ORIGINAL RESEARCH—EPIDEMIOLOGY

Prevalence and Characteristics of Sexual Functioning among Sexually Experienced Middle to Late Adolescents

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ABSTRACT

Introduction. Little is known about problems in sexual functioning among young people, despite the high rates found in adult samples. It is unclear which problems are most prevalent or how common sexual distress is for young people experiencing problems.

Aims. This study aims to assess the prevalence, range, and correlates of sexual problems and distress among a sample of adolescents (16–21 years).

Methods. Participants (mean age 19.2) were recruited from community and area high schools. Male adolescents (n = 114) completed online the International Index of Erectile Function (IIEF) and Premature Ejaculation Diagnostic Tool (PEDT). Female adolescents (n = 144) completed the Female Sexual Function Index (FSFI). Both completed the Female Sexual Distress Scale (FSDS) and the measures of background, relationship characteristics, and sexual histories.

Main Outcomes Measures. Clinical cutoff scores on the IIEF, PEDT, FSFI, and FSDS were used to determine whether there was a significant sexual problem.

Results. Adolescents reported extensive sexual experience, most in relationship contexts. Half of the sample (51.1%) reported a sexual problem; 50.0% reported clinically significant levels of distress associated with it. Similar rates of problems and distress were found among male and female adolescents. For the most part, adolescent characteristics, backgrounds, and experience were not associated with adolescents' sexual problems.

Conclusion. Sexual problems are clearly prevalent among adolescents, and distressing to many who experience them, emphasizing a strong need to develop programs to address this issue. **O'Sullivan LF, Brotto LA, Byers ES, Majerovich JA, and Wuest JA. Prevalence and characteristics of sexual functioning among sexually experienced middle to late adolescents. J Sex Med 2014;11:630–641.**

Key Words. Adolescents; Female Sexual Dysfunction; Male Sexual Dysfunction; Sexual Distress; Sexual Health in Young Men and Women

Introduction

Sexual exploration is a normal part of adolescent development. Experiences of partnered sexual activity increase steadily from middle to late adolescence (corresponding to ages 16–21). Most adolescents have had a boyfriend or girlfriend by 16 [1]. By grade 11, 75% of high school students had engaged in genital fondling, 53% in oral sex, and 43% in sexual intercourse [2]. A great deal of research has addressed adolescents' sexual health and risk outcomes, such as sexually transmitted infections and unwanted pregnancies [3–5]. However, surprisingly little is known about problems in sexual functioning that adolescents experience—a key component of sexual health. Widespread sociocultural inhibitions against providing youth with sexual information and typically poor parent–child communication about sex [6–8] likely leaves many adolescents poorly educated

regarding how to identify, avoid, or seek help for sexual problems that may emerge.

Research has made clear that adults' rates of sexual problems are high. Women's prevalence rates are typically higher than are men's—a consistent sex difference [9]. The "Global Study of Sexual Attitudes and Behaviors" examined adults (40–80 years) from 29 countries and revealed that the most common problems among women were low sexual interest (26–43%), inability to reach orgasm (18–41%), and low arousal (16–38%) [9]. The most common problems among men were early ejaculation (12–31%), low sexual interest (13–28%), and erectile difficulties (13–28%). A U.S. national household sample of 31,581 women aged 18 years and older (the "Prevalence of Female Sexual Problems Associated with Distress and Determinants of Treatment Seeking" study) found an age-adjusted prevalence of 39.3% for low desire, 26.6% for low arousal, and 21.8% for orgasm difficulty [10]. Moreover, prevalence of any sexual problem was 44.6% and sex-related distress was reported by 22.4% of the women. Factoring in whether these sexual problems were associated with significant distress reduced the prevalence to less than 14.8% for most of these problems. Rates among late adolescents (<22 years) were not presented separately from adults, which is typical in prevalence studies like this, even though sexual experiences in adolescence are likely the foundation upon which adult sexual lives (and by extension, difficulties) are based [11–13].

For many individuals, sexual problems may begin in adolescence. Adults often report that the course of their difficulties has been lifelong or at least since sexual début [14]. A review of the literature revealed no studies that have examined adolescent sexual functioning in a comprehensive way, or else examined specialized groups such as dysfunctions among survivors of rape [15] or childhood cancer [16]. However, a small number of studies with adolescents have included one or a few questions about sexual problems among more general samples. The 1998 Canadian Contraception Study (CCS) [17] included three questions in their survey of 18–24 year old women. They found that 33% reported experiencing low sexual desire (SD), 22% reported pain during intercourse, and 31% reported anorgasmia during intercourse. A study of 1,425 adolescent girls (12–19 years) found that 20% of sexually active girls reported regular pain during intercourse for at least the previous 6 months [18].

Among young men, 13% of a sample of 234 young adults (18–25) reported erectile dysfunction [19]. A study of Viagra® (sildenafil, Pfizer, Mission, KS, USA) abuse found that a significant number of users were in their teens [20], using this drug because of concerns about erectile functioning but rarely under medical supervision. New onset of erectile dysfunction occurs among men under 40 in approximately one-quarter of cases [21]. Overall, there are almost no findings relating to adolescents, but those few that exist suggest rates may be comparable with those found among adults, although how comparable their rates are remains unclear without a direct study of youth.

