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A Longitudinal Study of Problems in Sexual Functioning and Related Sexual Distress Among Middle to Late Adolescents

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A B S T R A C T

Purpose: Rates of sexual dysfunctions are high among adults, but little is known about problems in sexual functioning among adolescents. We completed a comprehensive assessment of problems in sexual functioning and related distress over a 2-year period among adolescents (16–21 years).
Methods: A sample of 405 adolescents completed five online surveys over 2 years. The main outcome measures were clinical cutoff scores on the International Index of Erectile Function and Premature Ejaculation Diagnostic Tool for male adolescents and the Female Sexual Function Index for female adolescents. A secondary outcome was clinical levels of distress.
Results: The majority of sexually active adolescents (78.6% of the male and 84.4% of the female) reported a sexual problem over the course; rates did not differ significantly by gender. Common problems for males were low sexual satisfaction (47.9%), low desire (46.2%), and problems in erectile function (45.3%). Common problems for females were inability to reach orgasm (59.2%), low satisfaction (48.3%), and pain (46.9%). Models predicting problems over time showed increased odds among those not in a sexual relationship. Odds of reporting a distressing sexual problem decreased over time for female but not male adolescents.
Conclusions: Problems in sexual functioning emerge early in individuals' sexual lives, are often distressing, and appear not to fluctuate over time. Additional efforts to identify key factors linked to onset will help elucidate possible mechanisms.
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IMPLICATIONS AND CONTRIBUTION

This comprehensive, longitudinal assessment of the range, rates, and onset of adolescents' problems in sexual function reveals high rates among both males and females. Half of the problems reached clinical levels of distress, with risk linked most closely to poorer sexual esteem and not being in a sexual relationship.

The World Health Organization emphasizes the value of approaching sexual health not just in terms of "the absence of disease, dysfunction, or infirmity," but also in terms of pleasure and positive functioning [1]. Research on adolescents' sexual health has focused primarily on unintended pregnancies and risk of infection [2,3]; far less is known about sexual functioning or problems in function that adolescents experience. Qualitative studies reveal that adolescents often experience low desire, anorgasmia, and are concerned about "performance" [4,5], but provide little insight into how common or distressing these problems might be.

Survey research addressing adolescent sexual functioning is typically narrow in scope, focusing on single problems such as

pain during intercourse [6], erectile dysfunction [7], or premature ejaculation (PE) [8]. One exception is a study of problems in sexual functioning among 171 adolescents (17—21 years) [9]. Overall, 97% and 98% of male and female adolescents had experienced a problem. Most common among males (reporting "sometimes" or "always") were PE (41.9%), performance anxiety (32.6%), difficulty maintaining erection (23.1%), and inability to climax (16.3%). For females, inability to climax (53.1%), performance anxiety (31.2%), painful intercourse (25.8%), and no/low desire (22.9%) were most common. Rates were comparable to an older sample of young adults (22—28 years), suggesting that adolescents' problems might persist into adulthood. Interviews with a subset of adolescents revealed sexual problems significantly disrupted sexual and relationship functioning. Another exception was a study assessing problems among a sample of 1,582 Canadian women (15—44 years) [10]. Rates among those 18—24 years were fairly high: low sexual desire (33%), anorgasmia (31%), and pain during intercourse (22%). These rates are similar to those found among women. Missing from the literature are longitudinal data exploring onset of problems in adolescents' sexual functioning and factors best predicting onset of a problem over time.

The abundant research on adult sexual functioning links problems with considerable distress: conflict and discord in their relationships and reduced well-being [11]. Longstanding and distressing sexual complaints in adulthood might be prevented if risk factors were assessed earlier in an individual's sexual life. Such information could allow intervention in ways that prevent these associated psychosocial outcomes if were able to identify markers of developing problems earlier in life. Insights about when and among whom sexual problems, especially distressing problems, originate and evolve would inform the broader literature on sexual dysfunctions, but it is valuable to understand more about adolescent sexual health and corresponding functioning for their own sake. This emerging literature suggests rates of problems among adolescents are high, possibly comparable to adult rates, and associated for many with distress.

