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Bullying Experience of LGBTQ+ Students and Sexual Risk Behavior in Ukraine

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BULLYING EXPERIENCE OF LGBTQ+ STUDENTS AND SEXUAL RISK BEHAVIOR IN UKRAINE

By

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INTRODUCTION: School bullying is a component of social determinants of health that contributes to the marginalization of LGBTQ+ adolescents and correlates significantly with academic indicators and mental health, reported by an extensive body of research. However, very little is known about the relationship between school victimization and sexual risk-taking behavior among LGBTQ+ Youth in Ukraine, where HIV and other STDs remain one of the biggest public health concerns.

AIM: Determine the associations between bullying, based on sexual orientation and gender expression characteristics, and high-risk sexual practices in order to inform the prevention policy development.

METHODS: The final study sample of 1,743 participants was obtained from the 2020 Ukrainian School Climate Survey (USCS), a cross-sectional study focused on measuring bullying experiences of LGBTQ+ students in Ukraine that also collected data on sexual behavior. The survey was conducted online from April 2020 through August 2020 and distributed through

social media, targeting students who attended secondary-level school during the 2019-2020 academic year and identified themselves as LGBTQ+. The logistic regression analysis and bootstrapping tools of SAS 9.4 software were applied to estimate the exposure-outcome associations and potential mediation effects.

RESULTS: Severe exposures to verbal and physical harassment that was based on gender expression are associated with a two-fold increase in the risk of condomless sexual intercourse (odds ratios, adjusted to age and gender, equal to 2.1, 95% CI: [1.2 - 3.5] and 1.9, 95% CI: [1.03 - 3.4] respectively). The odds of sexual risk behavior, adjusted to age and gender, among those who had been sexually harassed (AOR = 2.6, 95% CI: [1.5 - 4.5]) and those who experienced cyberbullying (AOR = 2.2, 95% CI: [1.3 - 3.7]) were even higher. There is also evidence suggesting that the more frequent exposure to physical and sexual harassment, the higher odds of condomless sex practices. However, there were no significant indirect effects between any type of school victimization and sexual risk behavior mediated by depression or low self-esteem.

CONCLUSION: Evidence provided by this study underlines the necessity of inclusive anti-bullying policies that would decrease the exposure of LGBTQ+ students to bullying based on prejudice to gender expression. There are reasons to believe that inclusive bullying prevention could reduce HIV incidence among adolescents in Ukraine by minimizing sexual risk behavior.

APPROVAL PAGE

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AUTHOR'S STATEMENT PAGE

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter I - Introduction

School victimization is a social determinant of health (SDH) that operates through exposure to stigma and discrimination within one's school community. The hostile school environment affects the quality of education by discouraging one's retention to study content (Srabstein & Leventhal, 2010). It is hard to estimate the influence of SDHs on population health. Many aspects of this phenomenon need to be studied, especially among marginalized groups such as sexual and gender minorities. One of these aspects is connections between bullying experiences at school and sexual health risk behaviors in most HIV-affected regions.

The public and policymakers' awareness of bullying at secondary-level educational institutions began to rise only in 2017 with UNICEF's cross-sectional study report that estimated the high prevalence of students' exposure to the adverse school climate across the country (Ferlik & Zaporozhets, 2019). At the end of 2018, the Ukrainian Parliament voted for the legislature to implement anti-bullying policies and consider bullying or its concealing as a public offense. Nevertheless, sexual orientation and gender identity were not listed among other personal characteristics due to which students should not be subjected to bullying. The lack of inclusive policies and widespread stigma put LGBTQ+ students at high risk of victimization and related health risks.

For many young people, two sequelae of sexual risk behavior--sexually transmitted diseases and youth pregnancy—are of major public health concern. From 2012 through 2017, the incidence of HIV infection, syphilis, gonorrhea has a sustainable tendency to decrease but remains high (CPH, 2020). Moreover, more than half of those young patients diagnosed with HIV are introduced to antiretroviral treatment while being in the third or fourth stages of HIV infection, according to the Center for Public Health of the Ministry of Ukraine (CPH, 2019). Therefore, it is essential to understand the predictors of behavior related to increased risk of HIV and STDs acquisition to provide evidence-based policy improvements and inform the prevention program implementation.

The fact that the health risks of queer youth in Ukraine are poorly studied and basically not addressed within national and local health promotion programs is a major gap in public health, especially considering that young men who have sex with men represent one of the key populations at risk for HIV. Therefore, to emphasize the necessity of inclusive anti-bullying policies, this study intends to estimate the associations between different types of school victimization, including verbal harassment, physical harassment, physical assault, and sexual risk behavior, specifically engagement in

condomless anal or vaginal sexual intercourse, among LGBTQ+ adolescents in Ukraine using the data of 2020 Ukrainian School Climate Survey conducted by national the Ukrainian non-governmental organization Parental Initiative "Tergo" and financially supported by The Royal Norwegian Embassy in Ukraine.

Chapter II - Literature Review

Bullying is a specific type of victimization among adolescents, presented as a systematic and repetitive abuse or misuse of the power of one person or group of people over another based on personal characteristics of victims in order to cause physical or psychological harm (Olewus et al., 1999). It can be expressed in different forms depending on the actions of bullies or the environment where it takes place. The most common of these forms is verbal harassment, physical harassment, physical assault, sexual harassment, social exclusion, personal property damage, spreading rumors, and cyberbullying on social media (Gladden et al., 2013). Due to the significant impact of bullying on the quality of young people's lives and their health, this type of victimization has become a major public health concern resulting in extensive research and implementation of preventive programs on national and international levels. However, some world regions such as Eastern Europe, and countries in Eastern Europe such as Ukraine specifically, still have some gaps in understanding and measuring the effect of bullying on population health, especially regarding minority groups. The body of scientific literature has focused on the issue of bullying in secondary-level educational institutions mainly with cross-sectional studies conducted within the international research programs initiated by either the World Health Organization or the United Nations International Children's Emergency Fund (UNICEF).

In April 2016, UNICEF Office Ukraine launched the U-Report system for data collection and general public engagement, which was used as a surveillance platform for the first national large-scale cross-sectional study on bullying experiences of Ukrainian secondary-school students. The study report was published in 2017 and revealed that half (49%) of all 2,117 respondents aged 14 -19 years were bullied, and 5% indicated their sexual orientation as the reason for this (U-Report, 2017). Even though the U-Report study attracted the most public attention to the issue, it was not the first attempt to learn more about school victimization. Health Behavior among School-Aged Children (HBSC) survey, the international study also developed by UNICEF focused on 10 - 17 years old adolescents, estimated the prevalence of bullying experience in the two months prior to the survey. The surveillance was initiated

in the beginning in 2002 and reported the downward trend through 2014 (47% versus 36%) with a further increase that reach 37.9 % in 2018 (Balakireva et al., 2019; Balakireva et al., 2019). The HBSC methodology is based on random cluster selection that covered all 25 regional territories of Ukraine, including the city of Kyiv. The data of 2018 were based on a sample of 13,337 students and used anonymous paper-based questionnaires. More than one third of all HBSC study participants (37,9 %) had been bullied at school within the last two months preceding data collection. While HBSC provides information on types of school victimization such as verbal harassment (30.7% of all bullied), social exclusion (18.2%), physical harassment (10.9%), spreading rumors (26.6%), sexual harassment (17.7%), the data on students' personal characteristics, on which bullying was based, were not obtained. Also, 21.5% of all respondents reported being victims of cyberbullying within the previous two months. The HBSC of 2018 is the most recent report. Later in 2019, the European School Survey Project on Alcohol and Other Drugs, using relatively the same methodology, estimated that the prevalence of exposure to bullying has increased to 39% (Balakireva et al., 2019).

Regarding sexual risk behavior, 9.2% of HBSC respondents who had sexual experience revealed (N = 1,403) that their sexual debut happened at 12 years old or younger (12.1% of boys and 3.5% of girls), while 66.8 % reported the age of 15 years old or older (Balakireva et al., 2019). Only 69.3% of all said that they or their partners were using condoms the first time, while 65.4% used a condom during their last sexual encounter. The mean age of the first sexual experience was estimated at 15.1 years old for female and 14.4 for male participants, suggesting that the majority of students' first sexual contact happens during the school years, making it crucial to understand what factors promote safe sexual encounters (Balakireva et al., 2019).

