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Characteristics and associated factors of self-reported sexual aggression in the Belgian population aged 16–69

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Abstract

Sexual violence is a major public health, societal, and judicial problem worldwide. Studies investigating the characteristics of its perpetrators often rely on samples of convicted offenders, which are biased by low reporting and conviction rates. Based on a self-report study in the Belgian general population aged 16 to 69 ($n=4687$), we provide lifetime and past-year prevalence rates of sexual aggression and report the characteristics of the events, including type, target, and the applied coercion strategies. Future research should use behaviourally specific questions that take the perpetrator's perspective into account to limit interpretation ambiguity which could reduce unintentional non-disclosure of sexual aggression.

Keywords Sexual violence perpetration, Sexual offending, Risk factors, Prevalence, Coercive strategy

Introduction

Sexual violence is a global problem with long-lasting consequences for the victims and therefore for society as a whole (World Health Organization, 2010). To prevent sexual violence, it is necessary to understand its perpetrators.¹ Studies of the nature and risk factors of sexual aggression have relied primarily on samples of convicted offenders (e.g., Piquero et al., 2012). However, these samples are heavily biased by the high dark

figure of sexual offenses that are not detected or reported (Kolivas & Gross, 2007) and the low conviction rates of sexual offenders (Lovett & Kelly, 2009). Self-report studies address these concerns, but they also have their limitations, such as misinterpretation of questionnaire items (Strang & Peterson, 2017) and social desirability bias (King, 2022), resulting in underreporting of sexual aggression. Despite these limitations, self-report studies allow us to obtain information about the characteristics of perpetrators who do not come into contact with the criminal justice system (Lisak & Miller, 2002).

To our knowledge, only one prior study provided data on sexual aggression in Belgium (Krahé et al., 2015). In this study conducted in Flanders among young adults between 18 and 27 years, 5.5% of young men and 2.7% of young women reported some act of sexual aggression, which was defined as “behaviour carried out with the intent or result of making another person engage in sexual activity despite his or her unwillingness to do so” (Krahé et al., 2015, p. 2). The ‘Sexpert study’ that examined the sexual health of Flemish people only reported rates of sexual victimisation, but not sexual aggression

¹ In this article, we refer to ‘perpetrators’ when it is not clear or known whether or not an act qualifies as a criminal offense. When referring to other studies, we adopt the terminology used in the original article. Perpetrators of sexual aggression in this study are those who have committed an act of sexual aggression as defined in the Method section.

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(Buysse et al., 2013). In Belgium's neighbouring country, the Netherlands, a study representative in terms of age, sex, education level, and level of urbanization found that about 10% of men and 2% of women between the ages of 15 and 70 had ever forced another person to perform sexual acts (de Haas et al., 2010). The authors also included behaviour without physical contact, such as the unwanted display or creation of sexual images. More recent research in the Netherlands with adolescents between the ages of 12 and 24 found that 5% of boys or men and 2% of girls or women had ever forced or pressured someone to have sex (de Graaf et al., 2017). These studies show that men are more likely than women to commit sexual aggression. Moreover, sexual aggression appears to be more common in adolescents and young adults (de Haas et al., 2010). Other factors typically associated with sexual aggression are own victimisation experiences, hostile attitudes towards women (see Tharp et al., 2013 for a review), and certain attitudes and behaviours linked to sexuality. Examples include a preference for impersonal sex, having multiple sexual partners, and early sexual initiation (Krahé et al., 2003; Malamuth et al., 1996; Tharp et al., 2013).

In contrast, looking at the victim perspective shows that the prevalence rates of sexual aggression reported above are likely biased. In a Belgian representative sample, 42% of women and 19% of men experienced a form of sexual violence that involved physical contact (so-called hands-on sexual victimisation) in their lifetime (Schapansky et al., 2021). This discrepancy between the prevalence of sexual victimisation and aggression may be explained in part by the possibility that only a small number of perpetrators are responsible for a large proportion of the acts (Lisak & Miller, 2002; Martinez et al., 2017). Another possible explanation is that perpetrators, intentionally or unintentionally, do not disclose their acts (Strang et al., 2013). Unintentional non-disclosure, when the sexual acts were interpreted as consensual, is considered the greatest threat to the validity of self-report measures of sexual aggression (Kolivas & Gross, 2007).

