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EMPIRICAL RESEARCH QUANTITATIVE

Examining suicide risk in sexual and gender minority youth: A descriptive observational study on depressive symptoms, social support and self-esteem

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Abstract

Aim: To understand the factors that contribute to the risk of suicide among lesbian, gay, bisexual, transgender, queer, intersex and asexual (sexual minorities) youth.

Background: The increase in the likelihood of suicide has made it an urgent issue in public health, particularly among young people, where it now ranks as the fourth leading cause of death. This issue becomes even more significant when focusing on sexual minorities.

Methods: A cross-sectional study was performed in targeted young individuals (15–29 years). Several variables were assessed, including suicide risk, self-esteem, presence and severity of depressive symptoms, perceived social support and self-reported levels of anxiety and depression.

Results: Statistically significant disparities were observed in suicide risk, presence of depressive symptoms and self-reported levels of anxiety and depression, all of which were more pronounced in sexual minority youth compared to heterosexual cisgender individuals. Likewise, statistically significant differences were noted concerning self-esteem and family support, both of which were lower in sexual minority youth.

Conclusion: This study has identified risk factors, such as anxiety, depression and limited social support, as well as protective factors, like higher self-esteem and self-concept. Understanding and addressing all these factors are essential in reducing the elevated rates of suicide among sexual minority youth. Consequently, evidence-based interventions such as Gender and Sexuality Alliances, which empower and create safe spaces for sexual minority youth, possess substantial potential for effectively addressing this issue.

Implications for the Profession: Given sexual minorities vulnerability, healthcare pros, especially nurses, must grasp suicide risk factors. They can help by educating, offering

care, assessing risk and fighting stigma. This guarantees safety and access to mental health services for at-risk individuals from sexual minorities.

Reporting Method: The reporting follows the STROBE checklist.

Patient Contribution: People who were invited to participate voluntarily completed a range of questionnaires.

KEYWORDS
anxiety, depression, sexual and gender minorities, suicide, young individuals

1 | INTRODUCTION

Suicide among the lesbian, gay, bisexual, transgender, queer, intersex and asexual community is a matter of concern and complexity that has garnered significant attention from mental health experts and human rights activists (Berry et al., 2023). sexual minority individuals face specific challenges and inequalities that contribute to a higher risk of suicide compared to the general population (Vanbronkhorst et al., 2021). Factors such as discrimination, stigmatisation, family rejection, bullying and harassment are involved in this situation. To effectively address these issues, comprehensive strategies are essential, emphasising the inclusion and acceptance of sexual and gender diversity. Various strategies can be employed to reduce the risk of suicide, including implementing awareness and education programs, enacting protective policies and laws to safeguard the rights of sexual minority individuals against discrimination and harassment, providing emotional support to sexual minority youth in schools and communities, promoting family acceptance and support and improving access to culturally sensitive mental health services tailored to the needs of the sexual minorities (Medina-Martínez et al., 2021).

What does this paper contribute to the wider global clinical community?

- Individuals from sexual minority frequently encounter distinctive hurdles that can heighten the likelihood of them having thoughts of suicide or engaging in suicide attempts.
- Individuals from sexual minorities exhibited considerably elevated scores on suicide risk scales when contrasted with the cisgender heterosexual group.
- The present study revealed a greater occurrence of depressive symptoms among young individuals from sexual minority groups.

2 | BACKGROUND

The increase in suicide risk has emerged as a concern in the field of public health. Specifically, young people between the ages of 15 and 29 are particularly vulnerable, with suicide being the fourth leading cause of mortality in this age group (Bilsen, 2018). Among the risk factors associated with youth suicide, one significant aspect is their heightened vulnerability during this stage, which exposes them to potential biopsychosocial health challenges, with depression, anxiety and suicidal inclinations being particularly notable (Boyas et al., 2019). Additional suicide risk factors associated with sociodemographic characteristics include having a lower level of education and experiencing less social support or belonging to ethnic minorities (Williams et al., 2021).

Moreover, this issue becomes more pronounced when examined in sexual minority groups, such as sexual minority individuals, who experience greater vulnerability and discrimination, leading to significantly higher rates of suicidal behaviour among at-risk populations (Tomicic et al., 2016). Individuals belonging to sexual minorities exhibit a higher prevalence of mental health problems, including depression, anxiety disorders and suicidal tendencies (Green et al., 2022; Tomicic et al., 2016), which have significant implications for their psychosocial well-being and overall health.

