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Sexual Behavior in Sexual Minority and Non-Minority Youth from Eight European Countries

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ABSTRACT

Sexual minority youth, compared to their heterosexual peers, have a disproportionate burden of sexual risks, but it remains unclear whether such inequalities exist across cultures and countries. We used data from eight European countries participating in the 2018 Health Behaviour in School-aged Children (HBSC) study to analyze sexual behavior in representative samples of adolescents aged 14.5–16.5 years ($N = 10,583$). Overall, 19.1% of the participants reported that they had had sexual intercourse. Compared to their non-minority peers (those exclusively attracted to opposite-gender partners), sexual minority youth – attracted to same- or both-gender partners – were significantly more likely to report having had sexual intercourse and sex before age 14. Those attracted to both-gender partners had similar odds of having had sexual intercourse, but higher odds of not using condoms, or neither condoms nor contraceptive pill use at last intercourse. Those not attracted to anyone had similar odds of having had sexual intercourse but were more likely to report early sex and not using protection at last intercourse. Adjusting for gender, country and family affluence did not substantially change the pattern of results. In interpreting the findings, the onset of puberty, sexual abuse, stigma management and experimentation with sexual identity should be considered. We discuss the practical, clinical and research implications of the findings.

Introduction

Sexual minority youth (SMY) are more likely to engage in sexual activity – including potentially health-compromising behaviors – than their heterosexual peers. Disparities between sexual minority and non-minority youth have been found in rates of sexual intercourse and early first intercourse (Barragán et al., 2019; Hipwell et al., 2013; Kann et al.,2011, 2016; Poon et al., 2015; Rosario et al., 2014; Tornello et al., 2014; Træen et al., 2016; Ybarra et al., 2016). Similar disparities were documented in not using condoms and/or contraceptive pills at last sexual intercourse (Charlton et al., 2013; Clayton et al., 2019; Everett et al., 2019; Hipwell et al., 2013; Poon et al., 2015; Poteat et al., 2019; Riskind et al., 2014; Rosario et al., 2014; Ybarra et al., 2016). In some geographic regions, there has been a higher incidence of sexually transmitted infections among SMY than heterosexual youth (e.g. Benson & Hergenroeder, 2005; Wood et al., 2016). A particularly concerning finding – which might first seem counter-intuitive (Ela & Budnick, 2017) – is that lesbian, gay and bisexual youth are more likely to be involved in a pregnancy than their heterosexual peers (Charlton et al., 2013; Everett et al., 2019; Poon et al., 2015; Riskind et al., 2014). According to a review, their risk of pregnancy is two to ten times higher than that of heterosexual youth (Leonardi et al., 2019).

While most studies have used self-identified sexual orientation to categorize SMY (gay/lesbian and bisexual), available data show similar disparities are found when the basis of categorization is sexual behavior (having sex with same- or both-gender partners) (Goodenow et al., 2008; Kann et al., 2016; Poteat et al., 2019; Riskind et al., 2014), love (Költő & Nic Gabhainn, 2023) or attraction (Busseri et al., 2008; Oshri et al., 2014; Stewart et al., 2019).

These risks are in a complex causal relationship. For instance, early sexual debut is associated with a variety of other sexual health risks such as having multiple sexual partners and not using condoms at most recent sexual intercourse, although this association is independent from sexual orientation (Lowry et al., 2017). Another example is the relationship between sexual orientation, sexual abuse, and sexual risk behaviors (Hipwell et al., 2013; Priebe & Svedin, 2012; Saewyc et al., 2006). These synergistic associations fit into the Syndemic Model of Health, which states that health-related behaviors often combine and interact over the life course (Singer & Clair, 2003).

Most empirical evidence on the sexual behavior of SMY comes from North America. There is sporadic evidence from other countries, but to our knowledge no cross-cultural comparisons exist in this area. This gap requires attention from researchers, given the large cross-cultural variation in sexual education policies (Weaver et al., 2005), attitudes toward LGB people (Bettinsoli et al., 2019), and overall rates of early intercourse and

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contraception use among adolescents (Költő et al., 2024). These studies found considerable differences even among European countries, which emphasizes the need for further comparative investigations. The extent to which findings from North America can be generalized to SMY from other countries or cultures remains unknown. The lack of cross-cultural studies is an overarching problem in the study of sexual orientation and sexual behaviors (Bőthe et al., 2021; Saewyc, 2011; Spira et al., 1998). Specific large-scale datasets that enable the comparison of sexual health of any age groups – particularly adolescents – by their sexual orientation, are scarce (Gayles & Garofalo, 2019).

Sexual Initiation and "Early" Sex

The 2015 Youth Risk Behavior Survey (YRBS) (Kann et al., 2016) examined a nationally representative sample of U.S. students in Grades 9–12 (aged 14–18) for various risk behaviors. They found that 31.6% of students unsure of their sexual orientation, 40.9% of heterosexual, and 50.8% of lesbian, gay and bisexual students reported sexual intercourse. Rates were similar among boys and girls, although the difference between SMY and non-minority youth was not significant in males. Unsure (8.8%) and sexual minority youth (7.3%) were more likely to report sexual intercourse before age 13 than heterosexual youth (3.4%).

In the 2006–2010 National Survey of Family Growth (Tornello et al., 2014), a nationally representative sample of U.S. young women aged 15–20 years, bisexual women reported younger age of first sexual intercourse than their heterosexual counterparts. In another U.S. study with a relatively large sample of girls aged 13–18 (Ybarra et al., 2016), lesbian and bisexual girls were significantly more likely than heterosexual girls to be engaged in different types of sexual activities (except for penile-vaginal sex). Lesbian girls (but not bisexual or questioning/unsure girls) reported earlier debut for almost all types of sexual activity than their heterosexual peers.

A meta-analysis of sexual risk behaviors in adolescent sexual minority boys (Valencia et al., 2018) estimated 62% of male SMY had sex with another male, compared to the 47% found in YRBS. However, the included studies varied in how they defined sexual minority status: based on sexual history, identity, place of recruitment, or a combination of these factors. In the British Columbia Adolescent Health Survey (BCAHS) (Poon et al., 2015), a representative study with Grades 7–12 young people in British Columbia, Canada, the rate of reported sexual intercourse was 19% in the overall sample; SMY youth were more likely to report this (32% of gay boys, 39% of lesbian girls, 37% of the bisexual boys and 43% of bisexual girls). A similar disparity was found in the rate of reported first sexual intercourse before age 15 (34% in the general population versus 46–51% in the SMY groups).