The lack of research on adolescents' sexual functioning is a serious omission for the field. Adults, particularly women, experience high rates of problems with sexual functioning [10]. Given that many individuals seeking treatment for sexual dysfunction report a lifelong pattern to these difficulties, earlier detection and management during adolescence may lead to more favorable outcomes than is currently the case. However, the prevalence of various problems among adolescents is not known, nor is it known whether there is a sex disparity in rates. Symptoms diagnosed as "dysfunction" in adults, such as pain, lack of arousal, and rapid ejaculation, are viewed as "normative" in young people, especially female adolescents [22]. Sexual problems might ultimately be resolved over time with age, across sexual partners, or with gains in sexual experience, a practice effect in essence. Those in romantic relationships (i.e., ongoing, intimate relationships characterized by affection and/or love) or sexual relationships might be less likely to report sexual problems than their single counterparts or, alternately, such relationships might comprise the contexts in which problems become salient. Coercion history has been shown to be associated with sexual problems among adults and so very likely is important to study here [23,24]. The lack of empirical evidence regarding the range, frequency, nature, and context of adolescents' sexual problems limits insights into when sexual problems arise and constrains the ability of care providers to design effective intervention programs, especially ones that are gender sensitive.

Aims

A primary aim of the current study was to determine the prevalence of problems in sexual functioning among sexually active middle to late adolescents. The term "problem" is used here rather than "dysfunction" to characterize a persistent and frequent difficulty in sexual func-

tioning, recognizing that a dysfunction can only be diagnosed following a comprehensive history-taking. We assessed sexual functioning in three ways. First, we examined mean scores for male and female adolescents and compared them with findings from past research with adults. Second, we grouped participants into those with (sexual problem group) and those without a problem (no sexual problem group). Finally, we determined the percent of participants with a problem who reported distress (distressed sexual problem group) vs. no distress (nondistressed sexual problem group). The possibility of a sex disparity in rates was assessed, with female adolescents experiencing a higher prevalence of sexual problems overall compared to male adolescents.

A second aim was to determine the extent to which adolescents' background characteristics and their relationship contexts were associated with their sexual functioning and/or their reports of sexual problems. To this end, associations between reports of sexual problems and age, number of sexual partners, years of sexual experience, romantic relationship and sexual relationship status, and history of sexual coercion were assessed. A final aim was to assess whether those who reported clinically significant distress could be differentiated in terms of background characteristics from those who were not distressed among all adolescents reporting a sexual problem.

Methods

Participants

A total of 182 male and 229 female adolescents were recruited to participate in a study of sexual experiences and relationships, requesting completion of an online survey. Eligibility requirements included age (16–21 years) and Canadian residency. Participants were recruited through community print and online advertising and a database of participants from another unrelated study [25]. Two male and three female participants were omitted from the analyses because of incomplete data. Although participants did not need to be in a dating or sexual relationship at the time of the study, only those who reported having experienced (i) oral, vaginal or anal sex and (ii) partnered sexual activity within the prior 4 weeks were included in the analyses, resulting in the exclusion of 66 male and 82 female nonactive participants for a final sample of 114 male and 144 female adolescents. Those participants included and excluded from the study were compared in terms of sex, education/employment status, dating relationship status, and sexual coercion history (χ^2 analyses) as well as age (analysis of variance) with a Bonferroni adjustment for all variables set at $P = 0.01$. Those excluded from the analyses were younger (18.5 vs. 19.2 years), less likely to report currently being in a relationship (25.7% vs. 67.5%), and less likely to report sexual coercion experience since age 14 (19.4% vs. 35.5%) compared with those included in the analyses.

Participants were predominantly Euro-Canadian (90.7%) and English-speaking (94.9%). Almost all (95.3%) were born in Canada. Most were in school full-time (69.0%), in school part-time (12.8%), or working full-time (10.9%). The majority identified as heterosexual (89.1%). More than two-thirds of the participants (67.8%) indicated that they were in a committed romantic relationship at the time of the study. The remainder indicated that they were single (16.3%) or dating someone but not exclusively (15.9%). In terms of sexual relationship status, more than two-thirds (79.8%) reported that they were in a sexual relationship at the time of the survey, 17.8% that they were not in a sexual relationship at that time but had had a sexual relationship in the past, and 2.3% that they had never had a sexual relationship (despite recent sexual experience).

Measures

Background Questionnaire

An investigator-derived questionnaire obtained demographic information including age, sex, race/ethnicity, place of birth, education and employment status, dating relationship status (i.e., single, dating, and committed), sexual relationship status (i.e., current sexual relationship, past sexual relationship, no past or current sexual relationship), the sex of their partner (male, female, other) (if any), and sexual orientation (i.e., heterosexual, lesbian, gay, bisexual, unlabeled, questioning, asexual, don't know, or other).

