Psychological Distress and Domestic Violence Under COVID-19 Lockdown in LGBT+ Persons in Belgium, Germany, and Portugal

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Abstract: *Background*: During the COVID-19 pandemic, governments worldwide issued lockdown and social-distancing measures, which triggers psychological distress and may increase the occurrence of domestic violence (DV). We examined the role of the LGBT+ status in the relationship between risk factors of DV and its occurrence during the pandemic. *Methods:* In this cross-sectional study (n = 5,148), an online self-report questionnaire was administered to a non-probabilistic sample of participants living in Belgium, Germany, and Portugal between March and June 2020. Participants were sampled through national media, social media, and snowballing procedures. *Results:* LGBT+ persons reported significantly higher levels of perceived stress, more acute stress symptoms, and more illegal drug use during the first weeks of the lockdown compared to non-LGBT+ persons. DV in LGBT+ persons was not more prevalent than in the non-LGBT under COVID-19 lockdown measures. No significant evidence was found indicating that identifying as LGBT+ itself increases the risk of DV exposure. *Conclusion:* LGBT+ persons were more at risk of DV compared to non-LGBT+ persons prior to but not during COVID-19 lockdown measures. The increased risk for DV can be linked to socio-demographic characteristics, levels of stress, and illegal drug use which are more prevalent in LGBT+ persons than in non-LGBT+ persons.

Keywords: domestic violence, LGBT+, COVID-19 pandemic, public health, sexual and gender based violence

Introduction

To contain the COVID-19 pandemic, governments worldwide issued lockdown and social-distancing measures to restrict social and physical contact to prevent a further spread of the virus. Yet, recent studies have shown that these drastic measures introduced psychological distress (Brooks et al., 2020) and may have increased the occurrence of domestic violence (DV) (Piquero et al., 2021). These findings should not surprise us since a number of identified risk factors (Brooks et al., 2020; Capaldi et al., 2012; Piquero et al., 2021) for experiencing psychological distress and DV prior to the pandemic – such as financial insecurity, increased levels of stress, feelings of helplessness and disempowerment, maladaptive coping strategies

etc. – were likely to emerge as a result of the far-reaching hygiene measures.

The bulk of studies regarding DV and mental health focus on the general population. However, persons identifying as lesbian, gay, bisexual, trans, queer, questioning, intersex, asexual, and with other non-heterosexual and/or non-cisgender identities (LGBT+) might be more at risk since they experience under usual circumstances numerous mental health disparities and report, for example, higher rates of depression, suicidality, and substance use compared to heterosexual and/or cisgender populations (non-LGBT+) (De Schrijver et al., 2022; Krueger & Upchurch, 2019). These mental health problems are often associated with increased minority stress (Mongelli et al., 2019). Further, the scarce studies on DV in LGBT+ persons report

comparable or even higher numbers of DV compared to non-LGBT+ persons (Badenes-Ribera et al., 2015; Callan et al., 2020; Donovan et al., 2006; Edwards et al., 2015; Russell, 2020). This vulnerability for the exposure to DV can be explained either by general and/or specific risk factors, the latter being related to sexual orientation, gender identity, and possibly associated minority stress (Callan et al., 2020; Russell, 2020).

Although lockdown measures applied to everyone – regardless of sexual orientation and gender identity – the pandemic created an opportunity to study how psychological distress and DV varied in different populations under the same externally enforced lockdown conditions. Seizing this opportunity, this study aims to contribute to a better understanding of the vulnerability of LGBT+ persons for experiencing DV and psychological distress by analysing the relationship between DV and psychological distress among LGBT+ persons in Belgium, Germany, and Portugal during the first COVID-19 lockdown in 2020. Moreover, given that research suggests LGBT+ persons to be more at risk of DV exposure compared to cisgender and heterosexual individuals, we explore if sexual orientation and gender identity may act as a moderator between DV and psychological distress. Essentially, this paper will explore whether (1) LGBT+ persons report more psychological distress, alcohol and drug use during the first COVID-19 lockdown then non-LGBT+ persons, (2) whether they report a higher occurrence of DV – including psychological, physical, and sexual violence –before and during the first COVID-19 lockdown than non-LGBT+ persons, (3) how psychological distress, alcohol and drug use, and DV are associated with each other in LGBT+ persons, and (4) whether LGBT+ identification moderates these associations.

Methods

Study Design, Procedures, and Participants

Data from three EU-countries (Belgium, Germany, and Portugal) were collected during the first lockdown between April 13 and June 8, 2020 and considered the full period of the first COVID-19 lockdown since its start in March 2020. An online survey was used to assess socio-demographic characteristics, changed financial situation, work and time spent at home, satisfaction with social and intimate relationships, stress and coping as well as self-reported victimisation of DV, including psychological, physical, and sexual violence. Participants were recruited through a variety of channels and methods, including press, social media, senior citizens' organizations, mental health services, and snowball sampling. Only residents of the three countries aged 16 years or older were included in this convenience sample. A total of 10,066 persons started the survey. Of this group, 61% ($n = 6,119$) indicated their willingness to participate in the research (i.e., active informed consent), were aged 16 or older, lived in Belgium, Germany, or Portugal, filled in their gender identity and sexual orientation, and completed the questionnaire to the end. Participants with missing values were excluded from the analyses. The final sample size comprises 5,148 participants.

Ethical Considerations

This research was approved by the Committee for Medical Ethics of the Ghent University Hospital and Ghent University (project BC-07600, approval date April 9, 2020) and was drawn up and carried out according to the World Health Organization (WHO) ethical guidelines on research into violence (World Health Organization, 2016). All participants received additional explanations about the nature of the study, contact details of emergency services, and gave their actively informed consent to participate in the study. Participation was anonymous.

Measures

Self-reported socio-demographic variables included gender, age, sexual orientation, educational level, and household size. Following guidelines on collecting data on sexual orientation and gender identity (Gates & Badgett, 2009; Motmans et al., 2020), self-identification questions were used to identify whether participants considered themselves to be heterosexual, homosexual/lesbian, bisexual, pansexual, omnisexual, or asexual and/or identified as a man, a woman, a transman, a transwoman or as "other, namely…" with an option to complete their preferred gender identity. No data on sexual attraction and behaviour were collected. The variable describing LGBT+ was created by merging the self-identification questions regarding gender and sexual orientation into one, which led to a dichotomous variable with *non*-LGBT+ (0) and LGBT+ (1).