Studies on sexual initiation and age at first intercourse in youth populations outside North America are rare. In one Mexican study, bisexual girls were 1.5 times, and lesbian girls 2.2 times more likely to report having had sexual intercourse than their heterosexual peers; boys' sexual orientation was not associated with sexual initiation (Barragán et al., 2019). In a study among vocational school students in Northern Thailand, aged 15–21 (van Griensven et al., 2004), there was no difference between the rates of sexual initiation across SMY and their heterosexual counterparts. Gay and bisexual males had significantly earlier sexual debut than heterosexual males. No significant difference was observed in females. In a Norwegian study, lesbian and gay young adults (aged 18–29) reported having had insertive vaginal or anal sexual experiences earlier than bisexual and heterosexual people of the respective gender (Træen et al., 2016).

Condom Use

A review has found that sexual minority youth in Canada were 1.3 to 3.5 times more likely than their heterosexual peers to be engaged in condomless sex (Blais et al., 2015). In the 2015 YRBS (Kann et al., 2016), among those who reported currently being sexually active, 57.8% of heterosexual, 52.5% of unsure and 47.5% of gay, lesbian and bisexual students reported they or their partner used a condom at last sexual intercourse. The prevalence was significantly higher among heterosexual youth than in SMY; however, no significant differences were found when broken down by gender. In the BCAHS, overall, 69% of boys and 61% of girls reported this outcome; in the SMY subsample, 58% of gay boys, 21% of lesbian girls, 63% of bisexual boys and 58% of bisexual girls reported condom use at last sex (Poon et al., 2015). We identified no European studies comparing condom use in SMY and non-minority youth.

Contraceptive Pill Use

According to the YRBS, 18.7% of heterosexual, 14.8% of gay, lesbian and bisexual, and 10.9% of unsure students reported that they or their partner used the contraceptive pill before last sexual intercourse; in both males and females, heterosexual students were significantly more likely to report pill use than their lesbian/gay or bisexual counterparts (Kann et al., 2016). We identified no European studies where contraceptive pill use in SMY and non-minority youth were compared.

Not Using Any Method to Prevent Pregnancy

In the 2015 YRBS, 12.4% of heterosexual, 19.4% of unsure and 26.4% of lesbian, gay or bisexual students reported that neither they nor their partner used any pregnancy prevention method during last sexual intercourse (Kann et al., 2016). In a sample of 18–19-year -old women from Michigan, U.S., compared to heterosexual participants, women belonging either to "mostly heterosexual" or LGBTQ groups reported significantly more gaps in (using any form of) contraception (Ela & Budnick, 2017). We identified no European studies where the use/nonuse of condoms and the contraceptive pill in SMY and non-minority youth were compared.

Aims of the Present Study

There is a scarcity of empirical evidence on sexual behaviors and sexual outcomes in SMY (e.g. Leonardi et al., 2019); large-scale datasets that enable a comparison of sexual health indicators across sexual orientation are particularly missing (Gayles & Garofalo, 2019). To address this gap, we used data from eight European countries participating in the Health Behaviour in School-aged Children (HBSC) study, a World Health Organization collaborative cross-national study, to explore four sexual health outcomes (having had sexual

intercourse, early first sex, condom use, pill use, and using neither of these methods at last sexual intercourse) in SMY and their non-minority peers, defined by their attraction to same- or both-gender partners. Data from a representative sample of adolescents aged 14.5–16.5 from England, France, Hungary, Ireland, Republic of Moldova, the Netherlands, North Macedonia, and Spain were analyzed.

Based on the available evidence, we anticipated that SMY would be more likely than their non-minority peers (attracted exclusively to opposite-gender partners) to report sexual intercourse, having first sexual intercourse younger than 14, and not using condoms, the contraceptive pill or either method at last sexual intercourse. Due to lack of evidence, we did not set formal hypotheses on the relative risk of youth who had not been attracted, or had not answered the item on attraction.

Method

HBSC was established in 1983. It is a cross-cultural adolescent population health survey monitoring the health and well-being of young people, conducted every four years (Inchley et al., 2023). In the 2018 survey round, 45 countries from Europe, Central Asia and North America took part in the study. In each country, a nationally representative sample of adolescents are recruited. The core age groups investigated in each country are 11-, 13-, and 15-year-olds. Countries are free to recruit adolescents from younger and/or older age groups, but they are not part of the international database. A stratified random cluster sampling technique is employed; the primary units are classes nested within schools. Participants complete an anonymous survey in the classroom. It is at the discretion of the national HBSC research team whether paper or online questionnaires are used. The questionnaires are developed by the international HBSC network and translated to local language using a protocol that stipulates back-translation checks (Inchley et al., 2018).

Some questions in the survey are used in a standard way across all countries (e.g. having had sexual intercourse, age at first intercourse, using condoms or contraceptive pills at last sexual intercourse). Other questions are optional: the national teams decide whether they want to use them in their country. Questions relating to attraction are one of these optional items and are only used in a small number of the participating countries. All questions related to sexual health and attraction are only administered to young people in the 15-year-old age group due to the potential sensitivity and relevance of the questions. The study is conducted in line with the Helsinki Declaration. Ethical approval is obtained at national/regional level from the respective higher education or health authorities. National HBSC teams obtain informed active or passive consent from schools, parents, and participants. Before administering the questionnaire, participants are told that they decide whether they want to answer any questions or not and that they are free to withdraw from the study at any point during participation. They are also assured that their responses are anonymous and will be treated confidentially.

Sample

The raw database contained data from 11,548 participants from the 15-year-old age group (age range: 14.5–16.5). This was reduced to 11,195 participants who provided sufficient information on family affluence. The final analytic sample consisted of 10,583 participants who answered the question on sexual intercourse (Figure 1). Note that not all participants who reported having had sexual intercourse answered further questions on their age at first intercourse or condom or contraceptive pill use at last intercourse.