Sexual Histories

Participants reported lifetime number of sexual partners in response to a question asking the total number of partners with whom they had "ever had oral sex, penile-vaginal intercourse, or anal sex." In addition, they reported the ages at which they had first engaged in oral sex, penile–vaginal intercourse, and anal sex (if ever). They reported frequency of participation in a range of sexual activities (e.g., kissing, touching genitals, and oral sex) over the prior month (i.e., not at all, once, 2–3 times, once a week, 2–3 times a week, once a day,

and more than once a day). Experience of sexual coercion since age 14 was assessed using the well-validated Sexual Experiences Survey [26,27]. Three of the 10 items were omitted as they assessed experiences of "sex play"; the remainder assessed attempted and completed acts of coercion. Participants indicated whether they had experienced any of seven experiences (yes/no). Participant who indicated that they had had any of the coercive sexual experiences were scored as having experienced sexual coercion. Cronbach alphas were 0.83 and 0.74 for male and female participants, respectively.

Male Sexual Functioning

Sexual functioning among male respondents was assessed using both the International Index of Erectile Function (IIEF) [28] and the Premature Ejaculation Diagnostic Tool (PEDT) [29]. The IIEF is considered the gold-standard measure of men's sexual functioning and requires respondents to indicate their agreement to 15 items assessing five domains: erectile function (EF), orgasmic function (OF), sexual desire (SD), intercourse satisfaction (IS), and overall satisfaction (OS). All items are scored within domains with higher scores in a domain indicating better functioning. Cronbach alphas for the five domains in the current study were moderate to very high (0.89, 0.97, 0.63, 0.92, and 0.92, respectively). The PEDT is a brief, five-item measure that assesses premature ejaculation (PE). Cronbach alpha for the current study was 0.85. A score of 11 or higher indicates likely problems with PE, scores of 9 or 10 represent "borderline" scores, and scores 8 or less indicate that a man does not have PE. Both reliability and validity have been well established [29,30]. There are no validated cutoffs for the domains of the IIEF except for the erectile function domain of the IIEF [31]. Scores on the IIEF and PEDT were used as continuous variables and were also used to group participants into those with a sexual problem (sexual problem group) and without (no sexual problem group). Specifically, the Sexual Problem Group comprised male adolescents who reported *at least one* of the following: an IIEF score that indicates moderate to severe levels of erectile dysfunction on the EF domain, a score on one of the remaining IIEF domains (OF, SD, IS, and OS) that was below the midpoint (indicating experiences of a sexual problem at least about half the time or more frequently, moderate to high dissatisfaction, or low to no desire or enjoyment), or PEDT scores ≥ 11. Male adolescents who did not report at least one of the above were part of the no sexual problem group.

Female Sexual Functioning

Sexual functioning among female respondents was assessed using the Female Sexual Function Index (FSFI) [32]. This measure is a 19-item survey that assesses six domains of sexual functioning, including desire, arousal, lubrication, orgasm, satisfaction, and pain, during the preceding 4 weeks. Domain scores are derived by summing scores for each item within the domain and multiplying the sum by a domain factor weight. Higher scores indicate stronger sexual functioning. The FSFI has strong psychometric properties [32,33]. The Cronbach alpha scores for each of the six subscales used in the current study were high 0.83 (desire), 0.97 (lubrication), 0.94 (arousal), 0.95 (orgasm), 0.98 (pain), and 0.95 (full scale). Scores on the FSFI were used as continuous variables, and the full scale score was also used to group participants into those with a sexual problem (sexual problem group) and without (no sexual problem group). Validated cutoff scores for the domains of the FSFI have not been established except for the desire domain (≤5, summed total of the two item scores) [34]. A score of 26.55 has been found to differentiate significantly women with and without a sexual dysfunction [33]. Thus, a score of 5 or less on the desire domain or a total FSFI score of 26.55 or less was used to categorize female participants into the sexual problem group. Female participants who did not meet this criterion were classified as belonging to the no sexual problem group.

Sexual Distress

The Female Sexual Distress Scale (FSDS) [35] was originally developed for women. No male equivalent is available. Given the unisex nature of the items, the FSDS was extended here to assess subjective distress associated with their sexual functioning among both male and female respondents for the prior 4-week period. Respondents indicated their degree of agreement with 12 items on a five-point scale ranging from never (0) to always (4) with scores ranging from 0 to 48. A total score of 15 or higher indicates subjective sexual distress [35]. This measure has strong psychometric properties [35,36]. Cronbach alphas for the current study were 0.91 and 0.92 for male and female adolescents, respectively. In keeping with established cutoff scores [35], male and female adolescents with FSDS scores ≥ 15 were identified as experiencing clinically significant distress and then

coded as being in the sexual distress group or no sexual distress group for analyses.

Procedure

After obtaining informed consent, participants were directed to an online survey that addressed the type, frequency, and duration of sexual problems, and a range of background and relationship variables. They completed the background and sexual histories measures first, followed by the IIEF (male adolescents), PEDT (male adolescents), FSFI (female adolescents), FSDS (both male and female adolescents), and coercion items. Surveys took approximately 30 minutes to complete. All measures were pilot tested with a comparable sample prior to administration in this study. Each participant was sent a $15 gift card following survey completion. All parents of minors (i.e., those under 18) provided consent using a passive consent procedure whereby letters were sent home informing parents of the study and parents were given the chance to decline consent for their child. The study was approved by the ethical review boards at our respective institutions.