Social, Relational, and Sexual Wellbeing

Satisfaction with physical encounters (i.e., "How satisfied were you with the social contacts you had during face-to-face contacts"), online contacts (i.e., "How satisfied were you with the social contacts you had online or by phone"), relationship with the partner (i.e., "How satisfied have you generally been with the relationship"), and sexual life (i.e., "How satisfied have you been with your sex life") during the four weeks prior to filling in the questionnaire were assessed in the form of single-item measures with five-point Likert scales, ranging from *very dissatisfied* (1) to *very satisfied* (5). Respondents reporting no relationship did not

receive this question in the online survey and were automatically recoded as *not applicable* for the item on the satisfaction with the relationship with the partner. This was done intentionally to retain these individuals in the analysis and prevent their responses from being categorized as missing values. All four items were later rescaled to three-point-scales due to the very low response rates in the extremities, ranging from being (*very*) *dissatisfied* (1), *nor satisfied, nor dissatisfied* (2) and (*very*) *satisfied* (3).

Acute stress symptoms

The occurrence of acute stress symptoms (i.e., initial traumatic symptoms that emerge within the first month after a traumatic event) or Posttraumatic Stress Disorder (PTSD) (i.e., traumatic symptoms presented longer than one month after the traumatic event) was measured using the 5-item PC-PTSD-5 (Prins et al., 2016), which questioned symptoms in the month before completion of the questionnaire (*yes* (1)/*no* (0)). A score of three of a maximum of five was regarded as an indication for PTSD. In the descriptives, both continuous and categorical scale versions are included, but for regressions, we used the continuous score.

Perceived Stress

Perceived stress was measured through the Perceived Stress Scale (PSS) (Cohen et al., 1994), which measures the perception of stress. The scale comprised ten items, and responses were made on a five-point Likert scale ranging from *never* (0) to *very often* (4). A sum score ranging from zero to 40 was created to yield a total perceived stress score, Cronbach's α = .876. The scale assessed the amount of perceived stress in the month prior to filling in the survey and a cut-off of 14 was considered moderate stress and a cut-off of 27 was considered high perceived stress (Cohen et al., 1994). In the descriptives, both continuous and categorical scale versions are included, but for regressions, we used the continuous score.

Alcohol (Ab)Use

The AUDIT-C (World Health Organization, 2001) was used to assess alcohol (ab)use, which consists of three questions: (1) "How often do you have a drink containing alcohol?" ranging from *never* (0) to *4 or more times a week* (4) (the screening ends with a score of 0 for respondents who indicated "*never*" in this first item); (2) "How many standard drinks containing alcohol do you have on a typical day" ranging from *1 or 2* (0) to *10 or more* (4); and (3) "How often do you have six or more drinks on one occasion?" ranging from *never* (0) to *daily or almost daily* (4). In accordance with the guidelines of the Flemish Expertise Centre for Alcohol and Other Drugs (VAD), a cut-off score of four for females and five for males was used on this three item scale with a total score between zero and 12 (Vlaams Expertisecentrum Alcohol en andere Drugs (VAD), 2017). In the descriptives,

both continuous and categorical scale versions are included, but for regressions, we used the continuous score.

Medication and Drug (Ab)Use

In addition to the validated scales, the questionnaire also included three yes (1)/no (0) questions about medication (i.e., "… taken medication to sleep or to calm down") and illegal drug use (i.e., "… consumed cannabis (hashish or marijuana)" and "… taken cocaine, amphetamines, ecstasy, heroin or other similar substances") in the first weeks of the first COVID-19-lockdown (i.e., "Have you since March '20 until now….?"). Participants had the option to skip the questions by stating "I prefer not to answer this question".

Exposure to Direct and Indirect DV

Violence was defined as forms of psychological, physical, or sexual harm inflicted on another person. The victimisation questions on psychological and physical violence were based on previous research (Keygnaert et al., 2017; Keygnaert et al., 2008; Pieters et al., 2010). A set of two yes/no questions were asked to assess *direct psychological violence* in the first weeks of the first COVID-19-lockdown (during the study period), as well as in the respondent's lifetime (before the study period): "Did someone insult, criticize, or belittle what you did or said?" and "Did someone do something to intimidate you?". Both items were recoded into the dichotomous variable "direct psychological violence" with options *no* (0) and *yes* (1). Respondents reporting at least one "yes" in the separate items would be coded as *yes* (1) in the new variable. Two such new variables were computed, one concerning direct psychological violence before the study period and one concerning direct psychological violence during the study period.

The exact same methodology was applied to assess *indirect psychological violence*: "Do you know that someone in your household was insulted, criticized or belittled" and "Do you know that someone else in your household was intimidated", resulting in another set of two dichotomous variables "indirect psychological violence before the study period" and "indirect psychological violence during the study period" with options *no* (0) and *yes* (1).

Direct physical violence was assessed in the exact same way with another set of two questions: "Did someone physically hurt or attack you?" and "Did someone (try to) stab, burn, maim, mutilate, strangle, or kill you?" and repeated for *indirect physical violence*.

A broad definition of sexual violence was used, considering both forms with (hands-on) and without physical contact (hands-off). This approach is in line with the current WHO definition, which starts from behaviour that is against one's will (Keygnaert et al., 2018). The questions concerning sexual violence were based on previous research (Keygnaert et al., 2018) and multiple international validated

questionnaires including the Sexual Experiences Survey (Koss et al., 2006), the National Intimate Partner and Sexual Violence Survey (Walters et al., 2013), and the Sexual Aggression and Victimization Scale (Krahé et al., 2015). A set of six questions were asked to measure sexual victimisation which can be grouped into two categories. Two items assessed hands-off sexual violence, including voyeurism and exhibitionism. The second category included four items on hands-on sexual victimisation which can be further grouped into two sexual abuse items, including unwanted kissing and fondling/rubbing, and two attempted or completed rape items, including (attempted) oral, vaginal, or anal penetration, and being forced to penetrate someone else. The questions were asked in the same way as for psychological and physical violence and were re-coded in the exact same manner for (in)direct hands-off and hands-on sexual violence.

