coefficient was no longer significant, but the coefficient for those who usually engaged in sexual touching was still significant (OR = 1.9, 95% CI 1.2–3.2).

A different pattern of association with the arousal difficulty measures was seen among women. No support was found for Hypothesis 3, but strong support was found for Hypotheses 4 and 7. In all three versions of the model, sexual touching was not associated with lubrication difficulties. (Only the final model is shown in Table 3, but the coefficients for sexual touching were nearly identical in the other two versions of the model and none were significant.) However, in all three versions of the model of never or rarely being aroused during sex, sexual touching was a strong predictor. In the final model, controlling for both psychological factors and emotional satisfaction with the relationship, women who sometimes, rarely or never engaged in sexual touching had 5.9 times (95% CI 2.3–14.8) the odds of being never or rarely aroused during sex and women who usually engaged in sexual

touching had 4.1 times (95% CI 1.9–8.7) the odds of never or rarely being aroused during sex, compared to women who always engaged in sexual touching.

More similarity across gender was seen in the models of being unable to climax, in that the results supported hypotheses 5 and 7 for both men and women (Table 4). Men and women who usually engaged in sexual touching did not differ from those who always did in their likelihood of being unable to climax. However, men and women who sometimes, rarely or never engaged in sexual touching differed consistently from those who always engaged in sexual touching in their likelihood of being unable to climax. In the three versions of the model, men who reported sometimes, rarely or never engaging in sexual touching had more than twice the odds (OR = 2.4, 95% CI 1.2–4.8; OR = 2.2, 95% CI 1.1–4.4; OR = 2.3, 95% CI 1.1–4.7) of being unable to climax, compared to men who always engaged in the activity. The same pattern was seen for women, except that in the final model, which included both the psychological factors and the emotional satisfaction with the relationship measure, the coefficient just missed significance at the .05 level (OR = 2.8, 95% CI 1.4–5.5; OR = 2.4, 95% CI 1.2–4.8; OR = 2.1, 95% CI 1.0–4.3).

Sexual Touching and Sexual Pleasure

A very similar pattern was seen in the models of reporting lack of pleasure from sex, though in this case the effect was significant in all three models among women rather than among men (Table 5). Men and women who usually engaged in sexual touching did not differ from those who always did in their likelihood of reporting lack of pleasure from sex. However, in support of Hypothesis 6, men and women who sometimes, rarely or never engaged in sexual touching differed consistently from those who always engaged in sexual touching in their likelihood of reporting lack of pleasure from sex. In the three versions of the model, women who reported sometimes, rarely or never engaging in sexual touching had more than twice the odds (OR = 4.4, 95% CI 2.2–8.8; OR = 3.9, 95% CI 1.8–8.4; OR = 2.8, 95% CI 1.3–6.3) of reporting lack of pleasure from sex, compared to women who always engaged in the activity. The same pattern was seen for men, except that in the final model, which included both the psychological factors and the emotional satisfaction with the relationship measure, the coefficient was no longer significant (OR = 3.8, 95% CI 1.6–9.1; OR = 3.6, 95% CI 1.4–9.2; OR = 2.2, 95% CI 0.8–6.2).

The strongest, most consistent association of sexual touching with sexuality outcome was found in the models of level of physical pleasure in the relationship. In support of hypotheses 6b and 7 among both men and women, both sexual touching coefficients were significant in all three versions of the model. Among men, those who reported the lowest frequency of sexual touching had lower odds of reporting a higher versus a lower level of physical pleasure in the relationship compared to those who reported the highest frequency of sexual touching (OR = 0.2, 95% CI 0.09–0.3; OR = 0.2, 95% CI 0.1–0.4; OR = 0.4, 95% CI 0.2–0.8), and the same was true for those who reported usually engaging in sexual touching, compared to those who reported always touching (OR = 0.3, 95% CI 0.2–0.6; OR = 0.3, 95% CI 0.2–0.5; OR = 0.5, 95% CI 0.3–0.9). Almost identical results were found for women who sometimes, rarely or never engaged in sexual touching (OR = 0.2, 95% CI 0.07–0.3; OR = 0.2, 95% CI 0.07–0.3; OR = 0.4, 95% CI 0.2–0.9), and those who usually engaged in sexual touching, compared to those who always engaged in sexual touching (OR = 0.3, 95% CI 0.2–0.5; OR = 0.3, 95% CI 0.2–0.5; OR = 0.6, 95% CI 0.3–1.0).

