Prevalence, co-occurrence, and associated factors of intimate partner violence among Brazilian university students

Prevalência, coocorrência e fatores associados da violência por parceiro íntimo entre estudantes universitários brasileiros

Inaê Dutra Valério (https://orcid.org/0000-0003-4855-7388) [1]
Ana Luiza Gonçalves Soares (https://orcid.org/0000-0003-2763-4647) [2]
Claudia Leite de Moraes (https://orcid.org/0000-0002-3223-1634) [3]
Helen Gonçalves (https://orcid.org/0000-0001-6470-3352) [1]

[1] Programa de Pós-Graduação em Epidemiologia, Universidade Federal de Pelotas. R. Marechal Deodoro 1160, Centro, 3º andar. 96020-220 Pelotas RS Brasil. inaevalerio@outlook.com
[2] Population Health Sciences, Bristol Medical School, University of Bristol. Bristol United Kingdom.
[3] Departamento de Epidemiologia, Instituto de Medicina Social, Universidade Estadual do Rio de Janeiro. Rio de Janeiro RJ Brasil.

Abstract *Intimate Partner Violence (IPV) among youth is a public health problem worldwide because of its high prevalence and lifelong serious consequences in health and quality of life. This cross-sectional census aimed to describe the IPV victimization among all freshman students in a Brazilian university (n=1,509), which was selected from a larger population of 2,706 freshmen. We created a 10-item questionnaire inspired by established instruments to measure the prevalence of IPV. Multivariate logistic regression assessed the association between demographic, socioeconomic, and behavioral factors with various types of IPV. We visualized co-occurrence using a Venn diagram and employed multinomial logistic regression to examine the relationship between covariates and the cooccurrence of IPV types. The chance of IPV was higher in males, those who were currently in a relationship, and those with a higher risk of alcohol abuse. These same characteristics were also associated with an increased likelihood of experiencing the co-occurrence of two or more types of IPV. Prevention strategies should consider those groups and monitoring of those who abuse alcohol, which can be a predictor behavior or a mechanism to deal with the stress arising from IPV.*

Key words *Violence, Students, Cross-sectional studies, Intimate partner violence, Youth*

Resumo *A Violência por Parceiro Íntimo (VPI) entre jovens é um problema de saúde pública em todo o mundo devido à sua alta prevalência e consequências graves duradouras na saúde e qualidade de vida. Este censo transversal teve como objetivo descrever a vitimização por VPI entre todos os estudantes calouros de uma universidade brasileira (n=1.509), selecionados a partir de uma população maior de 2.706 calouros. Criamos um questionário com 10 itens inspirado em instrumentos estabelecidos para medir a prevalência de VPI. A regressão logística multivariada avaliou a associação entre fatores demográficos, socioeconômicos e comportamentais a diferentes tipos de VPI. Visualizamos a coocorrência usando um diagrama de Venn e empregamos regressão logística multinomial para examinar a sua relação com as covariáveis. A chance de VPI foi maior em homens, naqueles que estavam atualmente em um relacionamento e naqueles com maior risco de abuso de álcool. As mesmas características também apresentaram maior probabilidade de experienciar a coocorrência de dois ou mais tipos de VPI. Estratégias de prevenção devem considerar esses grupos e o monitoramento daqueles que abusam de álcool, o que pode ser um comportamento preditor ou um mecanismo para lidar com o estresse decorrente da VPI.*

Palavras-chave *Violência, Estudantes, Estudos transversais, Violência por parceiro íntimo, Juventude*

Introduction

Intimate partner violence (IPV) is a pervasive issue that affects individuals in romantic or sexual relationships, encompassing psychological, physical, and sexual violence[1]. It poses a significant public health concern globally, impacting individuals' mental, physical, and social well-being[1]. Understanding IPV within specific populations such as university students is crucial due to its prevalence and adverse effects.

University students are at a high risk of experiencing intimate partner violence (IPV), with prevalence rates similar to or higher than the general population. Studies conducted in Europe and North America have reported varying rates, ranging from 17.3% to 86.7%, and this wide amplitude can be explained mainly by the type of violence investigated, and by methodological and sampling differences[2-4] across studies.

To date, there are only two publications, coming from a single study in 2004, on IPV among Brazilian university students, highlighting the scarcity of research on this population. This study, carried out at two universities in the state of São Paulo[5,6], exhibit methodological limitations, including small and convenience samples (maximum of 455 participants), lack of consideration of cyber abuse as a form of IPV, and limited exploration of associated factors such as gender. To bridge this gap, there is a critical need to expand knowledge on IPV among Brazilian university students, including less studied characteristics such as gender, sexual orientation, and relationship status, and to investigate both sexes. While both men and women can be victims and perpetrators of IPV, differences may exist in the severity and nature of violence experienced[7].

The combination of several risk factors may explain why university students are at a higher risk for the occurrence of IPV, including young age, lower experience in romantic/sexual relationships, and being part of the LGBTQIA+ community (sex, gender, and sexual orientation minorities)[8]. In addition, being exposed to an environment conducive to parties and peer reinforcement to alcohol consumption[9,10], and living alone/distant from the family can mean a reduction in their social support and greater emotional vulnerability[11]. In Brazil, university students are the ones who use the Internet the most[12], therefore they also may be at risk for cyber abuse (i.e., the use of digital communications to stalk/abuse another person). These factors contribute to a higher susceptibility to IPV, making it essential to research and understand this population in order to develop targeted prevention and intervention strategies tailored to their needs.

This study addresses the urgent need to investigate IPV among young individuals in Brazilian universities. With a focus on a public federal university in the South of Brazil, our primary objective is to estimate the prevalence of IPV and examine its association with socioeconomic, demographic, and behavioral factors among university students. Additionally, we aim to explore the co-occurrence of different forms of IPV and its association with covariates, as research suggests that experiencing multiple types of violence heightens the risk of negative health outcomes. Furthermore, we investigate potential differences in violence manifestations by sex.

Methods

Study Design and Setting

This study is part of a larger research project that investigated various topics related to the health of the university population. It is a cross-sectional census conducted on all individuals aged 18 years or older who enrolled in the first semester of 2017 and were still enrolled in the second semester of the same year in one of the 80 undergraduate courses at the Federal University of Pelotas (UFPel) (n=2,706). Our sample consisted of students who reported being in an intimate relationship within the 12 months prior to the interview and who answered at least one question about IPV. Additionally, we only included participants who had complete information on the assessed covariates, which included demographic, socioeconomic, and behavioral factors.

Data collection took place between November 2017 and July 2018. UFPel is one of the Brazilian public universities that has adopted a national system of admission called the Unified Selection System (SiSU) since 2010[13]. This system allows all students in the country to apply to any public university, provided they meet the required ranking, resulting in greater heterogeneity among students from different locations across the country.