Analyses

Descriptive statistics were analysed and country differences as well as differences between LGBT+ and non-LGBT+ participants were computed by (1) using (post-hoc) chi-square tests in the case of nominal variables and (2) one-way ANOVAs or independent samples t-tests in the case of continuous variables. All assumptions were checked. Levene's test was used to check for homogeneity of variance, which led to the use of the Welch's t-test statistic if equal variances could not be assumed. Post-hoc tests were performed with Scheffe and Tukey. Effect sizes were explored by comparing the Cramer's V Coefficient (V) (nominal variables) and the Eta-squared (η^2) or Hedges' correction (G) (continuous variables).

Multiple mixed effects logistic regressions were used to model our four binary outcome variables on DV to consider the clustered nature of the data (by country). There were no strong linear correlations (> 0.60) between the continuous predictors. Separate models were run per outcome (direct victimisation of psychological, physical, hands-off and hands-on sexual violence). Backward stepwise selection was used starting with a full model which contained all possible main effects followed by all cross-products of these main effects with the LGBT+ variable. This procedure has the advantage of considering the effects of all variables simultaneously. Main and interacting effects were then gradually eliminated in each step if they were not found (marginally) significant ($p < 0.10$). The main and interaction terms that remained significant at a respectively 0.05 and 0.10 probability level were retained in the final models. Variable Inflation Factors (VIF) were used to detect potential multicollinearity as they determine the strength of the correlations between the independent variables. Finally, the odds ratios were calculated by exponentiating the

estimates of the variables in the model as well as their 95% confidence intervals (CI). All analyses were conducted in R v4.0.3 using the packages "car" (Fox & Weisberg, 2019), "lme4" (Bates et al., 2015), and "effects" (Fox, 2003; Fox & Weisberg, 2019).

Results

Descriptive Statistics of the Study Sample

Table 1 reports the descriptive statistics for each country including sample socio-demographic characteristics as well as satisfaction levels for social, relational, and sexual contact. A significant variation in the distribution of variable categories among countries could be observed for all variables, except for the satisfaction levels for sexual contact (see Table 1). LGBT+ participants were significantly ($t = 8.14$; $df = 729.38$; $p \leq .001$; $G = .349$) younger than non-LGBT+ participants, with an average of 34.6 years ($SD = 13.60$) compared to 39.6 years ($SD = 14.28$). Proportionally, more LGBT+ participants indicated to have a worse financial situation since the start of the first COVID-19 lockdown with 21.5%, compared to 16.1% of the non-LGBT+ group ($\chi^2 = 11.91$; $df = 2$; $p = .003$; $V = .048$). LGBT+ participants were also more likely to live alone (17.3%) or with one housemate (37.9%) compared to non-LGBT+ participants with respectively 9.5% and 33.1% ($\chi^2 = 49.17$; $df = 4$; $p \leq .001$; $V = .098$). No significant difference was found between LGBT+ and non-LGBT+ participants concerning the satisfaction levels with face-to-face social contacts. However, LGBT+ participants were less likely to be satisfied with online social contacts (60.3%), their relationship (47.1%), and their sex life (37.6%) compared to non-LGBT+ participants with respectively 68.9% ($\chi^2 = 31.50$; $df = 2$; $p \leq .001$; $V = .078$), 61.9% ($\chi^2 = 73.89$; $df = 3$; $p \leq .001$; $V = .120$) and 48.4% ($\chi^2 = 24.11$; $df = 2$; $p \leq .001$; $V = .068$).

Mental Health and DV

Table 2 reports the descriptive statistics for each country including alcohol, sedative and drug use, perceived stress levels and the presence of acute stress symptoms as well as a prevalence of direct or indirect victimisation (psychological, physical, sexual). One in five participants of the total sample (21.6%) reported a form of direct victimisation during the first COVID-19 lockdown (March–June 2020), and 10.5% a form of indirect victimisation. These percentages were higher before the study period with 81.5 and 56.0%, respectively. Significant differences in the distribution of variable categories among countries could be observed for all mental health and coping variables, except for the acute stress symptoms. Significant differences in violence

Table 1. Descriptive statistics of the different sociodemographic variables and variables concerning the satisfaction level of different relations, contacts, and sex life during the first COVID-19 lockdown (March–June 2020)

