The role of risk and protective factors in risky sexual behaviors among adolescents in Cambodia

Siyan Yi¹, Krishna C. Poudel¹*, Junko Yasuoka¹*, Paula H. Palmer², Songky Yi³, Masamine Jimba¹**§

¹ Department of Community and Global Health, School of International Health, Graduate School of Medicine, the University of Tokyo, Japan.
Address: 7-3-1 Hongo, Bunkyo-ku, Tokyo, Japan.

² Institute for Health Promotion and Disease Prevention Research, Keck School of Medicine, University of Southern California, USA.
Address: 1000 South Fremont Avenue, Unit 8, Alhambra, CA 91803

Address: N 12, Road 1, Svay Por, Battembang, Cambodia

* These authors contributed equally to this work

§ Corresponding author

Email addresses:

SY: siyan@doctor.com
KCP: kcpoudel@hotmail.com
JY: jyasuoka@m.u-tokyo.ac.jp
PHP: ppalmer@usc.edu
SY: songky_yi@yahoo.com
Abstract

Background: In developing countries, the number of new HIV infections is increasing among people aged 15-24. This situation signals an urgent need to identify factors shaping adolescent sexual practices. The etiology of adolescent risky sexual practices is multifactorial; however, the interrelations among risk and protective factors are not well known. In this study, we examined the relative effects of risk and protective factors in multiple contexts on risky sexual behaviors among adolescents in Cambodia.

Methods: Our participants included 1,049 students randomly selected from five high schools in Battembang provincial town. The examined risk factors included substance use, depression, peer delinquency, family violence, and community violence. Protective factors included family support function, family dinner frequency, and school attachment. We used Chi-square test, Fisher’s exact test, t-test, or one-way analysis of variance (ANOVA) as appropriate to assess bivariate associations. A multiple linear regression analysis was then performed to identify and compare the relative effects of risk and protective factors on risky sexual behaviors.

Results: Of total, 12.7% of the participants had sexual intercourse during the past three months. Out of those sexually active students, 34.6% had two or more sex partners during the past three months, and 52.6% did not use a condom during their last sexual intercourse. After controlling for the other covariates, risky sexual behaviors remained significantly associated with risk factors including substance use, peer delinquency, and victimization of family
violence and some demographic characteristics including family income, age, and gender. None of protective factors remained significantly associated with risky sexual behaviors.

**Conclusions:** The findings suggest that risk factors are more closely related to adolescent risky sexual behaviors compared with protective factors. These risk factors should be emphasized for reducing risky sexual behaviors among adolescents.

**Background**

The period of adolescence is a time of multiple transitions. They include transition to puberty and transition involving parent-child, school, and peer relationships and cognitive abilities [1]. During the transition period, adolescents are regarded as a high-risk group for engaging in sexual risk [2]. By the time of their 15th birthday, many boys and girls engage in risky sexual activities in developing countries [3]. Furthermore, new HIV infections are increasing among young people aged 15-24 [3]. It signals an urgent need to identify behaviors and situations that contribute to the spread of HIV and other sexual transmitted infections in adolescence [3].

In Cambodia, adolescent risky sexual behaviors are among the major public health concerns. Several reasons contribute to the increasing concerns and awareness of the issues. First, Cambodian adolescents have been vulnerable to habitual risky sexual behaviors such as early sexual initiation and unprotected sex [4, 5]. Second, Cambodian young men visit sex workers as a part of the normal routine [6]. These young men may subsequently have sex with other non-commercial partners and thus become a bridge population to transmit HIV and other sexual transmitted infections [6].
Previous studies have identified risk and protective factors of adolescent risky sexual behaviors. The risk factors are known as substance use [7], peer delinquency [2, 8], depression [9], and exposure to community violence [10, 11]. For protective factors, risky sexual behaviors are negatively associated with parental monitoring [11], parental trust [12], family meal frequency [13], family structure [14], and school engagement [2].