Pelotas is a municipality in the state of Rio Grande do Sul, located in southern Brazil. The city's Human Development Index (HDI), which measures the degree of development in terms of education, health, and income, is similar to that

of the state and the country (0.74, 0.75, and 0.70, respectively)[14].

Procedures

The university provided a name list of all eligible participants, and students were approached in classrooms to complete an anonymous and self-administered questionnaire in Portuguese. The questionnaire was administered using the REDCap electronic platform[15] on tablets. To ensure confidentiality and anonymity, each student received a numerical identification. This process ensured that each individual only responded to the survey once. Before data collection, participants read and signed an informed consent form. After completing the questionnaire, all respondents received an information leaflet containing a list of free public health services for further information on IPV and ways to report cases.

Outcome Measures

We utilized a pool of questions for measuring IPV, which was based on widely used questionnaires in the literature[4,16,17], especially on the validated Brazilian WHO questionnaire[18]. In addition to the set of items on IPV, our questionnaire also considered various individual characteristics, such as sex, gender, sexual orientation, and the degree of romantic involvement. We also included newer forms of IPV, such as cyber violence.

The questionnaire consisted of 10 questions, with four focusing on psychological violence, four on physical violence, and two on sexual violence. All questions referred to "In the last 12 months, has your partner (or any of your partners):". For psychological IPV, the questions were (1) Cursed, yelled, or humiliated them; (2) Controlled their social networks (such as requiring passwords, monitoring who they talk to or add to); (3) Deprived them of doing something they liked or would like to do; (4) Did they look at them different or break things to make them afraid or intimidated. For physical IPV, the questions were (5) Pushed, scratched, pinched them or pulled their hair; (6) Did they break or throw objects with the intention of hurting them; (7) Punched, kicked or hit them; (8) Did they cause any cuts, bruises or fractures to them. For sexual IPV, two questions were asked: (9) Forced them to have sexual intercourse that they were not comfortable with or when they were under the influence of alcohol or other drugs; and (10)

Forced them to have sexual intercourse using physical force.

Comparing our questionnaire with the WHO questionnaire, ours had 10 questions, four of which referred to psychological violence, four to physical violence and two related to sexual violence, while the WHO scale is composed of 13 questions, four referring to psychological violence, six to physical and three related to sexual violence. In the questions regarding psychological IPV, both scales addressed questions about insult, humiliation and acts done to scare the victim; only ours asked about violence via social media. In the questions referring to physical IPV, both asked about acts such as pushing the victim, breaking things to scare/intimidate the victim, kicking, punching; only ours asked about having caused cuts, bruise or fracture and only theirs asked about strangulation, burns and threat or actual use of firearms or bladed weapons. In the questions regarding sexual IPV, both approached the practice of sexual acts against the victim's will or with the use of physical force; only ours asked about forced practice under the influence of psychoactive substance use.

Our questions were also structured in a gender-neutral manner to ensure inclusivity for sexual and gender diversity. The exposure period considered was the 12 months prior to the interview. Total IPV was defined when at least one of the ten items was answered positively. Psychological, physical, and sexual violence were identified if the respondent endorsed at least one item in the respective subscale. Questions focused only on respondents as victims.

To assess the questionnaire's comprehension, a pilot study was conducted involving 71 non-eligible university students from the same institution. This pilot study allowed for the identification and correction of any errors or adjustments needed prior to the main study's application. The internal consistency of the questionnaire was satisfactory (Cronbach's alpha of 0.74)[19], similar to the instruments it was based on, such as the Conflict Tactics Scales (CTS) (alpha ranging from 0.73 to 0.82 for different IPV subscales)[4] and the Brazilian WHO questionnaire (alpha ranging from 0.77 to 0.83 for different IPV subscales)[18].

Covariates

Demographic information collected included sex (female or male), gender identity (cisgender or transgender), sexual orientation (heterosexual, homosexual, bisexual, asexual), age (18-19 years,

20-24 years, ≥25 years), self-reported skin color/race (white, black, brown, or other), current relationship status (casual dating, dating, married, or without a partner), cohabitation status (living alone, with parents, with friends/colleagues, or with spouse/partner), and place of origin (Pelotas, other cities within the state, or other cities within the country). Socioeconomic information comprised economic class according to the Brazilian Association of Research Companies (ABEP), which categorizes households' purchasing power based on domestic assets ownership and education level of the head of household. Health risk behaviors included cigarette/tobacco use (never smoked, current/former smoker) and alcohol abuse, assessed using the Alcohol Use Disorder Identification Test (AUDIT). Alcohol abuse risk was categorized as low, medium, or high based on specific score ranges for females (3-4, 5-8, 9-12, and 13-40, respectively) and males (5-10, 11-14, and 15-40, respectively)[20].

Data Analysis

We compared sociodemographic and behavioral characteristics between participants included and not included in the analyses due to loss, missing data, or not having had an intimate relationship in the last 12 months. Descriptive statistics were used to summarize participants' demographic, socioeconomic, and behavioral characteristics, as well as the prevalence of IPV across these factors. Chi-square tests for heterogeneity were used for comparisons between categories, and a linear trend test was employed for ordinal categorical variables when appropriate. The manifestations of IPV were described according to sex, and chi-square tests for heterogeneity were used to assess possible differences between sexes.

Multivariate logistic regressions were conducted to calculate odds ratios (ORs) and their respective 95% confidence intervals (CIs) for the associations between demographic, socioeconomic, and behavioral characteristics, and each type of IPV. Confounding variables were chosen in accordance with a theoretical causality model rooted in ecological models of IPV[21-23], aiming to identify factors that could potentially influence both the exposure and the outcome. Each covariate was analyzed individually to assess its impact on the outcome while controlling for possible confounders (Chart 1). This process ensured that any proximal variables did not exert an undue influence on distal variables within the model.

By examining the independent effects of each covariate, we could identify and account for factors that may confound the relationship between the exposure and the outcome. This approach helps to mitigate the risk of biased results.

The co-occurrence of different types of IPV was assessed using a Venn diagram. Multinomial logistic regression models were used to analyze the relationship between each covariate with the number of IPV types suffered (0, 1, and 2 or more types of IPV). Adjusted relative risk ratios (RRR) were estimated, and confounders used were the same used in the multivariate logistic models.

The statistical analysis was performed using Stata version 14.0.

Ethics

The Research Ethics Committee of the School of Medicine at UFPel approved the project under number 2.352.451. Participation in the study was voluntary.