Variables	Overall (n = 5,148) n (%)	Belgium (n = 3,666) n (%)	Portugal (n = 504) n (%)	Germany (n = 978) n (%)	χ^2; df; p-value; V
Age [Mean (SD)]	39.05 (14.29)	41.22 (14.18)[a]	43.49 (11.90)[b]	28.65 (10.60)[c]	527.66; 2; < .001; .126*
Gender					–
Cis men	1,124 (21.83)	903 (24.63)	119 (23.61)	202 (20.65)	
Cis women	3,900 (75.76)	2,751 (75.04)	382 (75.79)	767 (78.43)	
Trans men	17 (0.33)	8 (0.22)	3 (0.60)	6 (0.61)	
Trans women	5 (0.10)	2 (0.05)	0	3 (0.31)	
Other	2 (0.04)	2 (0.05)	0	0	
Sexual orientation					108.148; 8; < .001; .102
Heterosexual	4,581 (88.99)	3,323 (91.47)[a]	458 (90.87)[a]	800 (81.80)[a]	
Homosexual	203 (3.94)	147 (4.01)[a]	18 (3.57)[a]	38 (3.88)[a]	
Bisexual	225 (4.37)	115 (3.14)[a]	15 (2.98)[a]	95 (9.71)[b]	
Pan-, omnisexual	99 (1.92)	53 (1.15)[a]	9 (1.79)[a]	37 (3.78)[b]	
Asexual	40 (0.78)	28 (0.76)[a]	4 (0.79)[a]	8 (0.82)[a]	
LGBT+ (yes)	567 (11.01)	343 (9.36)[a]	46 (9.13)[a]	178 (18.20)[b]	63.64; 2; < .001; .111
Financial situation					59.10; 4; < .001; .076
Easier	487 (9.46)	306 (8.35)[a]	52 (10.32)[a,b]	129 (13.19)[b]	
Equal	3,801 (73.83)	2,803 (76.46)[a]	326 (64.68)[b]	672 (68.71)[b]	
More difficult	860 (16.70)	557 (15.19)[a]	126 (25.00)[b]	177 (18.10)[a]	
Household [Mean (SD)]	2.03 (1.47)	2.05 (1.38)	2.00 (1.50)	1.99 (1.75)	48.24; 8; < .001; .068
Living alone	533 (10.35)	355 (9.68)[a]	49 (9.72)[a,b]	129 (13.19)[b]	
1 housemate	1,730 (33.60)	1,214 (33.12)[a]	159 (31.55)[a]	357 (36.50)[a]	
2 housemates	1,014 (19.70)	704 (19.20)[a]	129 (25.60)[b]	181 (18.51)[a]	
3 housemates	1,192 (23.15)	913 (24.90)[a]	113 (22.42)[a]	166 (16.97)[b]	
> 3 housemates	679 (13.20)	480 (13.09)[a]	54 (10.71)[a]	145 (14.83)[a]	
Satisfied with face-to-face contacts					26.03; 4; < .001; .050
Unsatisfied	2,115 (41.08)	1,535 (41.87)[a]	166 (32.94)[b]	414 (42.33)[a]	
Not satisfied/Not unsatisfied	1,194 (23.19)	861 (23.49)[a]	107 (21.23)[a]	226 (23.11)[a]	
Satisfied	1,839 (35.72)	1,270 (34.64)[a]	231 (45.83)[b]	338 (34.56)[a]	
Satisfied with online/phone contacts					36.95; 4; < .001; .060
Unsatisfied	538 (10.45)	254 (9.66)[a]	50 (9.92)[a,b]	134 (13.70)[b]	
Not satisfied/Not unsatisfied	1,111 (21.58)	767 (20.92)[a]	89 (17.66)[a]	255 (26.07)[b]	
Satisfied	3,499 (67.97)	2,545 (69.42)[a]	365 (72.42)[a]	589 (60.22)[b]	
Satisfied with partner relationship					100.69; 6; < .001; .099
Unsatisfied	411 (7.98)	286 (7.80)[a,b]	29 (5.75)[b]	96 (9.82)[a]	
Not satisfied/Not unsatisfied	452 (8.78)	322 (8.78)[a]	37 (7.34)[a]	93 (9.51)[a]	
Satisfied	3,101 (60.24)	2,330 (63.56)[a]	303 (60.12)[a]	468 (47.85)[b]	
Not applicable (no partner)	1,184 (23.00)	728 (19.86)[a]	135 (26.79)[b]	321 (32.82)[b]	
Satisfied with sex life					5.43; 4; .246; .023
Unsatisfied	1,232 (23.93)	863 (23.54)	119 (23.61)	250 (25.56)	
Not satisfied/Not unsatisfied	1,484 (28.83)	1,066 (29.08)	130 (25.79)	288 (29.45)	
Satisfied	2,432 (47.24)	1,737 (47.38)	255 (50.60)	440 (44.99)	

Note. Because the comparisons in this table involved 7 independent tests, we adopted a Bonferroni-corrected significance level of .05/7 = .007 for this set of analyses. Abbreviations: LGBT+ = lesbian, gay, bisexual, trans, pan-/omnisexual, asexual, other; V = Cramer's V. *One-way ANOVA with equal variances not assumed (instead of chi-square test): Welch statistic; df; p-value; η^2. [a,b,c]The presented proportions per variables' category with different superscripts differ significantly (posthoc χ^2 test or Tukey/Scheffe: p < .05) between the three countries. If both cells on the same row have subscript "a," this means they do not differ significantly; if the first cell has subscript "a" and the second cell subscript "b," they do differ significantly for the corresponding category of the variable of that specific row.

Table 2. Descriptive statistics of the variables concerning mental health, alcohol, sedative and substance use, and domestic victimization before and during the first COVID-19 lockdown (March–June 2020)

Variables	Overall (n = 5,148) n (%)	Belgium (n = 3,666) n (%)	Portugal (n = 504) n (%)	Germany (n = 978) n (%)	χ^2; df; p-value; V
Alcohol use[1] [Mean (SD)]	2.52 (2.14)	2.64 (2.18)	2.02 (2.05)	2.31 (2.01)	25.31; 2; < .001;
Problematic	1,142 (22.18)	877 (23.92)[a]	77 (15.28)[b]	188 (19.22)[b]	.070
Sedative use (yes)	560 (10.88)	422 (11.51)[a]	72 (14.29)[a]	66 (6.75)[b]	24.76; 2; < .001; .069
Illegal drug use (yes)	269 (5.22)	152 (4.15)[a]	13 (2.58)[a]	104 (10.63)[b]	73.52; 2; < .001; .120
Acute Stress Symptoms[2] [Mean (SD)]	1.51 (1.55)	1.46 (1.55)	1.67 (1.55)	1.64 (1.56)	5.95; 2; .051; .034
Present	1,359 (26.40)	933 (25.45)	143 (28.37)	283 (28.94)	
Perceived Stress Scale[3] [Mean (SD)]	15.74 (7.42)	15.03 (7.46)[a]	16.78 (6.40)[b]	17.86 (7.30)[c]	64.64; 1,206; < .001; .024*
Low	2,077 (40.35)	1,631 (44.49)	151 (29.96)	295 (30.16)	–
Moderate	2,629 (51.07)	1,762 (48.06)	319 (63.29)	548 (56.03)	
High	442 (8.59)	273 (7.45)	34 (6.75)	135 (13.80)	
Direct psychological violence					
Before study period	3,844 (74.7)	2,756 (75.2)[a]	325 (64.5)[b]	763 (78.0)[a]	33.94; 2; < .001; .081
During study period	1,038 (20.2)	733 (20.0)[a]	75 (14.9)[b]	230 (23.5)[c]	15.64; 2; < .001; .055
Indirect psychological violence					
Before study period	2,586 (50.2)	1,892 (61.6)[a]	179 (35.5)[b]	515 (52.7)[a]	48.75; 2; < .001; .097
During study period	480 (9.3)	340 (9.3)	30 (6.0)	110 (11.2)	11.07; 2; .004; .046
Direct physical violence					
Before study period	1,988 (38.6)	1,446 (39.4)	164 (32.5)	378 (38.7)	8.91; 2; .012; .042
During study period	119 (2.3)	98 (2.7)	6 (1.2)	15 (1.5)	7.55; 2; .023; .038
Indirect physical violence					
Before study period	1,287 (25.0)	956 (26.1)[a]	76 (15.1)[b]	255 (26.1)[a]	29.33; 2; < .001; .075
During study period	89 (1.7)	71 (1.9)	7 (1.4)	11 (1.1)	3.38; 2; .185; .026
Direct hands-off sexual violence					
Before study period	1,340 (26.0)	993 (27.1)	113 (22.4)	234 (23.9)	7.78; 2; .020; .039
During study period	53 (1.0)	44 (1.2)	0	9 (0.9)	–
Indirect hands-off sexual violence					
Before study period	354 (6.9)	284 (7.7)[a]	14 (2.8)[b]	56 (5.7)[a]	19.58; 2; < .001; .062
During study period	12 (0.2)	9 (0.2)	1 (0.2)	2 (0.2)	–
Direct hands-on sexual violence					
Before study period	2,029 (39.4)	1,462 (39.9)	165 (32.7)	402 (41.1)	10.91; 2; .004; .046
During study period	94 (1.8)	70 (1.9)	2 (0.4)	22 (2.2)	6.87; 2; .032; .037
Indirect hands-on sexual violence					
Before study period	497 (9.7)	386 (10.5)[a]	29 (5.8)[b]	82 (8.4)[a,b]	13.82; 2; < .001; .052
During study period	23 (0.4)	19 (0.5)	1 (0.2)	3 (0.3)	–