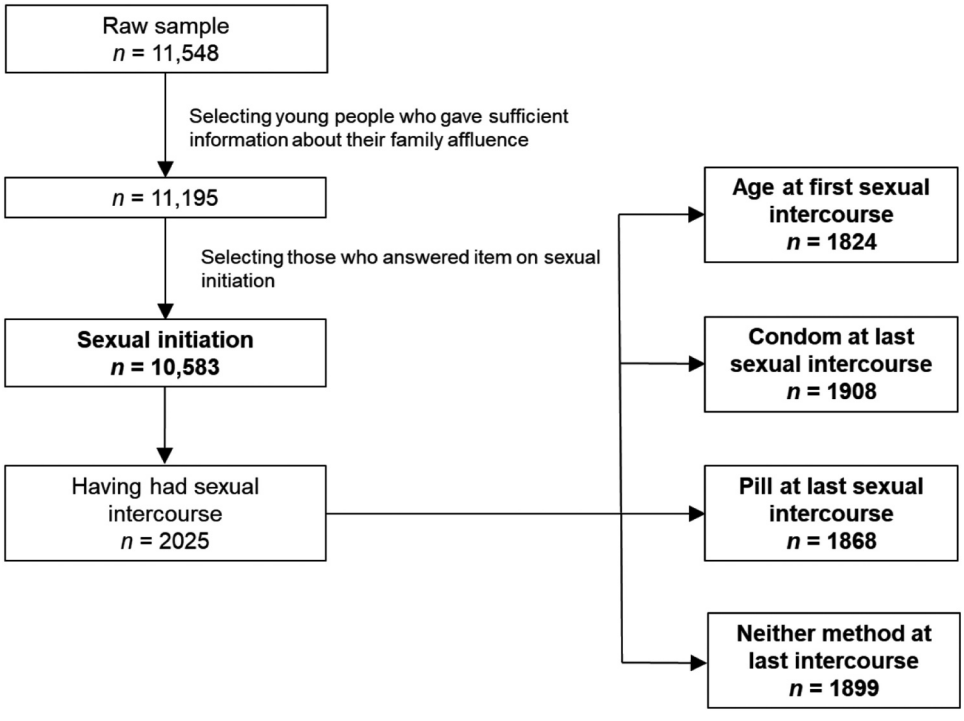

Figure 1. Sample selection procedure. Bolded letters mark the five subgroups used for statistical analysis.

Measures

Attraction was assessed by one item: "Are you attracted to …," with response options "Girls"/"Boys"/"Both girls and boys"/"I am not attracted yet to anyone." Boys attracted to girls and girls attracted to boys were classified as being attracted to the opposite gender. Boys attracted to boys and girls attracted to girls were coded as being attracted to the same gender. Participants marking being attracted to both boys and girls were categorized as being attracted to both gender partners, while those reporting not being attracted were coded as such. We also included those in the analyses who did not answer the item. Development of the item is reported elsewhere (Költő et al., 2018).

Sexual Behavior

Respondents were asked if they ever had *sexual intercourse* ("Yes"/"No"). Those who reported ever having had sexual intercourse were asked *how old they were* when they had sexual intercourse for the first time (response options: "11 years old or younger"/"12 years old"/"13 years old"/"14 years old"/"15 years old"/"16 years old or older"). Responses were dichotomized to reflect early sexual initiation (defined by having first sexual intercourse before the age of 14) versus later initiation (being 14 or older at first sexual intercourse). Participants were asked two further questions on whether they or their partner used *a condom* or *the contraceptive pill* the last time they had sexual intercourse ("Yes"/"No"/"Don't know"). Responses were dichotomized to having used these measures versus not using them or being unsure whether they or their partner used them. To account for the cumulative risk of using neither condoms nor contraceptive pills, in line with HBSC practice (Inchley et al., 2020; Költő et al., 2024; Neville et al., 2017), we also created a binary variable with values using *neither protective* method vs. using either or both at last sexual intercourse.

There were 242 participants (2.3%) who reported not having had sexual intercourse but answered the subsequent questions on sexual behavior in a way which indicated they actually *had had* sexual intercourse. Their responses were recoded as if they had had sexual intercourse.

Sociodemographic Variables

Respondents were asked to indicate if they were *a boy or a girl* (no other response options were listed). *Socioeconomic status* was assessed by the Family Affluence Scale (FAS), a composite measure developed by the International HBSC Network (Torsheim et al., 2016). The FAS contains six items that ask about material properties of the participants' family (e.g. number of cars and computers), living circumstances (whether the participant has their own bedroom; number of bathrooms in the family house) and number of holidays abroad last year. The absolute FAS scores are transformed to a relative score which classifies participants into the lowest 20% (low affluence), the medium 60% (medium affluence) and the top 20% (high affluence) at country level (Inchley et al., 2018). Last, an eight-category nominal variable categorized *country/region*.

Statistical Analysis

Descriptive and binary logistic regression analyses were conducted in SPSS (Version 25). Analyses were deemed statistically significant at $p < .05$.

First, we tested associations of socio-demographic variables and attraction with indicators of sexual behaviors using unweighted chi-square tests. Index of effect size (Cramer's V) was calculated for each test. Values of $V \leq .05$ were interpreted as very small, V between .06 and .19 as small, V between .20 and .29 as medium, and $V \geq .30$ as large (Funder & Ozer, 2019).

Next, logistic regression models explored the odds of those who were attracted to both- or same-gender partners, those who reported not being attracted to anyone, or did not respond to the attraction question, contrasted with those reporting attraction exclusively to opposite-gender partners (non-minority), for potentially health-compromising sexual behaviors. Univariate models estimated crude odds ratios. An iterative approach was used to test whether country/region, gender and family affluence were significant contributors. First, we built multivariate models with all three control variables. If Wald chi-square tests indicated predictors did not significantly contribute to the model, they were removed in a stepwise manner until all model effects were significant. The final multivariate models were used to obtain adjusted odds ratios. The reference category was opposite-gender attraction. We verified model fit and tested multicollinearity. The models did not include any interaction parameters. Logistic regression models were weighted for imbalances in school, class, or socio-demographic composition of the national samples.