Data Analysis

We assessed prevalence of sexual problems in the following ways. First, we compared mean scores on the sexual functioning measures with those found in previously published samples to assess overall functioning. Because no other adolescent data were available at the time of this writing, these comparison samples comprise adults, separated by sex. To predict overall sexual functioning, we conducted separate multiple regression analyses for male and female adolescents using age, number of past sexual partners, coercion experience since age 14, years since first sexual experience (i.e., oral, vaginal, or anal intercourse), romantic relationship status, and sexual relationship status to predict sexual functioning scores (total and domain scores for IIEF, PEDT, and FSFI). We then conducted bivariate analyses of these variables to differentiate the sexual problem group and the no sexual problem group, as well as the sexual distress group and no sexual distress group, as defined above.

Results

Adolescents' Sexual Histories

Of the total sample of 258 adolescents, the median number of sexual partners with whom they had "ever had oral sex, penile-vaginal intercourse, or anal sex" was 3.0 (range 1–28; standard deviation = 5.26). Male adolescents reported more sexual partners on average than did female adolescents ($Ms = 5.71$ and 4.31, respectively), $F(1,257) = 4.56$, $P < 0.05$. Average age of sexual debut was 16.2 years for oral sex (n = 253), 16.6 for penile–vaginal intercourse (n = 239), and 17.6 for anal sex (n = 92). No sex differences in age of first sexual experiences were found. More than one-third (36.4%) of participants reported that they had at least one experience of sexual coercion since age 14. A lower proportion of male (23%) than female (47%) participants reported sexual coercion, $\chi^2(1) = 16.38$, $P < 0.001$.

The sexual activities in which participants had engaged most frequently in the previous month were kissing, hugging, and whole body contact, typically at least two to three times a week (see Table 1). Least common activities were anal sex, which most had not engaged in or else had engaged in only once ever, and vaginal sex, in which more than one-third had engaged at least 2–3 times a week in the prior month with the remainder reporting sporadic occasions of this activity. Of those who reported oral sex in the prior month, most reported engaging in this activity a

Table 1 Proportions of adolescent sample (16–21 years) reporting participation in sexual activities in prior month

Sexual activity	Not at all (%)	Once ever (%)	2–3 Times (%)	Once a week (%)	2–3 Times a week (%)	Once a day (%)	More than once a day (%)
Kissing	0.0	2.3	12.5	7.8	23.4	6.3	47.7
Hugging	0.0	2.3	5.9	5.9	25/4	11.3	49.2
Whole body contact	1.6	3.6	12.4	11.6	23.5	13.5	33.9
Touching breasts	13.4	3.9	14.6	10.2	31.1	13.4	13.4
Touching genitals	3.1	7.8	19.1	15.6	34.8	13.7	5.9
Oral sex	13.0	19.7	19.3	16.5	24.8	5.1	1.6
Vaginal sex	18.0	10.6	11.0	16.5	36.9	5.9	1.2
Anal sex	88.0	8.0	2.0	1.2	0.8	0.0	0.0

Note. *N*s = 247–258. Participants were those who reported partnered sexual activity in prior 4-week period and at least one past occasion of oral, vaginal, or anal sex

Table 2 Current status and sexual relationship status

	Current relationship status		
Sexual relationship status	Single n (%)	Dating n (%)	Committed n (%)
Current sexual relationship	9 (3.6)	29 (11.5)	168 (66.7)
Past (no current) sexual relationship	31 (12.3)	12 (4.8)	3 (1.2)

Note. N = 252. Participants with no past sexual relationship were excluded

few times over the course of the month. With the exception of hugging and kissing, none of the sexual activities was reported by all participants.

The relationship contexts in which the adolescents were engaging in sexual activity are reported in Table 2. Those with no past sexual relationship were not included (n = 6). Most participants who were in a current sexual relationship were in a committed relationship with their partner. In contrast, most participants who were not in a current sexual relationship described themselves as single. Of note, a minority of single participants nonetheless had a current sexual relationship; a more substantial minority of individuals described themselves as not having a current sexual relationship despite the fact that they were dating or in a committed romantic relationship and had recently engaged in sexual activity (as per analysis inclusion criteria). To examine the extent to which participants engaged in sexual activity in a relationship context, we conducted a Fisher's exact test using relationship status (single, dating, and committed) and sexual status (current sexual relationship or past sexual relationship). The analysis was significant, Fisher's $\chi^2(2) = 128.62$, $P < 0.001$. Follow-up 2×2 analyses indicated that, as might be expected, a higher proportion of those in a committed relationship reported also being in a sexual relationship compared to those who were not in a committed relationship.

Sexual Functioning among Adolescents

Sexual functioning scores on the IIEF for male participants are presented in Table 3. Overall, the male adolescents reported better functioning than that of the clinical sample [29]. Their reports indicated similar functioning to the healthy adult control sample except for higher SD levels and lower OS [29]. Effect sizes were low.

