

Sexual behavior and suicide attempts among adolescents aged 12–15 years from 38 countries: A global perspective

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Abstract

Background

The aim was to investigate the relationship between sexual behaviors and suicide attempts by using data from 38 countries from four World Health Organization regions.

Methods

Cross-sectional data from 116,820 adolescents aged 12–15 years participating in the Global School-based Student Health Survey 2009–2016 were analyzed. Data on sexual behaviors were collected: (i) ever having had intercourse; among those who reported having had intercourse, (ii) multiple (≥ 2) lifetime sexual partners and (iii) condom use in last sexual intercourse and past 12-month suicide attempts were self-reported. Associations were analyzed using multivariable logistic regression.

Results

The prevalence of sexual intercourse and suicide attempts were 13.2% and 9.1%, respectively. A positive association between sexual intercourse and suicide attempts was found in 32 of the 38 countries (pooled OR for whole sample 2.12 [95% CI 1.98–2.27]). Having had multiple sexual partners was associated with increased odds of suicide attempts (pooled OR for whole sample 1.58 [1.27–1.96]). Condom non-use was only associated with suicide attempts among boys in the Americas (OR: 1.75 [1.25–2.45]).

Conclusion

Engaging in sexual intercourse was associated with increased risk of suicide attempt. Moreover, having had multiple sexual partners may also increase the risk of suicide attempts.

1. Introduction

Suicide is the second leading cause of death among adolescents and young adults (aged 15–29 years) worldwide, and is particularly prevalent in low- and middle-income countries (LMIC) (World Health Organisation, 2018). The majority (79%) of all global suicides occur in these countries (World Health Organisation, 2018) and, on average, one in ten adolescents who live there attempt suicide by the age of 12–15 years (Carvalho et al., 2019). It is important to note, however, that a relatively large proportion (21%) of suicides occur in high-income countries (HIC). Suicide attempt is thus a global issue inflicting the majority of global regions. A prior suicide attempt is the single most important risk factor for suicides in the general population (World Health Organisation, 2014), and even if it does not result in a completed suicide, it is known to increase risks for mental health problems, substance misuse, physical health problems, engagement in violence, and premature death in adulthood (Finkelstein et al., 2015, Goldman-Mellor et al., 2014, Mars et al., 2014). Thus, identifying social and behavioral risk factors for suicide attempts in adolescents, especially from LMIC, but also HIC, is important for informing the development of targeted interventions.

Currently, there is emerging evidence that sexual behavior may be associated with suicide attempts (Hallfors et al., 2004, Mota et al., 2010). Sexual intercourse in early adolescence may increase risk for suicidal behavior via mental disorders, distress resulting from being too psychologically immature to handle sexual relationships (Cauffman and Steinberg, 2000), and sexual violence particularly among girls (Santhya and Jejeebhoy, 2015). However, to our knowledge, only one previous study (Hallfors et al., 2004) has examined the relationship between sexual activity and suicide attempt in a sample which consists exclusively of adolescents and young adults. Specifically, this study, which included a large US ($n = 18,924$) sample of individuals aged 12–21 (median 16.3) years, found that those who reported engaging in sexual activity had more than two-fold higher odds of suicide attempts when compared with those who abstained from sexual activity (Hallfors et al., 2004). Furthermore, although the sample was not restricted to adolescents and young adults, another study on adults aged ≥ 18 years in the US noted significantly higher rates of suicide attempts in those who first had intercourse at 12–14 years (compared with 15–17 years), those with two or more sexual partners, and those who rarely or never used condoms (Mota et al., 2010).

Although these studies have provided important insights, further studies from settings outside of the US are necessary to understand the role of sexual behavior in suicidal behavior as attitudes towards sexual behavior and suicides are likely to vary considerably between regions mainly due to different social and cultural factors. For example, the majority of girls are married before the age of 18 in Sub-Saharan Africa (Koski et al., 2017) while sexual intercourse before marriage is not common in Muslim cultures (Adamczyk and Hayes, 2012). Furthermore, the prevalence of suicide attempts among

adolescence also varies widely between countries (Carvalho et al., 2019), and this may be related to differences in factors such as availability of mental health care, acceptability of suicide, and peoples' impulsivity between countries.

