



# Risk factor of sexual risk behavior among adolescents: A cross-sectional study from the Bolivia global school- based student health survey (GSHS)

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## ABSTRACT

**Background:** Many adolescents engage in sexual risk behaviors (SRBs).

**Purpose:** This study aimed to assess the prevalence of SRBs that lead to unintended sexually transmitted diseases (STDs) and teen pregnancy.

**Method:** The cross-sectional 'Global School-Based Health Survey (GSHS)' was conducted in 2018, with 6,940 Bolivian students aged 11–18 years or older responding to a questionnaire. The GSHS measure used in this survey included topics ranging from demographic information to sexual risk behaviors (SRB). Almost one-third of the students had ever had sex (33.7%), and nearly half of those who had sex had also consumed alcohol.

**Findings:** In adjusted ordinal logistic regression analysis, ever drinking alcohol (AOR = 1.55, 95% CI [1.22, 1.98]) and heavy alcohol use (AOR = 1.34, 95% CI [1.04, 1.74]) were positively associated with SRB. Conclusion: This study highlights the contribution of alcohol and substance use to the increasing prevalence of SRB among Bolivian adolescents. Additionally, 1 out of 3 students engage in SRB, reflecting a lack of sexual health education among adolescents.

**Implication:** The study shows that nearly one in three adolescents in Bolivia engage in SRB, influenced by alcohol and substance use, school truancy, and lack of parental support. This highlights the urgent need for more comprehensive sexual education programs that address these interconnected issues. Stakeholders are encouraged to develop deeper, integrated approaches that focus on substance use prevention, improving school engagement, and fostering stronger family support to reduce SRB and promote healthier outcomes for adolescents.

## KEYWORDS

alcohol; behavior; risk;  
sexual

## Introduction

Nowadays, adolescents tend to engage in sexual risk behavior (SRB) which can result in unintended health outcomes such as STDs (i.e. HIV) and teen pregnancy (Centers for Disease Control and Prevention [CDC], 2021). Even though most adolescents as students are aware of SRB, a significant proportion of teenagers have engaged in SRB that may predispose them to various sexual and reproductive health problems (Keto et al., 2020; Ssewanyana et al., 2021). SRB helps to explain why adolescents and young women in Sub-Saharan Africa have such a high rate of HIV infection in 2017, and compared to any other region, it has the highest rate (19%) of teenage pregnancy (Karim & Baxter, 2019). Other than that, among 15-year-old schoolchildren in 30 European, Israeli, and Canadian countries, 27% ever had sexual intercourse and 14% had not used the contraceptive pill or condoms at their last sexual encounter. Moreover, the beginning of sexual initiation was 18.8% in a survey of 15-year-olds in ten European countries, and among the

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sexually active, 52.4% had more than one sexual partner, 14.7% did not or rarely use condoms, and 3.0% became pregnant (Gambadauro et al., 2020; Nic Gabhainn et al., 2009).

The prevalence of SRB and the negative impact on it gradually to increase among the adolescent population (Gambadauro et al., 2020). Research in Gondar City, Ethiopia, some of the sexually active participants had more than one sexual partner, moreover, some of the male respondents had sexual intercourse with commercial sex workers and 81.2% of those not ever using condom during intercourse (Nic Gabhainn et al., 2009).

Based on the latest report, Bolivia had 22% adolescents in their population, which 17% of male youth had early sexual debut, while 11% were female, and only around 20% of them had comprehensive knowledge of SRB specifically on HIV (United Nations Children's Fund [UNICEF], 2015). The HIV prevalence among 15–24-year-olds in Bolivia was 0.1% (UNICEF, 2015). SRB has an impact on teenage and youth lifestyles and contributes to a variety of negative consequences, yet its prevalence is on the rise due to a variety of causes, including a lack of understanding about adolescent sexuality (UNICEF, 2015).