The studies mentioned above provide only descriptive statistics on the issue of peer-driven school violence. However, in partnership with Kyiv International Institute of Sociology, the World Health Organization published an analogous cross-sectional study report based on a similar methodology and reporting data on the risk of adverse health behavior among young people exposed to several forms of violence, including bullying. Interestingly, Ukraine was the only Eastern European country among participants in the WHO research initiative that included bullying as one of the adverse childhood experiences assessed within the study. The final sample of 1,517 individuals was made of post-secondary-school students aged 18 - 23 years old (2% were older than 24 years). Nevertheless, the "Adverse childhood experiences and health-harming behaviors among students in Ukraine'' survey is one among few, if not the only one, that assesses the association between the sexual risk behavior and

school bullying. Although none of these two estimates was statistically significant, the adjusted odds ratio (AOR controlled for age, gender, and socio-economic status) of early sexual onset at 16 years old or younger and any kind and severity of victimization at school is 1.2 (95% CI: 0.7 - 2.0). Similarly, the odds ratio between bullying and having multiple sexual partners (≥3 during the last 12 months) also was not statistically significant and equals 0.7 (95% CI: 0.2 - 2.4). However, school victimization was not the primary focus of the given research. The information regarding the bullying experience was collected through a single question without specification of its severity, type, and context. Moreover, the age of the participants creates a strong possibility of recall bias. Nevertheless, it was also reported that exposure to physical violence from peers, without specifying the setting, significantly increased chances of sexual risk behavior, both early sexual debut (AOR = 2.1; 95% CI: 1.4 - 3.0) and having multiple sexual partners (AOR = 2.2; 95% CI: 1.9 - 3.9) (Zakhozha et al., 2018).

Gender and sexual minorities in Ukraine are poorly studied, with little reported behavioral research. Besides biobehavioral studies focused on men who have sex with men older than 18 years old to inform national HIV prevention programs funded by The Global Fund, no data exist regarding behavioral patterns predictors. However, the Ukrainian civil rights organization "FulcrumUA" conducted the first national survey of LGBT students in Ukraine, as part of a global technical assistance project led by GLSEN. Hence, according to the data of 2017 Ukrainian School Climate Survey (USCS) based on the study sample of 718 LGBTQ+ students, 9 of 10 encountered bullying; the most common forms were verbal harassment based on sexual orientation (62.9%) and gender expression (64.7%). Around half of the respondents reported being physically (53.5%) and sexually (47.0%) harassed during the 2016 -2017 academic year, and approximately 47% were exposed to cyberbullying (Ivasiy & Didenko, 2018). Besides the descriptive statistics, USCS provided some estimates of the effect of bullying on mental health outcomes such as depression and self-esteem that are known as potential mediators of the relationships between school victimization and sexual risk. The correlations between severe verbal harassment, based on sexual orientation and gender expression, and depression were significantly positive (r = .37 for sexual orientation r =.34 for gender expression). Likewise, the students that were exposed to verbal harassment more often had lower self-esteem than average (Ivasiy & Didenko, 2018). Even though the USCS is, one of the major limitations of the USCS, a cross-sectional study from which causality cannot be determined, is that it does not account for other adverse childhood experiences that LGBTQ+ students may be subjected to.

While there are gaps in Ukrainian data that would explain school bullying's impact on personal and population health, extensive research reports from either high and low-income countries are available on this issue. For instance, Kim et al. looked at different types of victimization in the U.S. to assess their association with sexual risk behavior and its possible modification by the mental health conditions. Specifically, the study claimed that physical harassment in any setting was positively associated with increased sexual risk-taking behavior, while cyberbullying had the same effect only among males, which was also positively mediated by the depression variable (Kim et al., 2019). Focusing on the gay and bisexual male population of the U.S. and Canada specifically, Tulloch et al. claimed that anti-gay verbal and physical peer-driven harassment has an indirect effect on increased sexual risk through the mediation of mental health problems such as depression, substance abuse, and sexual partner violence. However, no significant direct association was reported (Tulloch et al., 2015). Also, in Holt et al., LGBTQ+ adolescents who were both bullying victims and bullies were 2.15 times at risk of engaging in casual sexual contact with the 95% CI equals to 1.22 - 3.78 (Holt et al., 2013). Concerning the engagement in unprotected sexual intercourse as risk-taking behavior, evidence in Greece suggests that bullied students were less likely to use condoms during the college attendance period than those who never experienced victimization at middle and high schools (Kritsotakis et al., 2017).

Taking into account evidence that defines certain forms of school victimization as predictors of sexual risk, it is crucial to get this evidence within the Ukrainian context, since Ukraine is an estimated leader among European countries in terms of HIV incidence among young population (World Bank, 2021). Luckily, since 2014 there is a sustainable decrease in annual HIV incidence (UNAIDS, 2019). Adolescents are also considered one of the key populations requiring special attention within the national and regional prevention programs. Likewise, in general population trends, HIV incidence in the age group of 15 - 24 years old steadily goes down, and 18.5 per 100,000 in 2015 compared to 34.5 in 2010 (UNAIDS, 2019). Despite the promising decline present through the end of 2020, HIV incidence in the given age group is the highest in Ukraine compared to the other European and Central Asian countries, according to the USAID estimates (World Bank, 2021). Moreover, more than half (56%) of new HIV cases in the given age group are diagnosed in the III or IV clinical stages (Center for Public Health of Ministry of Health of Ukraine [CPH], 2019). Analogically, incidences of syphilis and gonorrhea in Ukraine among teenagers 15 - 17 years old keep decreasing but remain as high as 6.5 and 11.3 per 100,000 in 2017 (CPH, 2017), though the incidence of syphilis in 2019 is 3.08 cases per 100,000, which could be underestimated due to global pandemic crisis (CPH, 2020). There are no national data on chlamydia infection in Ukraine. Nevertheless, it should be kept in mind that the last national census

conducted in Ukraine took place in 2000, which challenges the accuracy of the data provided above. The total population of Ukraine as of 2017 was estimated based on the residency registration records, which don't reflect the emigration data, meaning that true population estimates may be lower, resulting in underestimation of reported HIV and STDs frequency measures (State Statistics of Ukraine, 2020).

After UNICEF's U-report study, public attention to the issue of school bullying was attracted to the extent that it created the window of opportunity for civil rights organizations to advocate the anti-bullying policy development. Hence, the Ukrainian Parliament voted for the addition of anti-bullying articles to the law that regulates secondary-level education. According to the law, bullying and its concealment were declared as a public offense that could lead to penalties or an assignment of public works. After the policy change, around 33% of schools implemented anti-bullying policies, though these policies were never meant to be inclusive considering sexual and gender minorities (Patalay et al., 2017). Moreover, sex education has never been implemented nationwide in Ukraine, making it crucial to provide scientific evidence that might support advocacy efforts to establish an inclusive school environment and address potential predictors of sexual risk such as victimization at school.

Bullying is being defined as a form of systemic discrimination that affects youth within the setting of educational institutions and online on social media platforms. The long-term exposure to the given stressor contributes to the development of psychological distress among already marginalized gender and sexual minorities who also suffer from other forms of discrimination as well as from internal stigmatization (Meyer, 2013). Furthermore, depression as a manifestation of psychological distress is highly associated with sexual risk behaviors and consequently with increased prevalence of sexually transmitted diseases (Khan et al., 2009), not only among queer youth but also across the general young population. Some forms of peer victimization, such as cyberbullying, have been proven to have a direct effect on sexual risk behavior, while school-based victimization, in general, correlates positively with sexual risk behavior through depression as a mediator (Kim et al., 2019). However, Kim et al. did not specify to which type of school-based bullying students were exposed. It may be crucial to differentiate verbal harassment from other physical variants of bullying to assess the relationship better.

Besides depression, another potential effect modifier may be the low level of self-esteem, which is a significant predictor of risky sexual activity among youth in low-income countries (Enejoh et al., 2016). In fact, low self-esteem is also associated with severe exposure to peer-to-peer harassment among LGBTQ+ adolescents, according to data from the 2017 Ukrainian School Climate Survey (Kosciw et al., 2018). Therefore, the theoretical concept model of the relationship between peer-driven

victimization of LGBTQ+ students and sexual risk behavior would consist of different forms of harassment as exposures of interest, effects of which could be potentially mediated by the depression and self-esteem covariates (Fig. 1).