Thus, the present study aimed to investigate the relationship between three sexual behaviors (ever had sexual intercourse, multiple partners, and condom use) and suicide attempts by using data from 38 countries from four World Health Organization (WHO) regions (African Region [AFR], Region of the Americas [AMR], South-East Asia Region [SEAR] and Western Pacific Region [WPR]), which were predominantly LMICs, to provide a global understanding on this topic.

2. Methods

2.1. The survey

Publicly available data from the Global School-based Student Health Survey (GSHS) were analyzed. Details on this survey can be found at <http://www.who.int/chp/gshs> and <http://www.cdc.gov/gshs>. Briefly, the GSHS was jointly developed by the WHO and the US Centers for Disease Control and Prevention (CDC), and other UN allies. The core aim of this survey was to assess and quantify risk and protective factors of major non-communicable diseases. The survey draws content from the CDC Youth Risk Behavior Survey (YRBS) for which test-retest reliability has been established (Brener et al., 1995). The survey used a standardized two-stage probability sampling design for the selection process within each participating country. For the first stage, schools were selected with probability proportional to size sampling. The second stage involved the random selection of classrooms which included students aged 13–15 years within each selected school. All students in the selected classrooms were eligible to participate in the survey regardless of age. Data collection was performed during one regular class period. The questionnaire was translated into the local language in each country and consisted of multiple choice response options; students recorded their response on computer scannable sheets. All GSHS surveys were approved, in each country, by both a national government administration (most often the Ministry of Health or Education) and an institutional review board or ethics committee. Student privacy was protected through anonymous and voluntary participation, and informed consent was obtained as appropriate from the students, parents and/or school officials. Data were weighted for non-response and probability selection. From all publicly available data, we selected all nationally representative datasets that included the variables used in the current analysis. If there were more than two datasets from the same country, we chose the most recent dataset. A total of 38 countries were included in the current study. The characteristics of each country or survey are provided in **Table 1**. For the included countries, the survey was conducted between 2009 and 2016, and consisted of 6 low-income, 14 lower middle-income, 11 upper middle-income countries, and 7 high-income countries based on the World Bank

classification at the time of the survey. Furthermore, these corresponded to 7, 15, 5, and 11 countries from AFR, AMR, SEAR, and WPR, respectively.

2.2. Suicide attempt

Suicide attempt was assessed by the question “During the past 12 months, how many times did you actually attempt suicide?” and was defined as at least one suicide attempt in the past 12 months. This measure has been used previously and demonstrates a high level of convergent validity (Carvalho et al., 2019, Koyanagi et al., 2019, Vancampfort et al., 2018).

2.3. Sexual behavior

Lifetime sexual intercourse was assessed by the question “Have you ever had sexual intercourse?” with ‘yes’ and ‘no’ response options. Number of sexual partners was based on the question “During your life, with how many people have you had sexual intercourse?” Answer options were 1 person, 2 people, 3 people, 4 people, 5 people and ≥ 6 people. We considered those with two or more sexual partners to have multiple sexual partners. Data on multiple partners were not available from Bangladesh. Condom use was assessed with the question “The last time you had sexual intercourse, did you or your partner use a condom?” with ‘yes’ and ‘no’ response options.

2.4. Control variables

The control variables included sex, age, food insecurity, anxiety-induced insomnia, and alcohol consumption. As in previous studies using the same dataset (Balogun et al., 2014, Carvalho et al., 2019), food insecurity was used as a proxy for socioeconomic status as there were no variables on socioeconomic status in the GSHS. Also, anxiety-induced insomnia was considered a proxy of psychiatric disorders, as there were no variables on psychiatric disorders in the dataset (Carvalho et al., 2019). Food insecurity was assessed by the question “During the past 30 days, how often did you go hungry because there was not enough food in your home?” Response options were categorized as ‘never’, ‘rarely/sometimes’, and ‘most of the time/always’. Anxiety-induced insomnia was defined as replying ‘most of the time’ or ‘always’ to the question “During the past 12 months, how often have you been so worried about something that you could not sleep at night?” (Carvalho et al., 2019). Alcohol consumption was defined as having had one drink containing alcohol for at least one day in the past 30 days.