Results

Of the 2,706 university students identified, 1,865 responded to the survey, resulting in a response rate of 69%. The participant's flow is presented in Figure 1. After excluding those without a relationship in the previous 12 months and those with missing data, 1,509 students were included in the analysis. Participants not included in the analysis were similar to those included but were less likely to be in a current relationship, live with a partner, be current or former smokers, and have a high risk of alcohol abuse (Table 1).

As presented in Table 2, most students were female (55.7%) and aged up to 24 years (82.8%). The majority reported white skin color (72.9%), identified as cisgender (89.9%) and heterosexual (75.3%), and belonged to economic classes A/B/C (59.0%) (Table 2). Regarding the origin of the participants, 82.9% were from the Southern region, 13.2% from the Southeast region, 1.7% from the Midwest, 1.3% from the North, and 0.9% from the Northeast (information not included in the table). Approximately half of the participants came from other cities out of Pelotas (54.9%), lived with their parents (49.0%), and nearly 62% were in a casual or formal relationship. About 11% were current or former smokers, and 16% had a high risk of alcohol abuse.

The overall prevalence of total IPV was 30.4% (95%CI 28.1; 32.7). The prevalence of psycho-

Chart 1. Individual analysis model.

Variable	Confounders
Sex	-
Gender identity	Sex
Sexual orientation	Sex, age, skin color, economic class
Skin color	-
Age	-
Economic class	Sex, skin color, age
Place of origin	Sex, skin color, age, economic class
Cohabitation status	Sex, skin color, age, economic class, place of origin
Relationship status	Sex, sexual orientation, skin color, age, economic class, place of origin
Cigarette/tobacco use	Sex, sexual orientation, skin color, age, economic class, place of origin, cohabitation status, alcohol abuse
Alcohol abuse	Sex, sexual orientation, skin color, age, economic class, place of origin, cohabitation status, cigarette/tobacco use

Source: Authors.
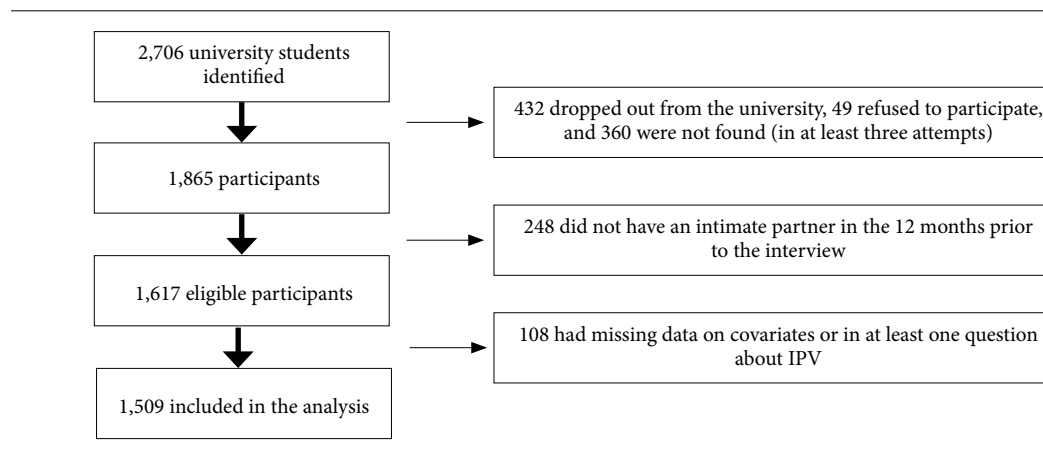
Figure 1. Flow chart of the study population.

Source: Authors.

logical IPV was 28.2% (95%CI 25.9; 30.5), physical IPV was 7.6% (95%CI 6.4; 9.0), and sexual IPV was 2.9% (95%CI 2.2; 3.9). The prevalence of all types of IPV, except sexual IPV, was higher in males (Table 2). For example, the prevalence of physical IPV was 10.0% (95%CI 7.9; 12.5) in males and 5.7% (95%CI 4.3; 7.5) in females (p-value for sex differences = 0.002). The prevalence of sexual IPV was higher among students from Pelotas or other cities outside of the state compared to those from other cities within the state. The prevalence of IPV varied according to relationship status, with higher rates of total and psychological IPV observed among those who were currently in a relationship (casual dating, dating, or married), and physical IPV was more prevalent among those who were casually dating.

Participants who were current or former smokers had a higher prevalence of sexual IPV (4.4%, 95%CI 2.8; 6.8) than those who never smoked (2.4%, 95%CI 1.6; 3.5), but the prevalence of the other types of IPV was similar regardless of smoking status. A higher prevalence of all types of IPV was observed among those with a higher risk of alcohol abuse. For instance, those with low risk of alcohol abuse had a prevalence of total IPV of 28.7% (95%CI 26.0; 31.5), whilst it was 30.5% (95%CI 24.9; 36.7) in those with medium risk and 37.5% (95%CI 31.6; 43.7) in those with high risk. Prevalence of all types of

Table 1. Socioeconomic, demographic and behavioral characteristics of the participants with complete data (n=1,509) compared with participants with missing data on covariates (n=353) among first-year university students at the Federal University of Pelotas, 2017.

Variable	Participants included in the analysis (%)	Participants not included in the analysis (%)	p-value
Sex	n=1,509	n=353	0.109
Female	55.7	51.0	
Male	44.3	49.0	
Gender identity	n=1,509	n=351	0.148
Cisgender	89.9	87.2	
Transgender	10.1	12.8	
Sexual orientation	n=1,509	n=345	0.935
Heterosexual	75.3	75.1	
Homosexual, bisexual and asexual[1]	24.7	24.9	
Age (years)	n=1,509	n=343	0.064
18-19	40.3	46.7	
20-24	42.5	36.2	
≥25	17.2	17.2	
Skin color	n=1,509	n=354	0.144
White	72.9	68.3	
Black	12.9	13.6	
Brown or other	14.2	18.1	
Socioeconomic level	n=1,509	n=271	0.821
A/B/C	59.1	59.8	
D/E	41.0	40.2	
Place of origin	n=1,509	n=353	0.349
Pelotas	45.1	49.3	
Other city of the state	35.1	33.1	
Other city of the country	19.8	17.6	
Cohabitation status	n=1,509	n=352	**0.003**
Living alone	12.3	13.9	
With parents	49.0	55.9	
With friends/colleagues	26.2	23.9	
With partner	12.5	6.3	
Relationship status	n=1,509	n=356	**<0.001**
No partner at moment	38.2	78.7	
Casual dating	16.8	8.4	
Dating	35.5	9.0	
Married	9.5	3.9	
Cigarette/tobacco use	n=1,509	n=354	**0.024**
Never smoked	72.4	78.2	
Current/Former smoker	27.6	21.8	
Alcohol abuse	n=1,509	n=341	**0.009**
Low risk	68.5	76.2	
Medium risk	15.4	13.5	
High risk	16.1	10.3	

[1] Sexual orientation groups were combined due to the low prevalence (6.8% homosexual, 13.2% bisexual and 4.2% asexual).