Note. Because the comparisons in this table involved 21 independent tests, we adopted a Bonferroni-corrected significance level of .05/21 = .002 for this set of analyses. The assumptions for the chi[2]-test could not be met for direct and indirect hands-off sexual violence as well as indirect hands-on sexual violence during the study period. Abbreviations: V = Cramer's V. *One-way ANOVA with equal variances not assumed (instead of chi-square test): Welch statistic; df; p-value; η^2. [1]AUDIT-C, from 0 (no alcohol intake) to 12 (problematic alcohol intake). [2]PC-PTSD-5, from 0 (*no acute stress symptoms*) to 5 (*at least 5 types of acute stress symptoms*). [3]Perceived stress scale, from 0 (*no perceived stress*) to 40 (*high perceived stress*). [a,b,c]Each subscript letter denotes a subset of the variables' categories whose column proportions do not differ significantly from each other (posthoc χ^2 test or Tukey/Scheffe: p > .05) between the three countries. If both cells on the same row have subscript "a," it means they do not differ significantly; if the first cell has subscript "a" and the second cell subscript "b," they do differ significantly for the corresponding category of the variable of that specific row.

exposure could only be observed for direct psychological violence (before and during the study), and indirect psychological, physical, hands-off and hands-on sexual violence before the study period.

Significant differences between LGBT+ and non-LGBT+ participants were also explored. Proportionally more LGBT+ participants indicated the use of illegal drugs (χ^2 = 27.83; df = 1; p < .001; V = .074) and the presence of

acute stress symptoms (χ^2 = 53.35; df = 1; p < .001; V = .102), with respectively 9.9% and 39.2%, compared to the non-LGBT+-group with respectively 4.6% and 24.8%. Perceived stress levels were also significantly higher for LGBT+ participants compared to non-LGBT+ participants (t = 8.13; df = 5,146; p < .001; G = .142). No significant differences in proportion between these two groups were found for problematic alcohol use and the use of sedatives.

Finally, LGBT+ participants reported proportionally more experiences of (in)direct psychological, physical, hands-off sexual and hands-on sexual violence before the study period compared to non-LGBT+ participants ($p <$ .001). In total, 88.7% of the LGBT+ participants reported a form of direct domestic victimisation ($\chi^2 = 22.05$; $df = 1$; $p < .001$; $V = .065$) and 64.9% reported a form of indirect domestic victimisation ($\chi^2 = 20.40$; $df = 1$; $p < .001$; $V = .063$) before the study period compared to 80.6% and 54.9% respectively for non-LGBT+ participants. No significant differences could be observed for any of these experiences of violence during the study period.

The first intercept-only model for direct psychological, physical, hands-off sexual and hands-on sexual victimisation had an ICC of respectively 1.2, 2.2, 2.2 and 5.5%, meaning that less than 6% of the variance in direct domestic victimisation is attributable to the country. To further assess the necessity of clustering by country, we conducted a likelihood ratio test (LRT) for model comparison. This test enabled us to evaluate whether incorporating country-level clustering improved model fit and explained the variation in the outcomes of interest. The LRT results consistently indicated that the p-value for all four outcomes exceeded the conventional significance threshold of 0.05. This finding implies that there was insufficient statistical evidence to support the inclusion of country-level clustering in the models. Consequently, we proceeded with the use of four generalized linear models with a logit link for our analysis.

Table 3 reports the final models for direct psychological, physical, hands-off sexual and hands-on sexual victimisation. Households with more than three people had a higher chance of psychological victimisation than participants who lived alone. Participants who evaluated their relationship as neutral, who were satisfied or who had no relationship were less likely to report psychological victimisation compared to participants who were unsatisfied with their relationship. A similar result was found for sex life, with participants who were unsatisfied with their sex life having a higher risk of psychological victimisation than participants who were satisfied. Sedatives use as well as higher levels of perceived stress or more acute stress symptoms were all linked to a higher risk for psychological victimisation. Additionally, direct psychological violence before the first COVID-19 lockdown as well as indirect psychological and direct physical violence during that lockdown were strongly related to a higher risk of direct psychological victimisation during lockdown. The occurrence of indirect psychological violence during lockdown led, however, to a lower risk of being directly psychologically victimised during lockdown. Finally, a moderating effect was found for sexual orientation and/or gender identity. Satisfaction rates with online/ phone contacts were related to the risk of direct psychological victimisation, but only for LGBT+ participants who were unsatisfied with their online/phone contacts having a higher risk of psychological violence compared to LGBT+ participants who were satisfied. Similarly, an effect was found of substance use for LGBT+ participants, but not for non-LGBT+ participants. LGBT+ participants who reported the use of illegal drugs had a higher risk of psychological victimisation compared to LGBT+ participants who did not.