Gender Differences

The last step of the analysis consisted of statistical tests for gender differences in the association of sexual touching with inability to climax, lack of pleasure from sex, and level of physical pleasure in the relationship. All models shown in Tables 4, 5, and 6 were re-

estimated using the entire sample and a gender-sexual touching interaction term. No support was found for Hypothesis 8; none of the interaction terms were significant (not shown).

Discussion

This study was the first to use population data to examine the correlates of sexual touching among older adults in the United States.

Consistent with the first hypothesis, emotional satisfaction with the relationship was found to be strongly and robustly related to frequency of sexual touching among both men and women. This predictor of frequency of sexual touching, the only one identified which persisted in the multivariate models among both men and women, adds to the existing evidence of a link between relationship quality and sexual behavior—and sexual touching in particular (Blumstein & Schwartz, 1983; McCabe et al., 2010; Santtila et al., 2008).

The other significant predictors of sexual touching were also consistent with previous findings. The unexpected finding that Black women engaged in sexual touching less frequently than White women was consistent with evidence that Black youth are somewhat less likely to engage in sexual touching than White youth (O'Sullivan et al., 2007). This difference may perhaps share an etiology with Black men and women's lower likelihood, compared to their White counterparts, of engaging in oral sex (Laumann et al., 1994; Mahay, Laumann, & Michaels, 2001). The association of physical and psychological health with frequency of sexual touching was consistent with evidence that health problems are a primary reason why older adults abstain from sexual activity (Lindau et al., 2007).

Sexual Touching and Arousal, Orgasm, and Pleasure

The results of the main analyses provided support for Hypotheses 2, 4, 5, 6a and 6b, and nearly all of Hypothesis 7, but not Hypothesis 3 and not the part of Hypothesis 7 referring to lack of sexual pleasure among men. Frequency of sexual touching was negatively associated with the likelihood of erection difficulties among men, infrequent subjective arousal among women, lack of orgasm among men and women, lack of sexual pleasure among men and women, and positively associated with degree of sexual pleasure among men and women. These associations persisted even after controlling for psychological factors and relationship satisfaction, except in the case of lack of sexual pleasure among men. The persistence of the majority of associations identified even after controlling for the factors that predicted both the dependent variables and the frequency of sexual touching indicate that the associations were not merely the results of confounding. The predominance of the evidence, then, supports an association between sexual touching and sexual arousal, orgasm, and sexual pleasure. These results were consistent with previous international population studies that have found a link between foreplay and arousal difficulty, orgasm difficulty, and physical pleasure (Laumann et al., 2006; Witting et al., 2008).

The null finding of no association between frequency of sexual touching and lubrication difficulties was contrary to Hypothesis 3. It also appears to be inconsistent with the strong association found between sexual touching and subjective arousal among women. The most likely explanation for this apparent discrepancy is the limited validity of self-reported vaginal lubrication as a measure of the subjective experience of sexual arousal, particularly among older women. As estrogen levels decrease following menopause, basal and responsive levels of vaginal lubrication decrease as well (Bachmann, 1995; Dennerstein, Dudley, Hopper, Guthrie, & Burger, 2000). Older women are, therefore, more likely to experience difficulty with vaginal lubrication unrelated to subjective arousal difficulties. Even more importantly, self-reported vaginal lubrication is poorly correlated with objective genital arousal (as measured by vaginal photoplethysmography or thermography) and both

are poorly correlated with subjective sexual arousal (Chivers, Seto, Lalumiere, Laan, & Grimbos, 2010). In light of these limitations of the measure, it is not disruptive to the pattern of findings that sexual touching was not associated with difficulties with vaginal lubrication.