Thus the etiology of adolescent risky sexual behaviors is multi-factorial. However, the interrelations among risk and protective factors are not well known [15]. We also do not know which domains of risk or protection are stronger predictors of certain outcomes compared with others [16].

Including all of the risk and protective factors in a single study would present a formidable task; therefore, many scholars recommend that theory-driven models should be used to direct the study of adolescent health risk behaviors [17]. In this study, we used the Social Development Model (SDM), which incorporates both risk and protective factors into a general theory of adolescent antisocial behaviors [18]. The SDM proposes that adolescents learn patterns of behaviors from socializing agents in four contexts: parents, peers, schools, and community. The objective of this study was to examine the relative effects of risk and protective factors of risky sexual behaviors among adolescent students in Cambodia. We hypothesized that risk factors would be more influential in predicting adolescent risky sexual behaviors compared to protective factors.

**Methods**

*Study site and sampling procedure*
From October 2007 to January 2008, we conducted this study in Battembang provincial town located in the north-west part of Cambodia. We used ‘Probability Proportional to Size’ sampling to select 10% of male and female students from a name list of each classroom in the 11 junior high and high schools in the town. Out of selected students (n=2,096), 118 (5.7%) were absent on the day of data collection, 23 (1.1%) were not permitted to participate by their parents or guardians, and 12 (0.6%) were excluded because more than one-third of the questionnaire was not completed. In this study, we included only students in grades 10 to 12 (n=1,049) due to low prevalence of risky sexual behaviors among students in grades 7 to 9 (n=894).

**Study procedure**

This study was approved by the Ethical Committee of the University of Tokyo, Japan and the National Ethics Committee for Health Research, Ministry of Health, Cambodia. We initially developed the survey questionnaire in English and then translated it into Khmer, the national language of Cambodia. Another translator back-translated it to ensure that the “content and spirit” of every original item were maintained. Some necessary modifications were made based upon comments from public health and education professionals in Cambodia. Prior to the main data collection, we conducted a pilot study among 273 students before constructing the final questionnaire.

One week prior to the day of data collection, the school principals sent a letter to parents or guardians of the selected students. In the letter, we explained them the study and gave them the opportunity to opt out on behalf of their children. Students also had an opportunity to
refuse or to discontinue the participation at any time. We ensured confidentiality by removing all personal identifiers from the questionnaires. The questionnaire was administered in a common hall of each school. The principal investigator and two research assistants informed the students carefully about the study and were available to answer questions of individual students while they were completing the questionnaires.

**Variables and measurements**

In this study, risk factors included substance use, depression, peer delinquency, family-violence victimization, family-violence witnessing, community-violence victimization, and community-violence witnessing. Protective factors included family support function, family dinner frequency, and school attachment.

**Risky sexual behaviors**

We adapted four items constituting risky sexual behavior scale from a previous study [8]. We asked whether the participants had sexual intercourse during the past three months, the number of sex partners during the past three months, the age at the first instance of sexual intercourse, and if the participants used a condom in their last sexual intercourse. For the age at the first sexual intercourse, the responses were coded as follows: 0 if the participants never had sex, 1 if the age reported was 17 years or older, 2 if the age reported was 16, 3 if the age reported was 15, 4 if the age reported was 14, and 5 if the age reported was 13 years or younger. For the number of sex partners, the responses were coded 0 if the participants never had sex, 1 if the number reported was 1, and 2 if the number reported was 2 or more. For condom use, the responses were coded 0 if the participants never had sex, 1 if the answer was
“yes,” and 2 if the answer was “no.” The total score of these four measures was calculated, with higher score indicating higher level of risky sexual behaviors (Cronbach’s $\alpha=.90$).