Very clear from the adult literature are the disparate rates between men and women. A UK national survey revealed 35% of men and 54% of women (16—44 years) reported a sexual problem lasting at least 1 month in the prior year [12]. A U.S. prevalence survey produced rates of 31% and 43% among men and women in the prior year [13]. We examined gender as a risk factor for problems in sexual functioning to help explain variance in outcomes among adolescents. Related to gender, we examined traditional socialization which positions men as the initiators and pursuers of sexual interactions with women, emphasizing performance in sexual interactions, and high sexual interest. Women, by contrast, are expected to be passive and acquiescent sexually and uninterested in sex [14]. Stronger endorsement of these restrictive standards was expected to predict higher probability of sexual problems.

Drawing primarily from the adult literature, relationship status was selected as a predictor because the relationship is a known context of sexual interactions that often brings to light and possibly exacerbates problems in functioning [15,16]. Sexual esteem and self-disclosure were assessed because these variables capture confidence in oneself as a sexual person [17] and tendency to communicate one's likes and dislikes, both of which are linked to lower likelihood of problems [18]. Self-esteem was associated with sexual enjoyment among females 18—26 years [19]. Research with 914 nonsexually active adolescents linked open

communication with more pleasure expectancies about partnered sexual activity [20]. Lower sexual esteem and less self-disclosure were expected to predict problems in sexual functioning.

History of sexual coercion was assessed given consistently strong patterns of association between coercive experience and dysfunction among adults, especially among women [21]. Less is known about men, but we expected coercion history would predict reports of sexual problems among both. Finally, religiosity and quality of sex education were assessed as both are associated with adult dysfunction: Those reporting higher religiosity and those with less sexual knowledge tend to report more sexual problems [21]. Adolescents often endorse a range of misconceptions about sexual health [22]. The prohibitive messages frequently taught in religious programs, including abstinence only programs common in the United States and UK [23], reinforce views that adolescent sexual behavior is problematic by nature and should not be pleasurable. These variables were viewed as potential strong predictors for problems in adolescent sexual functioning.

Assessing problems in sexual functioning among adolescents proves somewhat difficult, however. Despite many measures available in adult literature, no measures have been validated using adolescents. We piloted a range of measures validated with adults in this initial exploration of sexual problems among middle to late adolescents (16—21 years), although validation studies are still needed. Our primary goal was to characterize which adolescents were at risk of experiencing a problem in sexual functioning, as well as clinical levels of distress with a problem, and to track those symptoms over a 2-year period. The research questions were as follows:

1) What are the rates and types of persistent sexual problems in functioning, including distressing problems, among male and female adolescents over a 2-year period?
2) How well do age, relationship status, coercion history, lower sexual self-disclosure, sexual self-esteem, higher religiosity, traditional sexual socialization, and lower quality sex education predict reports of (1) sexual problems (model 1) and (2) distressing sexual problems (model 2)?

Methods

Participants and procedures

Adolescents (N = 411; 16—21 years) were recruited through an existing database of eight Eastern Canadian high school students to take part in a longitudinal study of adolescent sexual health. Permission was first obtained from district superintendents, then school principals, and teachers. All parents of minors provided consent using a passive consent procedure whereby letters were sent home informing parents of the study; parents were given a chance to decline consent for their child. Adolescents were directed to an online survey and provided consent. They were primarily Euro-Canadian (89.9%), heterosexual (89.6%), and English speaking (93.5%). Two males and four females were dropped because of incomplete data. The final sample was 180 male (M age 19.3; standard deviation = 1.27) and 225 female (M age 18.7; standard deviation = 1.41) middle to late adolescents. Participants received a gift card as compensation that increased in amount with each subsequent assessment. There were five assessments 6 months apart (baseline, four

follow-up assessments); 78% were retained across waves. The study was approved by the research ethics boards of the University of New Brunswick and the University of British Columbia.

Measures

Background information. This measure assessed age, gender, sexual orientation, ethnicity, education, employment status, romantic relationship, and sexual relationship status. Religiosity was assessed by indicating how important religion was in one's life from 1 (very unimportant) to 4 (very important).

Sexual functioning among male adolescents. Two well-standardized measures were used: The International Index of Erectile Function (IIEF) [24] and the Premature Ejaculation Diagnostic Tool (PEDT) [25]. On the IIEF, respondents indicate agreement with 15 items assessing erectile function, orgasmic function, sexual desire, intercourse satisfaction, and overall satisfaction, over prior 4 weeks. Higher scores within a domain indicate better sexual functioning (i.e., fewer problems). The PEDT consists of five items assessing PE. A score of 11+ indicates likely problems with PE, scores of 9–10 represent "borderline" scores, and scores <9 indicate no PE. Those who reported ≥1 of the following were classified as having had a persistent sexual problem at any given assessment: an IIEF score indicating moderate to severe erectile dysfunction on the erectile function domain; a score below the midpoint on any of the remaining IIEF domains (i.e., orgasm, sexual desire, intercourse satisfaction, and overall satisfaction) indicating a problem in sexual functioning at least half the time or more frequently, moderate to high dissatisfaction, or low to no desire or enjoyment; or a PEDT score ≥11. Scores were calculated for those who reported partnered sexual activity within the prior 4-week period and at least one past occasion of oral, vaginal, or anal sex.