The other inconsistent finding, that the association of sexual touching with lack of pleasure from sex was no longer significant among men when the relationship satisfaction measure was added to the model, is also not disruptive to the overall pattern of results, but for a different reason. This anomaly was likely the product of a power limitation. Since only 5% of men reported this problem, the study may not have had sufficient power to detect that the association persists even after controlling for relationship quality. While it is also possible that emotional satisfaction with the relationship mediates the association or is a confounder, this is unlikely. The first explanation is more convincing, since the *degree* of pleasure in the relationship was still strongly associated with sexual touching among men even after the emotional satisfaction measure was added to that model.

Gender Modification of Effects

No support was found for Hypothesis 8: there was no evidence of gender differences in the associations between frequency of sexual touching and lack of orgasm, lack of pleasure or degree of pleasure. The statistical tests for gender modification were almost extraneous, since the point estimates and confidence intervals for the touching coefficients in the women's and men's models were nearly identical. However, this lack of evidence for gender differences in these associations was not evidence for a lack of gender differences. It may be that the measures of sexual touching were not precise and specific enough to reveal the existing gender differences, or that the pathways linking sexual touching with arousal and orgasm differ for men and women. On the other hand, it may be that, in fact, the gender differences hypothesized to underlie the predicted interaction are not found among older adults. For example, as visual difficulties increase with age, the gender differences in the relative importance of tactile versus visual stimulation to sexual arousal may be significantly reduced. There is some evidence that men's appreciation of sensuality increases with age, even as their tactile sensitivity decreases (Potts, Grace, Vares, & Gavey, 2006; Schumm et al., 2009; Wickremaratchi & Llewelyn, 2006). Alternatively, it may be that the importance of feeling emotionally connected via sex and in particular sexual touching is greater among older men than younger men (Janssen et al., 2008). This possibility was, in fact, suggested by Basson (2001, 2008). Future studies with a more expanded set of measures can explore which, if any, of these explanations is correct.

Limitations

This study was limited in three important ways. First, it used cross-sectional data and a limited set of measures, which made establishing causality difficult. While this study modeled difficulty with arousal and orgasm as a function of regularity of sexual touching, the true association may be cyclical and recursive. Clinicians report that restricted sexual scripts both precede and follow the onset of most sexual difficulties, and inadequate sexual stimulation or infrequent foreplay can follow and thus sustain these difficulties (Fisher, Rosen, Eardley, Sand, & Goldstein, 2005; Leiblum, 2002; Leiblum & Rosen, 1991; McCabe, 1997; McCarthy & McDonald, 2009). Future domestic population studies that follow participants over time can investigate whether this additional mechanism operates among U.S. older adults. In addition, this study's analytical models could not include mediating and moderating factors, such individuals' intra personal and intrapsychic sexual scripts, perceived psychological and physical effects of sexual touching, propensity for sexual excitation and inhibition (Bancroft et al., 2009) or gender ideology, because such measures were not available in the dataset. Thus, it was not possible to test for evidence of the accuracy of the theories described in the introduction.

Second, the measures of sexual experience may have been biased in a number of ways. Self-reports are vulnerable to recall bias and interpretation bias, since participants may differ in their sensitivity to and interpretation of the same sexual experiences. Interpretation bias may have taken a number of forms. Those who have sex infrequently may not have thought that questions about sexual experiences during a period of "several months or more" applied to them. Retrospective recall bias and this sort of interpretation bias may be a particularly insidious problem in this population, since a third had sex once a month or less. Also, those who do not view lack of erection, vaginal lubrication or orgasm as a difficulty, either because they are not bothered by it or because they were not trying to achieve it in the first place, but who nonetheless experience it, might not have reported the experience because of the discrepancy between the question wording and their own interpretation of their experience. Future studies can use corroborating partner reports, more frequent measurement or a more limited time span in the question text, and more neutral wording to minimize the potential for these biases.