**Substance use**

For substance use, we modified some related parts of the 2007 Youth Risk Behavior Survey Form, from the Center for Disease Control Youth Risk Behavior Surveillance System (YRBSS; [http://www.cdc.gov/healthyyouth/yrbs/index.htm](http://www.cdc.gov/healthyyouth/yrbs/index.htm)). We collected information regarding illicit drug use (methamphetamine, heroin, ecstasy, inhalants, cocaine, or marijuana), alcohol drinking (at least a full glass of beer, wine, or liquor), and smoking (at least a whole cigarette) during the past three months. All response options were dichotomous (0= no, 1= yes). The total score of the three measures was calculated, with higher score indicating higher level of substance use (Cronbach’s $\alpha=.72$).

**Depression**

To measure depression, we used the Asian Adolescent Depression Scale (AADS) [20]. The scale comprises of 4 dimensions: negative self-evaluation (7 items), negative affect (5 items), cognitive inefficiency (4 items), and lack of motivation (4 items) with a 5-point response option ranging from (1) “strongly disagree” to (5) “strongly agree.” The total AADS score is the sum of the 20 items with a range from 20 to 100. A higher score indicated a higher level of depression, and an adolescent with a total score of 80 and above would be diagnosed as depressed (Cronbach’s $\alpha=.88$).

**Peer delinquency**
Peer delinquency was assessed using a scale adapted from a previous study [8]. Participants were asked how many of their friends engaged in various delinquent activities in the previous six months such as cutting school, damaging property, stealing, joyriding, hitting, attacking, using weapons, using drugs, or having sex with someone. The response category included: “0= none,” “1= few,” “2= half,” “3= most,” and “4= all.” A higher score indicated a higher level of peer delinquency (Cronbach’s $\alpha=.91$).

*Family violence*

Regarding students’ victimization and witnessing of family violence, we adapted two yes/no questions from a previous study [21]: (1) “During the previous two years, was there any time when you were hit, slapped, or received any physical punishment from a parent or other adult guardian?” and (2) “During the previous two years, did you see or hear one of your parents or guardians being hit, slapped, or otherwise physically hurt by another adult in your family?”

*Community violence*

We used six victimization and six witnessing items from previous research to collect information about exposure to community violence [22]. Each item held a binary (0= no/ 1= yes) response format and asked for exposure during the previous two years. Victimization items (Cronbach’s $\alpha=.71$) were: have you been (1) “beaten up or mugged;” (2) “threatened with serious physical harm;” (3) “shot or shot at with a gun;” (4) “attacked or stabbed with a knife;” (5) “chased by gangs or individuals;” and (6) “seriously wounded in an act of
violence.” For community-violence witnessing, we also asked students whether they had witnessed the same seven types of violence (Cronbach’s $\alpha = .75$).

*Family support function*

We adapted 17 items of Family Support Function Scale (FSFS) to measure family support [23]. Family support function was defined as the basic condition to keep normal life that a family should offer to family members. The scale combined three dimensions including positive functioning, common responsibility, and negative functioning using four response options: “rarely or never,” “sometimes,” “often,” and “almost always.” The total FSFS score was the sum of the 17 items. A higher score indicated more supportive family (Cronbach’s $\alpha = .84$).

*School attachment*

We measured school attachment using a seven-item scale adapted from a previous study [24]. The seven items, “I like school,” “My teachers like me,” “I like my teachers,” “School is fun,” “I am accepted in school,” “I feel like an outsider in school,” and “I feel like I fit in at school,” were measured on a 4-point scale that included “not at all,” “not much,” “some,” and “a lot” as response choices. A higher score indicated better school attachment (Cronbach’s $\alpha = .65$).

*Demographic characteristics*
Demographic characteristics included age, gender, school grade, family structure (two-parents, single-parent, or other), parental occupation, parental education, monthly family income, and type of family home (own house, rented house, relative’s house, or public places). We categorized parental education into [0= 9 years or less, 1= more than 9 years, 2= don’t know] and monthly family income into [0= ≤US$ 100, 1= US$ 101-300, 2= >US$ 300].