This risk has been linked to several negative health impact factors in the sexual minorities. These include stigma and stress processes experienced by sexual minorities, which involve negative encounters like social pressures and institutional bias (Williams et al., 2021), as well as facing discrimination, harassment or physical and sexual violence (Ancheta et al., 2021). In this context, it is important to highlight the concept of minority stress theory, which helps us grasp how individuals belonging to minority groups can encounter stress and psychological challenges due to their status within a society that is predominantly controlled by a majority group. While this theory has primarily been employed in examining ethnic and racial minorities, it can similarly be extended to encompass other minority categories, including those related to sexual or gender identity (Mcconnell et al., 2018). Additionally, individual factors like low self-esteem, ineffective coping mechanisms (Drabish & Theeke, 2021), internalised homophobia or transphobia, expectations of rejection and concealing one's identity (Johns et al., 2019) also contribute to this risk.

3 | AIM

Sexual minority youth represent a convergence of two risk groups: adolescents and sexual minorities, resulting in more severe and early

suicidal thoughts and behaviours. Understanding suicide risk factors such as perceived social support, self-esteem and depressive thoughts is crucial for preventing suicidal behaviours. Therefore, the objective of the present study was to explore suicide risk factors that could influence sexual minority youth, including depressive symptoms, self-esteem and perceived social support from friends, family and others.

4 | METHODS

4.1 | Design

A descriptive observational study was conducted between 2022 and 2023 being the first participant recruited in February 2022. The present study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) recommendations (File S1).

4.2 | Population and participants

The study included young individuals aged between 15 and 29 years, who voluntarily participated. The sample size was calculated using Epidat 4.2 (Epidemiology Service of the Dirección Xeral de Saúde Pública da Consellería de Sanidade; Xunta de Galicia, Galicia, Spain), considering a population of 4,994,664 young individuals in Spain (aged 15 to 29). With a confidence level of 95% and a margin of error of .05, the minimum required sample size was determined to be 385 participants.

4.3 | Variables and data collection tools

The variables and data collection tools are shown in Table 1.

4.4 | Sociodemographic variables

An ad hoc questionnaire was created, including the following items: age, gender, educational level, sexual orientation, history of bullying or harassment as well as encounters of harassment based on sexual orientation.

TABLE 1 Study variables.

Study variables	Collection tool
Sociodemographic variables	Ad hoc questionnaire
Suicide risk	Paykel Scale Plutchik Scale
Presence and severity of depressive symptoms	PHQ-9 questionnaire
Self-esteem	Rosenberg Scale
Social support	MSPSS Scale

Abbreviations: MSPSS, Multidimensional Scale of Perceived Social Support; PHQ-9, The Patient Health.

4.5 | Outcome variables

The study measured various variables, including suicide risk, self-esteem, presence and severity of depressive symptoms, perceived social support and self-reported levels of anxiety and depression.

Suicide risk was evaluated using two scales. The first one was the Suicide Risk Scale of Plutchik (SRSP), which consists of 15 Yes/No items and has a Cronbach's alpha of $\alpha = .779$. This scale evaluates past instances of self-harm, the level of current suicidal thoughts, experiences of depression, feelings of hopelessness and other factors linked to suicide attempts (Plutchik et al., 1989). The second one was the Paykel Suicide Scale, designed with 5 Yes/No items and a Cronbach's alpha of $\alpha = .802$, assessing various manifestations of suicidal behaviour such as feelings of fatigue with life, desires for death, thoughts of suicide, concrete plans for suicide and actual suicide efforts (Fonseca-Pedrero & de Albéniz, 2020). Higher scores on both scales indicated a more severe risk of suicide.

The Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 2015) was utilised to measure the participants' self-esteem levels. This scale, comprising 10 items on a 4-point Likert scale, demonstrated a high level of internal consistency with a Cronbach's alpha of $\alpha = .885$. Higher scores on the RSES indicated elevated self-esteem.

The Patient Health Questionnaire (PHQ-9) (Diez-Quevedo et al., 2001) was employed to measure the presence and severity of depressive symptoms in the past 2 weeks. This questionnaire, comprising 9 items scored on a scale of 0 to 3, demonstrated high internal consistency with a Cronbach's alpha of $\alpha = .872$. A higher total score on the PHQ-9 indicated more severe depressive symptoms.

