

# Gender Differences in Partner Influences and Barriers to Condom Use Among Heterosexual Adolescents Attending a Public Sexually Transmitted Infection Clinic in Singapore

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**Objective** To compare gender differences in the factors associated with condom use at most recent voluntary intercourse among heterosexual adolescents attending a public clinic for sexually transmitted infections (STIs).

**Study design** Between 2008 and 2011, we conducted a cross-sectional survey on 964 never-married adolescents between 14 and 19 years of age who reported having engaged in voluntary intercourse for most recent sexual encounter and were attending the only public STI clinic in Singapore for screening or treatment of STIs. Data were collected using a self-administered questionnaire.

**Results** The response rate to the questionnaire was 85.2%. In multivariate analysis, condom use at last intercourse for both genders was negatively associated with Malay race and peer connectedness and was positively associated with confidence in the ability to use a condom correctly. Being employed was positively associated with condom use for female respondents only. For male respondents only, condom use showed a positive association with living in better housing, older age at first intercourse, and engaging in sexual intercourse with commercial sex partners. Almost all (90%) commercial sex partners suggested condom use and provided condoms compared with 8.1% of non-sex worker partners. Condom use showed a negative association with inconvenience in its use among male respondents but not female respondents.

**Conclusion** STI prevention programs for adolescents must promote condom use with nonpaying partners, address barriers to condom use, and develop condom application skills, taking into account gender differences. Future research should explore condom use within dating relationships. (*J Pediatr* 2013;162:574-80).

South and Southeast Asia have the largest number of newly diagnosed sexually transmitted infections (STIs) in the world.<sup>1</sup> Programs to prevent and reduce risky sexual behaviors among adolescents are urgently needed in the region. Studies on adolescents' condom use around the world have applied the Expanded Health Belief Model (EHBM),<sup>2</sup> Social Cognitive Theory,<sup>3</sup> Information Motivation Behavior Skills model,<sup>4</sup> Theory of Planned Behavior,<sup>5</sup> and Social Development Theory<sup>6</sup> to assess predictors of condom use. Condom use generally showed a positive association with parent-adolescent sexuality communication,<sup>7,8</sup> parental monitoring,<sup>9-11</sup> high self-efficacy to negotiate condom use<sup>3,4</sup> and use condoms,<sup>3,12</sup> and perceived social support.<sup>6</sup> Few<sup>4,6</sup> studies have compared gender differences in condom use. Self-efficacy to assert condom use was associated with condom use for female respondents but not for male respondents.<sup>4</sup> Recent studies<sup>13,14</sup> have expanded beyond these models to examine the role of peer "connectedness" on condom use. There was some evidence of a risk association between peer connectedness and condom use, which requires further investigation.<sup>14</sup> The influence of partner relationships on condom use also has been examined increasingly in the US,<sup>15</sup> South America,<sup>16</sup> and Africa,<sup>17</sup> because this contextual factor exerts the most proximal influence on condom use.<sup>18</sup> Although steady and casual partners were examined in these studies, the relationship between commercial sex partners and condom use has not been explored. In Asia, patronization of sex workers by young men is the main source of heterosexual transmission of STIs and human immunodeficiency virus infection,<sup>19</sup> but few studies<sup>20,21</sup> have examined adolescents' condom use with sex workers. More research needs to be done to determine the extent commercial sex partners and individual, peer, and family factors influence condom use among adolescents in Asia. We applied a conceptual framework drawn from a combination of the individual-level EHBM, peer connectedness, parent-child sexuality communication, perceived parental monitoring, and partner relationships to compare gender differences in the factors associated with condom use among adolescents in Singapore.

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EHBM	Expanded Health Belief Model
STI	Sexually transmitted infection

## Methods

We conducted a cross-sectional study on never-married sexually active heterosexual adolescents attending the Department of STI Control clinic, which is the only public STI clinic in Singapore. About 80% of adolescents with reportable STIs attend this clinic. Study participants were new clinic patients who were never-married Singapore residents 14-19 years of age and whose most recent sexual encounter was consensual heterosexual intercourse. Sex was defined as: (1) the penis entering the vagina; (2) a person's mouth touching another person's genitals; and/or (3) the penis entering a female's anus. Between January 2008 and January 2011, 2830 adolescents aged 14-19 years attended the clinic, of whom 1132 (40%) were eligible to participate in the study. The non-eligible participants consisted mainly of patients attending the clinic for a follow-up visit.