Data analysis

We calculated total score of risky sexual behaviors, substance use, depression, peer delinquency, community-violence victimization, community-violence witnessing, family support function, and school attachment. Chi-square test, Fisher’s exact test, t-test, or one-way analysis of variance (ANOVA) was used as appropriate to assess bivariate associations between the outcome variable and demographic characteristics. A multiple linear regression analysis was performed to detect independent associations between all expected predictors and risky sexual behaviors. To identify and compare the relative effects of the expected predictors, all the risk and protective factors were entered simultaneously in the model together with some selected demographic characteristics found to have significant associations (p< .05) with risky sexual behaviors in bivariate analyses and in previous studies. We used SPSS version 15.0 (SPSS Inc, Chicago, IL) for all the statistical analyses.

Results

Descriptive statistics
Out of 1,049 students included in this study, 590 (56.5%) were male, and the mean age was 17.6 years (SD= 1.3). Their fathers’ occupations included farmer (43.4%), self-business (24.9%), government officers (21.4%), taxi drivers (2.8%), and retired (7.5%). Participants lived with two parents (70.1%), single-parent (15.8%), and others (step-parent, relatives, or in an orphanage) (14.1%). Eighty-eight percent of them lived in their own family accommodation, and 54.4% reported that their monthly family income was US$ 100 or less.

Out of parental education reported, 49.4% of their father and 45.5% of their mother had completed nine years or more of formal education. For sexual experiences, 133 (12.7%) of the participants had sexual intercourse during the past three months. Out of those sexually active students, 46 (34.6%) had two or more sex partners during the past three months, and 63 (52.6%) did not use a condom during their last sexual intercourse.

**Bivariate results**

Table 1 shows that boys were significantly more likely to experience sexual intercourse (18.4 % vs. 5.5 %; OR= 0.3, 95% CI= 0.16- 0.41) and have two or more sex partners (36.1% vs. 28.0%; OR= 0.2, 95% CI= 0.10- 0.50) during the past three months compared to girls. Condom use during the last sexual intercourse was also significantly higher among boys (63.3% vs. 31.6%; OR= 3.7, 95% CI= 1.30- 10.78). As shown in Table 2, mean score of risky sexual behaviors was significantly higher among boys (Mean= 2.6, SD= 1.5 vs. Mean= 2.1, SD= 0.8; p< 0.001) and among students aged 17 years or older (Mean= 2.7, SD= 1.1 vs. Mean= 2.3, SD= 1.6; p< 0.001) compared to their comparison groups.

**Multivariate results**
The results of multiple linear regression analysis are shown in Table 3. After controlling for other covariates, risky sexual behaviors remained significantly associated with substance use ($\beta = 0.21$, SE = 0.05, $t = 7.72$, $p < 0.001$), peer delinquency ($\beta = 0.08$, SE = 0.00, $t = 3.24$, $p = 0.001$), family-violence victimization ($\beta = 0.07$, SE = 0.08, $t = 2.82$, $p = 0.005$), family income ($\beta = 0.06$, SE = 0.06, $t = 2.55$, $p = 0.011$), age ($\beta = 0.12$, SE = 0.02, $t = 4.97$, $p < 0.001$), and gender ($\beta = -0.05$, SE = 0.06, $t = 2.12$, $p = 0.034$). On the other hand, the risky behaviors did not remain associated with any protective factors.

**Discussion**

This study provides insight into the effects of risk and protective factors in different domains on risky sexual behaviors among adolescent students in Cambodia. A unique aspect of this study is that we were able to examine several predictors of adolescent risky sexual behaviors simultaneously controlled for the effects of other covariates. The results indicated that risky sexual behaviors remained significantly associated with risk factors such as substance use, peer delinquency, and victimization of family violence. It also remained significantly associated with some socio-demographic characteristics such as family income, age, and gender. None of protective factors remained significantly associated with risky sexual behaviors.