Behaviourally specific self-reports can mitigate this ambiguity in interpretation (Peterson et al., 2011; Wilson & Miller, 2016). For this reason, they are considered the best available tool to measure both sexual victimisation and sexual aggression. Yet, it is unlikely that these questions detect all sexual aggression cases (Kolivas & Gross, 2007). Thus, assessment instruments for sexual aggression should be further developed. To this end, studies of sexual aggression in the general population should be conducted and reported so that researchers can compare and improve their methodology in their assessment of sexual aggression.

The current study wants to contribute to this by providing data on self-reported sexual aggression of Belgian residents between 16 and 69 years old. In doing so, we shed light on the characteristics of sexual aggression and its male and female perpetrators.

Methods

Sampling method and participants

This study uses data collected between October 2019 and February 2020, and between September 2020 and January 2021. The study was approved by the Medical Ethical Committee of Ghent University. The National Register, which contains demographic information on all residents of Belgium, served as the sampling frame from which Belgian residents were randomly drawn and then invited by mail to participate in an online survey. In two waves of data collection, 41,520 Belgian residents between 16 and 69 were selected and contacted by the National Register. Participants could access the online survey via a link or QR code in Qualtrics. To increase the response rate, participants were given the opportunity to win a voucher worth 30 euros.

Of the 6505 individuals who participated in the survey, respondents who did not provide informed consent ($n=706$), did not meet the age criteria ($n=6$), or completed the survey more than once ($n=29$) were excluded. Respondents were also excluded if they stopped before the 'sexual aggression' block relevant to this study was completed ($n=1070$). Three respondents indicated in the comments field at the end of the questionnaire that they had accidentally answered a question positively. Since it was clear which question they were referring to, their answers were adjusted accordingly. Some respondents ($n=7$) were also removed from the study due to the quality of their responses. The responses of six cases showed the same pattern as of those who indicated in the comments that they made a mistake but could not go back to correct it (e.g., age at first offense=1). Therefore, it was safe to assume that their responses were similarly false. However, without a remark made by the respondents themselves, we felt that we could not adjust their responses. Instead, we decided to remove those cases entirely. Another respondent gave clearly exaggerated, careless answers.

Thus, the final sample consisted of $n=4687$ respondents (50% male, 50% female, response rate 11.3%), with a mean age of 39.2 years ($SD=17.2$). Fifty percent of this sample had a higher education degree and 26% were students. Further, ten percent of the sample identified themselves as non-heterosexual. With half the sample being female, it reflects the population. Also the number of non-heterosexual respondents is comparable to that in other surveys (Coffman et al., 2017; Herbenick et al.,

2010). In contrast, more highly educated people are over-represented in our sample as this group only forms 36% on a Belgian population-level (Statbel, 2020). The same is true for young people aged 16–24 (16% on a population-level vs. 32% in our sample). However, young people were purposefully oversampled to ensure sufficient power in all age groups, which was then adjusted for by applying sample weights to the data (see Analysis for more information). In the final sample, 166 respondents reported one or more acts of sexual aggression.

Instruments

The questionnaire to assess sexual aggression was part of a larger survey that focused on sexual victimisation (Keygnaert et al., 2021). The survey was available in five languages, including the most commonly spoken languages by the study population at the time of the study (i.e., Dutch, French, and English) and two additional languages (i.e., Arabic and Farsi). These languages as well as English were added to allow non-native speakers to participate.

Sexual aggression

For the purpose of this study, sexual aggression is defined as engaging in sexual activity, that involves physical contact, with another person against their will (Krahé et al., 2015; World Health Organization, 2015).