Furthermore, a study in the Caribbean found that a considerable number of teenagers reported engaging in SRB, underlining the need for intervention programs (Pengpid & Peltzer, 2020). Some sexual and reproductive health consequences among adolescents were found to be linked to the quality of the parent-adolescent relationship, the presence of violence, substance abuse, or mental health problems in the family, peer relationships, cultural attitudes, and a history of physical and sexual abuse (Pilgrim & Blum, 2012). Moreover, a positive parent-child relationships can indirectly decrease the risk of sexual risk behaviors among adolescents (Rogers & McKinney, 2019). Another study in Pacific Island countries found that 77.8% of adolescents engaged in risky sexual behaviors, such as having sexual intercourse before age 14, having more than two sexual partners, and not using sexual protection and birth control (Peltzer & Pengpid, 2016). The many negative consequences related to SRB highlight the importance of this study. Previous study found that SRB was linked to respondents' age, alcohol consumption, and lack of HIV/AIDS knowledge in the study by Kassa et al. (2016). Another study in Hongkong also found that negative psychological emotion among adolescents was found as the significant factor of SRB as well as substance usages (e.g., alcohol & drugs; Chan, 2021). Consequently, adolescents with conveying psychological problems often engage in impulsive and overt risk-taking behaviors such as early sexual debut which correlated with high tendency of school absenteeism, fighting, tobacco, alcohol, and drug usages (Kushal et al., 2022). Moreover, participants with high psychological distress had increased odds of multiple SRB (Pengpid & Peltzer, 2020). Recent studies have increasingly focused on adolescent sexual health due to significant public health concerns like STDs and teen pregnancy. Adolescents engaging in sexual activity are at higher risk of STDs compared to adults. Understanding these issues requires examining contextual factors influencing adolescent sexual behavior beyond individualistic approaches. Experts advocate for an ecological approach, which explores how individuals interact with their environments across various levels of influence to better address these health outcomes (Salazar et al., 2010; Stockman et al., 2023).

Prior local study among adolescents in Bolivia found that cigarette smokers were likely to engage in a variety of other risky behaviors such as sexual intercourse and those who had early debut sexual intercourse were more likely to engage in a variety of risk behaviors such as alcohol use (Novilla, 2006). Meanwhile, there have not been any national studies on risky behavior in deeper level of SRB among young people in Bolivia, which led to this study. Therefore, this study aims to investigate the SRB among adolescents in Bolivia. The results of this study may have significant contributions to relevant stakeholders about the adolescence health situation in Bolivia, as well as implications for potential target-oriented public health interventions.

## Method

**Study Design**

This research involved a secondary analysis of the cross-sectional 2018 Bolivia Global School-Based Student Health Survey, which used a two-stage cluster sampling strategy to produce data characteristic of all students in the 2nd Secondary - 6th Secondary in Bolivia (World Health Organization [WHO], 2018). In the initial stage, schools were chosen based on probability proportional to enrollment size, and at the latter stage, random selection was applied to the classes, and students who were eligible to participate were selected.

**Participants**

A total of 6,940 students participated with complete measurement of sexual behavior (50.5% males & 49.5% females), and a mean age 15.5 years (*SD* = 1.6; age range ≤ 11 years to ≥ 18 years).

**Instruments**

This study used the 2018 Global School Health Survey Questionnaire for Bolivia (WHO, 2018), comprising of major risk factors categories such as: substance use (ever drunk, heavy alcohol use, current cannabis use, and amphetamine use) and psychological distress. Appendix A describes the questionnaire items used in this study.

**Procedure**

Approval was granted by Bolivia’s Ministry of Health along with a national ethics committee to proceed with the study protocol, and necessary approvals and permission, including informed consent, were obtained from the participating schools, parents, and students before the survey was administered. Current study data obtained from the World Health Organization data base.

**Data Analysis**

Data interpretation was performed using STATA software version 15.1 (Stata Corporation, College Station, TX, USA), keeping in mind the complex sampling design of the study. Initial descriptions of the data were reported using descriptive statistics. Unadjusted and adjusted ordinal logistic regression was used for the SRB index. Variables significant in the unadjusted models were subsequently included in the adjusted model. Furthermore, adjusted logistic regression was used to identify associations between independent variables and the outcome variables of ever sex, early sexual debut, multiple sexual partners, non-condom use at last sex, and non-birth control use at last sex.

**Result and Discussion**

**Participant’s Characteristics**

Among the participants, 40% reported experiencing bullying, with 24% being bullied at school, 20.9% outside of school, and 20.7% subjected to cyberbullying. Additionally, 33.7% of adolescents reported having had sexual intercourse, with the prevalence being 40% among females and 60% among males. Additionally, 22% of students reported experiencing psychological distress. School attendance (no missing classes or school without permission in the past month) was 60.2%. Students with heavy alcohol use was 11.2%, ever drunk 23.1%, and current cannabis use was 5.7% (see Table 1).

**Table 1**

*Participants Demographic Data*

Reliability and Convergent Validity

Constructs	Items	Item Loading	Cronbach’s Alpha	Composite Reliability	AVE
Competence	10	0.73–0.86	.945	.953	.669
Commitment	9	0.60–0.83	.878	.903	.512
Work Engagement	18	0.57–0.85	.955	.960	.571

Knowledge Sharing	8	0.58–0.81	.858	.888	.501
Mental Workload	6	0.67–0.87	.875	.903	.612
Employee Perf.	37	0.55–0.85	.980	.981	.586

Notes. AVE = Average Variance Extracted.