Substance use was one of the strongest predictors of risky sexual behaviors in this study. The finding extends the widespread evidence that substance use and risky sexual practices tend to co-occur among adolescents [25, 26]. The most frequently cited explanation for this co-variation is the sensation-seeking behavior which is defined as a disposition characterized by
the tendency to pursue novel, exciting, and optimal levels of stimulation [27]. Another possible explanation is intoxication of substances, such as alcohol and methamphetamine, that may have a disorganizing effect on the cognitive functions leading to poor decision-making on the involvement with risky sexual behaviors [28, 29].

Peer delinquency also remained significantly associated with risky sexual behaviors. The structure of peer pressure has been used to explain this association. It is defined as pressure from peers to “do something or to keep from doing something else, no matter if you personally want to or not” [30]. In this way, peer delinquency can be a pressure for adolescents in involving with risky sexual practices. Moreover, previous studies have found that being friends with delinquent peers contribute to risky behaviors beyond contributions in other factors [31]. Delinquent peers provide adolescents the opportunity to expose to health risks and contribute to difficulties adolescents experience by contributing to poor decision-making [31]. Delinquent peers are also more likely to promote maladaptive practices and adolescents who affiliate with such peers may be influenced or pressured into behaving similarly [8].

Victimization of family violence also remained significantly associated with risky sexual behaviors. The finding is supported by stress and coping theory which posits that violence exposure precipitates coping strategies that serve to avoid thoughts and feeling about the stressors [32]. Consistent with this notion, our findings may indicate that adolescents who had exposed to violence practiced risky behaviors, such as early sexual initiation or unprotected sexual intercourse, to self-medicate the distress caused by their experiences of violence in their family. Similarly, Brady explained that some risky behaviors may represent maladaptive coping strategies against violence experience [10]. Moreover, conflicted families
with poor communication are usually not effective in monitoring adolescents’ health risk involvement [31].

Another interesting finding of our study is the result of the positive association between family income and adolescent risky sexual behaviors. Students from a family with higher income were more likely to involve in risky sexual behaviors compared to those from a poorer family. This finding was contradicted with those in some other studies which demonstrated that poverty is one of the risk factors of adolescent risky sexual behaviors [15, 33, 34]. However, the positive association may be explained in part by the more opportunity received by adolescents in the better-off family in Cambodia. With more financial support, Cambodian adolescents may have more opportunity to have leisure time, to involve with deviant peers outside of the home, or to involve with substances which were also found to be important risk factors for risky sexual behaviors among our participants.

This study has some limitations. First, the study’s cross-sectional design prohibited us from concluding the causal relationships between the predictors and the outcomes. For example, it remained unclear whether negative life events, such as substance use, contributed to risky sexual involvement, or their risky sexual practices were the cause of the substance use. Longitudinal design is needed to address this shortcoming. The second limitation concerns the representativeness of the sample. Although students from a wide range of socio-economic background were included, we collected data only from students in schools located the provincial town. Thus the findings may not necessarily generalize to students living in more rural areas or out-of-school adolescents whose living conditions and life style may be different. Third, as with any self-report measures, there are adherent biases and potential for both underreporting and over-reporting. However, students’ responses were confidential and
they were cautioned not to look at the responses of their peers. These conditions have been known to promote valid responses on adolescent health risk behaviors [31].

Conclusions

Despite these limitations, our findings contribute to the literature in several ways. The findings suggest that risk factors are more closely related to adolescent risky sexual behaviors, while protective factors have no significant impact. Effective interventions to control adolescent risky sexual behaviors should emphasize a comprehensive approach by focusing on the reduction of substance use, deviant peer involvement, and exposure to family violence. Involving adolescents in youth-oriented community activities and enhancing family warmth may be beneficial. Future research should focus on how family, community, and school can contribute to the reduction of risky sexual behaviors among adolescent students in developing countries.