Finally, the Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet et al., 1988) was utilised. This questionnaire, comprising 12 items, assessed perceived social support from various sources: family members, friends, and other important individuals. Participants responded to the items on a Likert scale, ranging from strongly disagree (1) to strongly agree (7), with higher scores reflecting higher levels of perceived support. The MSPSS demonstrated strong internal consistency with a Cronbach's alpha of $\alpha = .907$.

Furthermore, participants were inquired about their self-reported levels of anxiety and depression, using a scale ranging from 0 (lowest level) to 10 (highest level).

4.6 | Data analysis

All data were analysed using IBM SPSS Statistics 28.0. Descriptive statistics for quantitative variables included measures of central tendency and dispersion, while qualitative variables were shown as frequencies and percentages. To assess differences between the two groups, the independent sample *t* Student utilised a test by the Central Limit Theorem and the study's sample size. The Fisher's exact

test and Chi-square test were used for analysing qualitative variables. The significance level for all tests was set at .05. Furthermore, a multivariable logistic regression analysis is performed to determine statistically significant associations with suicide Risk, aiming to directly correlate sociodemographic questions with individuals who have experienced suicide attempts in their lifetime.

4.7 | Ethical considerations

The study received approval from the Ethics Committee of the Department of Nursing, Physiotherapy, and Medicine at the University of Almería. Individuals were invited to participate in the study voluntarily, and they provided their consent, which allowed them to participate anonymously and voluntarily. The informed consent form detailed the study's objectives, duration, and the risks and benefits associated with taking part in the research. Throughout the data collection process, strict measures were taken to ensure anonymity, privacy and data confidentiality, following the guidelines of Organic Law 3/2018, of December 5, Protection of Personal Data and Guarantee of Digital Rights. The study adhered to the principles outlined in the Declaration of Helsinki. All participants or their parents gave written consent.

5 | RESULTS

5.1 | Sociodemographic variables

The study sample included 987 (*N*) young individuals, with 35.06% (*n* = 346) identifying as males and 64.94% (*n* = 641) as females. Among the participants, 3.55% (*n* = 35) identified as homosexual, 12.05% (*n* = 119) as bisexual and 84.40% (*n* = 833) as heterosexual cisgender individuals. The average age of the participants was 20.29 (SD = 3.08) years, ranging from 15 to 29 years. Among the participants, 54.81% (*n* = 541) had completed university education, 18.75% (*n* = 185) had vocational training, 25.33% (*n* = 250) had completed secondary education and the remaining 1.11% (*n* = 11) had completed primary education.

Regarding the question 'Have you ever experienced bullying or harassment?' 35.46% (*n* = 350) of the participants reported having experienced harassment. Among the participants who identified as individuals from sexual minorities (*n* = 154), 52.60% (*n* = 81) reported having experienced it. Within the group of young individuals who identified as heterosexual cisgender (*n* = 833), 32.30% (*n* = 269) reported having experienced bullying or harassment. The sociodemographic characteristics of the participants are presented in Table 2.

5.2 | Outcome measures

Table 3 presents the mean scores and standard deviations for the variables under investigation. Concerning the participants' suicide risk, the mean score obtained on the Plutchik scale for the sexual minorities group was 5.44 (SD = 3.49), while for the heterosexual cisgender group, it was 3.56 (SD = 2.78). A comparison of means demonstrated statistically significant differences ($U = 69{,}180$; $p < .001$). Similarly, the mean score for suicide risk on the Paykel scale was 2.1 (SD = 1.79) for the sexual minorities group, and for the heterosexual cisgender group, it was 1.18 (SD = 1.47). Again, a comparison of means revealed statistically significant differences ($U = 76{,}571.5$; $p < .001$). Both scale differences indicated a higher suicide risk among sexual minorities group.

Concerning self-esteem, the participants belonging to sexual minorities group had an average score of 26.17 (SD = 6.75), while the heterosexual cisgender group had an average score of 29.29 (SD = 6.55). Statistically significant differences were observed ($U = 134{,}531$; $p < .001$), indicating lower self-esteem among sexual minority youth.

As to the presence and severity of depressive symptoms, the sexual minorities group had an average score of 10.42 (SD = 5.93), whereas the heterosexual cisgender group had an average score

TABLE 2 Sociodemographic variables of the participants according to sexual orientation.