2.5. Statistical analysis

Statistical analyses were performed with Stata 14.1 (Stata Corp LP, College station, Texas). The analysis was restricted to those aged 12–15 years as most students were within this age range and the exact age outside of this age range was not provided. Age-sex-adjusted prevalence of sexual behavior by country was calculated using the proportions derived from the overall sample as the standard population. The association between lifetime sexual intercourse (exposure) and suicide

attempts (outcome) was assessed by country-wise multivariable logistic regression analyses. Pooled estimates for all countries and region-wide samples were obtained by meta-analysis with fixed effects based on country-wise estimates. In order to assess the level of between-country heterogeneity in the association between sexual intercourse and suicide attempts, we also calculated the Higgins's I^2 which represents the degree of heterogeneity that is not explained by sampling error with a value of <40% often considered as negligible and 40–60% as moderate heterogeneity (Higgins and Thompson, 2002). Heterogeneity between regions was tested by Cochran's Q tests. The same analysis was repeated for samples restricting to boys or girls. Next, in a sample restricted to those who ever had sexual intercourse ($n = 21,314$), we examined the association of multiple sexual partners and condom non-use (exposures) with suicide attempts (outcome) using multivariable logistic regression based on the overall sample and region-wide samples. Country-wise analyses for this part of the analysis were not possible due to the small sample size in each country.

All regression analyses were adjusted for age, sex, food insecurity, anxiety-induced insomnia, alcohol consumption, and country with the exception of the sex-stratified analysis and country-wise analysis, which were not adjusted for sex and country, respectively. Adjustment for country in the regression analysis restricted to those who ever had sexual intercourse was done by including dummy variables for each country in the model as in previous GSHS publications (McKinnon et al., 2016, Vancampfort et al., 2018). All variables were included in the regression analysis as categorical variables with the exception of age (continuous variable). Sampling weights and the clustered sampling design of the surveys were taken into account. Results from the logistic regression analyses are presented as odds ratios (ORs) with 95% confidence intervals (CIs). The level of statistical significance was set at $p < 0.05$.

3. Results

The final sample consisted of 116,820 adolescents aged 12–15 years [mean (SD) age 13.7 (1.0) years; 48.7% females]. The overall prevalence of lifetime sexual intercourse was 13.2% (boys 16.8%; girls 9.5%), while the prevalence of lifetime multiple sexual partners and condom non-use at last sexual intercourse among those who had sexual intercourse were 52.4% (boys 56.4%; girls 44.0%) and 41.8% (boys 42.5%; girls 40.9%), respectively, with a wide range in terms of the country-wise prevalence (Table 1). The countries with the lowest prevalence of lifetime sexual intercourse were mostly in Asia, while the prevalence exceeded 40% in Samoa, Mozambique, and Dominica. Overall, 9.1% (boys 8.8%; girls 9.3%) of the adolescents attempted suicide in the past 12 months. The prevalence of suicide attempts was much higher among those who had sexual intercourse than

those who did not (19.0% vs. 6.3%). Among those who had sexual intercourse, the prevalence of suicide attempts was higher among those who had multiple partners (vs. those who did not) (28.7% vs. 21.0%) or did not use a condom (vs. did use) (22.6% vs. 19.9%) at last sexual intercourse.

A positive and significant association between sexual intercourse and suicide attempts was noted in 32 of the 38 countries, with a pooled OR (95%CI) of 2.12 (1.98–2.27). A moderate level of between-country heterogeneity was observed ($I^2 = 55.8\%$). Significant region-level heterogeneity ($P < 0.001$) was also observed, with the highest OR being observed in WPR (OR = 2.69) and the lowest in AMR (OR = 1.79) (**Fig. 1**). The associations among boys and girls were similar, with pooled ORs (95%CI) of 2.29 (2.08–2.52) and 2.19 (2.00–2.39), respectively (data shown only in text).