Sexual functioning among female adolescents. We used the Female Sexual Function Index (FSFI) [26,27] which requires respondents report functioning across six domains: desire, arousal, lubrication, orgasm, satisfaction, and pain, during the preceding 4 weeks. Domain scores were derived by summing scores within the domain and multiplying the sum by a factor weight. Higher scores indicate higher functioning. Scores were derived for adolescents who reported partnered sexual activity within the prior 4-week period and at least one past occasion of oral, vaginal, or anal sex. For the predictive analyses, female respondents were classified as having had a persistent sexual problem at any given assessment if they reported: a score of ≤5 on the desire domain or a total FSFI score of ≤26.55 as these are the only domains with validated cutoff scores [27,28]. For descriptive purposes, scores below the midpoint on the remaining domains indicate low sexual functioning (i.e., at least half the time, no/low desire or arousal, difficulty to extreme difficulty, moderate to high dissatisfaction, high to very high pain, or no/low confidence in functioning).

Sexual distress. A widely adopted measure [29] assessed sexual distress over the prior 4 weeks. Originally developed for women, the Female Sexual Distress Scale was used to assess subjective distress associated with a sexual problem(s) among both male and female respondents. Respondents indicated agreement with 12 unisex items (e.g., In the past 4 weeks, how often did you feel frustrated by your sexual problems?) on a five-point scale ranging from 0 (never) to 4 (always). Those who reported a sexual problem and a score ≥15 were classified as having a distressing problem in sexual functioning.

Sexual self-esteem. Feelings of worth as a sexual person were assessed using a subscale of the Sexuality Scale [30]. Respondents indicated how characteristic 10 items were of them (e.g., I am a good sexual partner) from 1 (disagree) to 5 (agree). Higher scores reflect stronger sexual esteem.

Sexual self-disclosure. General tendency to self-disclose one's sexual preferences to a partner (e.g., ways you like or do not like to be touched sexually) was assessed using the Sexual Self-Disclosure Scale [31]. Respondents indicated the extent to which they disclosed across 12 types of sexual interactions from 1 (nothing at all) to 7 (everything). Higher scores indicate greater self-disclosure.

History of sexual coercion. Experience of sexual coercion since age 14 years was assessed using the Sexual Experiences Survey [32], modified to be sex neutral [33]. Seven items assessed use or threats of physical force, alcohol or drug use, verbal arguments and pressure, or misuse of authority. Participants with any of the experiences (yes/no) were scored as having experienced sexual coercion.

Traditional socialization. The 40-item female version of the Sexual Dysfunctional Beliefs Questionnaire [34] assesses endorsement of traditional beliefs about women (e.g., Pure girls do not engage in sexual activity), whereas the 40-item male version assesses traditional beliefs about men (e.g., A real man has sexual intercourse very often). Scales range from completely disagree (1) to completely agree (5). Summed scores indicate stronger endorsement of traditional sexual beliefs about one's gender.

School sex education. Respondents indicated how well each of 10 topics (e.g., puberty/physical development, sexual pleasure) was covered in sexual health education they had received [35]. Each item is rated from 1 (not covered at all) to 5 (covered very well). Higher scores indicate greater perceived quality.