	LGBTQIA+ (*n* = 154) (mean (SD)/*n* (%))	Heterosexual (*n* = 833) (mean (SD)/*n* (%))
Age	19.88 (2.54)	20.37 (3.17)
Sex		
Man	43 (27.92)	303 (36.37)
Woman	111 (72.08)	530 (63.63)
Studies		
University students	84 (54.55)	457 (54.86)
Vocational training	32 (20.78)	153 (18.37)
Secondary	37 (24.03)	213 (25.57)
Primary	1 (0.65)	10 (1.2)
Have you ever been bullied or harassed?		
Yes	81 (52.6)	269 (32.3)
No	73 (47.4)	564 (67.7)

TABLE 3 Statistics of outcome variables by sexual orientation.

	LGBTQIA+ ($n=154$) (Mean (SD))	Heterosexual ($n=833$) (Mean (SD))	*t*	*p*-value *t*-student	*d* Cohen
Suicide risk					
Plutchik	5.44 (3.49)	3.56 (2.78)	−6.328	<.001	.63 [.46; .81]
Paykel	2.1 (1.79)	1.18 (1.47)	−6.000	<.001	.59 [.41; .76]
Level of self-esteem (Rosenberg)	26.17 (6.75)	29.29 (6.55)	5.402	<.001	−.46 [−.63; −.29]
Depressive symptoms (PHQ-9)	10.42 (5.93)	7.88 (5.15)	−5.492	<.001	.46 [.29; .63]
Perceived social support (MSPSS)					
Total score	67.03 (11.86)	69.2 (13.26)	1.890	.059	−.16 [−.33; .01]
Family support	19.74 (6.87)	22.23 (6.06)	4.196	<.001	−.39 [−.57; −.22]
Friends' support	23.45 (5.18)	23.55 (5.12)	0.218	.827	−.01 [−.18; .16]
Other support	23.84 (5.07)	23.42 (5.51)	−0.878	.380	.07 [−.10; .24]
Anxiety level	6.05 (2.41)	4.89 (2.72)	−5.371	<.001	.42 [.25; .60]
Depression level	3.90 (2.74)	2.85 (2.66)	−4.458	<.001	.37 [.20; .55]

Abbreviations: MSPSS, Multidimensional Scale of Perceived Social Support; PHQ-9, The Patient Health Questionnaire.

of 7.88 (SD = 5.15), indicating a higher prevalence of depressive symptoms among sexual minority youth. The comparison of means showed statistically significant differences ($U = 81{,}250$; $p < .001$).

Regarding perceived social support, the mean score for the sexual minorities group was 67.03 (SD = 11.86), while for the heterosexual cisgender group, it was 69.2 (SD = 13.26), showing statistically significant differences ($U = 128{,}460$; $p = .005$). Specifically, for perceived family support, the sexual minorities group had a mean score of 19.74 (SD = 6.87), whereas the heterosexual cisgender group had a mean score of 22.23 (SD = 6.06), indicating statistically significant differences ($U = 129{,}013.5$; $p < .001$). Concerning perceived support from friends, the mean score for the sexual minorities group was 23.45 (SD = 5.18), and for the heterosexual cisgender group, it was 23.55 (SD = 5.12), with no statistically significant differences observed ($U = 125{,}428.5$; $p = .728$). On the other hand, the mean score for perceived support from others in the sexual minorities group was 23.84 (SD = 5.07), while for the heterosexual cisgender group, it was 23.42 (SD = 5.51), with no statistically significant differences ($U = 115{,}280.5$; $p = .763$). These results indicated lower perceived social support from family among sexual minority youth, while no statistically significant differences were observed in the perceived support from friends and others.

Last, concerning the level of anxiety, the mean score for the sexual minorities group was 6.05 (SD = 2.41), whereas the heterosexual cisgender group obtained a mean score of 4.89 (SD = 2.72). The comparison of means showed statistically significant differences ($U = 74{,}984.5$; $p < .0001$), indicating a higher level of anxiety in sexual minority youth. Additionally, the results also indicated a higher self-reported level of depression in sexual minority youth, with the mean score for depression in the sexual minorities group being 3.90 (SD = 2.74), while for the heterosexual cisgender group, it was 2.85 (SD = 2.66). The comparison of means revealed statistically significant differences ($U = 79{,}106.5$; $p < .001$).