The models for direct physical violence and hands-off sexual violence during lockdown showed very similar results. Identifying as LGBT+ was associated with a lower risk of physical and hands-off sexual violence compared to participants who did not identify as LGBT+ . Just as for direct psychological violence, the household size and satisfaction with the relationship showed an association with physical and hands-off sexual violence as well. Households with more than three people had a higher chance of physical and hands-off sexual victimisation than participants who lived alone. Participants who were satisfied or who had no relationship were less likely to report physical or hands-off sexual victimisation compared to participants who were unsatisfied with their relationship. Additionally, direct physical violence before lockdown as well as direct psychological and indirect physical violence during lockdown were strongly related to a higher risk of direct physical victimisation during lockdown. No moderating effects were found for sexual orientation and/or gender identity. Finally, the age of the participants seemed to be linked to the risk of hands-off sexual violence, with a decreasing risk as the age increases.

The final model for hands-on sexual victimisation shows that participants who were satisfied or who had no relationship were less likely to report hands-on sexual victimisation compared to participants who were unsatisfied with their relationship. This is a similar result for the other types of violence. Additionally, direct hands-on sexual violence before lockdown as well as direct psychological violence within lockdown were strongly related to a higher risk of direct hands-on victimisation within lockdown. The occurrence of direct hands-off sexual violence before the study period, however, led to a lower risk of direct hands-on sexual violence during the study period. Finally, a moderating effect was found for sexual orientation and/or gender identity. Higher levels of alcohol use were related to a lower risk of direct hands-on sexual victimisation, but only for LGBT+ participants.

Discussion

This study explored factors contributing to increased psychological distress and DV susceptibility in LGBT+ individuals versus non-LGBT+ individuals in Belgium, Germany, and Portugal. We analysed self-reported DV and distress among these groups during the first COVID-19 lockdown

Table 3. Associations between risk factors and direct psychological, physical, hands-off, and hands-on sexual victimization during the first lockdown

Variables	Direct psychological violence			Direct physical violence			Direct hands-off SV			Direct hands-on SV		
	Odds ratio	95% CI odds ratio (Wald)	p-value (LRT)	Odds ratio	95% CI odds ratio (Wald)	p-value (LRT)	Odds ratio	95% CI odds ratio (Wald)	p-value (LRT)	Odds ratio	95% CI odds ratio (Wald)	p-value (LRT)
Age	–	–	–	–	–	–	0.98	0.96–0.99	.009	–	–	–
LGBT+ (ref: No)	–	–	.885	–	–	.028	–	–	.009	–	–	.917
Yes	3.28	1.37–7.82		0.50	0.24–0.93		0.44	0.21–0.83		1.98	0.84–4.36	
Household (ref: > 3 housemates)	–	–	<.001	–	–	.001	–	–	.009	–	–	–
Living alone	0.47	0.33–0.67		0.10	0.02–0.35		0.13	0.02–0.45		–	–	
1 housemate	0.83	0.65–1.07		0.71	0.40–1.26		0.77	0.44–1.36		–	–	
2 housemates	0.77	0.59–1.00		0.81	0.46–1.45		0.86	0.49–1.53		–	–	
3 housemates	0.95	0.73–1.23		0.93	0.55–1.60		0.96	0.57–1.65		–	–	
Financial situation (ref: Easier)	–	–	–	–	–	–	–	–	–	–	–	.003
Equal	–	–		–	–		–	–		0.57	0.31–1.13	
More difficult	–	–		–	–		–	–		1.19	0.61–2.46	
Satisfied with online/phone contacts (ref: Unsatisfied)	–	–	.557	–	–	–	–	–	–	–	–	–
Not satisfied/Not unsatisfied	0.97	0.72–1.32		–	–		–	–		–	–	
Satisfied	1.07	0.82–1.41		–	–		–	–		–	–	
Satisfied with partner relationship (ref: Unsatisfied)	–	–	<.001	–	–	<.001	–	–	<.001	–	–	<.001
Not satisfied/Not unsatisfied	0.69	0.50–0.96		0.56	0.32–0.98		0.58	0.33–1.01		0.69	0.37–1.25	
Satisfied	0.45	0.34–0.60		0.22	0.13–0.35		0.22	0.13–0.35		0.29	0.17–0.49	
Not applicable	0.46	0.34–0.61		0.47	0.28–0.79		0.41	0.24–0.69		0.26	0.14–0.48	
Satisfied with sex life (ref: Unsatisfied)	–	–	.011	–	–	–	–	–	–	–	–	–
Not satisfied/Not unsatisfied	0.85	0.69–1.04		–	–		–	–		–	–	
Satisfied	0.72	0.58–0.89		–	–		–	–		–	–	
Sedatives use (ref: Yes)	–	–	.002	–	–	–	–	–	–	–	–	–
No	0.70	0.56–0.88		–	–		–	–		–	–	
Substance use (ref: Yes)	–	–	.037	–	–	–	–	–	–	–	–	–
No	0.83	0.58–1.19		–	–		–	–		–	–	
Alcohol use	–	–	–	–	–	–	–	–	–	1.13	1.04–1.23	.020
Acute stress symptoms[2]	1.11	1.05–1.18	<.001	–	–	–	–	–	–	–	–	–
Perceived stress[3]	1.05	1.03–1.06	<.001	–	–	–	–	–	–	–	–	–
Direct psychological violence before study period (ref: No)	–	–	<.001	–	–	–	–	–	–	–	–	–
Yes	11.4	7.96–17.0		–	–		–	–		–	–	

(Continued on next page)

Table 3. (Continued)