Results

Sample Characteristics and Clustering Effects

Descriptive statistics are presented in Table 1. There were 10,583 participants whose data were included in the analytic sample. These were organized into 1160 individual (classroom) clusters. Clusters contained 1 to 53 participants, with an average of 14.11 (SD = 6.89). We initially attempted to conduct an analysis that controlled for potential clustering effects in which students were nested within their classrooms with multilevel nested-models analysis using lavaan and lme4 packages in R, but these multilevel models were unable to converge, likely due to smaller and unevenly distributed class sizes. However, there was adequate power to nest students within country to assess whether associations between students' attraction and ever having had sex varied across countries. The cell sizes for some attraction groups were too restricted to do the same for the other sexual behavior outcomes.

Ever Having Had Sexual Intercourse

Reporting ever having had sexual intercourse was significantly associated with patterns of attraction: $\chi^2(4) = 65.44$, $p < .001$, with a small effect ($V = .079$). Those reporting being attracted to same- and both gender partners were more likely to report sexual intercourse than the other groups (Table 2).

Adjusting the model for gender, relative family affluence and country did not result in an essential change compared to

Table 1. Characteristics of the sample ($N = 10,583$).

	n	%
Age $M = 15.48$, SD = 0.36		
Gender		
Boy	5029	47.5
Girl	5554	52.5
Relative family affluence		
Lowest 20%	1942	18.4
Medium 60%	6578	62.2
Highest 20%	2063	19.5
Country		
England	703	6.6
France	2181	20.6
Hungary	1026	9.7
Ireland	935	8.8
Moldova	1472	13.9
Netherlands	1464	13.8
North Macedonia	1380	13.0
Spain	1422	13.4
Attraction		
Attracted to opposite gender	9138	86.3
Attracted to same gender	219	2.1
Attracted to both genders	490	4.6
Not attracted	644	6.1
No response	92	0.9
Having had sexual intercourse		
Yes	2025	19.1
No	8558	80.9
Sexual intercourse before the age of 14 ($n = 1824$)		
Yes	343	18.8
No	1481	81.2
Condom use at last intercourse ($n = 1908$)		
No or do not know	758	7.2
Yes	1150	60.3
Contraceptive pill use at last intercourse ($n = 1868$)		
No or do not know	1464	78.4
Yes	404	21.6
Using neither method at last intercourse ($n = 1899$)		
No or do not know	606	31.9
Yes	1293	68.1

the univariate models. After adjustment, same-gender attracted participants had around 2.8 times, both-gender attracted youth 2 times, and non-responders 1.7 times higher adjusted odds to be engaged in sexual intercourse compared to opposite-gender attracted youth. The odds of those with no attractions reporting sexual intercourse were statistically similar to that of the opposite-gender attracted (Table 3).

When disaggregating the analysis by country, participants attracted to the same gender were significantly more likely than the opposite-gender attracted participants to report having had sex in three countries (North Macedonia: $p < .001$, Moldova: $p < .001$, and France: $p = .009$). Those attracted to both girls and boys were significantly more likely to report having had sex in five countries (Netherlands: $p = .001$, Ireland: $p = .012$, Hungary: $p = .015$, France: $p = .008$, Spain: $p = .008$). Those not attracted to others were significantly less likely to report having had sex in Hungary ($p = .001$) and France ($p = .015$) but more likely in North Macedonia ($p < 001$).[1] England was the only country with no association between participants' attraction and reported sexual intercourse.

[1]The multiple group structural equation model was used to assess country-level variation in the association between students' attraction and ever having had sex, controlling for gender and family affluence.

Early First Sexual Intercourse

Sexual intercourse before age 14 were associated with patterns of attraction: $\chi^2(4) = 28.45$, $p < .001$, with a small effect ($V = .125$). Those reporting being attracted to same- and both-gender partners, as well as those reporting no attraction, were significantly more likely than those attracted to opposite-gender partners to report early first sexual intercourse (Table 2).

In the multivariate model for early sexual intercourse, (adjusted for gender, relative family affluence and country) same-gender attracted youth had around 2.4, both-gender attracted youth 2.2, not attracted youth 2.5, and non-responders 3.6 times higher adjusted odds of reporting this outcome (Table 4).

Condom Use at Last Sexual Intercourse

Using condoms at last intercourse was associated with patterns of attraction: $\chi^2(4) = 131.33$, $p < .001$, with a medium effect ($V = .262$). Those reporting being attracted to same- and both-gender partners were more likely than those attracted to opposite-gender partners to report not using a condom at sexual intercourse. Those reporting no attraction were more likely than SMY to report this outcome. There were large differences in reporting not using a condom among opposite-gender attracted (34.8%) versus non-attracted participants (88.0%) (Table 2).

Compared to opposite-gender attracted youth, those attracted to same-gender partners, both-gender partners and those not reporting attraction had significantly higher adjusted odds for not using a condom at last sexual intercourse (Table 5). Both-gender attracted youth had 2.1, and those not attracted had 7.4, times higher adjusted odds for this outcome (both statistically significant). Non-responders' odds for not using a condom at last sexual intercourse was statistically similar to that of the opposite-gender attracted.

Contraceptive Pill Use at Last Sexual Intercourse

Contraceptive pill use at last intercourse was also associated with patterns of attraction: $\chi^2(4) = 14.07$, $p = .007$, with a small effect ($V = .087$). Those reporting no attraction were significantly more likely than those attracted to opposite- or both-gender partners to report they or their partner had not used the contraceptive pill at last intercourse (Table 2).

Compared to opposite-gender attracted youth, participants attracted to same- or both-gender partners and those not responding to the item on attraction had similar odds of not using the contraceptive pill at last intercourse (Table 6). Non-attracted youth, on the other hand, had 4.2 times higher odds for this outcome. Since neither gender, family affluence, nor country significantly contributed to this effect, no multivariate model was built.

Using Neither Condoms nor Pills at Last Sexual Intercourse

Using neither condoms nor contraceptive pills at last intercourse was associated with patterns of attraction: $\chi^2(4) = 144.17$, $p < .001$,

Table 2. Sexual behavior across attraction groups, unweighted *n* (%).