Third, the sexual difficulty and sexual touching measures were somewhat limited. The sexual difficulty measures were unidimensional—particularly for men, whose subjective sexual arousal was not measured. Although the correlation between genital arousal and subjectively experienced sexual arousal is higher among men than among women, it is still far from perfect (Chivers et al., 2010). Also, the sexual touching question was multi-barreled and non-specific. Perhaps most importantly, participants were not asked about the duration, type, focus, intensity, style, variety, context, nor any other characteristics of the sexual touching they experienced. They were not asked about their attitudes toward, their satisfaction with, nor the presence or absence of communication and verbalization concurrent with the sexual touching they experienced. The type, novelty, duration, and tenderness of sexual touching may be a particularly important moderator of the association between sexual touching and arousal among women (Sims & Meana, 2010). Stronger and more nuanced associations of sexual touching with sexual difficulties may be found in future studies with a more focused and extensive set of measures.

Conclusion

The results of this study indicate that both male and female older adults who engage in more frequent sexual touching when they have sex are less likely to experience difficulties with orgasm, sexual pleasure, and sexual arousal (as measured by erections in men and subjective sexual arousal in women). Older adults who make sexual touching part of the irregular sexual routine are also more likely to report high levels of physical pleasure in their relationships.

This study answers the calls for increased research into the interpersonal and behavioral correlates of sexual difficulties (Bancroft, 2002; Rosen, 1996; Tiefer, 2004). In doing so, it adds to the population literature on sexual problems, which has primarily focused on physical, psychological, demographic, and life history correlates and pharmaceutical treatments (e.g., Bancroft, Janssen et al., 2003; Laumann et al., 1999; Mayer et al., 2007; McCabe et al., 2010). This study also represents the first U.S. population research on a type of sexual behavior that has been largely absent from the literature, despite its ubiquity in American popular culture and its recurrence in qualitative studies examining the aspects of sexuality important to women (Brotto et al., 2009; Carvalheira et al., 2010; Dempsey & Reichert, 2000; Frank et al., 1978; Graham et al., 2004; Hite, 1976; Hurlbert et al., 1993; Kunkel et al., 1999; Lowry et al., 1981; Ward, 2003). Finally, by describing these associations at the population level, and laying the theoretical groundwork, this study provides the rationale for further research in this area.

Twenty-five years ago, Nathan (1986) noted the importance of measuring the adequacy of sexual stimulation in order to obtain true prevalence rates of female sexual arousal disorder. Such measurement is still vitally needed today, in both epidemiological and clinical research, among both men and women. In order to improve the validity of scientific knowledge and quality of clinical practice, we need to better understand what constitutes adequate sexual stimulation. The results of this study suggest that further research is warranted into the possibility that sexual touching may constitute one such type of sexual stimulation among older adults.

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Table 1

Study sample characteristics

	Men (*N* = 868)	Women (*N* = 484)
Age		
57–64	53.5	56.9
65–74	34.3	32.3
75–85	12.2	10.8
Race/ethnicity		
White	81.7	84.1
Black	8.7	8.2
Native/Asian/other	2.6	1.3
Hispanic	7.0	6.4
Education**		
Less than high school	12.9	10.9
High school	22.3	25.7
Vocational certificate/some college/associates degree (AA)	29.6	38.5
Bachelors (BA) or more	35.2	24.9
Relationship type		
Married or cohabiting	88.5	91.1
Other	11.5	8.9
Physical health		
Poor/fair	17.0	15.8
Good	26.4	29.9
Very good	40.4	36.8
Excellent	16.1	17.6
Taking erectile dysfunction medication	2.4	–
Stress*	−0.15 (1.0)	−0.03 (1.7)
Anxiety symptoms**	−0.09 (1.0)	0.01 (1.5)
Depressive symptoms**	−0.18 (0.8)	−0.11 (1.2)
Taking SSRI antidepressant***	2.7	10.7
How emotionally satisfying is the relationship***		
Not, slightly, or moderately	16.2	26.7
Very	43.1	39.5
Extremely	40.7	33.8
How physically pleasurable is the relationship***		
Not, slightly, or moderately	15.8	26.7
Very	43.1	42.8
Extremely	41.0	30.4
Frequency of sexual touching		
Never	1.6	1.5
Rarely	1.4	2.4