Among those who had sexual intercourse, having had multiple sexual partners was significantly associated with 1.58 (95%CI 1.27–1.96) times higher odds for suicide attempts in the overall sample (**Table 2**). Similar associations were found between boys and girls and across regions, although some region-wise estimates were not statistically significant. Condom non-use at last sexual intercourse was only significantly associated with suicide attempts in AMR (overall sample and boys). Among boys in AMR, condom non-use was associated with 1.75 (95%CI 1.25–2.45) times higher odds for suicide attempts.

4. Discussion

In this large representative sample of school-aged adolescents across 38 different countries, the overall prevalence of sexual intercourse by the ages of 12–15 years was high (13.2%), exceeding 40% in three countries. Approximately 9% of adolescents had attempted suicide in the last 12 months. Importantly, those who had sexual intercourse had more than double the odds of having attempted suicide in the past 12 months compared with those who had never had intercourse. In some regions, odds of suicide attempts were significantly higher among boys and girls who had multiple sexual partners (vs. one partner) and boys who had not used a condom the last time they had sexual intercourse (vs. those who used a condom).

These findings lend support to previous literature that has shown a positive association between sexual activity and suicide attempts (Hallfors et al., 2004, Mota et al., 2010). Moreover, the present study adds to the literature by showing for the first time that such an association exists in adolescents residing in LMIC, where suicide attempts are particularly prevalent (World Health Organisation, 2018) and a high proportion of young adolescents are sexually active (Chandra-Mouli et al., 2014). It further adds to the literature through identifying country- and region-specific estimates, with those residing in the WPR at greatest risk. However, it should be noted that a

significant positive association between sexual intercourse and suicide attempt was observed in the vast majority of the countries studied.

Several mechanisms may explain the association between sexual intercourse and suicide attempt. Previous research has shown that adults who reported first having had sexual intercourse between the ages of 12–14 were more likely than those who first had intercourse at 15–17 to have numerous mental health problems (Mota et al., 2010), and that those with mental disorders or certain personality traits (e.g., impulsive) are more likely to attempt suicide (Bertolote et al., 2003, Borges et al., 2010, Shibre et al., 2014). Another plausible explanation is that young adolescents may find sexual relationships distressing due to not yet having reached full psychological maturity in being able to assess future consequences (Cauffman and Steinberg, 2000). Early marriage, coercive practices, and sexual violence may also partly account for the relationship between sexual intercourse and suicide attempts, particularly among girls. In many LMIC countries, the majority of girls (up to 75% in sub-Saharan Africa) are married before the age of 18 and many before the age of 15 (as high as 17% in Bangladesh and 23% in Mali) (Santhya and Jejeebhoy, 2015). For many, sexual initiation (either before or within marriage) is forced or coerced. The Demographic and Health Surveys (DHS) data from 14 countries from different regions show that between 13% and 47% of women who were sexually active by the age of 15 had a forced sexual initiation (Santhya and Jejeebhoy, 2015). In a study of over 24,000 women in 10 countries representing diverse cultural, geographical and urban/rural settings, the prevalence of sexual violence by an intimate partner ranged from 6–59%, with most sites falling between 10% and 50%. Sexual violence has been shown to be associated with incident depression and suicide attempts (Devries et al., 2011, Devries et al., 2013, Olshen et al., 2007, Pico-Alfonso et al., 2006, Silverman et al., 2001). Further research of a qualitative nature is required to provide further insight into the mechanisms between sexual intercourse and suicide attempt in adolescents.

One previous study from the US showed that non-condom use is associated with higher odds for suicide attempts among never married adults (Mota et al., 2010). The authors of this study hypothesized that low self-esteem and negative self-concepts, which have both been associated with less condom use and suicidality, may be implicated in this association. However, in our study, this association was found only among males in AMR. A rationale for why this association was not generally observed in this large sample of young adolescents is elusive and future research is required to determine this. Nonetheless, the general lack of association between condom use and suicidality indicates that the consistent and strong relationships observed between any sexual intercourse and suicidality in young people is not only driven by general associations between risk-taking and self-harm behaviors (Hallfors et al., 2004, King et al., 2001, Swahn and Bossarte, 2007).