**Association with SRB Index**

In adjusted ordinal logistic regression analysis, age 17 years and older (AOR = 1.27, 95% CI [1.04, 1.55]), male sex (AOR = 1.92, 95% CI [1.66, 2.22]), ever drunk students (AOR = 1.55, 95% CI [1.22, 1.98]), current cannabis use (AOR = 2.24, 95% CI [1.58, 3.18]), heavy alcohol use (AOR = 1.34, 95% CI [1.04, 1.74]), were positively associated, and school attendance (AOR = 0.82, 95% CI [0.71, 0.93]), moderate parental support (AOR = 0.83, 95% CI [0.71, 0.96]) and high parental support (AOR = 0.84, 95% CI [0.71, 1.00]) were negatively associated with five the SRB index (see Table 2).

**Table 2**

*Association with SRB Index*

Variable	COR 95% CI [LL, UL]	AOR 95% CI [LL, UL]
Age in years		
≤11 to 14	1 Reference	1 Reference
15	1.04 [0.90, 1.21]	0.91 [0.77, 1.09]
16	1.17 [1.00, 1.37]	1.10 [0.94, 1.30]
≥17	1.61*** [1.33, 1.93]	1.27** [1.04, 1.55]
Sex (Male – Female)	1.93*** [1.69, 2.22]	1.92*** [1.66, 2.22]
Ever drunk	2.61*** [2.13, 3.19]	1.55*** [1.22, 1.98]
Heavy alcohol use (≥2/day)	2.57*** [1.93, 3.40]	1.34** [1.04, 1.74]
Cannabis use	5.48*** [3.99, 7.53]	2.24*** [1.58, 3.18]
Amphetamine use	5.59*** [4.01, 7.79]	0.94 [0.48, 1.83]
Bullied in school	1.13 [0.97, 1.31]	1.00 [0.86, 1.16]
Bullied outside school	1.33*** [1.14, 1.55]	1.04 [0.85, 1.26]
Cyber bullied	1.20*** [1.06, 1.36]	1.02 [0.86, 1.21]
Psychological distress	1.06 [0.90, 1.24]	---

**Table 2. (continued)**

School attendance	0.64*** [0.56, 0.72]	0.82*** [0.71, 0.93]
Peer support (low)	0.88 [0.76, 1.02]	---
Low parental support	1 Reference	1 Reference
Moderate parental support	0.72*** [0.63, 0.83]	0.83** [0.71, 0.96]
High parental support	0.65*** [0.56, 0.75]	0.84* [0.71, 1.00]

Notes. COR = Crude Odds Ratio; AOR = Adjusted Odds Ratio.

\*\**p* < .05. \*\*\**p* < .01.

**Associations with Individual SRB**

Older age, male sex, ever drunk, and current cannabis use increased the odds of ever sex, early sexual debut, multiple sex partners and non-condom use at last sex and decreased the odds of non-birth control use at last sex. Heavy alcohol use was positively associated with three SRB (ever sex, multiple sexual partners, and non-condom use at last sex), and negatively associated with non-birth control use at last sex. Bullied outside school, cyberbullied, and psychological distress increased the odds of one SRB (multiple sexual partners and ever sex, respectively). School attendance was protective against four SRB (ever sex, early sexual debut, multiple sex partners and non-condom use at last sex) and increased the odds of non-birth control use at last

sex. Parental and peer support were not statistically significantly associated with any of the 5 SRB. Results presented in Table 3.