	Men (*N* = 868)	Women (*N* = 484)
Sometimes	4.3	6.7
Usually	12.9	14.5
Always	79.8	74.8
Frequency of sexual arousal during partner sex		
Never		2.2
Rarely		6.7
Sometimes		20.6
Usually		37.6
Always		32.9
Erection difficulties	37.1	–
Vaginal lubrication difficulties	–	39.0
Unable to climax (orgasm) ***	20.6	34.9
Lack of pleasure from sex ***	4.8	22.9

All numbers are percentages, except stress, anxiety symptoms, and depressive symptoms, which are mean (SD)

* $p<.05$;

** $p<.01$;

*** $p<.001$; Difference between men and women

Table 2

Predictors of frequency of sexual touching, by gender

	Men		Women	
	Bivariate	**Multivariate**	**Bivariate**	**Multivariate**
Age				
57–64	1.7+	1.4	0.8	1.0
65–74	1.6	1.4	1.0	1.2
75–85	Ref	Ref	Ref	Ref
Race/ethnicity				
White	Ref	Ref	Ref	Ref
Black	0.6+	0.8	0.2*** (0.1–0.3)	0.2*** (0.1–0.4)
Native/Asian/other	0.6	0.6	2.3	2.4
Hispanic	1.0	1.1	1.0	1.6
Education				
Less than high school	Ref	Ref	Ref	Ref
High school	1.5	1.3	1.4	1.3
Some college	1.4	1.2	2.7* (1.1–6.3)	2.3+ (1.0–5.2)
Bachelors (BA) or more	1.9	1.6	1.9	1.5
Relationship type				
Married or cohabiting	1.0	0.6	2.0	1.2
Other	Ref	Ref	Ref	Ref
Physical health				
Poor/fair	Ref	Ref	Ref	Ref
Good	1.1	0.9	1.2	1.4
Very good	1.4	1.0	2.1* (1.0–4.4)	2.1+ (1.0–4.2)
Excellent	2.3** (1.3–4.3)	1.4	2.2* (1.0–4.6)	2.4* (1.0–5.5)
Stress	0.7* (0.5–0.9)	0.8	0.7** (0.5–0.9)	1.0
Anxiety symptoms	0.9	1.8* (1.0–3.3)	0.7** (0.5–0.9)	0.9
Depressive symptoms	0.5** (0.3–0.8)	0.6* (0.4–0.9)	0.6* (0.4–0.9)	1.3
Taking SSRI antidepressant	0.4+	0.4	0.5	0.6
Taking impotence medication	0.9	0.7		
How emotionally satisfying is relationship				
Not, slightly, or moderately	0.1*** (0.08–0.3)	0.1*** (0.09–0.2)	0.1*** (0.06–0.2)	0.1*** (0.05–0.2)
Very	0.4*** (0.2–0.6)	0.4** (0.3–0.7)	0.4* (0.2–0.8)	0.4* (0.2–0.8)
Extremely	Ref	Ref	Ref	Ref

Odds (95% CI's) from ordered logistic regression models of frequency of sexual touching. Odds in the multivariate columns are from models that include all predictors

Ref reference category

+ $p<.1$;

* $p<.05$;

** $p<.01$;

*** $p<.001$

Table 3

Association of frequency of sexual touching with erection difficulties among men and vaginal lubrication difficulties and limited subjective arousal among women, without and with controls for psychological factors and emotional relationship satisfaction