Source: Authors.

violence did not differ between subgroups of age, skin color, socioeconomic level, sexual orientation, or cohabitation status.

Table 3 describes the manifestations of psychological, physical, and sexual IPV overall and stratified by sex. The most frequent actions re-

Table 2. Description of the sample and prevalence of total, psychological, physical and sexual intimate partner violence (IPV) according to sociodemographic and behavioral characteristics among first-year university students at the Federal University of Pelotas, 2017 (n=1,509).

Variable	N (%)	Total IPV % (95%CI)	Psychological IPV % (95%CI)	Physical IPV % (95%CI)	Sexual IPV % (95%CI)
Sex		p=0.017	p=0.017	p=0.002	p=0.114
Female	841 (55.7)	28.1 (25.1; 31.2)	25.9 (23.1; 29.0)	5.7 (4.3; 7.5)	3.5 (2.4; 4.9)
Male	668 (44.3)	33.2 (29.8; 36.9)	31.0 (27.6; 34.6)	10.0 (7.9; 12.5)	2.3 (1.4; 3.7)
Age (years)		p=0.616	p=0.934	p=0.578	p=0.568
18-19	608 (40.3)	30.1 (26.6; 33.9)	27.8 (24.4; 31.2)	8.3 (6.3; 10.8)	3.0 (1.9; 4.7)
20-24	642 (42.5)	31.5 (28.0; 35.2)	29.7 (24.7; 31.5)	7.5 (5.7; 9.8)	3.3 (2.2; 5.0)
≥25	259 (17.2)	28.2 (23.0; 34.0)	27.8 (22.7; 33.6)	6.2 (3.8; 9.9)	2.0 (0.8; 4.6)
Skin color		p=0.694	p=0.959	p=0.249	p=0.277
White	1,101 (72.9)	30.3 (27.7; 33.1)	28.3 (25.7; 31.0)	8.0 (6.5; 9.7)	2.9 (2.1; 4.1)
Black	194 (12.9)	28.4 (22.5; 35.1)	27.3 (21.5; 34.0)	4.7 (2.4; 8.7)	1.6 (0.5; 4.7)
Brown/Other	214 (14.2)	32.2 (26.3; 38.8)	28.5 (22.9; 34.9)	8.5 (5.4; 13.0)	4.3 (2.2; 8.0)
Gender identity		p=0.872	p=0.971	p=0.428	p=0.824
Cisgender	1,357 (89.9)	30.3 (27.9; 32.8)	28.2 (25.8; 30.6)	7.4 (6.1; 8.9)	3.0 (2.2; 4.0)
Transgender	152 (10.1)	30.9 (24.1; 38.7)	28.3 (21.7; 36.0)	9.2 (5.5; 15.0)	2.7 (1.0; 6.8)
Sexual orientation		p=0.204	p=0.430	p=0.119	p=0.067
Heterosexual	1,126 (75.3)	29.5 (26.9; 32.2)	27.6 (25.1; 30.3)	7.0 (5.6; 8.6)	2.5 (1.7; 3.6)
Homosexual, bisexual and asexual [3]	373 (24.7)	33.0 (28.4; 37.9)	29.8 (25.3; 34.6)	9.5 (6.9; 12.9)	4.3 (2.7; 7.0)
Socioeconomic level		p=0.684	p=0.637	p=0.591	p=0.212
A/B/C	891 (59.0)	30.8 (27.8; 33.9)	28.6 (25.7; 31.7)	7.9 (6.3; 9.9)	2.5 (1.6; 3.7)
D/E	618 (41.0)	29.8 (26.3; 33.5)	27.5 (24.1; 31.2)	7.2 (5.4; 9.5)	3.6 (2.4; 5.4)
Place of origin		p=0.840	p=0.439	p=0.837	p=0.013
Pelotas	681 (45.1)	31.1 (27.8; 34.7)	29.5 (26.2; 33.1)	8.0 (6.1; 10.3)	3.5 (2.4; 5.2)
Other city of the state	530 (35.1)	29.6 (25.9; 33.7)	27.9 (24.3; 31.9)	7.6 (5.6; 10.2)	1.3 (0.6; 2.8)
Other city of the country [1]	298 (19.8)	29.9 (24.9; 35.3)	25.5 (20.9; 30.8)	6.8 (4.4; 10.2)	4.4 (2.6; 7.5)
Cohabitation status		p=0.454	p=0.712	p=0.531	p=0.553
Living alone	185 (12.3)	27.0 (21.1; 33.9)	26.0 (20.1; 32.7)	6.6 (3.8; 11.2)	2.2 (0.8; 5.7)
With parents	740 (49.0)	31.8 (28.5; 35.2)	29.5 (26.3; 32.8)	8.6 (6.7; 10.8)	3.4 (2.3; 5.0)
With friends/colleagues	396 (26.2)	30.8 (26.5; 35.5)	27.5 (23.3; 32.1)	7.1 (4.9; 10.1)	3.1 (1.7; 5.3)
With partner	188 (12.5)	27.1 (21.3; 33.9)	26.6 (20.8; 33.4)	5.9 (3.3; 10.3)	1.6 (0.5; 4.8)
Relationship status		p<0.001	p<0.001	p=0.003	p=0.117
No partner at moment	577 (38.2)	23.4 (20.1; 27.0)	21.1 (18.0; 24.7)	7.0 (5.2; 9.4)	2.5 (1.5; 4.1)
Casual dating	253 (16.8)	33.6 (28.0; 39.6)	29.6 (24.3; 35.6)	13.1 (9.5; 17.9)	5.2 (3.0; 8.7)
Dating	535 (35.5)	36.1 (32.1; 40.2)	34.6 (30.7; 38.7)	5.8 (4.1; 8.1)	2.5 (1.3; 3.9)
Married	144 (9.5)	31.3 (24.2; 39.3)	29.9 (23.0; 37.8)	6.9 (3.8; 12.4)	3.5 (1.5; 8.1)
Cigarette/tobacco use		p=0.071	p=0.274	p=0.226	p=0.042
Never smoked	1,092 (72.4)	29.0 (26.4; 31.8)	27.4 (24.8; 30.1)	7.1 (5.7; 8.8)	2.4 (1.6; 3.5)
Current/former smoker	417 (11.5)	33.8 (29.4; 38.5)	30.2 (26.0; 34.8)	8.9 (6.5; 12.1)	4.4 (2.8; 6.8)
Alcohol abuse [2]		p=0.027	p=0.257	p<0.001	p=0.011
Low risk	1,033 (68.5)	28.7 (26.0; 31.5)	27.4 (24.8; 30.2)	5.8 (4.6; 7.4)	2.1 (1.3; 3.1)
Medium risk	233 (15.4)	30.5 (24.9; 36.7)	27.0 (21.7; 33.1)	8.6 (5.6; 13.0)	4.8 (2.7; 8.4)
High risk	243 (16.1)	37.5 (31.6; 43.7)	32.5 (26.9; 38.7)	14.1 (10.3; 19.1)	5.0 (2.8; 8.6)

[1] Two individuals were from abroad; [2] p-value for linear trend, [3] Sexual orientation groups were combined due to the low prevalence (6.8% homosexual, 13.2% bisexual and 4.2% asexual).