Competing interests

The authors declare that they have no competing interests.

Authors’ contributions

Siyan Yi conceived the research questions, designed the study, conducted field works for the study preparation, collected data, and drafted the manuscript for publication. Krishna C. Poudel involved in revisions of the research proposal, data analysis, and preparation of the manuscript for publication. Junko Yasuoka involved in revisions of the research proposal,
data analysis, and revisions of the manuscript for publication. Paula H. Palmer involved data analysis and revisions of the manuscript for publication. Songky Yi involved field works for the study preparation, data collection, and revisions of the manuscript for publication. Masamine Jimba involved in revisions of the research proposal, data analysis, and revisions of the manuscript for publication. All authors read and approved the final manuscript.

Acknowledgements

The authors thank school directors, teachers, and students for their contribution to this study. Without the support from the Battembang Provincial Health Department and the Provincial Department for Education, Youth and Sports, the research might have been impossible.

References


5. National Authority for Combating Drugs (NACD)/United Nations Office on Drugs and Crime (UNODC): Commune-based baseline behavior survey in 60 communes in


34. Santelli JS, Lowry R, Brener ND, Robin L: **The association of sexual behaviors with socioeconomic status, family structure, and race/ethnicity among US adolescents.** *Am J Pub Health* 2000, **90:** 1582-1588.
<table>
<thead>
<tr>
<th></th>
<th>Gender (n, %)</th>
<th>OR (95% CI)</th>
<th>Age groups (n, %)</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual intercourse- past 3 months</td>
<td>108 (18.4)</td>
<td>25 (5.5)</td>
<td>0.3 (0.16-0.41)</td>
<td>92 (11.5)</td>
</tr>
<tr>
<td></td>
<td>92 (11.5)</td>
<td>40 (16.5)</td>
<td>1.5 (1.02-2.27)</td>
<td></td>
</tr>
<tr>
<td>Two or more sex partners*</td>
<td>39 (36.1)</td>
<td>7 (28.0)</td>
<td>0.2 (0.10-0.50)</td>
<td>24 (26.1)</td>
</tr>
<tr>
<td></td>
<td>24 (26.1)</td>
<td>21 (52.5)</td>
<td>3.1 (1.68-5.62)</td>
<td></td>
</tr>
<tr>
<td>Condom use- last sex *</td>
<td>57 (63.3)</td>
<td>6 (31.6)</td>
<td>3.7 (1.30-10.78)</td>
<td>38 (41.3)</td>
</tr>
<tr>
<td></td>
<td>38 (41.3)</td>
<td>25 (62.5)</td>
<td>0.5 (0.21-1.15)</td>
<td></td>
</tr>
</tbody>
</table>

* Data were only from students who had sexual intercourse during the past 3 months
Table 2  Comparisons of mean scores of risky sexual behaviors in some selected demographic characteristics