Some insights into the factors which influence the association between sexual intercourse and suicidality in young adolescents is provided by the finding that those who had multiple partners were at significantly higher risk for suicide attempt. These findings support previous research in adult populations (Mota et al., 2010). It has previously been suggested that individuals who engaged in high rates of “impersonal sex” (engaging in sex merely for the purpose of the act) are at a greater risk of having adverse family backgrounds, negative health indicators, and dissatisfaction with life in general (Langstrom and Hanson, 2006), which are likely to lead to greater suicide attempts. It is plausible to assume that those participants in the present study with multiple sexual partners are also those who engage in impersonal sex.

A clear strength of the present study is the large, representative sample of adolescents from multiple continents and adjustment for potential confounding by a wide range of demographic and behavioral variables. However, findings from the present study must be interpreted in light of its limitations. First, the study was cross-sectional and therefore, causality or temporal associations cannot be established. Future research utilizing a longitudinal design is needed. Secondly, we relied on self-reported data, which could have been affected by factors such as recall and social desirability biases. Thirdly, varying degrees of bias may have been introduced by interviewing only schoolchildren, especially in countries where school attendance rates are low. Nonetheless, the majority of 12–15 years old adolescents from most of the countries in our study do attend school. Further, suicide attempt was measured with a single item only, which likely results in some misclassification (Millner et al., 2015). Also, data were not available on the nature of sexual intercourse engaged in, and thus future research is required to establish how important factors such as consent, marriage, and age of sexual partner underpin the relationship between sexual intercourse and suicidality in young people. In particular, consent may be an important factor as sexual experiences that are not consensual may be associated with higher risk for suicide attempts. Moreover, residual confounding may exist, as data on some factors, which have been reported to be associated with both sexual behavior and suicidal behavior, could not be adjusted for due to lack of data. Specifically, these include factors such as social support, school connectedness, IQ, somatic health, personality, and self-esteem. Future studies should consider taking these factors into account to gain a more thorough understanding on the link between sexual behavior and suicide attempts. Finally, a measure of socioeconomic status *per se* was not available in the present dataset, and thus, a proxy measure (food insecurity) was used. This may have introduced some bias into the analyses but it is unlikely to have significantly influenced the findings given the considerable overlap between food insecurity and levels of wealth.

In conclusion, the present global study on adolescents aged 12–15 years found a high rate of sexual intercourse, as well as a high prevalence of multiple sex partners and non-condom use. This is alarming given the high risk these sexual behaviors carry in terms of adolescent pregnancy, and transmission of HIV and other sexually transmitted diseases. Although causality cannot be established due to the cross-sectional nature of the study, while residual confounding may exist due to factors which were not measured in our study, those who had engaged in sexual intercourse were at higher odds of suicide attempts in the majority of the countries, while having multiple lifetime sex partners and condom non-use were also associated with suicide attempts in some regions. Future studies of longitudinal design are warranted to assess causality, and to assess whether addressing sexual behavior can positively impact on adolescent suicide rates.

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Table 1 Survey characteristics and age- and sex-adjusted prevalence of lifetime sexual intercourse, multiple sexual partners, and condom non-use at last sexual intercourse