	Men erection difficulties[a,b]			Women vaginal lubrication difficulties[a]	Women never or rarely aroused during sex[c]	
Sexual touching						
Sometimes, rarely or never	2.4 ** (1.2–5.0)	2.2 * (1.1–4.5)	1.9 (0.9–4.2)	1.0 (0.5–2.3)	11.3 *** (4.2–30.0)	5.9 *** (2.3–14.8)
Usually	2.2 ** (1.3–3.7)	2.1 ** (1.3–3.6)	1.9 * (1.2–3.2)	0.8 (0.4–1.6)	5.4 *** (2.5–11.5)	4.1 *** (1.9–8.7)
Always	Ref	Ref	Ref	Ref	Ref	Ref
Stress		0.9 (0.6–1.4)	0.9 (0.6–1.4)	1.0 (0.7–1.5)	0.7 (0.3–1.6)	0.6 (0.3–1.5)
Anxiety symptoms		0.9 (0.6–1.2)	0.8 (0.6–1.2)	1.1 (0.6–1.8)	1.6 + (0.9–2.8)	1.4 (0.8–2.4)
Depressive symptoms		1.7 * (1.1–2.8)	1.7 * (1.1–2.7)	1.0 (0.6–1.8)	2.2 + (1.0–4.9)	2.0 (0.8–4.9)
Taking SSRI antidepressant		1.8 (0.9–3.7)	1.8 (0.9–3.7)	1.8 (0.8–3.9)	1.2 (0.4–3.6)	1.3 (0.5–3.3)
How emotionally satisfying is relationship						
Not, slightly, or moderately			1.5 (0.8–2.8)	1.8 * (1.1–3.0)		5.8 *** (2.3–14.7)
Very			1.5 + (1.0–2.4)	1.1 (0.7–1.7)		1.0 (0.4–3.1)
Extremely			Ref	Ref		Ref

All models control for age, race-ethnicity, education, relationship type, and physical health

[a] Odds (95% CI) from logistic regression models of experiencing the condition for several months or more during the past 12 months

[b] All erection difficulties models include a control for taking erectile dysfunction medication

[c] Odds (95% CI) from logistic regression models of never/rarely feeling sexually aroused ("turned on") during sexual activity with partner in the last 12 months

Ref reference category

+ $p<.1$;

* $p<.05$;

** $p<.01$;

*** $p<.001$

Table 4

Association of frequency of sexual touching with orgasm difficulties, without and with controls for psychological factors and emotional relationship satisfaction

	Men unable to climax			Women unable to climax		
Sexual touching						
Sometimes, rarely or never	2.4 * (1.2–4.8)	2.2 * (1.1–4.4)	2.3 * (1.1–4.7)	2.8 ** (1.4–5.5)	2.4 * (1.2–4.8)	2.1 + (1.0–4.3)
Usually	1.5 (0.9–2.8)	1.4 (0.7–2.6)	1.4 (0.7–2.5)	1.8 (0.9–3.5)	1.5 (0.8–3.1)	1.5 (0.7–3.0)
Always	Ref	Ref	Ref	Ref	Ref	Ref
Stress		0.9 (0.6–1.5)	0.9 (0.5–1.5)		1.0 (0.6–1.5)	1.0 (0.6–1.5)
Anxiety symptoms		0.8 (0.5–1.1)	0.8 (0.5–1.2)		1.8 ** (1.2–2.7)	1.8 ** (1.2–2.8)
Depressive symptoms		1.6 * (1.1–2.6)	1.6 * (1.0–2.5)		1.5 (0.8–2.7)	1.4 (0.8–2.7)
Taking SSRI antidepressant		3.9 ** (1.5–10.1)	3.8 ** (1.4–9.9)		2.5 ** (1.3–4.8)	2.5 ** (1.3–4.8)
How emotionally satisfying is relationship						
Not, slightly, or moderately			1.0 (0.6–1.8)			1.2 (0.7–2.3)
Very			1.1 (0.7–1.8)			0.8 (0.5–1.4)
Extremely			Ref	Ref		Ref

All models control for age, race-ethnicity, education, relationship type, and physical health. Male models control for taking erectile dysfunction medication

Odds (95% CI) from logistic regression models of experiencing the condition for several months or more during the past 12 months

Ref reference category

+ $p<.1$;

* $p<.05$;