Data analysis

Reports of ≥1 sexual problems at each of the five assessments were calculated, followed by reports of ≥1 sexual problems across the 2-year period. Descriptive statistics were calculated for subtypes of problems for males and females. Because of the prospective cohort design, logistic models were fit for the dichotomous outcome variables (report of sexual problem; report of distressing sexual problem) with generalized estimating equations (GEE) to adjust for correlation in repeated within-subject observations and for variance in observations across individuals. For model 1 predicting reports of sexual problems, participants were included for each person-wave that they reported recent sexual activity (prior 4 weeks corresponding to the time frame in the standardized assessment tools used). Model 2 predicting reports of distressing sexual problem included only those with recent sexual activity and ≥1 sexual problem. All models were estimated using SAS statistical software 9.2 (PROC GENMOD, SAS Institute, Inc., Cary, NC).
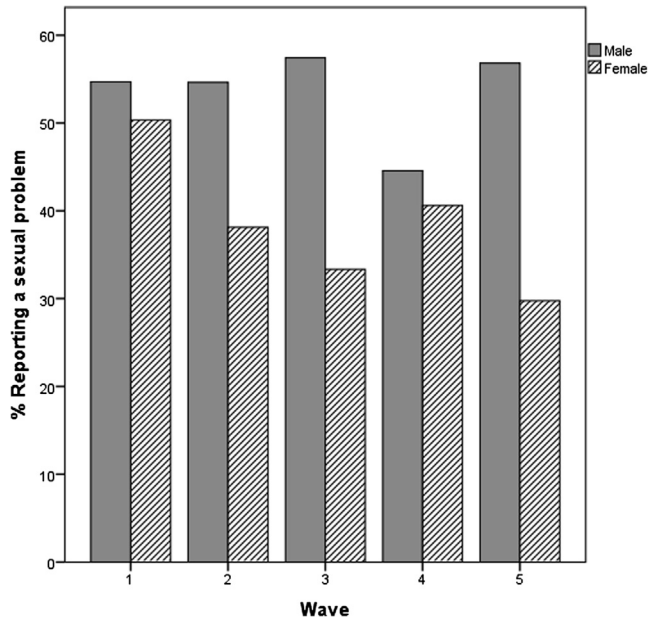
Figure 1. Percentage of male and female adolescents reporting one or more persistent problems in sexual functioning by wave.
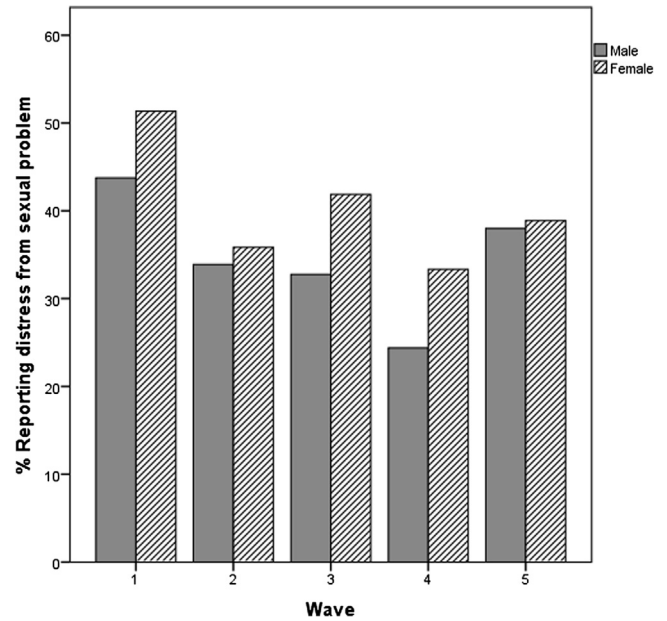
Figure 2. Percentage of male and female adolescents reporting one or more persistent and distressing problems in sexual functioning by wave.

For predictors, we calculated mean centered age at baseline for inclusion in the models (participants' baseline mean age = 18.98 years) (baseline age) and included time since baseline interview (study years) and an interaction term for age × study years. The term for baseline age quantifies cross-sectional differences of age, the time parameter models the longitudinal trend associated with the passage of time during the study, and the interaction term allows for different trajectories from varied starting points (e.g., baseline ages) [36]. We used GEE with the following predictors: age, relationship status (single/relationship), religiosity, sexual esteem, sexual self-disclosure, coercion history, traditional socialization, and quality of sex education. Less than 5% of data were missing, and data were missing at random. GEE is particularly robust with regard to handling incomplete data, makes use of all available data, and as such, all participants who reported at least one completed observation contributed to the model. With the exception of coercion history, predictors were time varying, modeling the relationship between beliefs and behaviors with report of problems and their impact as reported at each wave.

Results

The percentages of male and female adolescents reporting one or more persistent problems in sexual functioning by wave and reports of one or more persistent and distressing problems by wave are shown in Figures 1 and 2. Overall, 78.6% of male and 84.4% of female sexually active adolescents reported a sexual problem over the course of the study, and 41.7% of male and 47.8% of female adolescents reported a distressing sexual problem. Chi squares revealed no significant differences in proportions among male and female adolescents.