Rates of sexual problems among the female adolescents can be found in Table 4. On average, their individual domain scores for desire, arousal, lubrication, and satisfaction more closely resembled the healthy adult controls than they did the clinical comparison groups [33]. Scores on the orgasm functioning domain were lower than the healthy adult control group. Pain scores were also lower than the healthy adult control group and lower than the female sexual orgasm disorder sample. Their full scale scores were higher than most of the comparison groups but still lower than the healthy adult controls.

Problems in Sexual Functioning

Overall, 51.1% of the 258 adolescents reported a sexual problem. Similar proportions of male and female participants reported a sexual problem (53.5% and 49.3%), $\chi^2(1) = 0.50$, $P > 0.05$. These problems were explored separately by sex in greater detail below.

Sexual problems among the male adolescents were examined first. Using the IIEF erectile dysfunction domain validated cutoff score [31], 84 (73.7%) male participants had scores indicative of no problems with erectile dysfunction (ED) (scores 26–30), 18 (15.8%) had scores indicative of mild to moderate ED (scores 16–25), 10 (8.8%) had scores consistent with moderate ED (scores 11–15), and two (1.8%) had scores that suggested severe ED (scores ≤ 10). Thirteen (11.4%) had scores suggesting problems with orgasm, 27 (23.7%) had scores

Table 3 Means (SD) of sexual functioning domains for male adolescents (16–21 years) and comparative samples

Sexual functioning Domain	Youth sample Mean (SD)†	Range	Adult clinical comparison‡ Mean (SD)	*t*-value§	Effect size§	Adult controls Mean (SD)‡	*t*-value¶	Effect size¶
Erectile function	26.5 (5.5)	1–30	10.7 (6.5)	19.70****	2.62	25.8 (7.6)	0.79	0.11
Orgasmic function	8.3 (2.6)	0–10	5.3 (3.2)	7.73****	1.03	8.8 (2.9)	1.36	–0.18
Sexual desire	7.9 (1.5)	2–10	6.3 (1.9)	7.02****	0.93	7.0 (1.8)	4.08****	0.54
Intercourse satisfaction	10.8 (4.1)	0–15	5.5 (3.0)	11.04****	1.48	10.6 (3.9)	0.37	0.05
Overall satisfaction	8.0 (2.0)	2–10	4.4 (2.3)	12.54****	1.67	8.6 (1.7)	2.42*	–0.32

Note. *$P < 0.05$; ****$P < 0.0001$. Effect sizes of 0.20, 0.50, and 0.80 are considered small, moderate and large, respectively
†N = 114 (of 146; 78.1%) who reported partnered sexual activity in prior 4-week period and at least one past occasion of oral, vaginal, or anal sex
‡Rosen, Riley, Wagner, Osterloh, Kirkpatrick & Mishra, 1997 [28]
§Analyses comparing youth sample and adult clinical sample
¶Analyses comparing youth sample and adult controls

Table 4 Weighted means (SD) of sexual functioning domains for female adolescents (16–21 years) and comparative samples

Sexual functioning Domain†	Youth sample‡		Hypoactive sexual desire disorder§			Female sexual arousal disorder§			Female sexual orgasm disorder§			Pain disorder§			Adult controls§		
	Mean (SD)	Range	Mean (SD)	*t*-value¶	Effect size¶	Mean (SD)	*t*-value††	Effect size††	Mean (SD)	*t*-value‡‡	Effect Size‡‡	Mean (SD)	*t*-value§§	Effect Size§§	Mean (SD)	*t*-value¶¶	Effect Size¶¶
Desire	4.10 (1.06)	1.2–6	3.04 (0.90)	3.61***	1.08	2.99 (1.33)	7.91****	0.92	3.89 (1.27)	0.91	0.18	3.09 (1.23)	4.67****	0.89	4.28 (1.12)	1.56	–0.17
Arousal	4.89 (0.88)	0–6	3.85 (1.46)	3.94***	0.86	3.09 (1.46)	12.76****	1.49	4.29 (1.16)	3.08**	0.58	3.30 (1.91)	7.12****	1.07	5.08 (1.11)	1.75	–0.19
Lubrication	5.22 (1.07)	0–6	4.67 (1.55)	1.76	0.41	3.31 (1.60)	12.01****	1.40	5.02 (1.20)	0.87	0.18	3.67 (2.07)	6.02****	0.94	5.45 (1.14)	1.96	–0.21
Orgasm	3.76 (1.70)	0–6	4.40 (1.44)	1.36	–0.41	3.05 (1.66)	3.64***	0.42	2.98 (1.48)	2.23*	0.49	3.04 (2.11)	2.05*	0.38	5.05 (1.30)	8.40****	–0.85
Satisfaction	4.62 (1.28)	0–6	3.63 (1.34)	2.75**	0.76	3.38 (1.45)	7.78****	0.91	4.16 (1.37)	1.69	0.35	3.81 (1.60)	3.05**	0.56	5.04 (1.19)	3.27**	–0.34
Pain	4.31 (1.90)	0–6	4.49 (2.00)	0.34	–0.09	4.21 (1.80)	0.47	0.05	5.45 (1.05)	3.03**	–0.74	2.02 (1.89)	6.09****	1.21	5.51 (1.29)	7.39****	–0.74
Full	26.85 (5.36)	2–36	23.89 (6.47)	1.93	0.50	20.05 (6.74)	9.57****	1.12	25.80 (4.51)	0.96	0.21	19.73 (8.73)	5.91****	0.98	30.75 (4.80)	7.40****	–0.77