** $p<.01$;

*** $p<.001$

Table 5

Association of frequency of sexual touching with lack of pleasure from sex, without and with controls for psychological factors and emotional relationship satisfaction

	Men lack of pleasure from sex[a]			Women lack of pleasure from sex[a]		
Sexual touching						
Sometimes, rarely or never	3.8 ** (1.6–9.1)	3.6 ** (1.4–9.2)	2.2 (0.8–6.2)	4.4 *** (2.2–8.8)	3.9 ** (1.8–8.4)	2.8 * (1.3–6.3)
Usually	1.6 (0.6–4.5)	1.5 (0.5–4.4)	1.4 (0.5–4.0)	1.9 (0.9–4.1)	1.8 (0.8–3.9)	1.5 (0.7–3.2)
Always	Ref	Ref	Ref	Ref	Ref	Ref
Stress		0.9 (0.5–1.5)	0.9 (0.5–1.6)		1.1 (0.7–1.8)	1.1 (0.7–1.7)
Anxiety symptoms		1.2 (0.5–2.7)	1.0 (0.4–2.4)		1.7 * (1.0–2.8)	1.6 + (1.0–2.8)
Depressive symptoms		1.2 (0.5–2.9)	1.3 (0.5–3.2)		1.6 + (0.9–2.7)	1.5 (0.9–2.6)
Taking SSRI antidepressant		2.5 (0.5–12.3)	3.0 (0.6–15.8)		1.4 (0.6–3.3)	1.4 (0.6–3.3)
How emotionally satisfying is relationship						
Not, slightly, or moderately			2.4 (0.9–6.4)			2.4 * (1.0–5.5)
Very			0.8 (0.3–1.9)			1.3 (0.7–2.6)
Extremely			Ref			Ref

All models control for age, race-ethnicity, education, relationship type, and physical health. Male models control for taking erectile dysfunction medication

[a] Odds (95% CI) from logistic regression models of experiencing the condition for several months or more during the past 12 months

Ref reference category

+ $p<.1$;

* $p<.05$;

** $p<.01$;

*** $p<.001$

Table 6

Association of frequency of sexual touching with level of physical pleasure, without and with controls for psychological factors and emotional relationship satisfaction

	Men level of physical pleasure			Women level of physical pleasure		
Sexual touching						
Sometimes, rarely or never	0.2 *** (0.09–0.3)	0.2 *** (0.1–0.4)	0.4 * (0.2–0.8)	0.2 *** (0.07–0.3)	0.2 *** (0.07–0.3)	0.4 * (0.2–0.9)
Usually	0.3 *** (0.2–0.6)	0.3 *** (0.2–0.5)	0.5 * (0.3–0.9)	0.3 *** (0.2–0.5)	0.3 *** (0.2–0.5)	0.6 * (0.3–1.0)
Always	Ref	Ref	Ref	Ref	Ref	Ref
Stress		1.1 (0.8–1.7)	1.0 (0.8–1.5)		1.0 (0.7–1.4)	1.0 (0.7–1.5)
Anxiety symptoms		0.7 (0.5–1.1)	0.9 (0.6–1.4)		0.8 (0.5–1.1)	0.8 (0.6–1.2)
Depressive symptoms		0.6 * (0.4–0.9)	0.7 (0.4–1.2)		0.8 (0.5–1.3)	1.1 (0.7–1.8)
Taking SSRI antidepressant		1.2 (0.4–3.2)	0.8 (0.4–2.1)		0.9 (0.4–1.8)	0.9 (0.4–2.0)
How emotionally satisfying is relationship						
Not, slightly, or moderately			0.01 *** (0.003–0.02)			0.02 *** (0.01–0.05)
Very			0.05 *** (0.04–0.08)			0.1 *** (0.06–0.2)
Extremely			Ref			Ref

All models control for age, race-ethnicity, education, relationship type, and physical health. Male models control for taking erectile dysfunction medication

Odds (95% CI) from ordered logistic regression models of level of physically pleasure in the relationship

Ref reference category

* $p<.05$;

** $p<.01$;

*** $p<.001$