<table>
<thead>
<tr>
<th>Risky sexual behaviors</th>
<th>Number</th>
<th>Mean</th>
<th>SD</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 18 years</td>
<td>802</td>
<td>2.3</td>
<td>1.1</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>≥ 19 years</td>
<td>246</td>
<td>2.7</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>590</td>
<td>2.6</td>
<td>1.5</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Female</td>
<td>455</td>
<td>2.1</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>Family structure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two-parents</td>
<td>733</td>
<td>2.4</td>
<td>1.2</td>
<td>0.547</td>
</tr>
<tr>
<td>Other *</td>
<td>313</td>
<td>2.5</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>Father’s job</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farmer</td>
<td>399</td>
<td>2.5</td>
<td>1.4</td>
<td>0.038</td>
</tr>
<tr>
<td>Other †</td>
<td>645</td>
<td>2.4</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>Father’s education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ Grade 9</td>
<td>287</td>
<td>2.4</td>
<td>1.3</td>
<td>0.367</td>
</tr>
<tr>
<td>≥ Grade 10</td>
<td>280</td>
<td>2.5</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>Don’t know</td>
<td>481</td>
<td>2.4</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>Mother’s education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ Grade 9</td>
<td>403</td>
<td>2.4</td>
<td>1.3</td>
<td>0.280</td>
</tr>
<tr>
<td>≥ Grade 10</td>
<td>176</td>
<td>2.5</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Don’t know</td>
<td>468</td>
<td>2.4</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>Monthly family income</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income Level</td>
<td>Count</td>
<td>OR</td>
<td>CI</td>
<td>p-value</td>
</tr>
<tr>
<td>--------------</td>
<td>-------</td>
<td>-----</td>
<td>-----</td>
<td>---------</td>
</tr>
<tr>
<td>≤ US$ 100</td>
<td>561</td>
<td>2.3</td>
<td>1.1</td>
<td>0.081</td>
</tr>
<tr>
<td>&gt; US$ 100</td>
<td>470</td>
<td>2.5</td>
<td>1.3</td>
<td></td>
</tr>
</tbody>
</table>

Type of family home

<table>
<thead>
<tr>
<th>Home Type</th>
<th>Count</th>
<th>OR</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own home</td>
<td>924</td>
<td>2.4</td>
<td>1.2</td>
</tr>
<tr>
<td>No own home</td>
<td>122</td>
<td>2.6</td>
<td>1.4</td>
</tr>
</tbody>
</table>

*OR* = Odds ratio; CI = Confident interval

*Other included living with single parent, relatives, or in an orphanage*

†*Other included self business, office worker, government officer, or taxi driver*
**Table 3** Results of multiple linear regression analysis predicting risky sexual behaviors

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Beta</th>
<th>SE</th>
<th>t</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance use</td>
<td>0.21</td>
<td>0.05</td>
<td>7.72</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Depression</td>
<td>0.02</td>
<td>0.00</td>
<td>0.92</td>
<td>0.359</td>
</tr>
<tr>
<td>Peer delinquency</td>
<td>0.08</td>
<td>0.00</td>
<td>3.24</td>
<td>0.001</td>
</tr>
<tr>
<td>FSF</td>
<td>-0.04</td>
<td>0.00</td>
<td>-1.47</td>
<td>0.143</td>
</tr>
<tr>
<td>FV-vict</td>
<td>0.07</td>
<td>0.08</td>
<td>2.82</td>
<td>0.005</td>
</tr>
<tr>
<td>FV-wit</td>
<td>0.01</td>
<td>0.07</td>
<td>0.45</td>
<td>0.652</td>
</tr>
<tr>
<td>CV-vict</td>
<td>0.02</td>
<td>0.04</td>
<td>0.95</td>
<td>0.341</td>
</tr>
<tr>
<td>CV-wit</td>
<td>0.03</td>
<td>0.02</td>
<td>1.12</td>
<td>0.264</td>
</tr>
<tr>
<td>School attachment</td>
<td>0.01</td>
<td>0.10</td>
<td>0.50</td>
<td>0.618</td>
</tr>
<tr>
<td>Family structure (two parents)</td>
<td>-0.01</td>
<td>0.07</td>
<td>-0.21</td>
<td>0.837</td>
</tr>
<tr>
<td>Family income (≤ US$100)</td>
<td>0.06</td>
<td>0.06</td>
<td>2.55</td>
<td>0.011</td>
</tr>
<tr>
<td>Age</td>
<td>0.12</td>
<td>0.02</td>
<td>4.97</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Gender (male)</td>
<td>-0.05</td>
<td>0.06</td>
<td>-2.12</td>
<td>0.034</td>
</tr>
</tbody>
</table>

*FSF* = Family support function; *FV-vict* = Family violence-victimization; *FV-wit* = Family violence-witnessing; *CV-vict* = Community violence-victimization; *CV-wit* = Community violence-witnessing