	Attracted to opposite gender	Attracted to same gender	Attracted to both genders	Not attracted	No response	*p*
Ever had sexual intercourse (*n* = 10,583)						<.001
Yes	1869 (18.5%)$_{a,b}$	78 (35.6%)$_{c}$	127 (25.9%)$_{c}$	104 (16.1%)$_{b}$	27 (29.3%)$_{a,c}$	
No	7449 (81.5%)$_{a,b}$	141 (64.4%)$_{c}$	363 (74.1%)$_{c}$	540 (89.3%)$_{b}$	65 (70.7%)$_{a,c}$	
Sexual intercourse before the age of 14 (*n* = 1824)						<.001
Yes	266 (16.9%)$_{a}$	21 (30.9%)$_{b}$	32 (27.4%)$_{b}$	18 (36.0%)$_{b}$	6 (35.3%)$_{a,b}$	
No	1306 (83.1%)$_{a}$	47 (69.1%)$_{b}$	85 (72.6%)$_{b}$	32 (64.0%)$_{b}$	11 (64.7%)$_{a,b}$	
Condom use at last intercourse (*n* = 1908)						<.001
No or do not know	555 (34.8%)$_{a}$	39 (53.4%)$_{b}$	62 (51.7%)$_{b}$	88 (88.0%)$_{c}$	14 (63.6%)$_{b,c}$	
Yes	1038 (65.2%)$_{a}$	34 (46.4%)$_{b}$	58 (48.3%)$_{b}$	12 (12.0%)$_{c}$	8 (36.4%)$_{b,c}$	
Contraceptive pill use at last intercourse (*n* = 1868)						.007
No or do not know	1214 (77.6%)$_{a}$	56 (81.2%)$_{a,b}$	88 (74.6%)$_{a}$	89 (92.7%)$_{b}$	17 (85.0%)$_{a,b}$	
Yes	351 (22.4%)$_{a}$	13 (18.8%)$_{a,b}$	30 (25.4%)$_{a}$	7 (7.3%)$_{b}$	3 (15.0%)$_{a,b}$	
Using neither method at last intercourse (*n* = 1899)						<.001
Neither	438 (27.5%)$_{a}$	32 (45.7%)$_{b}$	47 (39.2%)$_{a,b}$	79 (84.0%)$_{c}$	10 (50.0%)$_{a,b}$	
Either	1157 (72.5%)$_{a}$	38 (54.3%)$_{b}$	73 (60.8%)$_{a,b}$	15 (16.0%)$_{c}$	10 (50.0%)$_{a,b}$	

The same subscript letters in the given row denote that the column proportions within the row do not differ significantly from each other at $p < .05$ level.

Table 3. Crude and adjusted odds ratios for ever having had sexual intercourse (*N* = 10,583).

		Univariate model			Multivariate model, adjusted for gender, relative family affluence and country		
	n	COR	*p*	95% CI	AOR	*p*	95% CI
Attracted to opposite gender	9138	1			1		
Attracted to same gender	219	**2.51**	<.001	1.84–3.43	**2.77**	<.001	2.02–3.79
Attracted to both genders	490	**1.57**	<.001	1.27–1.96	**2.01**	<.001	1.59–2.54
Not attracted	644	0.85	.143	0.68–1.06	0.87	.188	0.69–1.08
No response	92	**1.91**	.014	1.14–3.21	**1.72**	.038	1.03–2.88

COR: Crude odds ratio. AOR: Adjusted odds ratio. CI: Confidence interval. Significant odds ratios are highlighted in bold.

Table 4. Crude and adjusted odds ratios for sexual intercourse before the age of 14 (*N* = 1824).

		Univariate model			Multivariate model, adjusted for gender, relative family affluence and country		
	n	COR	*p*	95% CI	AOR	*p*	95% CI
Attracted to opposite gender	1572	1			1		
Attracted to same gender	68	**2.33**	.029	1.23–4.43	**2.35**	.007	1.26–4.39
Attracted to both genders	117	**1.74**	.014	1.12–2.71	**2.16**	.001	1.36–3.42
Not attracted	50	**2.46**	.003	1.35–4.51	**2.46**	.003	1.35–4.48
No response	17	**3.98**	.029	1.15–13.71	**3.58**	.047	1.02–12.58

COR: Crude odds ratio. AOR: Adjusted odds ratio. CI: Confidence interval. Significant odds ratios are highlighted in bold.

Table 5. Crude and adjusted odds ratios for not using condoms (or unsure) at last sexual intercourse (*N* = 1908).

		Univariate model			Multivariate model, adjusted for gender and country		
	n	COR	*p*	95% CI	AOR	*p*	95% CI
Attracted to opposite gender	1593	1			1		
Attracted to same gender	73	**1.88**	.017	1.12–3.17	1.60	.077	0.95–2.70
Attracted to both genders	120	**2.15**	<.001	1.46–3.17	**2.12**	<.001	1.40–3.21
Not attracted	100	**13.39**	<.001	6.94–25.83	**7.39**	<.001	3.86–14.14
No response	22	2.25	.124	0.80–6.35	1.62	.302	0.65–4.05

COR: Crude odds ratio. AOR: Adjusted odds ratio. CI: Confidence interval. Significant odds ratios are highlighted in bold.

with a medium effect ($V = .276$). Those attracted to same-gender partners were significantly more likely than those attracted to opposite-gender partners to report they or their partner used neither method at last intercourse. Those not attracted were more likely than same-gender attracted participants to report this outcome. There was a large difference in reporting neither method between opposite-gender attracted participants (27.5%) versus those reporting no attraction (84.0%) (Table 2).

Compared to opposite-gender attracted youth, those reporting same- or both-gender attraction, and those not attracted, also had significantly higher odds of reporting neither condom nor contraceptive pill at last sexual intercourse (Table 7). In the multivariate model, family affluence did not make a significant contribution. However, after adjusting the model for gender and country, the odds of same-gender attracted youth were no longer significant. Still, both-

Table 6. Crude and adjusted odds ratios for not using contraceptive pills (or unsure) at last sexual intercourse ($N = 1868$).