Tables 1 and 2 show the specific types of sexual problems reported by male and female adolescents at each assessment point. For recently sexually active male adolescents, Table 1 shows that the most prevalent problem in sexual functioning reported was overall low sexual satisfaction (47.9%), followed by low desire (46.2%) and problems with erectile function (45.3%). Problems of PE, orgasmic functioning, and low intercourse satisfaction were far less common.

Table 2 shows the most prevalent problems in sexual functioning among recently sexually active female adolescents. Approximately 39% had full-scale FSFI scores indicating sexual problems over the course of the study. Of the specific types of problems, over half (59.2%) reported inability to reach orgasm. The next most common problems over time were low satisfaction (48.3%) and pain (46.9%). Low arousal and inability to lubricate sufficiently were the least commonly reported problems.

Models were computed to assess factors identifying who developed a sexual problem over time. Separate models were developed for male and female adolescents to incorporate gender-specific measures of traditional socialization. In predicting odds of a sexual problem, male and female adolescents who were not in a sexual relationship were 2.42 and 3.26 times more likely to report a sexual problem over time than were those in a sexual relationship (see Table 3). There was a slight decrease in odds (odds ratios [ORs] = .94 for both male and female adolescents) of reporting a sexual problem for each point increase in the scale for sexual self-esteem and a very minor decrease in odds (.99) for female adolescents for each increase in sexual self-disclosure score that they reported.

Each point increase in sexual self-esteem was associated with reduced odds (OR = .87 and .92) of reporting a distressing sexual problem for male and female adolescents, respectively (Table 3). There was a minor increase in odds of having a distressing sexual difficulty with each point increase in endorsement of dysfunctional male gender roles (OR = 1.02). However, for female adolescents, each additional year in the study (an index of passage of time) was associated with 40% reduced odds (OR = .60) of reporting a distressing sexual problem, and those without a coercion history had 63% reduced odds (OR = .37) of a distressing sexual problem.

Table 1
Mean scores (SD) of sexual functioning domains for recently sexually active male adolescents across waves

Sexual functioning domain	Baseline, n = 117		6-month follow-up, n = 108		12-month follow-up, n = 101		18-month follow-up, n = 93		24-month, follow-up, n = 88		Total across waves reporting 1+ problems, n = 117
	Mean (SD)	Problem (%)	Mean (SD)	Problem (%)	Mean (SD)	Problem (%)	Mean (SD)	Problem (%)	Mean (SD)	Problem (%)	Problem (%)
Erectile function[a]	26.52 (5.51)	28.2	26.04 (5.93)	31.5	26.58 (5.74)	26.7	27.34 (5.17)	18.3	26.28 (5.77)	27.3	45.3
Orgasmic function[b]	8.28 (2.65)	13.7	8.14 (2.88)	13.0	8.51 (2.83)	10.9	9.30 (1.96)	5.4	8.17 (3.06)	15.9	23.9
Sexual desire[b]	7.92 (1.48)	23.9	7.95 (1.36)	15.7	7.80 (1.70)	22.8	7.80 (1.82)	24.7	7.58 (1.89)	26.1	46.2
Intercourse satisfaction[c]	10.83 (4.14)	12.0	10.12 (4.76)	20.4	10.92 (4.45)	12.9	11.34 (3.77)	9.7	10.43 (4.42)	17.0	23.9
Overall satisfaction[b]	8.03 (1.98)	18.8	7.80 (2.00)	25.0	8.06 (2.14)	25.0	8.20 (1.93)	18.9	7.58 (2.24)	30.7	47.9
PEDT Score[d]	5.30 (4.25)	13.8	4.93 (4.01)	10.4	4.98 (4.47)	11.9	4.48 (4.47)	8.7	4.79 (4.81)	12.5	19.7
Total reporting 1+ problems		54.7		54.6		57.4		44.1		56.8	n = 92 78.6

All participants reported partnered sexual activity in prior 4-week period and at least one past occasion of oral, vaginal, or anal sex.
PE = premature ejaculation; PEDT = Premature Ejaculation Diagnostic Tool; SD = standard deviation.
  [a] Respondents were classified as having low sexual functioning if they scored ≤18.
  [b] Respondents were classified as having low sexual functioning if they scored ≤5.
  [c] Respondents were classified as having low sexual functioning if they scored <8.
  [d] Respondents were classified as having PE if they scored ≥11.