Region	Country income	Country	Year	Response rate (%)	N ^c	Sexual intercourse % [95%CI]	Multiple sexual partners ^{a,b} % [95%CI]	Condom non-use ^a % [95%CI]	
AFR	L	Benin	2016	78	717	21.8 [16.0,29.1]	49.9 [38.5,61.3]	55.6 [44.6,66.0]	
		Malawi	2009	94	224	20.8 [17.4,24.7]	46.4 [35.3,57.8]	37.1 [29.3,45.7]	
		Mozambique	2015	80	668	40.4 [32.8,48.4]	47.1 [31.4,63.5]	23.8 [16.2,33.5]	
		Tanzania	2014	87	2615	18.0 [15.1,21.3]	49.6 [37.9,61.4]	68.4 [60.8,75.1]	
	LM	Ghana	2012	82	1110	29.0 [21.2,38.4]	60.9 [52.3,68.9]	55.8 [39.0,71.4]	
		UM	Namibia	2013	89	1936	35.7 [31.0,40.6]	61.9 [57.6,66.1]	34.0 [27.1,41.6]
	AMR	H	Seychelles	2015	82	2061	38.8 [35.8,41.8]	59.1 [53.9,64.1]	47.7 [43.8,51.7]
		LM	Belize	2011	88	1600	22.3 [19.8,25.1]	60.1 [51.4,68.2]	37.1 [29.8,45.0]
			Bolivia	2012	88	2804	18.9 [16.9,21.1]	44.5 [36.2,53.1]	34.5 [27.6,42.2]
			El Salvador	2013	88	1615	18.2 [15.6,21.1]	49.2 [40.3,58.0]	27.9 [20.0,37.5]
UM		Guatemala	2009	81	4495	11.2 [9.9,12.7]	47.6 [40.7,54.6]	41.1 [34.9,47.5]	
		Honduras	2012	79	1486	23.8 [20.7,27.1]	46.6 [39.5,53.8]	34.2 [26.9,42.4]	
		Antigua & Barbuda	2009	67	1235	34.1 [29.7,38.8]	65.1 [60.1,69.8]	30.6 [25.3,36.5]	
		Argentina	2012	71	2158	33.9 [31.2,36.7]	54.9 [51.3,58.5]	22.1 [18.7,26.0]	
		Costa Rica	2009	72	2265	16.6 [14.2,19.3]	45.8 [37.9,53.9]	40.1 [32.8,47.8]	
		Dominica	2009	84	1310	44.1 [40.2,48.1]	63.7 [59.0,68.2]	35.9 [31.3,40.9]	
H	Peru	2010	85	2359	15.8 [13.3,18.8]	38.0 [32.6,43.7]	33.0 [26.6,40.1]		
	Suriname	2009	89	1046	22.3 [19.0,26.1]	46.8 [36.7,57.3]	27.6 [24.2,31.3]		
	Bahamas	2013	78	1308	29.0 [24.9,33.4]	55.8 [46.4,64.9]	38.2 [31.5,45.3]		
	Curaçao	2015	83	1498	18.2 [15.9,20.7]	31.4 [25.0,38.6]	44.8 [35.1,54.9]		
	Trinidad & Tobago	2011	90	2363	25.5 [21.9,29.5]	53.0 [46.2,59.6]	50.0 [43.5,56.4]		
	Uruguay	2012	77	2869	27.3 [22.9,32.2]	44.8 [39.6,50.1]	14.6 [11.1,19.0]		

SEAR	L	Nepal	20	69	461	19.2	57.4 [43.2,70.4]	52.6
			15		6	[15.6,23.5]		[43.8,61.1]
	LM	Bangladesh	20	91	275	8.8	NA	58.7
			14		3	[6.4,11.9]		[47.2,69.4]
		East Timor	20	79	163	19.3	47.0 [35.7,58.6]	49.1
			15		1	[14.9,24.7]		[39.6,58.6]
		Indonesia	20	94	880	5.5	56.8 [45.5,67.4]	74.9
			15		6	[4.4,6.8]		[58.2,86.5]
	UM	Thailand	20	89	413	14.4	44.4 [34.7,54.5]	33.8
			15		2	[12.0,17.1]		[25.6,43.0]
WPR	L	Cambodia	20	85	181	13.1	46.6 [26.8,67.5]	56.2
			13		2	[11.3,15.2]		[40.4,70.9]
	LM	Kiribati	20	85	134	22.3	50.1 [43.3,57.0]	71.3
			11		0	[19.5,25.4]		[61.8,79.3]
		Laos	20	70	164	8.3	71.0 [60.6,79.6]	46.7
			15		4	[6.2,11.0]		[35.2,58.5]
		Mongolia	20	88	370	9.8	42.7 [33.8,52.2]	55.5
			13		7	[8.3,11.4]		[45.5,65.0]
		Samoa	20	79	220	56.4	70.9 [65.6,75.6]	48.6
			11		0	[49.8,62.8]		[41.5,55.7]
		Vanuatu	20	72	852	12.9	34.7 [25.3,45.4]	37.5
			11			[8.9,18.3]		[25.3,51.5]
	UM	Fiji	20	79	153	12.3	56.0 [43.4,67.8]	39.7
			16		7	[9.3,16.2]		[30.5,49.6]
		Malaysia	20	89	162	7.9	60.0 [53.7,66.0]	66.8
			12		73	[6.9,8.9]		[58.1,74.5]
		Tuvalu	20	90	679	18.6	44.0 [28.7,60.7]	37.8
			13			[15.1,22.6]		[21.8,57.1]
	H	Brunei	20	65	182	9.9	39.7 [25.4,56.0]	49.3
			14		4	[8.3,11.8]		[36.8,62.0]
		French	20	70	190	30.0	44.0 [38.9,49.3]	37.3
			15		2	[26.6,33.6]		[32.8,41.9]