Source: Authors.

Table 3. Frequency of manifestations of psychological, physical and sexual intimate partner violence (IPV) victimization according to sex among first year university students at the Federal University of Pelotas, 2017 (n=1,509)

IPV type	N	Overall % (95%CI)	Sex		p-value[1]
			Female (n=821) % (95%CI)	Male (n=647) % (95%CI)	
Total IPV	458	30,.4 (28.1; 32.7)	28,1 (25.1; 31.2)	33.2 (29.8; 36.9)	0,032
Psychological violence	425	28.2 (25.9; 30.5)	25.9 (23.1; 29.0)	31.0 (27.6; 34.6)	0.017
Insulted, shouted or humiliated	247	16.5 (14.7; 18.5)	17.3 (14.9; 20.0)	15.7 (13.0; 18.5)	0.202
Controlled social medias	215	14.3 (12.7; 16.2)	12.5 (10.4; 14.9)	16.7 (14.0; 19.7)	0.013
Deprived you of doing something you liked/would like to do	210	14.0 (12.4; 15.9)	12.3 (10.3; 14.7)	16.2 (13.6; 19.2)	0.020
Looked different or break things	87	5.8 (4.7; 7.1)	6.0 (4.5; 7.8)	5.6 (4.0; 7.6)	0.423
Physical violence	114	7.6 (6.4; 9.0)	5.7 (4.3; 7.5)	10.0 (7.9; 12.5)	0.002
Pushed, scratched, pinched or pulled your hair	91	6.2 (5.1; 7.5)	4.7 (3.4; 6.3)	8.2 (6.3; 10.5)	0.004
Broke or threw objects to hurt you	17	1.1 (0.7; 14.8)	0.7 (0.3; 1.6)	1.7 (0.9; 3.0)	0.071
Punched, kicked or hit	32	2.1 (1.5; 3.0)	1.6 (0.9; 2.7)	2.9 (1.8; 4.4)	0.058
Caused a cut, bruise or fracture	28	1.9 (1.3; 2.7)	2.2 (1.4; 3.4)	1.5 (0.8; 2.8)	0.238
Sexual violence	44	2.9 (2.2; 3.9)	3.5 (2.4; 4.9)	2.3 (1.4; 3.7)	0.114
Forced to engage in any uncomfortable sexual practices or under the influence of alcohol or other drugs	35	2.4 (1.7; 3.3)	3.0 (2.0; 4.4)	1.5 (0.8; 2.8)	0.044
Forced a sexual intercourse using physical force	13	1.0 (0.6; 1.7)	1.0 (0.5; 1.9)	1.1 (0.5; 2.2)	0.518

[1] Chi-squared test.

Source: Authors.

lated to psychological violence were insulting, shouting, or humiliating (16.5%). Males reported more incidents of being victim of social media control and deprivation of activities they enjoyed compared to females. The most frequent manifestations of physical IPV included pushing, scratching, pinching, or pulling the victim's hair (6.2%), with males experiencing this type of violence more frequently (8.2% in males vs. 4.7% in females). In terms of sexual abuse, forcing uncomfortable sexual practices or engaging in sexual activities under the influence of alcohol or other drugs was the most frequent action (2.4%) and it was more commonly reported by females.

Table 4 shows the association between each covariate with IPV after adjusting for possible confounders. Males had higher odds of experiencing total IPV (OR 1.18, 95%CI 1.02; 1.38), psychological IPV (OR 1.20, 95%CI 1.02; 1.40), and physical IPV (OR 1.74, 95%CI 1.22; 2.49) compared to females. Participants from other cities within the state had a lower risk of sexual IPV (OR 0.34, 95%CI 0.14; 0.79) than those from Pelotas. Casual dating (OR 1.43, 95%CI 1.14; 1.80), dating (OR 1.58, 95%CI 1.31; 1.91),

and being married (OR 1.41, 95%CI 1.05; 1.91) were associated with higher odds of total IPV, and similar associations were also observed for psychological IPV. Alcohol abuse was associated with higher odds of total and physical IPV, with the strongest associations observed for those with a high risk of alcohol abuse (ORs ranging from 1.34 for total IPV to 2.3 for physical IPV).

From the 235 females who reported at least one type of IPV, 77.4% reported only one type, 20.0% reported two, and 2.6% reported all 3 types of IPV (Figure 2). Among the 222 males who reported at least one type of IPV, 73.0% reported only one type, 24.8% reported two, and 2.3% reported all 3 types of IPV (Figure 2). The most common co-occurrence of IPV was between psychological and physical violence (22.5% in males and 13.2% in females) followed by both psychological and sexual violence in females (6.0%) and all types of IPV in males (2.3%).

The association between the covariates and co-occurrence of IPV is presented in Table 5. Males were more likely to have co-occurrence of two or more types of IPV (RRR 1.55; 95%CI 1.05; 2.29). Individuals both dating and in married

Table 4. Adjusted association of sociodemographic and behavior characteristics with intimate partner violence (IPV) among first-year university students at the Federal University of Pelotas, 2017 (n=1,509).