Discussion

We report the first data to our knowledge tracking problems in sexual functioning among a nonclinical sample of middle to late adolescents. Approximately 80% of the sexually active adolescents reported a sexual problem over the 2 years of assessments, and almost half of these problems reached clinically significant levels of distress (using adult metrics). As reported in an earlier study incorporating qualitative interviews [9], these problems can have a profound negative impact on individual and relationship functioning. Striking is the lack of sex difference in the rates reported here; it varies notably from the adult literature which consistently reveals higher rates among women than men [12,13]. It may be that male adolescents' problems are resolved over time or that female adolescents experience an upsurge that accounts for this divergence in adult rates. What is clear is that the early sexual lives for many start out characterized by problems in sexual functioning that might warrant clinical diagnosis as dysfunctions in the future.

Difficulty getting and/or maintaining an erection was reported most often among the male adolescents. Low sexual self-esteem was linked to slightly higher odds of reporting a sexual problem as well as a distressing sexual problem for adolescents. This finding might reflect repeated unsuccessful attempts to engage in sexual activity after consuming alcohol; the pairing of heavy drinking and sexual activity among adolescents is well documented [37]. Somewhat surprising was the fairly high rates of no/low sexual satisfaction and desire among male adolescents, although both erection problems and lacking desire are common among adult men and increase steadily over time [13]. These rates support research demonstrating that a notable minority of young men comply with unwanted (although not necessarily coerced) sexual activity [38]. In support of this argument was the finding that endorsement of more traditional beliefs about men's sexual roles (e.g., "A real man is always ready for sex") identified male adolescents at somewhat higher risk for problems. Future research should explore endorsement of beliefs or social norms might contribute to dysfunction.

Table 2
Weighted means (SD) of sexual functioning domains for recently sexually active female adolescents across waves

Sexual functioning domain	Baseline, n = 147		6-month follow-up, n = 139		12-month follow-up, n = 129		18-month follow-up, n = 133		24-month follow-up, n = 121		Total across waves, n = 147
	Mean (SD)	Problem (%)	Mean (SD)	Problem (%)	Mean (SD)	Problem (%)	Mean (SD)	Problem (%)	Mean (SD)	Problem (%)	Problem (%)
Desire[a]	4.10 (1.06)	22.4	4.17 (1.01)	18.7	4.28 (1.05)	18.6	4.16 (1.05)	19.5	4.25 (1.01)	15.7	40.8
Arousal	4.89 (.88)	16.3	4.98 (.83)	15.1	5.12 (.80)	13.2	4.94 (1.02)	15.8	16.5 (.93)	1.7	40.8
Lubrication	5.22 (1.07)	12.9	5.40 (.98)	7.2	5.40 (.85)	9.3	5.26 (1.09)	7.6	5.31 (.99)	9.1	27.2
Orgasm	3.76 (1.70)	46.3	4.17 (1.58)	30.9	4.33 (1.46)	34.1	4.28 (1.56)	31.8	4.49 (1.52)	28.9	59.2
Satisfaction	4.62 (1.28)	22.6	4.79 (1.23)	18.7	4.85 (1.16)	19.4	4.87 (1.26)	18.9	4.99 (1.15)	16.5	48.3
Pain	4.31 (1.90)	28.6	4.49 (1.82)	25.2	5.01 (1.40)	16.3	4.70 (1.69)	20.3	4.80 (1.56)	19.0	46.9
Full[b]	26.85 (5.36)	50.3	28.00 (4.81)	38.1	28.99 (4.27)	33.3	28.09 (5.65)	40.6	28.91 (4.85)	29.8	70.7
Total reporting 1+ problems[c]		66.7		60.4		55.8		52.6		53.7	n = 124 84.4

All participants reported partnered sexual activity in prior 4-week period and at least one past occasion of oral, vaginal, or anal sex. Cutoff scores are unavailable for all FSFI domains except the desire domain.
FSFI = Female Sexual Function Index; SD = standard deviation.
  [a] Respondents were classified as having low desire if they had a score of ≤5 on the desire domain.
  [b] Respondents were classified as having low sexual functioning if they had a total FSFI score of 26.55 or less.
  [c] Respondents were classified as having had a persistent sexual problem in functioning if they met criteria for low desire or low FSFI total score.