**Table 3**  
*Association with SRB Index*

Variable	COR 95% CI [LL, UL]	AOR 95% CI [LL, UL]
<b>Age in years</b>		
≤11 to 14	1 Reference	1 Reference
15	1.04 [0.90, 1.21]	0.91 [0.77, 1.09]
16	1.17 [1.00, 1.37]	1.10 [0.94, 1.30]
≥17	1.61*** [1.33, 1.93]	1.27** [1.04, 1.55]
Sex (Male – Female)	1.93*** [1.69, 2.22]	1.92*** [1.66, 2.22]
Ever drunk	2.61*** [2.13, 3.19]	1.55*** [1.22, 1.98]
Heavy alcohol use (≥2/day)	2.57*** [1.93, 3.40]	1.34** [1.04, 1.74]
Cannabis use	5.48*** [3.99, 7.53]	2.24*** [1.58, 3.18]
Amphetamine use	5.59*** [4.01, 7.79]	0.94 [0.48, 1.83]
Bullied in school	1.13 [0.97, 1.31]	1.00 [0.86, 1.16]
Bullied outside school	1.33*** [1.14, 1.55]	1.04 [0.85, 1.26]
Cyber bullied	1.20*** [1.06, 1.36]	1.02 [0.86, 1.21]
Psychological distress	1.06 [0.90, 1.24]	---
School attendance	0.64*** [0.56, 0.72]	0.82*** [0.71, 0.93]
Peer support (low)	0.88 [0.76, 1.02]	---
Low parental support	1 Reference	1 Reference
Moderate parental support	0.72*** [0.63, 0.83]	0.83** [0.71, 0.96]
High parental support	0.65*** [0.56, 0.75]	0.84* [0.71, 1.00]

Notes. COR = Crude Odds Ratio.

\*\**p* < .05. \*\*\**p* < .01.

**Discussion**

The current cross-sectional study investigated the risk factors of sexual behavior associated with alcohol and substance usages based on the data among students’ adolescents in Bolivia from the Global-based Health Survey 2018. Based on the report on 2015, the early sexual initiation prevalence of adolescent’s male was 17%, yet 11% were female (UNICEF, 2015) which the trend in 2018 is the reverse in this study since 17.9% female students had early sexual debut, while male students were only 9.3%. Differentiation of the findings might be explained by Kushal et al. (2022) study which found that young adults in high-income countries reported the highest frequency of early sexual debut, however, adolescents in lower middle-income countries had the lowest prevalence of the early sexual debut. According to the income consideration there was 4.5% economic growth in Bolivia during 2015-2017 periods (Beverinotti 2018). A prior study found that high-poverty school students are more likely to be sexually active than those in low-poverty schools (Underwood et.,al, 2021). Therefore, Bolivia's economic growth could potentially contribute to the shift in trends observed in this study. Meanwhile, SRB in this study also analyzing broader behavior such as multiple sex partners, and the absence of condom and birth control use at last sex was not discussed in previous study. Although the previous Bolivian study at 2012 (WHO, 2021) found that condom use among students were of higher percentage compared to the current study in 2018, while the percentage of students who ever had sex was found to be higher in this current study. Comparing the previous data from the 2012 survey, the trend of SRB increased; the previous study found that among participants only 20.3% had engaged in sexual intercourse and 62.5% students had used a condom at last sexual intercourse, compared to this current study from the 2018 that found a higher percentage of student’s engagement in sexual

activity while 30% fewer students had used condoms, although smaller percentage of students conducted in early sexual debut compare to the previous data base. Findings call for intensified comprehensive sexual education (CSE) among Bolivian adolescents. CSE among adolescents in Latin America and the Caribbean, including Bolivia, is needed to reduce the increasing SRB, especially unwanted pregnancy, which might reduce their chances of getting a better education and a job for their future (Pan American Health Organization [PAHO], 2020).

This study found that alcohol and cannabis users were likely to engage in SRB (being sexually active, early sex debut, having multiple sex partners, and non-condom use). Moreover, psychological distress was found to increase the odds of sexual initiation and having multiple sexual partners. Meanwhile, students who experienced bullied outside school and cyber bullied also found had higher prevalence of non-birth control use. The result that alcohol and substance use increased SRB among students in Bolivia is supported by a previous study by Novilla (2006) that found that adolescent substance users (tobacco, cannabis, and drugs) were likely to take risky actions. In this study, the risky act included sexual activities that become the part of one factor of SRB along with the low attendance at school.

## Conclusion

Nearly one out of three (32.8% of the population) adolescents in Bolivia engaged in SRB. This study broadened the previous lack studies of SRB by showing that alcohol and substance use, school truancy and lack of parent support were associated with SRB. It is suggested that stakeholders improve their comprehensive sexual risk education among adolescent students in Bolivia in deeper approach.

## Limitation of Study

This baseline survey is limited by the absence of prior research, restricting comparisons and trend analysis. Self-reporting bias, recall issues, and sampling limitations may affect data accuracy and generalizability. The cross-sectional design also prevents establishing causality, underscoring the need for further research.

## Acknowledgement

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## Conflict of Interest

The authors declare no conflict of interest.