		Univariate model			Multivariate model[a]		
	n	COR	*p*	95% CI	AOR	*p*	95% CI
Attracted to opposite gender	1565	1			1		
Attracted to same gender	69	1.20	.569	0.64–2.23	–	–	–
Attracted to both genders	118	0.89	.617	0.57–1.39	–	–	–
Not attracted	96	**4.16**	<.001	1.90–9.15	–	–	–
No response	20	2.16	.239	0.60–7.77	–	–	–

COR: Crude odds ratio. AOR: Adjusted odds ratio. CI: Confidence interval. Significant odds ratios are highlighted in bold. [a]Gender, relative family affluence, and country did not have a significant impact on the association between not using contraceptive pill and attraction groups, therefore no multivariate model was estimated.

Table 7. Crude and adjusted odds ratios for using neither condoms nor contraceptive pills at last sexual intercourse ($N = 1899$).

		Univariate model			Multivariate model, adjusted for gender and country		
	n	COR	*p*	95% CI	AOR	*p*	95% CI
Attracted to opposite gender	1595	1			1		
Attracted to same gender	70	**1.94**	.014	1.15–3.27	1.67	.068	0.96–2.90
Attracted to both genders	120	**1.82**	.003	1.22–2.72	**1.90**	.004	1.22–2.96
Not attracted	94	**13.89**	<.001	7.64–25.24	**7.10**	<.001	4.05–12.45
No response	20	2.00	.179	0.73–5.50	1.24	.627	0.52–3.00

COR: Crude odds ratio. AOR: Adjusted odds ratio. CI: Confidence interval. Significant odds ratios are highlighted in bold.

gender attracted youth had 1.9 and not attracted youth 7.1 times higher adjusted odds of reporting this outcome.

Discussion

The results comparing sexual behaviors in sexual minority youth and their opposite-gender attracted peers align with existing international literature. Our data on reported sexual intercourse are comparable to those by Kann et al. (2016) and Poon et al. (2015) using self-identified sexual orientation. In the 2015 YRBS, prevalence of sexual intercourse was generally higher than in the 2018 HBSC study, although this may be because their study included older adolescents. Youth taking part in the 2013 BCAHS survey reported similar rates of sexual intercourse to our participants. Similarly to other studies in North America (Tornello et al., 2014; Ybarra et al., 2016) and Thailand (van Griensven et al., 2004), SMY in our study were more likely to report early sexual intercourse than opposite-gender attracted youth. No differences in these outcomes were found between youth attracted to same-gender or both-gender partners. However, the odds for reporting not using a condom at last sexual intercourse were significantly higher in those who were attracted to both-gender partners than among opposite-gender attracted. The odds for using the contraceptive pill – or using neither condoms nor pills, at last sexual intercourse – were not statistically different for SMY compared to non-minority youth.

Our survey measure did not explicitly define sexual intercourse as penile-vaginal sex, and so SMY may have counted other forms of sexual behavior (anal sex or oral sex) as sexual intercourse in their answers. The survey also did not ask about the gender of sexual partners. It is possible that the lower rates of condom use among SMY, especially girls, were because they had a same-gender partner, and so their sexual behaviors could not result in pregnancy, even though they would still be at risk for sexually transmitted infections (Doull et al., 2018). Another potential explanation, especially for sexual minority boys, is that they might be more likely than their non-minority peers to adopt the script of condomless sex from pornography (Tokunaga et al., 2020).

Yet in our study, SMY were just as likely to report birth control pill use as their non-minority peers; this may be because the contraceptive pill can also be prescribed for reasons other than contraception, such as regulating painful menstruation, and sexual minority girls may be taking birth control for those reasons.

While in most multivariate models, gender, and country (and in some, family affluence) were significant contributors, there were no substantial and consistent differences between the crude and adjusted odds ratios. Country-disaggregated analyses were only possible for reported sexual intercourse, where SMY (either same- or both-gender attracted) were significantly more likely to report sexual intercourse in seven countries, and non-attracted youth in two countries. The pattern of attraction was not related to sexual initiation only in England.

These findings suggest that the differences across gender, country and family affluence had a relatively low impact on the association between attraction and sexual behaviors. The disproportionate burden of sexual risk for SMY and youth without attractions in the eight European countries in our study is similar to that found in North America.

Sexual Health Disparities Across Patterns of Attraction

There are several potential reasons for the sexual health disparities observed across attraction groups (or the lack of thereof). There is evidence in the literature that SMY are more likely to experience sexual and dating violence and coerced sexual intercourse than their heterosexual peers (Ricks et al., 2023; Williams & Gutierrez, 2022). This might contribute to the finding that same- and both-gender attracted participants were more likely to report sexual intercourse than

their opposite-gender attracted peers. Early first sexual intercourse – where we also found a disparity across attraction groups – is also often linked to sexual coercion and intimate partner violence (Reis et al., 2023). Given that in non-consensual sex, the victim has less agency than the perpetrator to decide on using protection, this might also contribute to the disparities between SMY and non-minority youth in condom use at last sexual intercourse, and reporting using neither condom nor contraceptive pill at last intercourse.

The findings that non-attracted youth had similar odds of reporting sexual intercourse as their opposite-gender attracted peers are somewhat surprising, as a longitudinal study found that lack of (sexual) attraction in adolescence predicted lower likelihood of sexual activity later in life (Haydon et al., 2014). This finding, and especially the fact that non-attracted youth had significantly higher odds for early sexual initiation and not using condoms, contraceptive pill or neither at last intercourse, again raises the possibility that their engagement in sex may be non-consensual or coerced.

There is evidence that gay and bisexual men report earlier age of puberty than heterosexual men; onset of puberty in lesbian and bisexual women did not differ from that in heterosexual women (Bogaert et al., 2002). Earlier onset of puberty might have been linked with SMY, at least sexual minority boys', increased likelihood of being engaged in sexual intercourse and having been sexually initiated earlier than their non-minority counterparts.

Saewyc et al. (2008) discussed how enacted stigma of sexual minority status may contribute to the higher rates of sexual behaviors in SMY. Building on Goffman's (1968) theory on stigma management, they argued that same- and both-gender attracted youth may avoid disclosure of their sexual minority status and engage in heterosexual dating and sexual practices to prevent being identified as sexual minority, thus deflecting enacted stigma.