The study was approved by The National University of Singapore Institutional Review Board. Two trained local staff conducted face-to-face interviews in private consultation rooms after obtaining informed consent. Questions on sensitive information such as condom use were placed at the end of the questionnaire and were self-administered. We attempted to reduce bias from self-reporting by ensuring anonymity and confidentiality, expressing empathy, and explaining to patients that the purpose of the survey was to help us plan better programs to support them. Audio-computer assisted self-interviews were attempted but were found to be impractical for younger adolescents. Before the interview, adolescents signed the consent form (age of consent: 16 years or older) after receiving an explanation of the study and the patient information sheet. For those under the age of 16, accompanying parents, guardians, or juvenile home officers signed the consent form, and the adolescent signed the assent form. Only 4 participants under the age of 16 were unaccompanied; because they could understand the nature of the study and treatment, we followed the Fraser guidelines<sup>22</sup> and took informed consent from them. The waiver for parental consent for adolescents under the age of 16 was approved by the institutional review board. Free laboratory tests (up to US\$50) were offered as incentives.

The dependent variable was condom use at last intercourse. Last intercourse was analyzed to facilitate recall. In addition, it allowed us to examine condom use according to the type of partner at last intercourse. Most (78.2%) reported that their last intercourse occurred in the month preceding the study, with only 6.9% reporting last intercourse >6 months before the study. The independent variables included sociodemographic characteristics, lifetime smoking and drug use, EHBM components, peer connectedness, child-parent relationships, and partner type/relationships. The EHBM included: (1) perceived vulnerability assessed by chance of getting STIs or human immunodeficiency virus infection; (2) perceived seriousness assessed by noncurability of AIDS and some STIs; (3) benefits of using condoms assessed by effectiveness in protecting against STIs/AIDS; (4)

barriers to condom use such as bother/inconvenience, reduction in sexual pleasure, and cost and difficulty in getting condoms; (5) self-efficacy assessed by confidence in ability to use condoms correctly; and (6) cues to condom use, such as having attended STI talks. All the EHBM constructs except for cues and perceived seriousness were assessed on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Barriers to condom use were analyzed as separate items because of the weak internal consistency (Cronbach  $\alpha = .53$  for male respondents and  $.39$  for female respondents). Child-parent relationships were assessed on a 4-point Likert scale in 2 domains: frequency of communication about sex and parental monitoring. Parental monitoring (Cronbach  $\alpha = .70$  for male respondents and  $.79$  for female respondents) was assessed by 3 statements: whether their parents: (1) made sure that they told them where they were going; (2) asked them what they were doing with friends; and (3) asked them where they were after school. These statements taken from the demandingness subscale of the Authoritative Parenting Index<sup>23</sup> were scored on a 4-point scale ranging from "not like her" to "a lot like her." Those responding "a lot" and "just like her" to each of the 3 statements were categorized into high monitoring and the remainder was categorized as low monitoring. Peer connectedness<sup>24</sup> is a composite 6-item measure that assesses getting along well, hanging out, spending time, following what their peers do, and their perceived importance of their opinions and acceptance by peers. Cronbach  $\alpha$  was  $.70$  for both genders. The question on partner relationship for first and last intercourse encounters asked whether their most recent partner was a girlfriend/boyfriend, male/female casual partner, prostitute, gigolo, or female/male client (someone who pays you for sex). A casual partner was defined as an acquaintance or someone who is not a girlfriend or boyfriend and with whom they did not pay for sex.

## Statistical Analyses

For bivariate analysis, we compared categorical variables with the use of the  $\chi^2$  test and continuous variables with independent-sample t test and ordinal variables with Wilcoxon rank-sum test. To identify independent factors significantly associated with condom use at last intercourse, we conducted logistic regression using backward stepwise elimination procedure to estimate the aOR and the 95% CI. We selected all independent variables with  $P < .1$  in the bivariate analyses for entry into the logistic regression model so as to avoid the exclusion of any variable that may be marginally significant at selection but becomes statistically significant in the final controlled analysis model. Data analyses were performed with the Statistical Package for Social Science, version 19.0 (SPSS Inc, Chicago, Illinois).

## Results

The response rate was 85.2% ( $n = 964$ ). Nonrespondents did not differ in mean age ( $P = .117$ ), race ( $P = .374$ ), or gender

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