We asked eight behaviourally specific questions to assess whether a person had ever engaged in sexually aggressive behaviour. These questions were based on the revised Sexual Experience Survey (SES)—Long Form Perpetration (Koss et al., 2006, 2007), the National Intimate Partner and Sexual Violence Survey (Smith et al., 2017), the Senperforto questionnaire (Keygnaert et al., 2015), and the Sexual Aggression and Victimisation Scale (Krahé & Berger, 2013). These items can be further grouped into sexual abuse (physical contact without penetration) and rape or attempted rape (physical contact with penetration). The reference period was the entire life course, and the age of the victim was not specified. Thus, both acts against minors and against adults were included. A list of the items can be found in Appendix A. When a question was answered affirmatively, respondents were asked a follow-up question regarding the frequency of the behaviour over the past 12 months. For this analysis, we recoded the responses into a binary variable of no (= 0) vs. at least one (= 1) incident in the past year.

To reduce recall bias and time spent with the survey, we asked respondents to choose the behaviour that happened most recently (if multiple were indicated) and all other follow-up questions then referred to this most recent incident.

Coercion strategy

We then asked respondents which circumstances best described the incident. The response options reflected the coercion types verbal pressure, (threat of) the use of force, exploiting a state of incapacitation, or of their position of authority or power (Keygnaert et al., 2012, 2014; Krahé & Berger, 2013). We further provided the option that none of the answers applied. The revised SES (Koss et al., 2006, 2007) asks about different forms of sexual aggression in combination with the coercive strategy used. In contrast, we decided to ask about the coercive strategy separately in our research because the content validity tests showed that a combined format confused participants who did not know what to answer if the unwanted behaviour occurred under circumstances that were not captured by the coercive strategy outlined in the survey.

Sociodemographic and sexuality-related factors

Next to mapping the extent and nature of sexual violence in the Belgian population, the research project of which this study is a part aimed to understand the impact of sexual violence on, among other things, people's sexual and reproductive health. In this study, we want to assess how such sexuality-related factors, together with basic sociodemographic factors (i.e., sex and age) are associated with sexual aggression.

The sex of the respondents was defined as the 'sex assigned at birth'. Respondents were further asked about the age at which they had sex for the first time (i.e., sexual initiation), as well as how many male and female sexual partners they had. For those indicating they never had sex (13.9%, $n=651$), and therefore did not see this question, we assigned the value 0. When an answer to one of these two variables was missing, we assigned the value 0 to that missing response. When both fields were left empty, we handled it as a missing value for the calculation of total sex partners. The response format made it safe to assume that if a respondent entered a number for, e.g., female sex partners and none in male sex partners, it was because they had no male sex partners.

We calculated the age of respondents at the time of participation based on their year of birth and then divided them into three age groups: adolescents and young adults (16–24 years), adults of reproductive age (25–49 years), and adults older than reproductive age (50–69 years). To ensure sufficient power in all age groups, which were especially relevant for the analyses of sexual victimisation (reported elsewhere, see Schapansky et al., 2021), the youngest group was purposefully oversampled. To compensate for this overrepresentation, we applied sample weights, in order to provide prevalence rates that are representative of the Belgian population in terms of sex

and age. Sampling weights were computed based on the population distribution of males and females within the three age groups as provided by the National Register for the sampling period.

To reduce information loss due to missing values in the following analysis, age at sexual initiation was grouped into early vs. late sexual initiation, with 15 years or younger considered early (Epstein et al., 2018; Young et al., 2018). Given that all respondents were at least 16 years old at the time they completed the survey, we assigned respondents who indicated that they had never had sex to the late initiation category.

The number of male and female sexual partners was combined into a total number. Respondents who reported never having had sexual intercourse were given the value 0. This variable was dichotomised into 0–2 sexual partners vs. 3 or more based on the median (see Analysis for details).

In addition, own victimisation experiences were included in the analysis of factors associated with sexual aggression. For this purpose, the aggregated variable of lifetime hands-on victimisation was used. We assessed hands-on victimisation using the same eight items, formulated from the victim's perspective, along with an additional item that indicated that someone touched the victim's intimate body parts during care.