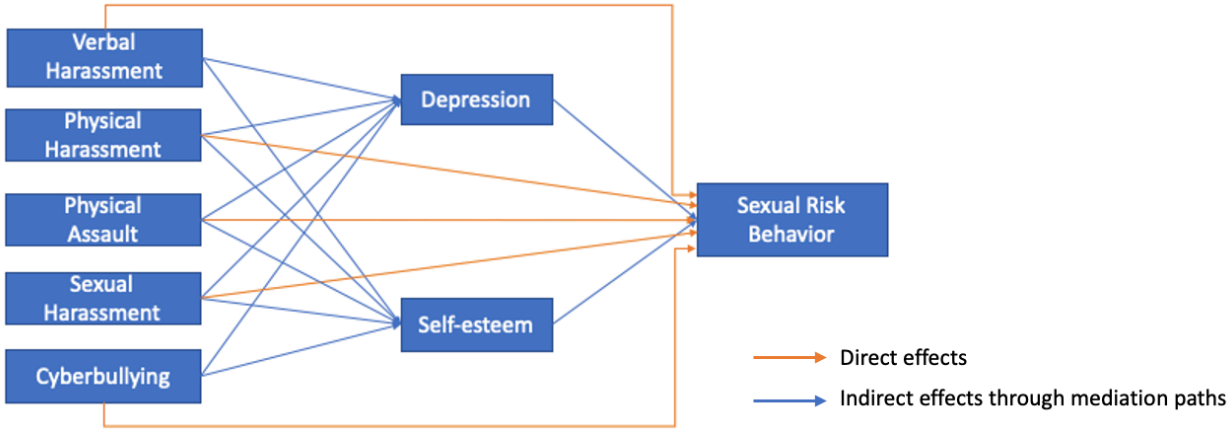


Figure 1. Theoretical Concept Model

In conclusion, the aim of this study is to use the national sample of secondary-level school LGBTQ+ students and assess the relationship between sexual orientation/gender expression based bullying exposures and sexual risk-taking behavior as well as examine mediating roles of depression and low self-esteem on the given associations.

Chapter III - Materials and Methods

3.1. Study Sample

The data used within the thesis research were taken from the Ukrainian School Climate Survey (USCS), conducted in 2020 by the Ukrainian non-governmental organization “Parental Initiative "Tergo" in partnership with the US-based organization "Gay, Lesbian, Straight Education Network (GLSEN).” The USCS is a national cross-sectional study designed as an online survey and distributed through social media (Facebook, Instagram, TikTok), targeting secondary-level students based in Ukraine who attended school in the 2019 - 2020 academic year and identified themselves as gender and sexual minorities. The Ukrainian and Russian versions of the USCS questionnaire with 364 items were placed on the Qualtrics platform and distributed in the period from April 2020 through August 2020. The Institutional Review

Board of "Tergo" approved the study methodology. Further, Georgia State University IRB also approved the use of secondary data for the given thesis research after Tergo's official permission of data utilization. The final study sample consisted of 1,743 observations cleaned from those who did not attend the school during the most recent academic year in Ukraine and do not identify themselves as LGBTQ+. The whole USCS study sample was taken into the analysis representing students from 25 of 27 regions in Ukraine, including the city of Kyiv and Russian-occupied regions of Donetsk and Luhansk but without Crimea peninsula and its capital, the city of Sevastopol, that was not reached within the social media targeting settings.

3.2. Dependent Variable

The dependent variable, which is the outcome of interest, was the sexual risk-taking behavior. In terms of HIV transmission, which is a major public health concern in Ukraine, Patel at al., identifies the following condomless sexual practices as risk factors: receptive anal intercourse, insertive anal intercourse, receptive penile-vaginal intercourse and insertive penile-vaginal intercourse (Patel et al., 2014). The dependent variable was created using answers of the respondents who self-reported of being engaged in one of the listed sexual intercourse without using a condom. First, the outcome group was made from the selection based on two dichotomous variables gained from the responses (yes = 1; no = 0) to the following questions: “The last time you had sexual intercourse, did you have insertive/receptive anal or vaginal intercourse?” and “The last time you had sexual intercourse, did you or your partner use a condom?”. As a result, the outcome group was made up of 97 individuals, including cisgender women who reported having unprotected vaginal intercourse only with people of the same gender. Due to the limitations of the collected data, it was not possible to assess whether cisgender women who reported having unprotected vaginal intercourse only with other women were engaged in practices that increase the risk of STD transmission, therefore, they were transfered to the non-outcome group. Transgender men, who reported that their sex assigned at birth was female, had vaginal sex with people of the same gender but used other protection methods (e.g., dental gum, female condom), were also transferred to the non-outcome group. Eventually, 64 individuals left in the outcome group that included cisgender gay and bisexual men, who were engaged in condomless anal/vaginal intercourse with other men or women (N=23); cisgender lesbian and bisexual women who reported having unprotected anal/vaginal intercourse with men (N=27); and transgender/non-binary people who had unprotected vaginal/anal intercourse with people of both same and different gender (N=14).

3.3. Independent Variables

Victims of the different school bullying types were identified through the self-reported responses to the multiple-choice questions that featured the Likert scale (Never = 1; Rarely = 2; Sometimes = 3; Often = 4; Frequently = 5). Questions regarding verbal harassment, physical harassment, and physical assault specifically asked about the reason for bullying, whether it was the sexual orientation or gender expression. Dummy variables were created for each type of victimization (1 = exposed; 0 = unexposed). Students were considered exposed if they answered "Sometimes", "Often", and "Frequently" to the following questions:

- Verbal Harassment based on sexual orientation/gender expression: "*In the past year, how often have you been verbally harassed (name-calling, threats, etc., directed at you) at your school because of your sexual orientation/gender expression?*"
- Physical Harassment based on sexual orientation/gender expression: "*In the past year, how often have you been physically harassed (shoved, pushed, etc.) at your school because of your sexual orientation/gender expression?*"
- Physical Assault based on sexual orientation/gender expression: "*In the past year, how often have you been physically assaulted (punched, kicked, injured with a weapon, etc.) at your school because of your sexual orientation/gender expression?*"
- Sexual Harassment: "*In the past year, how often have you been sexually harassed at your school, such as sexual remarks made toward you or someone touching your body inappropriately?*"
- Cyberbullying: "*In the past year, how often have you been harassed or threatened by students at your school using a phone, the internet, or social media (for example, text messages, emails, Instagram, Twitter, or Facebook)?*"

The frequency of bullying exposures within the study sample are presented in the Figure 2.

Additionally, in order to assess dose-effect dependence between school bullying and sexual risk behavior, independent variables were re-dichotomized, and those students who answered "Sometimes" to the questions above were reassigned to the unexposed group.

3.4. Mediators

Depression was assessed using the scale developed by the Center of Epidemiologic Studies (CES-D), which consists of 20 items (Rubloff, 1977). The respondents were asked to self-report the last week's frequency of a set of symptoms associated with depression. According to the literature, those who scored 16 or more on the CES-D score should be considered depressed. However, following this recommendation, it was discovered that 80.3% of the study sample should be considered depressed. Also, using the average sample score as a cutoff is a common approach used in the methodology of the School Climate Survey, which provides a more even distribution between "depressed" and "non-depressed groups," in this case, it is 50.4% to 49.6% respectively. The results of mediation analysis for both types of cutoffs were similar. Therefore, it was decided to use an average sample score as a cutoff in order to get more even dichotomization. Consequently, those students who scored the average sample value of depression variable and above were considered to have higher levels of depression (50.4%). The dummy variable was created using the given cutoff, respectively (1 = depressed; 0 = not depressed.

In order to estimate self-esteem among the participants, Rosenberg's 10-item self-esteem scale was incorporated into the USCS questionnaire (Rosenberg, 1965). Rosenberg's scales measure both negative and positive feelings about oneself, and those 29.6% of study sample, who scored below 12 were considered to have low self-esteem. The score of 12 was also used as a cutoff to create the dichotomized self-esteem variable (0 = low self-esteem; 1 = normal or high self-esteem).