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**Appendix A**

*Study Variables*

Variables	Survey question	Response options and recording
<b>Sociodemographic factors</b>		
Age	“How old are you?”	“11 years old or younger to 18 years old or older” “(Coded 1= 11 years old and younger to 14 years old, 2= 15 years old, 3= 16 years old, 4 = 17 years and older)”
Sex	“What is your sex?”	“Male, Female” (Coded 0= Female, 1= Male)
<b>Sexual Activity</b>		
Sexual initiation	“Have you ever had sexual intercourse?”	“Yes, No” (coded yes=1, no=0)
Early sexual initiation (<14 years)	“How old were you when you had sexual intercourse for the first time?”	“I have never had sexual intercourse, 11 years old or younger to 18 years old or older” “(coded 0= never had sex, 1=11 years old or younger, 1=12 years old, 1=13 years old, 0=14 years old or older”
Multiple sexual partners	“During your life, with how many people have you had sexual intercourse?”	“I have never had sexual intercourse, 1 person to 6 or more people” “(Coded 0= never had sex or 1 person, 1=2 or more than people)”
Non-condom uses at last sex	“The last time you had sexual intercourse, did you or your partner use a condom?”	“I have never had sexual intercourse, Yes, no” (coded 0=never had sex, 0=yes, 1=no)
Non-birth control use at last sex	“The last time you had sexual intercourse, did you or your partner use any other method of birth control, such as withdrawal, rhythm (safe time), birth control pills, or any other method to prevent pregnancy?”	“I have never had sexual intercourse, Yes, no” “(coded 0=never had sex, 0=yes, 1=no)”
<b>Psychological Distress</b>		



Loneliness	“During the past 12 months, how often have you felt lonely?”	No = “never” or “rarely” or “sometimes” Yes = “most of the times” or “always” (Coded 0=no, 1=yes)
Anxiety	“During the past 12 months, how often have you been so worried about something that you could not sleep at night?”	No = “never” or “rarely” or “sometimes” Yes = “most of the time” or “always” (Coded 0=no, 1=yes)
Bullied in school	“During the past 12 months, have you ever been bullied on school property?”	Yes/No (Coded 0=no, 1=yes)
Bullied outside school	“During the past 12 months, have you ever been bullied when you were not on school property?”	Yes/No (Coded 0=no, 1=yes)
Cyber bullied	“During the past 12 months, have you ever been cyber bullied?”	Yes/No (Coded 0=no, 1=yes)
<b>Lifestyle factors</b>		
Ever drunk	“During the past 30 days, on how many days did you have at least one drink containing alcohol?”	“I did not drink alcohol during the past 30 days, 1 and 2 days, 3 to 5 days, 6 to 9 days, 10 to 19 days, 20 to 29 days, or all 30 days” (coded 0= not drink alcohol, 1= 1 and 2 days to all 30 days)
Heavy alcohol use (≥2 drinks/day)	“During the past 30 days, on the days you drank alcohol, how many drinks did you usually drink per day?”	1=I did not drink alcohol during the past 30 days to 7=5 or more drinks (Coded 0=no to <2 drinks/day, 1= 2 or more drinks/day)
Current cannabis use	“During the past 30 days, how many times have you used marijuana (also called maria juana, yerba, or mota)?”	1=“0 times” to 5 “20 or more times” (coded 0=no, 1=1 or more times)
Amphetamines use	“During your life, how many times have you used amphetamines or methamphetamines (also called pastillas or pepas)?”	No = “0 times” in both questions Yes = “1 or 2 times” or “3 to 9 times” or “10 to 19 times” or “20 or more times” in either question (coded 0=no, 1=1 or more times)
Peer support	“During the past 30 days, how often were most of the students in your school kind and helpful?”	“1= never to 5=always” “(coded 0=never/rarely/sometimes, 1=mostly or always)”
School attendance	“During the past 30 days, on how many days did you miss classes or school without permission?”	No= “0 days”, Yes= “1 or 2 days” or “3 to 5 days” or “6 to 9 days” or “more than 10 days” “(coded 1=0 days, 0=1 or more days)”
Parental support items	“During the past 30 days, how often did your parents or guardians check to see if your homework was done?” “During the past 30 days, how often did your parents or guardians understand your problems and worries?”	“1 = never to 5 = always (coded 1-3 = 0 and 4- 5 = 1)” “1 = never to 5 = always (coded 1-3 = 0 and 4- 5 = 1)”

“During the past 30 days, how often did your parents or guardians really know what you were doing with your free time?” “1 = never to 5 = always (coded 1-3 = 0 and 4- 5 = 1)”

“During the past 30 days, how often did your parents or guardians go through your things without your approval?” “1 = never to 5 = always (coded 1-3 = 0 and 4- 5 = 1)”

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