Note: $^{*}P < 0.05$; $^{**}P < 0.01$; $^{***}P < 0.001$; $^{****}P < 0.0001$. Effect sizes of 0.20, 0.50, and 0.80 are considered small, moderate and large, respectively (Cohen, 1988).
†Higher scores denote better sexual functioning
‡N = 144 (of 180; 80.0%) who reported partnered sexual activity in prior 4-week period and at least one past occasion of oral, vaginal, or anal sex
§Wiegel, Meston & Rosen, 2005 [33]
¶Analyses comparing youth sample and Hypoactive Sexual Desire Disorder—Adult Sample
††Analyses comparing youth sample and Female Sexual Arousal Disorder—Adult Sample
‡‡Analyses comparing youth sample and Female Sexual Orgasm Disorder—Adult Sample
§§Analyses comparing youth sample and Pain Disorder—Adult Sample
¶¶Analyses comparing youth sample and Adult Control Sample

suggesting low sexual desire, 11 (9.6%) had scores reflective of low intercourse satisfaction, and 21 (18.4%) had low overall satisfaction scores. The PEDT indicated that 15 (13.2%) had scores indicating PE (≥11) and another seven (6.1%) had scores near the clinical cutoff (9–10), rates that are lower than those found in a random sample of heterosexual men (18–65 years) (16% and 15%, respectively) [37]. Overall, 61 of the 114 male adolescents (53.5%) were classified as reporting symptoms indicative of a sexual problem. Erectile dysfunction and low desire were the most common problems for male participants.

The FSFI full scale cutoff criterion of ≤26.55, scores was used to classify female adolescents for analyses, which revealed that 60 (41.6%) of the female adolescents had overall scores suggestive of a sexual dysfunction. Moreover, 32 of the 144 female adolescents (22.2%) had desire scores indicative of low desire. Overall, 71 of the 144 female adolescents (49.3%) were classified as reporting symptoms indicative of sexual problems, using a score of 5 or less on the desire domain or a total FSFI score of 26.55 or less to categorize female participants into the sexual problem group or no sexual problem group. Orgasm difficulty and low desire were the most common problems.

Comparisons of Adolescents With and Without Sexual Problems

To address the second aim, a multiple linear regression was conducted using participants' background characteristics (age, number of past sexual partners, years of partnered sexual experience, experience of sexual coercion, relationship status [current vs. no current relationship] and sexual relationship status [current vs. no current sexual relationship]) to predict sexual functioning among male adolescents. The five IIEF domain and PEDT scores were used as dependent variables. Two variables had predictive utility. More years of sexual experience was associated with better erectile functioning ($sr = 0.24$, $P < 0.01$) ($R^2 = 0.13$, $F(6,107) = 2.58$, $P < 0.05$) and greater IS ($sr = 0.18$, $P < 0.05$) ($R^2 = 0.21$, $F(6,107) = 4.68$, $P < 0.001$). Being in a sexual relationship was associated with better orgasm functioning ($sr = 0.22$, $P < 0.05$) ($R^2 = 0.12$, $F(6,107) = 2.47$, $P < 0.05$), greater IS ($sr = 0.27$, $P < 0.01$) ($R^2 = 0.21$, $F(6,107) = 4.68$, $P < 0.001$), and greater OS ($sr = 0.18$, $P < 0.05$) ($R^2 = 0.19$, $F(6,107) = 4.06$, $P < 0.01$). Adolescent characteristics were not associated with male adolescents' SD or PEDT scores.

Parallel regressions were conducted with background characteristics to predict female

Table 5 Comparisons of adolescents with sexual problems and no sexual problems among participants reporting recent sexual activity

	Male adolescents			Female adolescents		
	Sexual problem (N = 61)†	No sexual problem (N = 53)†	*P*	Sexual problem (N = 71)†	No sexual problem (N = 73)†	*P*
Background characteristics						
Age (M; SD)	19.3 (1.06)	19.6 (1.26)		19.0 (1.36)	19.2 (1.36)	
No. of past sexual partners (M; SD)	5.41 (6.26)	6.06 (7.18)		4.28 (3.92)	4.34 (3.47)	
Years since first partnered genital experience (M; SD)	2.75 (1.80)	3.64 (2.26)		3.10 (1.85)	3.14 (1.54)	
Sexual coercion experience since age 14 (%)	24.6	20.8		49.3	45.2	
Current romantic relationship at time of study (%)	57.4	83.0	0.003	53.5	79.5	0.001
Sexual relationship at time of study (%)	73.8	90.6		64.8	91.8	0.000