Multivariable logistic regression analysis is performed to determine statistically significant associations with suicide risk. The results of multivariable logistic regression analysis (Table 4) are as follows: age (OR = .97; 95% CI = .88–1.07; $p = .542$), gender (OR = 1.51; 95% CI = .83–2.92; $p = .195$), sexual orientation (OR = 1.87; 95% CI = 1.05–3.25; $p = .030$), bullying (OR = 2.34; 95% CI = 1.37–4.05; $p = .002$), anxiety (OR = 1.43; 95% CI = 1.21–1.70; $p < .001$) and depression (OR = 1.14; 95% CI = 1.02–1.27; $p = .024$). This multivariable logistic regression analysis highlights the importance of sexual orientation, bullying, anxiety and depression as significant predictors of suicide risk. However, age and gender do not appear to be significant predictors in this model.

6 | DISCUSSION

The objective of our study was to identify suicide risk factors that may have an impact on the sexual minority youth population. Although numerous studies have explored the relationship between various variables and suicide risk in persons belonging to sexual minorities, to the best of our knowledge, none has specifically investigated the interrelation of the variables presented in this study. Therefore, this research represents the first attempt to examine the potential influence of multiple factors, including depression, anxiety, self-esteem, and perceived support, on suicide risk among sexual minority youth.

The results obtained indicate a higher suicide risk in sexual minority youth compared to heterosexual cisgender youth. These findings are consistent with most studies found, which show higher rates of suicidal behaviours, self-harm and depressive feelings (Bradbury, 2020; Gambadauro et al., 2020; Lucassen et al., 2017). Specifically, a higher suicide risk and depressive symptoms have been observed in men who have sex with men (Chan et al., 2022) as well as in bisexual women (Needham & Austin, 2010). Also, these findings differ from other research that did not establish a connection between identifying as lesbian or bisexual and experiencing higher levels of depressive symptoms, whereas a predominantly

TABLE 4 Multifactorial analysis of suicide risk.

Attempted suicide		No	Yes	OR (95% CI)	*p*-Value
Age	Mean (SD)	20.3 (3.1)	20.0 (2.7)	.97 (.88–1.07)	.542
Gender	Man	331 (95.7)	60 (9.4)	–	
	Woman	581 (90.6)	60 (9.4)	1.51 (.83–2.92)	.195
Sexual orientation	Heterosexual	783 (94.0)	50 (6.0)	–	
	LGBTQIA+	129 (83.8)	25 (16.2)	1.87 (1.05–3.25)	.030
Bullying	No	612 (96.1)	25 (3.9)	–	
	Yes	300 (85.7)	50 (14.3)	2.34 (1.37–4.05)	.002
Anxiety	Mean (SD)	4.9 (2.7)	7.5 (1.9)	1.43 (1.21–1.70)	<.001
Depression	Mean (SD)	2.8 (2.6)	5.4 (2.8)	1.14 (1.02–1.27)	.024

Abbreviations: CI, confidence interval; OR, odds ratio.

heterosexual cisgender identity did show such an association (Szalacha et al., 2017).

The presence of depressive symptoms, self-harming behaviours, suicidal tendencies and emotional instability among these sexual minorities has been linked to a variety of risk factors (Eisenberg et al., 2020; Steinke et al., 2017). In general, sexual minority youth face an increased risk of suicidal thoughts due to situations such as harassment (Martin-Storey & Crosnoe, 2012), discrimination (Almeida et al., 2009), perceived stress (Krueger et al., 2018) and maltreatment (Woodford et al., 2014).

These risk factors become more pronounced when studied in transgender and gender nonconforming youth, as they exhibit higher rates of distress, depression, anxiety and suicidal thought (Moyer et al., 2019). In addition to these challenges, other research has shown an increased risk of developing conditions such as post-traumatic stress disorder, eating disorders, autism spectrum disorder, bipolar disorder, self-harm, social isolation and a higher likelihood of reporting past experiences of emotional abuse, suicide attempts, and less family support compared to cisgender women and men (Katz-Wise et al., 2018; Parodi et al., 2022; Stewart et al., 2021).

Amidst these stressors and suicide risk factors, there exist protective factors, such as reduced internalised oppression and enhanced self-esteem (David & Derthick, 2018; Katz-Wise et al., 2018). These results align with the findings of our study, which also revealed lower self-esteem among sexual minorities youth, potentially indicating a diminished sense of overall well-being and self-worth (Brook et al., 2008), a less positive self-concept (Martin-Storey & Crosnoe, 2012) and weaker emotional awareness (Hatzenbuehler et al., 2008).