Variable	Total IPV OR (95%CI)	Psychological IPV OR (95%CI)	Physical IPV OR (95%CI)	Sexual IPV OR (95%CI)
Sex	p=0.030	p=0.030	p=0.003	p=0.179
Female	1	1	1	1
Male	1.18 (1.02; 1.38)	1.20 (1.02; 1.40)	1.74 (1.22; 2.49)	0.66 (0.35; 1.21)
Age (years)	p=0.620	p=0.934	p=0.582	p=0.577
18-19	1	1	1	1
20-24	1.05 (0.89; 1.23)	1.03 (0.86; 1.23)	0.91 (0.62; 1.33)	1.10 (0.59; 2.05)
≥25	0.94 (0.74; 1.18)	1.00 (0.79; 1.26)	0.75 (0.44; 1.30)	0.66 (0.25; 1.75)
Skin color	p=0.695	p=0.959	p=0.268	p=0.292
White	1	1	1	1
Black	0.93 (0.73; 1.19)	0.97 (0.75; 1.24)	0.59 (0.30; 1.15)	0.53 (0.16; 1.72)
Brown and Other	1.06 (0.86; 1.32)	1.01 (0.80; 1.27)	1.06 (0.65; 1.73)	1.45 (0.70; 2.99)
Gender identity [a]	p=0.938	p=0.962	p=0.505	p=0.863
Cisgender	1	1	1	1
Transgender	1.0 (0.79; 1.30)	0.99 (0.76; 1.29)	1.20 (0.70; 2.15)	0.91 (0.33; 2.53)
Socioeconomic level [c]	p=0.761	p=0.702	p=0.891	p=0.210
A/B/C	1	1	1	1
D/E	0.98 (0.83; 1.14)	0.97 (0.82; 1.15)	0.97 (0.68; 1.40)	1.47 (0.81; 2.67)
Sexual orientation [b]	p=0.141	p=0.296	p=0.054	p=0.133
Heterosexual	1	1	1	1
Homosexual, bisexual and asexual	1.14 (0.96; 1.35)	1.10 (0.92; 1.32)	1.45 (0.99; 2.12)	1.60 (0.87; 2.96)
Place of origin [d]	p=0.707	p=0.353	p=0.654	p=0.022
Pelotas	1	1	1	1
Other city of the state	0.94 (0.79; 1.12)	0.95 (0.79; 1.13)	0.92 (0.62; 1.36)	0.34 (0.15; 0.79)
Other city of the country [1]	0.93 (0.75; 1.14)	0.84 (0.67; 1.06)	0.79 (0.47; 1.32)	1.21 (0.62; 2.36)
Cohabitation status [e]	p=0.891	p=0.811	p=0.783	p=0.645
Living alone	1	1	1	1
With parents	1.09 (0.81; 1.47)	1.18 (0.82; 1.51)	1.35 (0.69; 2.66)	1.36 (0.47; 3.91)
With friends/colleagues	1.10 (0.81; 1.47)	1.11 (0.83; 1.49)	1.14 (0.58; 2.22)	1.16 (0.37; 3.67)
With partner	1.01 (0.70; 1.45)	1.01 (0.70; 1.45)	1.05 (0.45; 2.44)	0.67 (0.19; 2.44)
Relationship status [f]	p<0.001	p<0.001	p=0.005	p=0.076
No partner at moment	1	1	1	1
Casual dating	1.43 (1.14; 1.80)	1.41 (1.10; 1.80)	1.90 (1.23; 2.94)	2.07 (1.01; 4.26)
Dating	1.58 (1.31; 1.91)	1.68 (1.38; 2.04)	0.85 (0.54; 1.34)	0.88 (0.40; 1.91)
Married	1.41 (1.04; 1.91)	1.42 (1.03; 1.96)	1.08 (0.56; 2.08)	1.84 (0.66; 5.13)
Cigarette/tobacco use [g]	p=0.329	p=0.500	p=0.852	p=0.084
Never smoked	1	1	1	1
Current/Former smoker	1.09 (0.92; 1.30)	1.07 (0.88; 1.29)	0.96 (0.65; 1.43)	1.45 (0.79; 2.69)
Alcohol abuse [h]	p=0.018	p=0.109	p<0.001	p=0.064
Low risk	1	1	1	1
Medium risk	1.06 (0.85; 1.32)	0.99 (0.78; 1.26)	1.38 (0.86; 2.22)	2.08 (1.05; 4.09)
High risk	1.34 (1.09; 1.63)	1.26 (1.01; 1.57)	2.31 (1.53; 3.48)	1.82 (0.90; 3.68)

[1] Two individuals were from abroad. [a] Adjusted for sex. [b] Adjusted for sex, age, skin color, economic class and sexual orientation. [c] Adjusted for sex, age, and skin color. [d] Adjusted for sex, age, skin color, and economic class. [e] Adjusted for sex, age, skin color, economic class, and place of origin. [f] Adjusted for sex, age, skin color, sexual orientation, economic class, and place of origin. [g] Adjusted for sex, age, skin color, sexual orientation, economic class, cohabitation status, place of origin, and alcohol abuse. [h] Adjusted for sex, age, skin color, sexual orientation, economic class, cohabitation status, place of origin, and tobacco use.

Source: Authors.

Female, n=235

Psychological
166 (70.5%)

Physical

31 (13.2%)

9 (3.8%)

6 (2.6%)

2 (0.9%)

14 (6.0%)

Sexual

7 (3.0%)

Male, n=222

Psychological
146 (65.8%)

Physical
9 (4.1%)

50 (22.5%)

5 (2.3%)

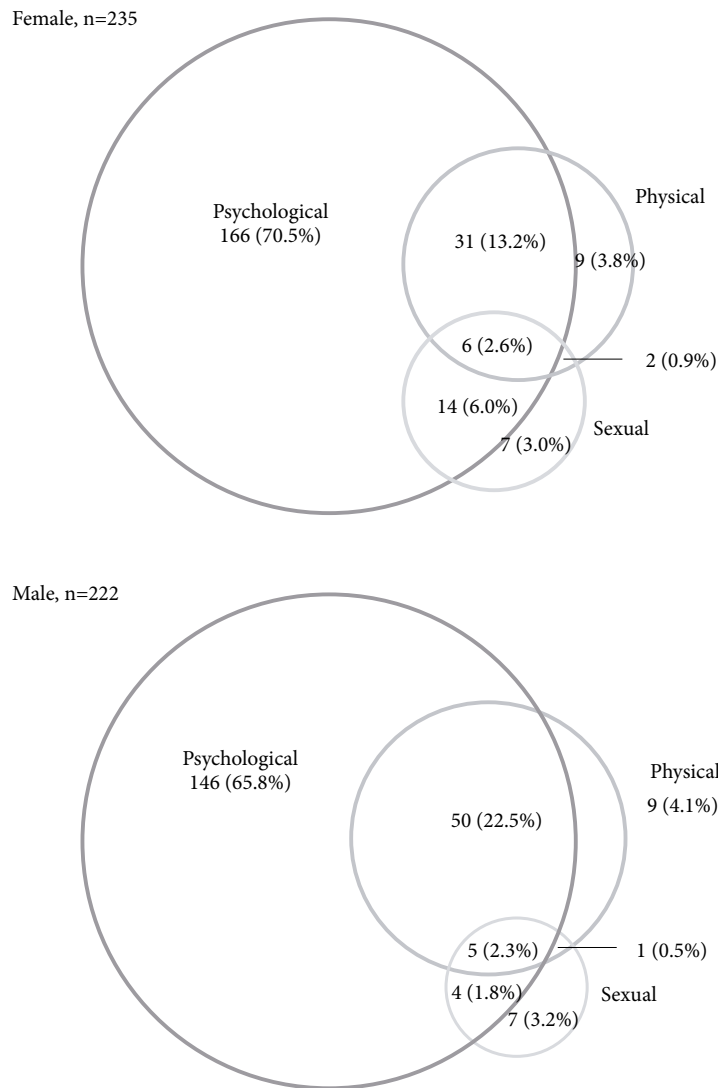1 (0.5%)

4 (1.8%)

Sexual

7 (3.2%)

Figure 2. Interrelationship between types of intimate partner violence (IPV) among those who reported at any type of IPV among first-year university students at the Federal University of Pelotas according to sex.