Note. ***Only $P < 0.004$ was considered significant after a Bonferroni correction
†The number of valid responses corresponds to the number of respondents with non-missing information on the IIEF and PEDT (male) or FSFI (female). χ^2 (categorical) or *F* scores (continuous) data

adolescents' FSFI full scores. The analysis was significant, $R^2 = 0.21$, $F(6,137) = 5.87$, $P < 0.001$. Two variables uniquely predicted FSFI full scores: sexual status ($sr = 0.23$, $P < 0.01$) and romantic relationship status ($sr = 0.16$, $P < 0.05$). Female adolescents who were not in a sexual relationship and those who were not in a romantic relationship reported worse sexual functioning than did their counterparts who were in a romantic or sexual relationship. To explore these associations further, these background characteristics were used to predict the six FSFI domain scores. None was associated with female adolescents' desire, arousal, or lubrication scores. However, sexual relationship status was the one characteristic that significantly predicted their orgasm ($sr = 0.17$, $P < 0.05$), satisfaction ($sr = 0.18$, $P < 0.05$), and pain ($sr = 0.29$, $P < 0.001$) scores. Being in a sexual relationship was associated with better orgasm functioning, greater satisfaction, and less pain. Relationship status was also related to satisfaction scores ($sr = 0.20$, $P < 0.01$): Those in romantic relationships reported higher sexual satisfaction.

Bivariate analyses were conducted to compare the sexual problem group and the no sexual problem group on adolescent characteristics (see Table 5). Among both the male and female participants, the sexual problem group was less likely to be in a romantic relationship compared with the no sexual problem group. In addition, female adolescents in the sexual problem group were less likely to be in a sexual relationship compared with female adolescents in the no sexual problem group.

Distress Associated with Sexual Problems

The mean score on the FSDS for the 61 male participants who reported a sexual problem was 12.51 (standard deviation = 9.12), and 28 male adolescents reporting sexual problems (45.9%) scored ≥ 15—the suggested cutoff for clinically significant distress [35]. The mean FSDS score among the 71 female participants who reported a sexual problem was 15.0 (standard deviation = 11.4), with 38 of these adolescents (53.5%) scoring above the clinical cutoff on the FSDS. Almost all adolescents (92.4%) who reported a sexual problem indicated that they had experienced some level of distress; indeed, only seven male and three female indicating that they never experienced distress with regard to their sexual problem. Overall, 66 (50.0%) of all participants with sexual problems reported clinical levels of distress; no sex differences in proportions were found, $\chi^2(1) = 0.76$, $P > 0.05$, nor were there differences in male and female participants' total FSDS scores, $F(1,130) = 1.92$, $P > 0.05$.

To examine the relationship between reports of distress and sexual problems, bivariate analyses were first conducted to compare the sexual distress group and the no sexual distress group (see Table 6). The two groups then were compared on the frequencies with which they participated in each of the sexual activities listed in Table 1 and the background variables (e.g., age, age, number of past sexual partners, years of partnered sexual activity, sexual coercion since age 14). Interestingly, none of the analyses was significant.

Discussion

This study provides important insights into the sexual functioning of adolescents, including the frequencies with and range in which they engage in sexual activity, with whom they engage in sex, and

Table 6 Comparisons of adolescents with sexual problems and sexual problems with distress among participants reporting recent sexual activity

	Male adolescents		Female adolescents	
	Sexual distress (N = 28)†	No sexual distress (N = 33)†	Sexual distress (N = 38)†	No sexual distress (N = 33)†
Background characteristics				
Age (M; SD)	19.3 (1.01)	19.4 (1.12)	19.1 (1.43)	19.0 (1.29)
No. of past sexual partners (M; SD)	5.82 (6.79)	5.06 (5.86)	4.34 (4.40)	4.21 (3.35)
Years since first partnered genital experience (M; SD)	2.82 (2.16)	2.70 (1.47)	3.05 (1.75)	3.15 (1.99)
Sexual coercion experience since age 14 (%)	30.3	17.9	60.5	36.4
Current romantic relationship at time of study (%)	53.6	60.6	57.9	48.5
Sexual relationship at time of study (%)	64.3	81.8	63.2	66.7

Note. Only $P < 0.025$ was considered significant after a Bonferroni correction. None of the analyses was significant
†The number of valid responses corresponds to the number of respondents with nonmissing g information on the FSDS as well as the IIEF and PEDT (male) or FSFI (female) and who reported a sexual problem. χ^2 (categorical) or *F* scores (continuous) data

for how many sexual functioning is problematic. To our knowledge, this is the first study to explore these experiences in detail. The primary objective guiding this study was to obtain prevalence rates of problems in sexual functioning among sexually active mid- to late adolescents (16–21 years) and to explore whether the sex disparity apparent in adult samples is found among adolescents.

More than half of the adolescent sample (51%) was characterized as having a sexual problem—a rate higher than found in adult samples [28,33]. In addition, clinical levels of distress were reported by half of those who reported a sexual problem making it abundantly clear that these are problems that warrant greater research and clinical attention.