Table 3
Prospective associations between baseline predictors and reports of problems in sexual functioning over a 2-year period

	Sexual problem		Distressing sexual problem	
	Males[a]	Females[b]	Males[c]	Females[d]
Age at baseline (years)	.75 (.55–1.01)	1.04 (.83–1.31)	1.21 (.76–1.94)	1.03 (.72–1.46)
Study age (years)	.99 (.75–1.31)	.80 (.62–1.02)	.89 (.58–1.37)	.60 (.39–.93)*
Age × study age	1.13 (.90–1.41)	.98 (.81–1.21)	1.05 (.76–1.44)	1.00 (.74–1.36)
Sexual relationship status (in relationship = reference)	2.42 (1.27–4.61)**	3.26 (1.79–5.94)***	2.10 (.96–4.64)	1.07 (.53–2.15)
Sexual coercion after age 14 years (history of coercion = reference)	1.15 (.70–1.87)	.68 (.44–1.06)	.60 (.26–1.40)	.37 (.20–.71)**
Self-disclosure	.99 (.98–1.00)	.99 (.98–1.00)*	.99 (.97–1.01)	.99 (.98–1.00)
Sexual self-esteem	.94 (.91–.96)***	.94 (.91–.96)***	.87 (.82–.92)***	.92 (.89–.95)***
Religiosity	.93 (.72–1.20)	.85 (.67–1.07)	1.38 (.86–2.20)	.72 (.50–1.03)
Dysfunctional beliefs	1.01 (1.00–1.03)	1.01 (1.00–1.02)	1.02 (1.00–1.04)*	1.00 (.98–1.02)
School sex education	.98 (.95–1.00)	1.00 (.97–1.02)	.98 (.94–1.02)	1.01 (.97–1.05)

*$p < .05$; **$p < .01$; ***$p < .001$.
Values are presented as odds ratio (95% confidence interval).
[a] n = 468 observations (n = 247 events).
[b] n = 620 observations (n = 227 events).
[c] n = 247 observations (n = 89 events).
[d] n = 227 observations (n = 95 events).

Female adolescents reported difficulty in climaxing, as well as no/little sexual desire and satisfaction most frequently. These problems parallel those found at high levels among adult women [12,13,39]. Higher sexual self-esteem was linked to lower risk of a sexual problem, including distressing problems, as was communicating one's likes and dislikes sexually, but only by a small margin. Unlike for male adolescents, we found a clearer picture of improvement over time for female adolescents, suggesting that learning and experience played a role in improving their sexual lives. Coercion histories increased odds of a problem in functioning among female adolescents, as found among women [21].

A primary aim was to assess factors useful for identifying who was most likely to report a sexual problem over time. The only factor that emerged as a strong predictor was relationship status: Adolescents who were not in a sexual relationship were approximately three times more likely to report a problem in sexual functioning compared to those who were in a sexual relationship. Relationship status did not predict reports of distressing sexual problems, however. These findings suggest that adolescents avoid connecting intimately with others when experiencing sexual problems, or possibly, those in relationships have opportunities to discuss and improve their sexual functioning in ways not possible for those who are single. Further research is needed to examine this association in greater detail.

Study limitations include assessing sexual problems within prior 4 weeks of each assessment, although in line with how sexual dysfunctions are assessed among adults. Rates would likely be higher with more frequent, broader assessments. We did not assess for general health status or chronic diseases (e.g., diabetes mellitus), nor the contexts of our respondents' lives (e.g., school, family, work), which are known to affect risk of problems in sexual function [40]. The sample was fairly homogenous, limiting generalizability to more diverse groups. Reliance on self-reports introduces problems of recall bias, and social desirability factors inherent to studies using such methods. A strength of the study has been the use of comprehensive, widely adopted measures of sexual dysfunction, which will allow other researchers to compare the rates obtained here to adult samples. Formal validation work is still needed, however.

Finally, the longitudinal design facilitates some of the first insights into the onset and progression of problems in sexual functioning as adolescents make the transition into adulthood, but does not permit conclusions about causality.

Health care providers and clinicians need to inquire about sexual functioning when adolescents present with related issues and establish open communication about sexual matters as much as possible. Pleasure is a key component to healthy sexual development. Healthy sexual development can be encouraged through the processes of learning, communication, and experimentation—key to discerning what is pleasurable in one's sexual life and in one's interactions with partners, as well as the contexts and circumstances that are most conducive to positive encounters.

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