3.5. Statistical Analysis

Descriptive and inferential analyses were done in SAS 9.4 to report study sample demographics and frequencies of sexual risk behavior. Pearson correlation method was applied to assess the interrelations between different types of school victimization and report if people who experience a certain type of bullying are also exposed to any other kind of it.

Since sexual risk behavior is a discrete binary variable, logistic regression analysis was used to report the associations between potential confounders (age, gender, area of habituation), exposure variables, and the outcome variable. Analogically, odds ratios of sexual risk behavior for types of bullying were estimated through the series of multivariate logistic regression analyses that allow adjusting for confounding effects of age and gender.

Chapter IV - Results

4.1. Demographic characteristics

After the data cleaning process, the final study sample was made of 1,743 participants, 14.1% of cisgender males, 73.9% of cisgender females, and 12.0% of transgender people with a mean age of 15.3 years old (SD = 1.4), where 46.1% were aged between 13 and 19 years old. Most of the study respondents (1,739) reported their sexual orientation, 25.2% identified themselves as gay or lesbian, 66.1% - as bisexual or pansexual, and 8.6% were questioning or provided other terms to describe their identity. Of 1,563 participants who responded to the question regarding sexual onset, 342 (21.9%) had a sexual experience, 64 of each (3.7% of the study sample) had been engaged in high-risk sexual intercourse (see "Dependent Variable" of "Material and Methods").

All 25 regions of Ukraine, except Crimea and city of Sevastopol, were represented in the study sample, while the city of Kyiv (11.9%), Kyiv Region (11.5%), and Dnipro region (9.7%) were the most prevalent. Considering geographical areas, almost half of all participants lived in (48.5%) urban areas, 23.4% in sub-urban, and 28.1% lived in rural communities. Table 1 presents sociodemographic characteristics of the final study sample taken into the analysis.

4.2. Experiences of School Victimization

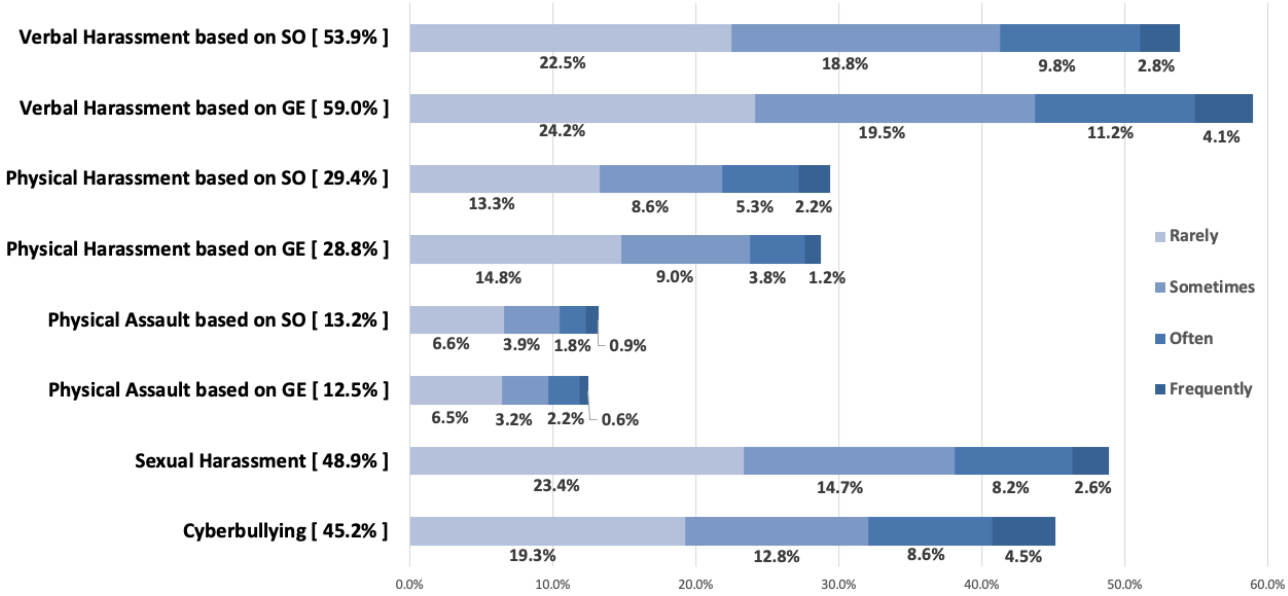
The 2020 Ukrainian School Climate Survey's primary goal was to measure the bullying experience of LGBTQ+ students across the country. Based on the existing literature, several types of peer-driven school victimization were considered exposures of interest that could potentially predict the engagement into the sexual-risk taking.

Table 1.
Sociodemographic characteristics of study participants (N=1742)

Characteristic	N	%
Age (N=1742)		
13 -16 yo	939	46.1
16 -19 yo	803	53.9
Gender (N=1727)		
Cisgender Men	244	14.1
Cisgender Women	1276	73.9
Transgender / Non-binary	207	12.0
Sex Assigned at Birth (N=1740)		
Male	243	14.0
Female	1497	86.0
Sexual Orientation (N=1739)		
Gay	439	25.2
Bisexual/Pansexual	1150	66.1
Questioning/Other	150	8.6
Sexual experience (N=1563)		
Yes	342	21.9
No	1221	78.1
Unprotected anal/vaginal sexual intercourse		
Yes	64	3.7
No	1679	96.3
Area (N=1716)		
Urban	803	48.5
Sub-Urban	401	23.4
Rural	482	28.1

Students were asked to self-report how often (never, rarely, sometimes, often, frequently) they were exposed to a certain type of bullying. Specifically, the questions on verbal harassment, physical harassment, and physical assault were designed to assess whether the reason of bullying was their sexual orientation or gender expression. Verbal harassment was defined as name-calling and threatening, and 53.9% and 59.0% of the study participants had been verbally harassed during the last academic year based on their sexual orientation or gender expression, respectively. Moreover, 12.4% experienced verbal harassment based on sexual orientation often and frequently, while 15.3% were verbally harassed due to gender expression with the same frequency. Physical harassment such as shoving, and pushing was less prevalent. Specifically, 29.4% of LGBTQ+ students had been physically harassed because of their sexual orientation, while 28.8% because of their gender expression, and 7.5% and 5.0% reported that physical harassment occurred often or frequently. The more violent form of bullying, such as physical assault (punching, kicking, or injuring with a weapon), was reported by 13.2% and 13.5% of the study respondents who had ever suffered from it during the last academic year because of their sexual orientation and gender expression, respectively. Other forms of school bullying

that could be potentially associated with sexual risk behavior sexual harassment (unwanted touching or sexual remarks) and cyberbullying. The latter was experienced by 45.2% of respondents, and 13.1% were bullied online often and frequently. Almost half of the students (48.9%) were sexually harassed, and 10.8% experienced it "often" or "frequently." Figure 2 presents the prevalence of the mentioned types of school bullying and how frequently they had been experienced.



SO = Sexual Orientation; GE = Gender Expression.

Figure 2. Frequencies of different types of school bullying experienced by LGBTQ+ Students in Ukraine during 2019/2020 academic year.

4.3. Interrelations between Types of School Victimization

As shown in Table 2, all school bullying types were significantly positively correlated with one another, though all of the correlations were either moderate or small based on the Pearson correlation coefficients.

Those forms of victimizations that were occurring sometimes, often, and frequently based on the same characteristics seem to be the most associated with one another. Specifically, verbal harassment based on sexual orientation (SO) was moderately correlated with physical harassment also based on SO ($r = 0.46$, $p < 0.001$) as well as the latter one was associated with the physical assault based on SO to the same extent ($r = 0.47$, $p < 0.001$). Similarly, verbal and physical harassment based on gender expression (GE) had a moderate correlation with one another (0.40, $p<0.001$). Physical assault and physical harassment on GE were also associated at the moderate level (0.47, $p<0.001$). All the pairs of

the same types of bullying that happened due to different characteristics (e.g., verbal harassment on SO and verbal harassment on GE) were also moderately correlated with one another. Sexual harassment exposure had small level correlations with all other school victimization types, while cyberbullying was moderately associated with both verbal and physical harassment based on sexual orientation ($r = 0.37$, $p<0.001$; $r = 0.36$, $p < 0.001$).