Variables	Direct psychological violence			Direct physical violence			Direct hands-off SV			Direct hands-on SV		
	Odds ratio	95% CI odds ratio (Wald)	p-value (LRT)	Odds ratio	95% CI odds ratio (Wald)	p-value (LRT)	Odds ratio	95% CI odds ratio (Wald)	p-value (LRT)	Odds ratio	95% CI odds ratio (Wald)	p-value (LRT)
Direct psychological violence during study period (ref: No)			—			< .001			< .001			< .001
Yes	—	—		8.82	5.71–14.1		8.71	5.64–13.9		3.34	2.18–5.13	
Indirect psychological violence before study period (ref: No)			.006			—			—			—
Yes	0.79	0.67–0.93		—	—		—	—		—	—	
Indirect psychological violence during study period (ref: No)			< .001			—			—			—
Yes	5.58	4.42–7.07		—	—		—	—		—	—	
Direct physical violence before study period (ref: No)			—			< .001			< .001			—
Yes	—	—		8.06	4.98–13.8		8.26	5.10–14.1		—	—	
Direct physical violence during study period (ref: No)			—			—			—			—
Yes	—	—		—	—		—	—		—	—	
Indirect physical violence during study period (ref: No)			—			< .001			< .001			—
Yes	7.37	4.47–12.6		6.95	4.04–11.9		7.51	4.35–12.9		—	—	
Direct hands-off SV before study period (ref: No)			—			—			—			< .001
Yes	—	—		—	—		—	—		0.40	0.25–0.64	
Direct hands-off SV during study period (ref: No)			—			—			—			< .001
Yes	—	—		—	—		—	—		18.7	9.63–36.4	
Direct hands-on SV before study period (ref: No)			—			—			—			< .001
Yes	—	—		—	—		—	—		6.46	3.96–10.9	
Direct hands-on SV during study period (ref: No)			< .001			—			—			—
Yes	3.69	2.23–6.14		—	—		—	—		—	—	
Satisfied with online/phone contacts (ref: Unsatisfied × LGBT+)			.043			—			—			—
Not satisfied/Not unsatisfied × LGBT+	0.55	0.27–1.11		—	—		—	—		—	—	
Satisfied × LGBT+	0.45	0.24–0.84		—	—		—	—		—	—	
Substance use (ref: Yes × LGBT+)			.075			—			—			—
No × LGBT+	0.51	0.24–1.07		—	—		—	—		—	—	
Alcohol use × LGBT+	—	—	—	—	—	—	—	—	—	0.77	0.56–1.00	.046

Note. [1]AUDIT-C, from 0 (no alcohol intake) to 12 (problematic alcohol intake). [2]PC-PTSD-5, from 0 (no acute stress symptoms) to 5 (at least 5 types of acute stress symptoms). [3]Perceived stress scale, from 0 (no perceived stress) to 40 (high perceived stress). Abbreviations: LGBT+ = lesbian, gay, bisexual, trans, pan-/omnisexual, asexual, other; PTSD = posttraumatic stress disorder; CI = confidence interval; LRT = likelihood ratio test; SV = sexual violence.

(March–June 2020), aiming to identify potential risk factors and moderators.

The study analysed 5,148 participants, with 10% recognizing as LGBT+. It found that the COVID-19 lockdown detrimentally affected participants' relational, sexual, social satisfaction, and mental health, alongside alcohol, sedative, and substance use. The data indicated 20% experienced DV, while 10% experienced indirect DV. These numbers seem higher than what was found in other European studies on DV during lockdown, but are in fact difficult to compare as both the measurement of DV and reference period variate throughout the different studies (see e.g., Jung et al., 2020; Kourti et al., 2021). In our study, the reported (in)direct domestic victimisation before the study period was higher than during the study period, however this is not surprising since the time of reference is very different. Yet, these findings are in line with results for other studies in Europe which showed that an increase in DV was observed during periods of lockdown measures (Kourti et al., 2021). Comparable to findings from earlier research (Fomenko et al., 2022), households consisting of more than three persons were more at risk of (in)direct DV exposure. Furthermore, we found that for all types of DV, the more satisfied one is with their relationship and/or sex life, the less likely one seems to report domestic victimisation. Yet, further research is needed to identify the cause within this association. Being single – as is to be expected – is also less associated with domestic victimisation. Furthermore, we also found several associations between different forms of domestic victimisation prior to and during the study period. In general, we can derive from the study findings that DV is often expressed through multiple types of violence, that it often occurs multiple times (before versus during study period), and that direct and indirect DV are often clustered within the same household. For researchers, policy makers, and caregivers who are trying to detect and prevent DV, it is crucial to understand that domestic victimisation is rarely a story of "single incident violence".

Even though country differences emerge in terms of descriptive statistics on socio-demographical variables, variables concerning the satisfaction level of different relations, contacts and sex life during the first COVID-19 lockdown, and variables regarding mental health, alcohol, sedative and substance use, and domestic victimisation before and during first COVID-19 lockdown, it is crucial to interpret these findings with careful consideration. While these differences may appear on the surface, our subsequent analyses revealed that they are more likely a consequence of coincidental sample composition rather than reflective of genuine disparities between the three countries in terms of mental health, alcohol, sedative and drug use, and occurrence of DV. The absence of significant clustering, as indicated by our likelihood ratio tests, suggests that the country of residence does not emerge as a substantial risk or protective factor in this study. The risk of exposure to DV should therefore be understood at individual level instead of at country level.

In line with earlier studies (De Schrijver et al., 2022; Krueger & Upchurch, 2019; Kuyper & Vanwesenbeeck, 2011; Stuber et al., 2008), the LGBT+ subsample composition showed to be socio-demographically different from the non-LGBT+ subsample. The LGBT+ participants were in general younger, reported more financial difficulties, lived more often alone or only with one other person, were less satisfied about their online social contacts, their relationships, and their sex lives compared to non-LGBT+ participants. However, no differences were found for face-to-face contacts during the study period. Yet, given that face-to-face contacts had to be limited to an absolute minimum during the COVID-19 lockdown measures for everyone, more information about the nature of these contacts is needed to understand why a difference was found for online and phone contacts and not for face-to-face contacts.

As expected based on earlier studies (Drazdowski et al., 2016; Hatchel et al., 2019; Kuyper & Fokkema, 2011; Rostosky et al., 2022; Stuber et al., 2008), LGBT+ participants also reported more illegal drug use, indicated to experience more acute stress symptoms, and reported higher levels of perceived stress than non-LGBT+ participants. These findings may be explained through the lenses of the othering-based stress (De Schrijver, 2022; Hendricks & Testa, 2012; Meyer, 2003; Meyer & Frost, 2013) as well as by the differences in sociodemographic characteristics (Krueger & Upchurch, 2019; Kuyper & Vanwesenbeeck, 2011; Stuber et al., 2008) between LGBT+ and non-LGBT+ participants. Unfortunately, our dataset did not contain variables on othering-based stress. More research is needed to confirm whether experiencing othering-based stress moderates the observed relationships.