Additionally, social support has been identified as another protective factor in the literature, showing its ability to attenuate depressive symptoms (Teasdale & Bradley-Engen, 2010), decrease suicidal behaviours and positively influence higher levels of self-esteem (Huang et al., 2018; Jones, 2017). In this regard, it was found that girls belonging to sexual minorities experienced less distress when they perceived strong family relationships, indicating that family support and closeness played a role in the link between same-sex attraction and depressive symptoms (Pearson & Wilkinson, 2013). Likewise, other research showed that higher levels of social support and support for sexuality were associated with reduced emotional distress (Doty et al., 2010). Similar results were reported by La Roi et al. (2016), who discovered that parental rejection mediated the association between bisexual identity and depressive symptoms (La Roi et al., 2016).

However, the protective aspect of social support can also be considered a risk factor, as according to the present work, lower levels of social support were found among sexual minority youth, leading to an increased risk of suicide. These outcomes align with various studies showing that sexual minority youth who perceived low family support experienced higher levels of emotional and behavioural distress (Haro et al., 2016) and increased levels of violence due to their sexual orientation (Darwich et al., 2012). Similarly, social and family support has been identified as a protective factor, reducing substance abuse among sexual minorities (Padilla et al., 2010).

It is worth exploring some therapeutic approaches or coping strategies that can foster protective factors and reduce risk factors. One of these strategies is the establishment of Gender and Sexuality Alliances, which provide spaces for empowerment and transformation, creating a secure environment for sexual minority youth that can enhance their self-esteem (Poteat et al., 2015). Within these spaces, students can engage in knowledge exchange and open discussions about sexual minorities issues, which may otherwise be silenced in the broader school community (Sutherland, 2019). Additionally, Gender and Sexuality Alliances can integrate mental health promotion programs to equip students with coping skills and resources (Bain & Podmore, 2019), while also reducing substance use, psychological distress and victimisation incidents (Ioverno & Russell, 2021; Lessard et al., 2020).

7 | LIMITATIONS

Nevertheless, the findings presented in this study are subject to certain limitations that need to be carefully considered. First, a potential limitation is the presence of social desirability bias common in descriptive observational studies that utilise questionnaires, which may hinder complete honesty in participants' responses.

Additionally, although the study was open to individuals of all sexual identities, focusing on sexual minorities, the responses received were limited to heterosexual cisgender, bisexual and homosexual participants, potentially affecting the generalizability of the results to other sexual identities. Therefore, future research should be aware of these limitations and explore alternative methodological designs, such as randomised clinical trials using intervention programs or promoting active agents in health and conducting multifactorial analyses to obtain more precise insights into the impact of suicide risk among sexual minority youth.

8 | CONCLUSIONS

Sexual minorities have shown a higher risk of suicide. There are several risk factors that influenced in it, such as anxiety, depression and limited social support, as well as protective factors, like higher self-esteem and self-concept. Understanding the influential risk factors that impact suicide risk among sexual minority youth is of utmost importance to comprehend the unique challenges these sexual minorities face. Moreover, gaining insights into protective factors would allow the implementation of evidence-based interventions that can prove highly effective. As indicated by this study, interventions should primarily focus on enhancing essential factors, such as social and familial support, as well as self-esteem. Initiatives like Gender and Sexuality Alliance, which promote empowerment and provide safe spaces for sexual minority youth, have the potential to significantly reduce the alarming rates of suicide mortality among sexual minority youth, making it one of the most critical public health issues to address today.

AUTHOR CONTRIBUTIONS

Pablo GÓMEZ-CHICA: Conceptualization, Investigation, Methodology, Project administration, Writing—original draft, Writing—review and editing. Lola RUEDA-RUZAFA: Data curation, Formal analysis, Investigation, Methodology, Software, Validation, Visualisation, Writing—original draft, Writing—review and editing. Adrián APARICIO-MOTA: Data curation, Investigation, Project administration, Resources, Writing—original draft, Writing—review and editing. Miguel RODRIGUEZ-ARRASTIA: Supervision, Validation, Writing—original draft, Writing—review and editing. Carmen ROPERO-PADILLA: Supervision, Writing—original draft, Writing—review and editing. Cristian RODRIGUEZ-VALBUENA: Supervision, Writing—original draft, Writing—review and editing. Pablo ROMÁN: Conceptualization, Data curation, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision.

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CONFLICT OF INTEREST STATEMENT

The authors declare that they have no competing interests.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on reasonable request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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