Table 2.
Correlations between types of school bullying

	VH on SO	VH on GE	PH on SO	PH on GE	PA on SO	PA on GE	SH	CB
VH on SO	-	**0.32** p<0.001	**0.47** p<0.001	**0.27** p<0.001	**0.28** p<0.001	**0.19** p<0.001	**0.18** p<0.001	**0.37** p<0.001
VH on GE	**0.32** p<0.001	-	**0.27** p<0.001	**0.40** p<0.001	**0.11** p<0.001	**0.28** p<0.001	**0.15** p<0.001	**0.23** p<0.001
PH on SO	**0.46** p<0.001	**0.27** p<0.001	-	**0.39** p<0.001	**0.47** p<0.001	**0.33** p<0.001	**0.25** p<0.001	**0.36** p<0.001
PH on GE	**0.26** p<0.001	**0.40** p<0.001	**0.39** p<0.001	-	**0.15** p<0.001	**0.47** p<0.001	**0.22** p<0.001	**0.26** p<0.001
PA on SO	**0.28** p<0.001	**0.11** p<0.001	**0.47** p<0.001	**0.15** p<0.001	-	**0.34** p<0.001	**0.16** p<0.001	**0.25** p<0.001
PA on GE	**0.18** p<0.001	**0.26** p<0.001	**0.33** p<0.001	**0.47** p<0.001	**0.34** p<0.001	-	**0.20** p<0.001	**0.22** p<0.001
SH	**0.19** p<0.001	**0.15** p<0.001	**0.25** p<0.001	**0.22** p<0.001	**0.16** p<0.001	**0.20** p<0.001	-	**0.27** p<0.001
CB	**0.37** p<0.001	**0.23** p<0.001	**0.36** p<0.001	**0.26** p<0.001	**0.25** p<0.001	**0.22** p<0.001	**0.27** p<0.001	-

VH = Verbal Harassment; PH = Physical Harassment; PA = Physical Assault; SH = Sexual Assault; CB = Cyberbullying; SO = Sexual Orientation; GE = Gender Expression.

4.4. Prevalence and odds of bullying experiences by age, gender, and area of habitation

According to the literature review, sociodemographic characteristics such as age, gender, and family's socioeconomic status should be considered as potential confounders of the association between school victimization and health-harming behaviors (Zakhozha et al., 2018). Socioeconomic status was not measured within the USCS, but the area of habitation (urban, sub-urban and rural) was one of the variables provided in the dataset that was decided to be tested for confounding. First, it was reasonable to look at the associations between exposures of interest and sociodemographic characteristics such as age, gender, and habitation area. Prevalence and odds of school victimizations forms by the levels of the given covariates are presented in Table 3.

LGBTQ+ students aged 13 - 16 years old were more at risk of all types of school bullying, though the 95% confidence intervals of odds ratios of being exposed to either verbal, physical harassment

based on gender expression and sexual harassment include the value of 1.0, indicating that the association is not statistically significant.

Student's gender is also a predictor of a certain type of school victimization. It is not surprising that transgender study participants are more at risk of verbal harassment, physical harassment, and physical assault due to their gender expression compared to cisgender females. Transgender people also had higher odds (1.5, 95% CI: [1.1 - 2.1]) of cyberbullying during the 2019/2020 academic year. On the other hand, gay and bisexual cisgender men had higher odds of physical harassment and physical assault based on sexual orientation (2.7, 95% CI: [1.3 - 3.3]) as well as transgender students (3.7, 95% CI: [2.4 - 5.9] respectively) compared to the cisgender female group. However, cis-females were more at risk of sexual harassment compared to cis-males of the study population. Additionally, students who identified themselves as gay or lesbian (homosexual) have higher odds of all types of school bullying except sexual harassment compared to bi-, pansexual adolescents and those who were questioning their sexual orientation.

Regarding the area of habitation, LGBTQ+ students who live the rural area have significantly higher odds of being physically harassed based on their sexual orientation and gender expression (1.7, 95% CI: [1.3 - 2.3] and 1.5, 95% CI: [1.1 - 2.0] respectively) as well as higher odds of being physically assaulted because of their sexual orientation (1.7, 95% CI: [1.7 - 2.6]) than urban-based LGBTQ+ students. Cyberbullying is also more commonly affects rural queer adolescents with the odds of 1.5, 95% CI: [1.2 - 1.9] compared to those who live in the urban areas.

Table 3.
Prevalence of severe bullying exposure (sometimes, often, frequently) by age, gender, sexual orientation and area of habitation.

	Verbal Harassment on SO		Verbal Harassment on GE		Physical Harassment on SO		Physical Harassment on GE		Physical Assault based on SO		Physical Assault based on GE		Sexual Harassment		Cyberbullying	
	Pr,%	OR (95% CI)	Pr,%	OR (95% CI)	Pr,%	OR (95% CI)	Pr,%	OR (95% CI)	Pr,%	OR (95% CI)	Pr,%	OR (95% CI)	Pr, %	OR (95% CI)	Pr, %	OR (95% CI)
Age																
16+ yo	34.1	1.0 (ref.)	34.2	1.0 (ref.)	12.5	1.0(ref.)	12.8	1.0 (ref.)	4.1	1.0 (ref.)	4.6	1.0 (ref.)	23.9	1.0 (ref.)	15.7	1.0 (ref.)
14-16 yo	28.2	**1.3 (1.1-1.6)**	35.4	1.1 (0.7-1.3)	19.3	**1.7 (1.3-2.2)**	15.1	1.2 (0.9-1.6)	8.7	**2.2 (1.5-3.4)**	7.1	**1.6 (1.1-2.4)**	26.4	1.1 (0.9-1.4)	10.0	**1.6 (1.3-2.0)**
Gender																
Cis. Women	27.2	1.0 (ref.)	29.9	1.0 (ref.)	12.8	1.0 (ref.)	10.0	1.0 (ref.)	4.1	1.0 (ref.)	3.7	1.0 (ref.)	27.4	1.0 (ref.)	24.1	1.0 (ref.)
Transg-r/NB	44.1	**2.1 (1.6-2.8)**	55.7	**3.0 (2.2-4.0)**	25.5	**2.6 (1.6-3.3)**	27.4	**3.4 (2.4-2.9)**	12.2	**3.2(1.9-5.3)**	12.8	**3.8 (2.6-6.4)**	28.2	1.0 (0.7-2.5)	32.9	**1.5 (1.1-2.1)**
Cis. Men	41.7	**1.9 (1.4-2.5)**	42.6	**1.7 (1.3-2.3)**	25.5	**2.7 (1.3-3.3)**	22.9	**2.7 (1.9-3.8)**	13.9	**3.7 (2.4-5.9)**	11.7	**3.5 (2.1-5.7)**	11.5	**0.4 (0.2-0.5)**	28.6	1.3 (0.9-1.7)
SO																
Homosexual	50.8	1.0 (ref.)	40.4	1.0 (ref.)	26.9	1.0 (ref.)	18.8	1.0 (ref.)	12.4	1.0 (ref.)	10.6	1.0 (ref.)	23.2	1.0 (ref.)	32.0	1.0 (ref.)
Bi-, Pansexual	26.3	**0.3 (0.2-0.4)**	33.7	**0.7 (0.6-0.9)**	13.1	**0.4 (0.3-0.5)**	12.9	**0.6 (0.5-0.7)**	4.8	**0.4 (0.2-0.5)**	4.7	**0.4 (0.3-0.6)**	26.8	1.2 (0.9-1.6)	24.6	**0.7 (0.5-0.9)**
Questioning	10.7	**0.1 (0.06-0.2)**	25.0	**0.5 (0.3-0.8)**	7.4	**0.2 (0.1-0.4)**	8.0	**0.4 (0.2-0.8)**	2.5	**0.2 (0.1-0.6)**	0.9	**0.1(0.01-0.5)**	18.3	0.7 (0.4-1.2)	18.0	**0.5 (0.3-0.8)**
Queer	36.3	0.5 (0.2-1.9)	60.0	2.2 (0.6-8.0)	18.2	0.6 (0.1-2.8)	18.2	1.0 (0.2-4.5)	9.1	0.7 (0.1-5.7)	10.0	0.9 (0.1-7.6)	36.4	1.9 (0.5-6.6)	9.1	0.2 (0.1-1.7)
Other	0	-	11.1	0.2 (0.02-1.5)	10.0	0.3 (0.03-2.4)	0	-	0	-	0	-	0	-	20.0	0.5 (0.1-2.5)
Area																
Urban	29.1	1.0 (ref.)	33.0	1.0 (ref.)	13.5	1.0 (ref.)	12.0	1.0 (ref.)	5.5	1.0 (ref.)	5.5	1.0 (ref.)	24.6	1.0 (ref.)	23.0	1.0 (ref.)
Sub-Urban	32.8	1.2 (0.9-1.5)	38.1	1.3 (1.0-1.6)	16.1	1.2 (0.9-1.7)	15.3	1.3 (0.9-1.9)	6.0	1.1 (0.6-1.8)	5.3	1.0 (0.6-1.7)	26.0	1.1 (0.8-1.4)	26.6	1.2 (0.9-1.6)
Rural	33.4	1.2 (1.0-1.6)	35.7	1.1 (0.9-1.4)	21.1	**1.7 (1.3-2.3)**	16.7	**1.5 (1.1-2.0)**	9.0	**1.7 (1.7-2.6)**	7.1	1.3 (0.8-2.1)	26.2	1.1 (0.8-1.4)	30.7	**1.5 (1.2-1.9)**