If SMY's needs are ignored by sexuality and relationships education programs (as demonstrated, for instance, by Higgins et al., 2019), they may conclude that such programs are irrelevant to their lived experience, and "tune out" important information about safe sex skills and practices (Saewyc et al., 2008). Thus, they might be unprepared for informed decision-making when engaging in sex, especially with partners who could become pregnant or conceive a pregnancy.

SMY may lack social support and clear models or social scripts for establishing healthy sexual behaviors and romantic relationships because their identities are not shared by the majority. This can also increase their risk of unwanted and non-consensual sexual encounters.

While evidence suggests that SMY are disproportionately at risk of poorer sexual health outcomes, a discourse only highlighting "at-riskness" may obscure LGBTQ+ youths' positive lived experiences, their self-agency and their capacity for pleasure (e.g. Talburt & Rasmussen, 2010). Sexual experimentation is a natural process for young people, including those developing queer identities, and same-sex activities often include curiosity and pleasure; therefore, it is important that we avoid discussing youth sexuality only in terms of risk (Savin-Williams, 2005). Concentrating on risk and blaming SMY for their behavior instead of focusing on informed decision-making and positive sexual practices may hinder identity development (Rasmussen, 2004; Sauntson, 2021).

Sexual Risk in Those with No Attraction and Those Who Did Not Respond

We had not proposed formal hypotheses about the sexual outcomes for those who reported no attraction. Compared to their opposite-gender attracted peers, they did not have different odds of reporting sexual intercourse. Those non-attracted youth, however, who reported ever having had sexual intercourse were significantly more likely than their opposite-gender attracted peers to report having first sexual intercourse before age 14, not using a condom or the contraceptive pill, or not using either mode of protection at last intercourse. These results are in line with earlier findings that lack of attraction often, but not in all cases, corresponds to sexual inexperience (Haydon et al., 2014). It may indicate that when sexual behavior occurred, it was unplanned. Similarly, some adolescents might not report attraction at present, but this does not mean that they identify as asexual/aromantic or will not experience sexual attraction later in adolescence or adulthood. While we did not assess the reasons for sexual behaviors in the survey, it is also possible that sexual experiences in this group (and others) were unwanted or non-consensual. However, it is important to remember that youth who are not attracted to anyone may have other reasons for sexual intercourse, for instance, curiosity, peer pressure, or the wish to please their partner.

Participants who did not answer the item on attraction had higher odds of sexual intercourse and early first sex than those attracted to opposite-gender partners. While we do not know their reasons for (early) sexual intercourse, some participants in this group might be unsure about their attraction or might be SMY, but either had felt the question was too intrusive or had concerns about privacy. Thus, their sexual behavior may be a means of stigma management and identity concealment (Saewyc et al., 2008).

Strengths and Limitations

To our knowledge, this is the first analysis of nationally representative European data exploring the relationship between SMY and sexual behavior. The novel nature of the analysis, rigorous HBSC study methods and the nationally representative sample of adolescents from eight European countries give strength to our study. There were, however, limitations. Some of these might also contribute to the interpretation of the results.

The eight countries where data were collected do not represent the full geographical range of countries of HBSC, which in the 2018 survey round included 45 countries and regions (Inchley et al., 2020). In many countries, it would have been problematic to administer items on sexual attraction for various reasons (e.g. potential pushback from funders). For the same reasons, the 2018 HBSC round included no questions on self-identified sexual orientation, birth-registered sex and gender identity. The 2022 survey round included validated items on these dimensions in some countries (Költő, Ciria Barreiro, et al., 2021). Questions on the onset of puberty could not be administered in all countries, due to the limited length of the questionnaire.

As outlined above, studies have found evidence that SMY might be more likely than heterosexual youth to experience unwanted, coerced or forced sex, or sexual abuse (e.g. Reis et al., 2023). However, the HBSC study does not collect data on these aspects of sexual experience. While we acknowledge the importance of collecting cross-cultural data on sexual and dating violence, the anonymous nature of HBSC prevents researchers from intervening and offering immediate help to young people who disclose such experiences. In some countries, administering such questions might also raise legal issues, or jeopardize the ability to undertake the study.

Some cells within the attraction × sexual behavior crosstabulations were very small, which may have led to a lack of convergence in the nested models and might have also impacted statistical power. A potential solution to this shortcoming might be to oversample SMY groups (Anderssen & Malterud, 2017; Költő, Vaughan, et al., 2021; Schrager et al., 2019), although this may not impact the rate of missing responses.

The existing literature points out an intersectionality between sexual orientation and gender: girls, especially girls identifying as bisexual or attracted to both genders, have a disproportionate burden related to sexual risks than boys and those identifying as lesbian/gay or exclusively attracted to same-gender partners (Bodnar & Tornello, 2019; Tornello et al., 2014). The small sample size meant we were not able to disaggregate the analyses by gender.

The gender of the most recent sexual partner would have provided important information. We could not include such a question in the HBSC study in all countries, due to potential pushback and the limited space in the questionnaire. In a recent pilot study our team carried out with LGBTQ+ youth in six countries (Költő, Ciria Barreiro, et al., 2021), we found that a number of respondents found the item on the gender of last sexual partner intrusive, which also warrants caution on its inclusion in a broad-scale health and wellbeing survey such as HBSC.

In the HBSC study, gender is determined by asking participants whether they are a boy or a girl, with no other response options listed. This question has been used since the study was established in 1983. We are aware that it neither measures birth-registered sex nor gender identity, and it neglects the lived experience of transgender, non-binary, genderfluid, genderqueer and other gender minority youth. Elsewhere, our team reported that non-response on this question varied between 1% and 4% across five countries; we argued that non-response may partly be attributed to participants choosing another gender identity descriptor or to privacy concerns (Heinz et al., 2023). Alternatively, More inclusive questions have been applied in some countries in the most recent 2022 HBSC survey on birth-registered sex and gender identity; we also developed a standardized question on self-identified sexual orientation (Költő, Ciria Barreiro, et al., 2021).

Practical/Clinical Applications

Schools have a crucial impact on SMY health. In areas where the school climate is more hostile toward lesbian, gay and bisexual individuals, sexual minority youth have their first sexual experiences at a lower age, and they are less likely to use condoms, with stronger effects found for bisexual youth and gay boys (Philbin et al., 2021). Conversely, LGBTQ-friendly schools create an atmosphere conducive to less sexual risk for all young people. According to the School Health Profiles and the YRBS data (Kaczkowski et al., 2022), having a Gender-Sexuality Alliance or similar club in the school and prohibition of harassment was associated with positive sexual health outcomes.