Abbreviation: CI Confidence interval; AFR African Region; AMR Region of the Americas; SEAR South-East Asia Region; WPR Western Pacific Region; L Low-income; LM Lower middle-income; UM Upper middle-income; H High-income.

^a Restricted to those who ever had sexual intercourse.

^b Multiple sexual partners referred to ≥ 2 partners.

^c Restricted to those aged 12-15 years.

Table 2 Association of multiple sexual partners and condom non-use with suicide attempts estimated by multivariable logistic regression^a

	Overall			Boys			Girls		
	OR	95%CI	P-value	OR	95%CI	P-value	OR	95%CI	P-value
<i>Multiple sexual partners^b</i>									
Overall	1.58	[1.27,1.96]	<0.001	1.43	[1.07,1.91]	0.015	1.90	[1.38,2.63]	<0.001
AFR	1.88	[1.29,2.76]	0.001	1.46	[0.87,2.46]	0.154	2.94	[1.30,6.68]	0.010
AMR	1.33	[1.05,1.70]	0.021	1.42	[1.03,1.95]	0.031	1.26	[0.94,1.69]	0.125
SEAR	1.96	[0.92,4.19]	0.082	1.41	[0.56,3.53]	0.457	4.34	[1.00,18.84]	0.050
WPR	1.35	[0.76,2.41]	0.310	1.00	[0.51,1.96]	0.990	2.44	[1.02,5.86]	0.046
<i>Condom non-use^c</i>									
Overall	1.26	[0.96,1.66]	0.098	1.27	[0.87,1.85]	0.219	1.22	[0.87,1.72]	0.247
AFR	0.77	[0.49,1.21]	0.257	0.67	[0.39,1.16]	0.155	1.16	[0.50,2.67]	0.733
AMR	1.53	[1.19,1.96]	0.001	1.75	[1.25,2.45]	0.001	1.29	[0.94,1.77]	0.118
SEAR	1.30	[0.64,2.66]	0.468	1.13	[0.44,2.90]	0.792	1.23	[0.37,4.03]	0.733
WPR	0.94	[0.56,1.58]	0.818	1.12	[0.54,2.33]	0.760	0.73	[0.35,1.53]	0.399

Abbreviation: OR Odds ratio; CI Confidence interval; AFR African Region; AMR Region of the Americas; SEAR South-East Asia Region; WPR Western Pacific Region
Models are adjusted for age, food insecurity, anxiety-induced insomnia, alcohol consumption, and country. Overall model is additionally adjusted for sex.

^a Restricted to those who ever had sexual intercourse.

^b Multiple sexual partners referred to ≥ 2 partners. Bangladesh is not included due to lack of data.

^c At last sexual intercourse.