Source: Authors.

relationships were more likely to be victims of a single type of IPV (RRR 2.23; 95%CI 1.66; 2.99, and RRR 1.68; 95%CI 1.02; 2.75, respectively), and those in casual dating had an elevated risk of experiencing two or more types of IPV (RRR 2.37, 95%CI 1.42; 4.00). Individuals categorized as having a high-risk of alcohol abuse also had higher risk of experiencing two or more types of IPV concurrently (RRR 2.52; 95%CI 1.51; 4.21, respectively).

Discussion

In this study, 30% of university students experienced IPV in the 12 months prior to the interview; psychological IPV was the most frequently reported type of violence, and almost 18% suffered from both psychological and physical IPV. The occurrence of IPV was associated with sex, relationship status, and alcohol use. The risk of suffering two or more IPV was higher in males,

Table 5. Adjusted association of sociodemographic and behavior characteristics with co-occurrence of intimate partner violence (IPV) among first-year university students at the Federal University of Pelotas, 2017 (n=1,509).

Variable	One type of IPV RRR [1] (95%CI)		Two or more types of IPV RRR [1] (95%CI)
Sex		p=0.046	
Female	1		1
Male	1.20 (0.94; 1.54)		1.55 (1.05; 2.29)
Age (years)		p=0.720	
18-19	1		1
20-24	1.13 (0.86; 1.47)		0.88 (0.58; 1.35)
≥25	0.92 (0.64; 1.32)		0.89 (0.51; 1.56)
Skin color		p=0.581	
White	1		1
Black	1.03 (0.71; 1.49)		0.57 (0.28; 1.16)
Brown and Other	1.10 (0.77; 1.56)		1.03 (0.60; 1.79)
Gender identity [a]		p=0.985	
Cisgender	1		1
Transgender	0.97 (0.65; 1.46)		1.03 (0.55; 1.94)
Socioeconomic level [c]		p=0.974	
A/B/C	1		1
D/E	0.97 (0.75; 1.25)		0.98 (0.65; 1.47)
Sexual orientation [b]		p=0.181	
Heterosexual	1		1
Homosexual, bisexual and asexual	1.13 (0.85; 1.50)		1.48 (0.96; 2.28)
Place of origin [d]		p=0.240	
Pelotas	1		1
Other city of the state	1.00 (0.76; 1.33)		0.69 (0.44; 1.07)
Another city of the country [2]	1.04 (0.74; 1.45)		0.55 (0.30; 0.99)
Cohabitation status [e]		p=0.923	
Living alone	1		1
With parents	1.30 (0.82; 2.05)		1.10 (0.53; 2.28)
With friends/colleagues	1.25 (0.81; 1.95)		1.12 (0.54; 2.34)
With partner	1.07 (0.62; 1.86)		0.94 (0.39; 2.30)
Relationship status [f]		p≤0.001	
No partner at moment	1		1
Casual dating	1.45 (0.99; 2.12)		2.37 (1.42; 4.00)
Dating	2.23 (1.66; 2.99)		1.13 (0.69; 1.90)
Married	1.68 (1.02; 2.75)		1.43 (0.67; 3.05)
Cigarette/tobacco use [g]		p=0.617	
Never smoked	1		1
Current/Former smoker	1.16 (0.86; 1.55)		1.03 (0.65; 1.62)
Alcohol abuse [h]		p=0.009	
Low risk	1		1
Medium risk	0.98 (0.68; 1.41)		1.51 (0.87; 2.60)
High risk	1.30 (0.90; 1.86)		2.52 (1.51; 4.21)

[1] Relative Risk Ratio. [2] Two individuals were from abroad. [a] Adjusted for sex. [b] Adjusted for sex, age, skin color, economic class and sexual orientation. [c] Adjusted for sex, age, and skin color. [d] Adjusted for sex, age, skin color, and economic class. [e] Adjusted for sex, age, skin color, economic class, and place of origin. [f] Adjusted for sex, age, skin color, sexual orientation, economic class, and place of origin. [g] Adjusted for sex, age, skin color, sexual orientation, economic class, cohabitation status, place of origin, and alcohol abuse. [h] Adjusted for sex, age, skin color, sexual orientation, economic class, cohabitation status, place of origin, and tobacco use.

Source: Authors.

those who were casual dating, and those with moderate and high risk of alcohol abuse.

The only two previous studies with university students in Brazil, which used similar instruments (CTS or adapted version), reported different results from ours. One study considered the 12 months prior to the interview and found a lower prevalence of IPV, estimated at 21% of respondents[5]. The other study examined violence during a lifetime and estimated a higher prevalence of IPV (76%)[6]. Both studies also found psychological violence to be the most prevalent type of IPV. However, while one study reported more IPV among women[5], the other showed no differences by sex[6]. Similar patterns of IPV occurrence were observed in international studies conducted with university students in Portugal and Nigeria, which also showed a higher prevalence of psychological IPV, followed by physical and sexual IPV[24,25].

The co-occurrence of psychological and physical IPV was the most common, whist the co-occurrence of both types with sexual IPV was less common. These findings align with the results of the US National Intimate Partner and Sexual Violence Survey (NISVS), where the highest co-occurrence was observed between psychological and physical IPV, and lower co-occurrences were observed when combined with sexual IPV[26]. Similarly, a study with 193 students from Nicaragua found that most victims of psychological violence suffered only this type of violence, whereas victims of physical and sexual violence frequently experienced psychological and physical violence, respectively[27]. Both our study and the one in Nicaragua had a cross-sectional design, so the temporality of violence is unknown. However, it is possible that psychological violence precedes other types of violence. A similar pattern, though with differing proportions, was observed in males and females, with the most common co-occurrence of IPV observed between psychological and physical IPV. However, males exhibited a greater co-occurrence of psychological and physical IPV than females, whilst females experienced a higher co-occurrence of psychological and sexual IPV than males. These findings reinforce the earlier results regarding the typologies of IPV by gender.