Driving the total scores for male adolescents were their lower rates of satisfaction. Sexual functioning likely has a trial-and-error component to learning. For male adolescents, more years of sexual experience was associated with both better erectile functioning and IS. Being in relationships might attenuate concerns or anxiety about sexual problems so that they do not perpetuate themselves. For male adolescents, in fact, simply being in a relationship (no matter what quality) was linked to better orgasm functioning and higher levels of intercourse and OS. For female adolescents, lower sexual functioning was linked only to reduced sexual relationship satisfaction but no other relationship quality dimension.

Among adolescent women, lower functioning appears most closely linked to their orgasm functioning and pain. Women's orgasm complaints are typically negatively associated with age with highest rates among the youngest women [38], whereas other complaints typically increase with age. A study of dyspareunia found highest rates (20%) among women younger than 19 [18]; rates among adult women is typically 12–21% [38,39] and usually not related to lubrication or experience. Pain among female adolescents might be associated with too little foreplay, having sex when it is not truly wanted, or anxiety or guilt around sex, as some work suggests [25].

These data indicate that similar proportions of male and female adolescents (54% and 51%, respectively) can be described as having a problem in sexual functioning, and thus, rates do not reveal the sex disparity that so consistently characterizes studies of adults. It is unclear why we found such high rates overall, but especially the high rates among both male and female participants rather than female participants alone, as is common in the adult literature. However, because their profiles were different, the mechanisms involved likely are very different for male and female adolescents. Male and female adolescents are socialized in radically different ways: This gender-role socialization has also been construed in terms of sexual scripts [40]. The traditional sexual script socializes men to initiate sexual interactions with women, and women to acquiesce to their male partners' sexual needs [41,42]. Women are taught to be passive sexually, whereas men are expected to pursue all sexual opportunities with women and to control their partners' sexual decisions. Moreover, there appears to be a nearly universal sexual double standard that gives men greater sexual freedom and rights of sexual determination [43], yet men report considerable pressure from these expectations to perform sexually and seek ever-higher levels of intimacy. Although not explored in detail here, such socialization may have a greater impact on adolescents than on adults; future research is required to examine this possibility further.

Alternately, perhaps sexual complaints are more long lasting in women than they are in men, or perhaps sexual experience allows men to outgrow sexual complaints more easily than it does for women. Longitudinal data are clearly needed to clarify better how sexual problems progress over time.

Of note, the factors expected to be linked to sexual problems, specifically age, sexual experience (i.e., number of sexual partners and years since first experience), coercion histories, and participation (or lack thereof) in sexual and romantic relationships, were of limited use in predicting sexual functioning and no use in predicting distress. In other words, all youth appear to be of comparable risk, not just youth with specific characteristics or backgrounds. The one exception was relationship status: being sexually active but single (i.e., not being in a romantic relationship) was associated with worse sexual functioning for both male and female adolescents as was being sexually active but not in a sexual relationship (at least for female adolescents). Perhaps those adolescents with poor sexual functioning avoid relationships. Because the extent to which participants had experienced sexual problems in the past was not assessed, it is possible that for some of the participants being in a relationship helped them overcome problems as they worked on a mutually pleasurable sexual script with their partner. Other factors, such as untreated anxiety, depression, stress, and general health status, have proven useful predictors in studies of adults [24,44–46] and need to be explored in studies of adolescents.

There are a number of limitations that need to be noted. An obvious caution is that the measures employed to measure sexual problems are those validated on adult samples. It is simply not know to what extent the sexual problems that adults and adolescents experiences are truly concordant. There may be other forms of sexual problems that might be unique to this stage of development, problems that might be uncovered from qualitative investigations with youth. Possibly the adolescents in this study interpreted problems in ways different from adults given that they had overall less sexual experience upon which to draw. The sample was a relatively homogenous group of primarily white, heterosexual, students in dating relationships. The extent to which the findings can be generalized to other adolescent groups, including more ethnically diverse samples, is unknown. The data were cross-sectional in nature and relied on measures standardized with adult samples. Questions remain about whether, for adolescents, functioning improves, stabilizes or worsens over time, the nature of risk factors for experiencing problems, and the impact these problems have on individuals (e.g., sexual self-esteem) and their relationships (e.g., dissolution) over time. These questions can be addressed best with longitudinal data. In addition, this study does not purport to have captured rates of adolescents' sexual disorders, although many problems assessed here by survey might in fact have met the criteria for sexual disorders in a clinical interview.

Overall, these results suggest that many adolescents, both male and female, experience sexual problems. Furthermore, these problems are distressing to most adolescents at least at times and highly distressing to a substantial minority of adolescents. These findings suggest a need for prevention efforts, through sex education and through the Internet, aimed at providing youth with age-appropriate information that they need to prevent the development of these problems. Work in this area can also greatly benefit young people who develop sexual dysfunctions as a result of other conditions or experiences, such as childhood cancer [47,48] or sexual assault [15]. This study makes clear that adolescents need to be provided with youth-friendly information about how to deal with sexual problems when they do arise both to decrease their distress as well as to ensure that these problems do not become entrenched.

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