SO = Sexual Orientation; GE = Gender Expression; NB = Non-Binary

4.5. Prevalence and odds of sexual risk behavior by age, gender, and area of habitation

Engagement in sexual risk-taking behavior, specifically not using a condom or other protection during the incentive or receptive anal or vaginal intercourse, was highly associated with age and gender. The sexual risk-taking behavior was self-reported and determined through the following two joint questions: “The last time you had sexual intercourse, did you have insertive/receptive anal or vaginal intercourse?” and “The last time you had sexual intercourse, did you or your partner use a condom?”. As shown in Table 4, LGBTQ+ students aged 13-16 years old had a 60% less chance of practicing sexual risk-taking behavior (OR: 0.4, 95% CI: [0.2 -06]). Likewise, gender was another factor that predicts the outcome as transgender adolescents had 3.1, 95% CI: [1.6 - 6.1] odds of practicing sexual risk behavior than cisgender LGB students, while cisgender gay and bisexual males have odds of condomless sexual intercourse as high as 5.1, 95% CI: [2.9 - 8.9]. Area of habitation and sexual orientation were not significantly associated with the sexual risk behavior.

Table 4.

Prevalence of sexual risk behavior (unprotected insertive/receptive anal/vaginal intercourse) by age, gender, and area of habitation

Characteristic	Sexual Risk Behavior	
	Pr, %	OR (95% CI)
Age		
16 - 19 yo	5.6	1.0 (ref.)
13 - 16 yo	2.0	**0.4 (0.2-06)**
Gender		
Cis. Women	2.1	1.0 (ref.)
Transg-r /NB	6.3	**3.1 (1.6-6.1)**
Cis. Men	9.8	**5.1 (2.9-8.9)**
SO		
Homosexual	5.2	1.0 (ref.)
Bi-, Pansexual	3.0	0.6 (0.3-1.0)
Questioning	3.1	0.6 (0.2-1.7)
Queer/Other	9.1	2.8 (0.6-13.1)
Area		
Urban	3.1	1.0 (ref.)
Sub-Urban	3.5	1.1 (0.6-2.2)
Rural	5.0	1.6 (0.9-2.9)

Table 5.

Crude and Adjusted (to Age, Gender) Odds of Sex-Taking Risk by Type of School Victimization reported "Sometimes, Often, Frequently" versus "Often, Frequently"

Type of Victimization	Sexual Risk Behavior			Sexual Risk Behavior	
	OR (95% CI)	AOR (95% CI)		OR (95% CI)	AOR (95% CI)
Verbal Harassment *In the past year, how often have you been verbally harassed (name-calling, threats, etc. directed at you) at your school because of...*					
Sexual orientation:					
• Never, Rarely	1.0 (ref.)	1.0 (ref.)	• Never, Rarely, Sometimes	1.0 (ref.)	1.0 (ref.)
• Sometimes, Often, Frequently	1.6 (1.0-2.7)	1.4 (0.8-2.4)	• Often, Frequently	2.0 (1.1-3.7)	1.7 (0.9-3.2)
Gender Expression					
• Never, Rarely, Sometimes	**1.0 (ref.)**	**1.0 (ref.)**	• Never, Rarely, Sometimes	1.0 (ref.)	1.0 (ref.)
• Often, Frequently	**2.4 (1.5-4.0)**	**2.1 (1.2-3.5)**	• Often, Frequently	2.5 (1.4-4.3)	2.1 (1.2-3.8)
Physical Harassment *In the past year, how often have you been physically harassed (shoved, pushed, etc.) at your school because of...*					
Sexual orientation:					
• Never, Rarely	1.0 (ref.)	1.0 (ref.)	• Never, Rarely, Sometimes	1.0 (ref.)	1.0 (ref.)
• Sometimes, Often, Frequently	1.9 (1.1-3.4)	1.8 (1.0-3.2)	• Often, Frequently	2.4 (1.2-4.8)	2.2 (1.03-4.5)
Gender Expression:					
• Never, Rarely	**1.0 (ref.)**	**1.0 (ref.)**	• Never, Rarely, Sometimes	**1.0 (ref.)**	**1.0 (ref.)**
• Sometimes, Often, Frequently	**2.4 (1.3-4.2)**	**1.9 (1.03-3.4)**	• Often, Frequently	**3.0 (1.4-6.5)**	**2.7 (1.2-6.1)**
Physical Assault *In the past year, how often have you been physically assaulted (punched, kicked, injured with a weapon, etc.) at your school because of...*					
Sexual orientation:					
• Never, Rarely	1.0 (ref.)	1.0 (ref.)	• Never, Rarely, Sometimes	1.0 (ref.)	1.0 (ref.)
• Sometimes, Often, Frequently	2.2 (1.0-4.6)	1.9 (0.8 - 4.5)	• Often, Frequently	2.6 (0.9-7.6)	2.1 (0.7-6.3)
Gender Expression:					
• Never, Rarely	1.0 (ref.)	1.0 (ref.)	• Never, Rarely, Sometimes	1.0 (ref.)	1.0 (ref.)
• Sometimes, Often, Frequently	2.1 (1.0-4.9)	1.7 (0.8 - 3.9)	• Often, Frequently	2.6 (0.9-7.6)	2.2 (0.7 - 6.7)
Sexual Harassment *In the past year, how often have you been sexually harassed at your school, such as sexual remarks made toward you or someone touching your body inappropriately?*					
• Never, Rarely	**1.0 (ref.)**	**1.0 (ref.)**	• Never, Rarely, Sometimes	**1.0 (ref.)**	**1.0 (ref.)**
• Sometimes, Often, Frequently	**1.8 (1.1-3.1)**	**2.6 (1.5-4.5)**	• Often, Frequently	**2.4 (1.3-4.5)**	**3.9 (2.0-7.7)**
Electronic Harassment / Cyberbullying *In the past year, how often have you been harassed or threatened by students at your school using a phone, the internet, or social media (for example, text messages, emails, Instagram, Twitter, or Facebook)? /*					
• Never, Rarely	**1.0 (ref.)**	**1.0 (ref.)**	• Never, Rarely, Sometimes	1.0 (ref.)	1.0 (ref.)
• Sometimes, Often, Frequently	**2.0 (1.2-3.4)**	**2.2 (1.3-3.7)**	• Often, Frequently	1.7 (0.9-3.2)	2.0 (1.03-3.6)

4.6. Odds of Sexual Risk Behavior by Types of School Bullying

LGBTQ+ students who were exposed to self-reported bullying sometimes, often, and frequently at secondary school have a higher probability of sexual risk behavior than those who experienced bullying rarely or never. Specifically, age and gender-adjusted odds of sexual risk behavior (condomless anal/vaginal intercourse) among those students who were verbally or physically harassed because of their gender expression are 2.1, 95% CI: [1.2 - 3.5] and 1.9, 95% CI: [1.03 - 3.4], respectively. Exposure to sexual harassment also increases the probability of sexual risk-taking (Adjusted Odds Ratio (AOR) = 2.6, 95% CI: [1.5 - 4.5]) as well as students who had been bullied on social media are more likely to get engaged in having unprotected sexual intercourse (AOR = 2.2 [1.3 - 3.7]), which is consistent with findings published by Kim et al. (Kim et al., 2019). Verbal and physical harassment based on sexual orientation that occurred "sometimes," "often," and "frequently" were not significant direct predictors of sexual risk behavior as well as physical assault based both on sexual orientation and gender expression (see Table 5).