Adolescent gay and bisexual men and adolescent men who have sex with men represent the majority of new HIV diagnoses in the United States. However, targeted prevention programmes are virtually non-existent (Mustanski et al., 2014). This aligns with the experiences of sexual and gender minority youth who report that they did not have relationships and sexuality education in school, or that LGBTQ+ issues were neglected (Bradlow et al., 2017; Karsay, 2015). LGBTQ+ inclusive sex education may play a pivotal role in the sexual behaviors of SMY. In a U.S. study with young women aged 15–20 (Bodnar & Tornello, 2019), those who received sex education were 1.44 times more likely to use the contraceptive pill. Sexual minority participants who received formal sex education on how to say no reported fewer male partners, a finding not observed for heterosexual participants.

Timing of sex education also matters. Bisexual (but not heterosexual and lesbian) women who received sex education before their first sexual intercourse with a male partner were 1.5 times more likely to use the contraceptive pill than those who did not receive sex education at that stage. Receiving sex education before first intercourse was associated with lower incidence of pregnancies in all participants, irrespective of sexual orientation.

The factors that protect SMY health remain understudied (Garcia et al., 2023). A systematic review by Armstrong et al. (2016) identified 11 individual-level protective factors. Subjective peer norms and attitudes about condom use had consistent protective effects across studies. These provide promising intervention targets for sexual health promotion among SMY. While they found mixed evidence on self-efficacy, self-esteem and positive identity, developing interpersonal skills such as assertive sexual communication, may benefit SMY, especially bisexual young women (Bodnar & Tornello, 2019).

Despite their disproportionate health burden, sexual and gender minority youth receive poorer healthcare than their cisgender heterosexual peers (Hafeez et al., 2017). Disparities stem from stigma, lack of awareness, insensitivity, and unpreparedness to appropriately assess and cater for the specific needs of LGBTQ+ youth (Knight et al., 2014). This is especially problematic for sexual health practices, where many sexual and gender minority individuals feel misunderstood and perceived staff lacking competence (Mizock et al., 2021). Good practices and recommendations to increase LGBTQ+ friendly youth sexual health services are summarized by Költő, Vaughan, et al. (2021).

Implications for Further Research

Due to the low subsample size in some groups, we were unable to disaggregate the findings by gender or other sociodemographic

characteristics, such as ethnicity. Sources and mechanisms of sexual risk in sexual minority girls and boys are, at least partially, different (Bodnar & Tornello, 2019; Ela & Budnick, 2017; Everett et al., 2014; Higgins et al., 2019; Mustanski et al., 2014; Philbin et al., 2021; Tornello et al., 2014; Valencia et al., 2018). Available evidence shows that ethnicity may have an additional or intersecting effect in sexual orientation-related stigma and its negative health consequences. A potential way to address the role of intersecting characteristics in further population health surveys is to oversample LGBTQ+ youth communities, as this would give sufficient power to analyses disaggregated by other sociodemographic characteristics (Schrager et al., 2019). This, of course, would also require using self-identified sexual orientation as a classifier of SMY rather than attraction; our team proposed a question on sexual orientation in the 2022 HBSC survey (Költő, Ciria Barreiro, et al., 2021).

It is important to understand young people's reasons for being engaged (or not) in sexual behaviors, and among those who have started having sex, what factors determine their contraceptive or STI prevention behavior. Qualitative studies are needed, especially with youth who report no romantic or sexual attraction, or identify as asexual/aromantic, to explore how they define sexual intercourse, what are their reasons for sexual intercourse, and for higher rates of unprotected sex. Studies on sexual abuse, dating violence and non-consensual sex are particularly needed, but these require much caution and safeguarding. Positive aspects of sexuality among LGBTQ+ youth also warrant further examination.

Conclusion

In this study, using nationally representative samples of 15-year-old adolescents from eight European countries, we examined whether health-compromising sexual behaviors were associated with sexual minority status (operationalized by being attracted to same- or both-gender partners). Partially in line with our hypothesis, we found that SMY were more likely to report sexual intercourse and sex before age 14, compared to their non-minority (opposite-gender attracted) peers. Those who were attracted to both-gender partners were more likely to report that they or their partner had not used a condom or either condoms or contraceptive pills at last sexual intercourse. The latter disparities were not found in those youth exclusively attracted to same-gender partners. Participants who reported no attraction also had higher odds of early sex and unprotected last sexual intercourse, and those who did not respond to questions on attraction had higher odds of reporting sexual intercourse and sex before age 14.

These results are in line with existing evidence, mostly from North America, suggesting that sexual behavior disparities in sexual minority youth can be found in other countries as well. The pattern of the results remained similar after controlling for gender, country and family affluence. While these disparities in SMY are usually attributed to potentially being exposed to sexual abuse or coercion or sexual activity as a way of stigma management, SMY's higher engagement in sexual intercourse may also be associated with experimentation and developing sexual identity. The finding that youth with no attractions were much more likely to be engaged in unprotected sex (odds for these outcomes were between 4 and 7 compared to their opposite-gender attracted peers) is of particular concern. Further studies are needed to understand the context of these sexual experiences.

These findings highlight that relationships and sexuality education, which rarely caters to the specific needs of LGBTQ+ youth, needs to be improved. Inclusive and affirmative education might have a positive impact on the lives and sexual health of SMY. Other settings, especially youth sexual health services, would also benefit from more inclusive healthcare practice, for example, LGBTQ+ awareness training to healthcare staff. Further studies should explore experiences of SMY around sexuality and should use innovative methods to examine the intersecting effects of sexual orientation, gender identity, ethnicity, and other sociodemographic characteristics, on sexual health.

Abbreviations

BCAHS	British Columbia Adolescent Health Survey
HBSC	Health Behaviour in School-aged Children
LGBTQ+	Lesbian, Gay, Bisexual, Trans, Queer and other gender and sexual minority groups
SMY	Sexual Minority Youth
YRBS	Youth Risk Behavior Survey

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