With the exception of sexual IPV, all types of IPV were more commonly reported by males. Cyber violence was the most prevalent manifestation of IPV, especially among males. A literature review exploring qualitative and quantitative studies revealed that both genders experience cyber abuse victimization[28]. However, significant differences emerge in terms of perpetration and consequences. While females tend to focus on controlling and monitoring their partners' social media, males are more prone to post-breakup violent acts, such as sharing sexting and intimate photos of their ex-partners[28]. Regarding consequences, female victims report greater psychological distress, whereas males view cyber abuse as positive expressions of love and care rather than violence[28]. It is important to note that these results are more applicable to the gender dynamics in heterosexual couples. Our results of higher prevalence of cyber abuse victimization in males corroborate this pattern. Although the sex of the perpetrator is unknown, 75% of the participants reported being heterosexual, which might explain the higher report of cyber violence victimization by males.

The physical manifestations most frequently reported, such as pushing, scratching/pinching, or hair pulling, have been observed to occur more commonly among male victims too. These sex differences in prevalence could be influenced by the perceived severity of these actions. The perception that these physical manifestations are less serious when coming from women may contribute to a higher reporting rate of specific behaviors among males compared to females.

The prevalence of sexual IPV was higher in participants who were current or former smokers and in those with a higher risk of alcohol abuse, which has also been observed in other studies[3,29,30]. However, associations were no longer observed after adjusting for confounders. This lack of association was potentially due to its low prevalence and therefore reduced statistical power for detecting associations. The lower prevalence of sexual IPV in studies might lie in its identification process. Notably, sexual violence within intimate relationships is often normalized, characterized by an implicit obligation to fulfill the partner's sexual needs, especially among females[31,32]. In contrast, sexual violence perpetrated by a stranger can be better recognized as actual violence.

The occurrence of IPV may exhibit gender-specific patterns. Men tend to disclose a higher prevalence of psychological and physical victimization, whereas women tend to report a greater incidence of sexual IPV[27,33]. However, the interpretation of this evidence depends on the severity of the investigated acts of violence and their motivations. A study of 450 US college students found that while males reported experiencing more physical victimization than females, they were also more likely to be perpetrators[2].

The study concluded that the reported violence could reflect the violence perpetrated by the individuals themselves toward their partners.

The mechanisms of perpetration of psychological and physical IPV may partially explain the associations between relationship status and IPV found in our study. Psychological IPV is characterized by the degree of intimacy between partners, as the more the perpetrator knows the victim, the more they are able to manipulate them[34]. Dating, marriage, or common-law marriage, which involve greater intimacy and longer contact time, are more likely to involve this type of violence. This would be less expected in relationships without commitment, such as casual dating.

A higher risk of abusive alcohol consumption was associated with total and physical IPV. Alcohol can lead to misunderstandings[35], reduce threat perception and the ability to prevent violent acts, acting as a two-way factor in perpetration and legitimization of IPV[1]. However, the possibility of reverse causality cannot be ruled out since IPV and alcohol consumption were measured at the same timeframe. Longitudinal studies have shown that alcohol use is associated with IPV both as a risk factor and a consequence[36].

Contrary to expectations, younger individuals and those of lower socioeconomic status were not at a greater risk of reporting IPV. This result may be attributed to the homogeneity of the university population. The age range of the participants was narrow (most were aged 18-24 years), which might explain the lack of association with age. Similarly, it is possible that the university population is not heterogeneous enough to detect possible disparities between socioeconomic classes. Despite efforts such as including the implementation of quotas and improvements in access for lower economic classes to universities, individuals from the most economically disadvantaged strata still encounter challenges in gaining entry to university.

Alternatively, these variables may be associated when analyzing more chronic forms of IPV that consider the frequency of acts and social vulnerability[37]. Similarly, individuals belonging to racial, gender, and sexual orientation minorities did not report higher IPV rates, but this may be due to the small number of individuals in these categories, resulting in low statistical power to detect associations. It is also possible that these characteristics are more prominent when viewed from an intersectional perspective, considering the risk assessment of individuals who have multiple marginalized identities[8,38].

Some possible limitations of the study should be highlighted such as the subjectivity of results, as individuals may recall or omit IPV differently[39]. Psychological and sexual IPV may be trivialized or less known, while physical aggression is more easily recognized as violence and remembered more often. Reporting IPV can be difficult due to the protection provided by intimacy, as it may lead to victim stigmatization and additional suffering[40]. Another limitation is the use of a non-validated questionnaire to assess IPV, although it was based on validated questionnaires used worldwide. However, the questionnaire addressed some unique aspects not typically covered in the literature, such as contemporary forms of violence like cyberviolence. Given the prevalence of communication through social media, IPV through digital platforms cannot be neglected.

Also, although the cross-sectional design does not establish temporality, it effectively describes the prevalence of IPV and associated factors. Despite a sample size of over 1,500 students, some sub-groups were too small to explore differences, such as sexual orientation. Although the research was conducted with university students from a single institution, our expectation was that their integration into a national admission system (SiSU) would contribute to the creation of a more diverse academic environment, thereby broadening the applicability of the results to other Brazilian university students. However, the vast majority of participants indicated that they originated from the Southern region of the country, the same region as the investigated university. Therefore, it is necessary to approach comparisons and generalizations of the results with caution. Further cross-sectional studies in diverse regions, or preferably, nationwide surveys, should be conducted to accurately estimate the prevalence of IPV in the Brazilian university population.

Positive points of the study deserve be mentioned too. At present, there is only one study that have examined IPV among Brazilian university students[5]. Our study provides an update to the knowledge base, focusing on a different region of the country and expanding the types of IPV investigated, including cyber-violence. The anonymous questionnaire ensured reliability of answers for this sensitive topic. The recall period of 12 months minimized recall bias, and the questionnaire used straightforward questions that have been tested with young people. The assessment of three sub-types of IPV and their co-occurrence was also a strength.

Conclusion

Approximately one in three university students reported experiencing IPV, with psychological IPV, including cyberviolence, being the most commonly reported type. The most common overlap between types of violence was psychological IPV with physical IPV. Males, individuals at high risk for alcohol abuse, and those in casual relationships had the highest prevalence of overall victimization, physical IPV, and concurrent occurrences of victimization. These results highlight the need to raise awareness about violence among young people, emphasizing that IPV can occur among undergraduate students and not only within marriage or cohabitation but also in casual relationships. As technology advances, it is crucial to address new forms of IPV, such as those occurring through social media, and to help legislative mechanisms understand their recurrence, specificities, and social and individual dimensions within affected groups.

Collaborations

ID Valério participated in the design and planning of the study; analysis and interpretation of data; preparation and approval of the final version of the manuscript. ALG Soares and H Gonçalves participated in the design and planning of the study; data interpretation; critical review and approval of the final version of the manuscript. CL Moraes participated in the data interpretation; critical review and approval of the final version of the manuscript.

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