Regarding (in)direct DV exposure, LGBT+ participants reported significantly more victimisation than non-LGBT+ participants before the study period, yet no differences were observed in terms of DV exposure during the lockdown period under study. Several hypotheses could explain why this is the case. First, under the lockdown, rules about social contacts were the same for everyone, regardless of sexual orientation or gender identity. This means that the role of one's social network as a protective factor against violence exposure might have become comparable for everyone as well as increased levels of stress might have served equally as a risk factor. Another explanation could be related to the (im)possibility of escaping a threatening domestic environment due to the ruling lockdown measures. More research is needed to fully understand the different socio-ecological circumstances and dynamics that may have played a role in the observation that the risk of DV

exposure became equal for LGBT+ and non-LGBT+ persons under COVID-19 lockdown measures. Future studies could benefit from making comparisons between data regarding the period before, during, and after the COVID-19 pandemic and the associated hygiene measures.

Moderating effects of sexual orientation and/or gender identity on the relationship between psychological distress and DV emerged. Identifying as LGBT+ reinforces the effect of some of the risk factors for specific types of DV significantly. These vulnerabilities were only found for LGBT+ persons. For example, substance use and satisfaction about social contacts and relationships were only associated with certain types of domestic victimisation in the LGBT+ sample. However, we found no significant evidence indicating that the identification as LGBT+ itself served as a risk factor for DV victimisation during lockdown. Yet, we did find that they reported more financial difficulties, a younger age, less relational and sexual satisfaction, poorer mental health, more maladaptive coping strategies such as the use of illegal drugs, and more prior experiences with DV. These have all been identified as general risk factors for (in)direct exposure to violence (Casey & Masters, 2017; De Schrijver, 2022; Ullman & Najdowski, 2011; World Health Organization, 2019). These findings support the hypothesis that the general vulnerabilities contribute more to the increased incidence of DV in LGBT+ persons than specific characteristics such as one's sexual orientation or gender identity. The fact that identifying as LGBT+ operates as a moderator may explain why sexual orientation and gender identity are not consistently identified as risk factors for DV exposure.

Like all studies, ours also came with certain limitations. First, because of our convenience sample, the study findings cannot be extrapolated to the general populations and LGBT+ communities in Belgium, Germany, and Portugal. Selection bias and possible confounding variables (e.g., number of sexual partners (De Schrijver, 2022), exposure to interpersonal violence during childhood (Butler et al., 2020; Fomenko et al., 2022; Walker et al., 2019) require caution in interpreting our finding, especially when comparing LGBT+ and non-LGBT+ individuals. Secondly, although the study questionnaire including items measuring physical, psychological, and sexual DV is one of the study strengths, adding items on economic violence in future studies could strengthen our knowledge about the occurrence and correlates of DV. Thirdly, self-harming behaviour, suicidal ideation, and suicide attempt – earlier identified correlates of DV (Keygnaert et al., 2021; Pieters et al., 2010) – could not be included in the three country analysis because these items were not included in the German study due to ethical considerations. Further research is needed to analyse these data on a country level. Analysis of the Belgian LGBT+ sample already showed alarming rates of suicidal ideation and self-harm during the first weeks of the lockdown (De Schrijver et al., 2021).

Fourthly, in this study, sexual orientation and gender identity were measured based on single-items on self-labelling. Identifying LGBT+ persons who do not (yet) self-label as such remain thus undetected. Combining multiple dimensions including self-labelling, sexual/romantic attraction, sexual partners and behaviour, sex at birth, and gender identity (see Badgett, 2009; Motmans et al., 2020) would allow more nuance in the identification of the LGBT+ subgroup of our study samples. In addition, as mentioned above, the lack of data collection regarding othering-based stress limits our interpretation of the study findings (De Schrijver, 2022).

Conclusion

This study highlighted that LGBT+ persons were generally more at risk of domestic victimisation compared to non-LGBT+ persons, but this increased risk disappeared during the first COVID-19 lockdown periods in Belgium, Germany, and Portugal. This study showed that one in five LGBT+ persons in Belgium, Germany and Portugal had ever experienced direct domestic victimisation and one in ten was ever exposed to indirect DV. The country one lives in could not be identified as an influencing factor in the occurrence of DV prior to and under lockdown measures. The general higher risk for DV observed in LGBT+ persons compared to non-LGBT+ persons can be linked to socio-demographic characteristics, acute stress symptoms, high levels of perceived stress, and illegal drug use which are more prevalent in LGBT+ persons than in non-LGBT+ persons. These findings highlight the need for public health measures aimed at preventing mental health disparities in LGBT+ communities, lowering the barriers to seeking help upon DV and increasing access to mental health care in general. Future research should incorporate an intersectional perspective and address both shared and unique vulnerabilities for the non-LGBT+ population as well as LGBT+ communities to fully understand the dynamics underlying DV and its impact on societies and their communities.

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Ethics approval and informed consent

This study was approved by the Ethics Committees of Ghent University Hospital and Ghent University (BC-07600) on April 9th, 2020. This study was conducted according to WHO ethical guidelines on research on violence. All participants received an information letter with additional explanation about the nature of the study and contact details of emergency services and gave their active informed consent to participate in the study. Participation was anonymous. No individual data or photos were used in the manuscript. Analyses were done on aggregated data only. Consent for publication on an individual level is thus not needed. The informed consent also mentions data analysis and publication, by using the aggregated data.

Authorship

Ines Keygnaert oversaw the global "Relationships, Stress and Aggression in times of COVID-19" study and coordinated the project from development of the questionnaire, over the data collection, analysis and reporting. Lotte De Schrijver drafted the manuscript, assisted by Elizaveta Fomenko who analysed the data. Sonia Dias coordinated the data collection in Portugal. Paulina Tomaszewska and Isabell Schuster were responsible for the data collection in Germany. All authors (Lotte De Schrijver, Elizaveta Fomenko, Sonia Dias, Isabell Schuster, Paulina Tomaszewska, and Ines Keygnaert) revised the manuscript for important intellectual content, and all authors read and approved the final version.

Availability of data and materials

We are unable to make our data set publicly available for ethical reasons. This study involves sensitive human research participant data, which cannot be shared publicly. However, the corresponding author can be contacted for future data request purposes (may require data use agreements to be developed).

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