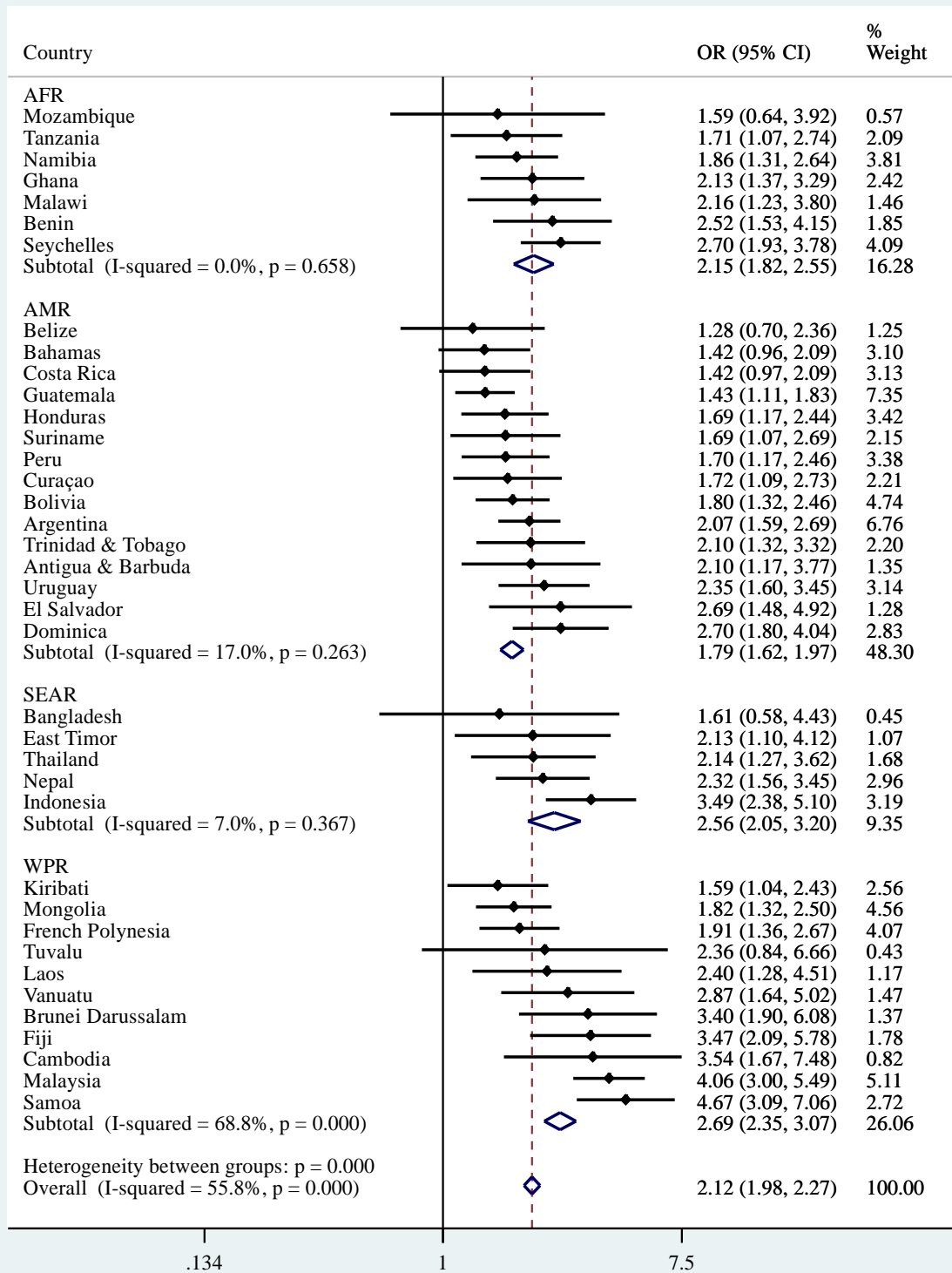


Figure 1 Country-wise association between sexual intercourse (exposure) and suicide attempts (outcome) estimated by multivariable logistic regression

Abbreviation: OR Odds ratio; CI Confidence interval; AFR African Region; AMR Region of the Americas; SEAR South-East Asia Region; WPR Western Pacific Region

Models are adjusted for age, sex, food insecurity, anxiety-induced insomnia, and alcohol consumption.

Overall estimate was estimated by meta-analysis with fixed effects.