After re-dichotomizing dummy variables of bullying exposures and comparing odds of sexual risk of those who experienced victimization often and frequently to those who reported it had happening rarely, sometimes or never, the odds estimates of risky sexual behavior increased for physical harassment based on gender expression (AOR = 2.7, 95% CI: [1.2 - 6.1]) and sexual harassment (AOR = 3.9, 95% CI: [2.0 - 7.0]), though they remained on the same value for verbal harassment due to gender expression (AOR = 2.1, 95% CI: [1.2 - 3.8]), and decreased for cyberbullying (AOR = 2.0, 95% CI: [1.03 - 3.6]) (see Table 5).

4.7. Indirect Effects and Interaction

The level of depression below the sample mean as well as low self-esteem were both significantly associated with every type of school bullying, as shown in Table 6. However, neither depression variable (OR = 1.2, 95% CI: [0.7 - 2.0]) or low self-esteem (OR = 0.9, 95% CI: [0.5 - 1.5]) were not significant predictors of sexual risk behavior. Estimation of indirect effects of school bullying on sexual risk behavior through the two mediation pathways using the CASUALMED procedure (SAS Institute Inc, 2017) did not result in any significant findings as shown in Table 7.

While the mediation was not discovered, it was also decided to test for the effect moderation of the relationships between bullying experiences and sexual risk behavior that might be caused by depression and low-self-esteem. As demonstrated in Table 8, interaction terms of each type of school

victimization and depression did not contribute significantly to the prediction of sexual risk behavior within the logistic model that already included the given kind of school bullying and depression variable. Similarly, the interaction terms with self-esteem variables did not contribute to predicting sexual risk-taking behavior. Hence, there are not enough evidence to suggest that the effect of different school bullying forms and the engagement in the condomless anal/vaginal intercourse were not homogeneous across the strata of depression variable and the strata of self-esteem variable.

It is also reasonable to highlight that the proportion of LGBTQ+ who self-determined of being engaged in sexual risk behavior is relatively small (N=64) compared to the whole study sample (N=1742). This factor is possibly is the reason for the lack of the statistical significance in mediation and moderation values estimates.

Table 6

Odds of Depression Score Above the Sample Average and Low Rosenberg's Self-Esteem Score (≤12) by Type of School Victimization.

Exposure	Odds of Depression	Odds of Low Self-esteem
VH on SO	2.7 (2.1-3.3)	1.9 (1.5-2.4)
VH on GE	2.7 (2.1-3.3)	2.1 (1.7-2.6)
PH on SO	3.9 (2.8-5.3)	2.3 (1.7 -3.1)
PH on GE	3.2 (2.3-4.4)	2.1 (1.7-2.9)
PA on SO	4.0 (2.4 -6.5)	1.8 (1.2-2.8)
PA on GE	4.7 (2.7-8.2)	2.0 (1.2-3.2)
SH	2.2 (1.7-2.8)	1.5 (1.2-2.9)
CB	2.8 (2.3-3.7)	2.1 (1.6-2.6)

Table 7

Indirect effects through mediation paths results for sexual risk behavior adjusted to age and gender.

Path	β (SE)	p-value
(VH on SO)→D→SRB	0.0016 (0.0024)	0.497
(VH on GE)→D→SRB	0.0013 (0.0024)	0.591
(PH on SO)→D→SRB	0.0022 (0.0032)	0.489
(PH on GE)→D→SRB	0.0020 (0.0029)	0.487
(PA on SO)→D→SRB	0.0018 (0.0031)	0.563
(PA on GE)→D→SRB	0.0023 (0.0035)	0.514
SH→D→SRB	0.0008 (0.0019)	0.619
CB→D→SRB	0.0008 (0.0025)	0.750
(VH on SO)→LSE→SRB	-0.0005(0.0016)	0.750
(VH on GE)→LSE→SRB	-0.0008(0.0018)	0.626
(PH on SO)→LSE→SRB	-0.0007 (0.0024)	0.727
(PH on GE)→LSE→SRB	-0.0006 (0.0019)	0.772
(PA on SO)→LSE→SRB	-0.0006 (0.0015)	0.687
SH→LSE→SRB	-0.0005 (0.0010)	0.585
CB→LSE→SRB	-0.0001 (0.0018)	0.557

VH = Verbal Harassment; PH = Physical Harassment; PA = Physical Assault; SH = Sexual Assault; CB = Cyberbullying; SO = Sexual Orientation; GE = Gender Expression.

Table 8

Depression/Self-Esteem and School Bullying Interaction Term Coefficients and Odds of Sexual Risk Behavior by Type of School Victimization Stratified by Depression and Self-esteem Variables.

Model	Depression (CES-D Scale)			Self-Esteem (Rosenberg's Scale)		
	Interaction term coefficient ($\beta_{EXPi*Depression}$)	Odds of Sexual Risk Behavior		Interaction term coefficient ($\beta_{EXPi*Self\text{-}Esteem}$)	Odds of Sexual Risk Behavior	
SRB and VH_{SO}	0.1 (p > 0.9)	Not Depressed	1.6 (0.6-3.8)	0.2 (p > 0.7)	Normal or High SE	1.6 (0.7-3.4)
		Depressed	1.7 (0.8-3.5)		Low Self-Esteem	1.9 (0.9-4.2)
SRB and VH_{GE}	0.8 (p = 0.2)	Not Depressed	1.5 (0.6-3.6)	1.1 (p = 0.07)	Normal or High SE	1.5 (0.7-3.3)
		Depressed	3.4 (1.5-7.7)		Low Self-Esteem	4.6 (1.8-11.5)
SRB and PH_{SO}	0.05 (p > 0.9)	Not Depressed	1.9 (0.6-6.7)	-0.06 (p > 0.9)	Normal or High SE	1.8 (0.7-4.9)
		Depressed	2.0 (0.9-4.4)		Low Self-Esteem	1.7 (0.7-4.0)
SRB and PH_{GE}	0.13 (p > 0.8)	Not Depressed	3.2 (1.5-6.7)	-0.3 (p > 0.6)	Normal or High SE	2.7 (1.1-6.9)
		Depressed	3.1 (1.7-5.9)		Low Self-Esteem	2.0 (0.9-4.8)
SRB and PA_{SO}	0. 6 (p > 0.6)	Not Depressed	1.5 (0.2-11.2)	0.4 (p > 0.6)	Normal or High SE	1.5 (0.3-6.7)
		Depressed	2.4 (1.0-5.9)		Low Self-Esteem	2.2 (0.6-6.7)
SRB and PA_{GE}	-0.01 (p > 0.9)	Not Depressed	2.5 (0.3-20.1)	0.2 (p > 0.8)	Normal or High SE	2.0 (0.5-9.0)
		Depressed	2.2 (0.8-5.9)		Low Self-Esteem	2.4 (0.8-7.3)
SRB and SH	0.9 (p = 0.2)	Not Depressed	1.0 (0.3-2.9)	0.4 (p > 0.5)	Normal or High SE	1.5 (0.6-3.4)
		Depressed	2.2 (1.0-4.6)		Low Self-Esteem	2.1 (0.9-4.6)
SRB and CB	1.0 (p = 0.14)	Not Depressed	1.1 (0.4-3.3)	0.5 (p > 0.4)	Normal or High SE	1.7 (0.7-3.9)
		Depressed	3.0 (1.4-6.4)		Low Self-Esteem	2.7 (1.2-6.0)

SRB = Sexual Risk Behavior; VH = Verbal Harassment; PH = Physical Harassment; PA = Physical Assault; SH = Sexual Assault; CB = Cyberbullying; SO = Sexual Orientation; GE = Gender Expression.

Chapter V - Discussion

The first data on the bullying experience of secondary-level school students were presented in 1995 as a portion of UNICE's European School Survey Project on Alcohol and Other Drugs. Over the last two and a half decades, from 1995 through 2021, Ukrainian data on school bullying became much more extensive. Another UNICEF study, U-report, revealed that more than 90% of Ukrainian students recognize bullying as a significant problem (U-Report, 2016). At the same time, the WHO's report on Adverse Childhood Experiences and Health-Harming Behavior provided evidence that school bullying is a significant predictor of alcohol and street drug abuse as well suicidal attempt(s) (Zakhozah et al., 2018). Literature on school victimization of gender and sexual minorities is less common. A portion of U-Report respondents (5%) indicated that they were bullied because of their sexual orientation (U-Report, 2016). However, 2017 and 2020 Ukrainian School Climate Surveys both reported that more than 90% of LGBTQ+ students were exposed to bullying at least once during their school-life (Kosciw et al., 2018; Kosciw et al., 2021).

In 2020 Ukrainian School Climate Survey along with bullying exposure measurements collected data on sexual behavior that were taken into the analysis for the given thesis research. Approximately every fifth LGBTQ+ respondent (21.9%) had a sexual experience, which is slightly higher than the proportion in the general population of students who ever had sex (18.3%) estimated in the UNICEF's Health Behavior in School-Aged Children study (Balakireva et al., 2019). Within the given research, self-reported unprotected receptive/insertive anal/vaginal intercourse was considered a sexual risk behavior and self-reported by 3.7% (N=64) of the study respondents. Different types of school victimization such as verbal harassment, physical harassment, physical assault, sexual harassment, and cyberbullying were measure on the Likert scale and reported within the 2020 Ukrainian school climate survey. Additionally, students were asked about the reasons for the bullying they had been exposed to, whether it was sexual orientation, gender, gender expression, disability, socioeconomic status, etc. The given study was intended to estimate whether any type of listed bullying experiences that were based either on sexual orientation or gender expression increases the odds of sexual risk behavior defined above as well as if any of these relationships, if present, modified, or mediated by the depression and low self-esteem. The major findings are that verbal and physical harassment that was based on gender expression is associated with a two-fold increase in risk of condomless intercourse almost twice or more (ORs adjusted to age and gender-equal to 2.1, 95% CI: [1.2 - 3.5] and 1.9, 95% CI: [1.03 - 3.4] respectively). The odds of sexual risk behavior adjusted to age and gender among those who had been sexually

harassed (AOR = 2.6, 95% CI: [1.5 - 4.5]) and those who experienced cyberbullying (AOR = 2.2, 95% CI: [1.3 - 3.7]) were even higher. Interestingly, there is also evidence suggesting more frequent exposure to these four types of bullying increases the odds of unprotected sex even more, which could be considered dose-effect dependence.

While depression measured with the CES-D scale and self-esteem assessed through Rosenberg's scale were significantly associated with all types of school bullying, neither of these two potential mediators were not significant predictors of sexual risk behavior (Radloff, 2015; Rosenberg, 1965). The data do not support the hypothesis on the mediation role of depression or low self-esteem on the relationship between school bullying and sexual risk behavior. These findings are consistent with the results published by Kim et al., suggesting that even if peer-driven harassment at school can lead to depression development among adolescents, it does not predict sexual risk behavior of victims (Kim et al., 2019). Analogically, the significant influence of school bullying on self-esteem does not mean that the latter mediates the association between bullying and sexual risk-taking practices.

After assessing the possible moderating effect of depression and self-esteem on the relationships between types of school bullying and condomless sexual intercourse, it was concluded that given data do not support it as well, possibly due to the small proportion of students (N=64) who represent the outcome group.

5.1. Limitations

There are certain limitations of the study. The data collection process took place during the COVID-19 restrictions in Ukraine, meaning that students were not physically at school for a few weeks before it, which could result in recall errors regarding bullying exposures and mental health wellbeing. COVID -19 restrictions could also reduce chances of sexual risk contacts during the lockdown. The methodology of the study provides a nationally representative sample of LGBTQ+ students. However, most isolated groups as those who do not have access to the Internet or those who are afraid of being associated with gender and sexual minorities and do not follow LGBTQ+ social media resources, may be underrepresented in the study sample because social media targeting algorithms might not reach them. Additionally, students who do not consider themselves LGBTQ+ but had been engaged in a same-sex relationship may also be not fully represented in this research.

Students who reported being "rarely" bullied in the Likert scale questions were assigned to the unexposed group during the dichotomization of the exposure variables. It was assumed that exposures

that were self-reported happening "sometimes," "often," and "frequently" had an influence on a person's lifestyle development, and "rarely" occurring exposures were disregarded. Besides transferring those who reported “rare” bullying events to the exposed group does not change the main results of the analysis. However, to overcome the given limitation in future research, it might be reasonable to ask participants how they perceive the bullying exposure and its frequency and conduct the dichotomization based on these measures.

Not all of the respondents answered all questions of the questionnaire. The online survey is intended to create a more comfortable platform for LGBTQ+ students to answer sensitive questions but also makes it impossible to control nonresponse rates. In particular, sexual experience questions were not answered by 10.3% of study respondents, which gives no certainty about the experience of these respondents. There were no significant differences in demographics between those who responded to the sexual experience question and those did not. Moreover, LGBTQ+ students were particularly asked about the most recent sexual intercourse in order to avoid misclassification of the outcome group and minimize the recall bias. These two factors could potentially result in the relatively small (N=64 of 1743 observations) outcome group, which does not include those who had been engaged in unprotected vaginal/anal intercourse before the most recent sexual contact. Consequently, it is hard to find a statistically significant effect modification (by depression and low self-esteem) of the relationships between bullying exposures and sexual risk-taking behavior when the outcome group is represented by a small portion of the study sample. King and Zhang discuss some possible solutions to solve the issue of the small outcome group of logistic regression in rare events data. First, the definition of the outcome could be reconsidered to enlarge the outcome group. For instance, instead of the last sexual contact, it might be reasonable to ask about all sexual contacts within a certain period. Second, the study sample restriction only to those who ever had sex in their life could provide more even distribution of participants between outcome and non-outcome group (King and Zhang, 2001). The latter approach could be applied by designing the study to measure the relationship between bullying and sexual risk behavior specifically. Focusing on the given research question presumes utilization of recruitment strategy that would reach more of those who ever had sex and include them into the analysis as well as those exposed to sexual risk, respectively.

Finally, the study's cross-sectional design means that it is impossible to determine the causal effect of school bullying and sexual risk-taking behavior. While the temporal sequence criteria cannot be

claimed, there is evidence to suggest that the dose-response criterion is present, posting that more frequent bullying experiences increase the odds of sexual risk behavior (see Table 5).

While considering the study's limitations, it is reasonable to suggest that the recruitment methods resulted in the study sample that most closely reflects the population of gender and sexual minority students of secondary-level schools in Ukraine and provides some valuable insights on sexual practices LGBTQ+ students and their predictors.

5.2. Conclusions

The prevalence of any kind of sexual experience among LGBTQ+ students in Ukrainian secondary-level schools is slightly higher but close to the given prevalence among students of the general population. However, minorities are exposed to unique stressors in their communities that create health disparities within marginalized groups (Meyer, 2003). Verbal and physical harassment based on gender expression as well as sexual and electronic harassment are all associated with sexual-risk-taking behavior among LGBTQ+ students in Ukraine. The more frequent exposure to physical harassment based on gender expression and sexual harassment, the higher odds of sexual risk behavior. Specifically, gender expression is the particular reason for bullying that correlates with a sexual risk-taking lifestyle. However, the mediating roles of depression and low self-esteem on the relationships of bullying and condomless sexual intercourse were not statistically significant.

The given evidence underlines the necessity of inclusive anti-bullying policies that would decrease the exposure of LGBTQ+ students to bullying based on prejudice to gender expression. There are reasons to believe that inclusive bullying prevention could reduce HIV incidence among adolescents in Ukraine through sexual risk minimization.

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