Analysis

Analyses were performed using R version 3.6.3 and higher. To examine the association of sexual aggression with the factors described above, we computed multivariate logistic regression analyses. All variables were added simultaneously, resulting in adjusted odds ratios for each variable controlling for the effects of the other predictor variables in the model. Adjusted odds ratios indicate by how much the likelihood of sexual aggression increases when the factor level of an independent variable changes. A value greater than 1 indicates an increase in the probability of sexual aggression and a value less than 1 indicates a decrease. A multivariate outlier analysis was conducted on the variables used in the regression model and no outliers were detected. The multicollinearity hypothesis of multivariate regression analyses was tested with the Variance Inflation Factor (VIF), which did not demonstrate multicollinearity. The linearity hypothesis of continuous variables added to the analysis (i.e., number of sex partners) was tested with the Box-Tidwell test (Box & Tidwell, 1962), which indicated a violation of this hypothesis. The variable was therefore dummy coded based on the

median. Respondents who reported having had no to two sex partners were given the value 0 and respondents who reported having had three or more sex partners were given the value 1. The confidence intervals of the weighted prevalence rates were calculated using the proportion test for calculating binomial confidence intervals. All other results are based on the unweighted data.

Results

Prevalence of sexual aggression

Lifetime prevalence

A total of 166 respondents (3.5%; 95% CI 3.0–4.1) reported at least one act of life-time sexual aggression (5.7% of men (95% CI 4.8–6.8); 1.4% of women (95% CI 1.0–2.0)). Table 1 shows the prevalence of each reported behaviour for men and women and in the total sample. Unwanted kissing and fondling were the most prevalent behaviours (1.6 (95% CI 1.2–2.0) and 1.8% (95% CI 1.4–2.2), respectively), whereas making another person penetrate oneself was least prevalent (reported by 0.1%; 95% CI 0.0–0.2, $n=3$).

Past-year prevalence

At least one act of sexual aggression in the past 12 months was reported by 1.2% of men (95% CI 0.8–1.8) and 0.4% of women (95% CI 0.2–0.8). The past-year prevalence of each behaviour is shown in Table 1. The frequency of each behaviour reported over the past year is provided in Appendix B. In most cases, respondents did not engage in the reported behaviour over the past year. One striking observation is that for most behaviours, there is one extreme outlier: a respondent who claimed to have engaged in the behaviour at least twice a month on average. The highest reported value was 50 incidents of oral penetration against someone's will over the past 12 months. It is important to note, though, that these high values are likely rough estimates made by the respondents.

Overlap of types of sexual aggression

When examining the overlap between the different behaviours, it becomes clear that those reporting any unwanted penetration and those reporting attempted penetration form nearly mutually exclusive groups with the overlap of each combination ranging from 0 to 17.4% ($n=4$). Half of those reporting attempted or completed unwanted penetration ($n=26$ out of 52), also reported some other form of hands-on sexual aggression. All questions that followed referred to the most recent incident in case of multiple types or occurrences.

Table 1 Prevalence of hands-on sexual aggression

Item	Women N (%; 95% CI) ^a n = 2354	Men N (%; 95% CI) n = 2333	Total N (%; 95% CI) n = 4687
Lifetime			
Kissing	18 (0.7; 0.4–1.2)	55 (2.5; 1.9–3.2)	73 (1.6; 1.2–2.0)
Fondling/rubbing	11 (0.4; 0.2–0.8)	74 (3.2; 2.5–4.0)	85 (1.8; 1.4–2.2)
Undressing	1 (0.0; 0.0–0.3)	14 (0.7; 0.4–1.1)	15 (0.4; 0.2–0.6)
Oral penetration	1 (0.0; 0.0–0.3)	11 (0.4; 0.2–0.8)	12 (0.2; 0.1–0.4)
Attempted oral penetration	3 (0.1; 0.0–0.4)	12 (0.5; 0.3–0.9)	15 (0.3; 0.2–0.5)
Vaginal or anal penetration	3 (0.1; 0.0–0.3)	16 (0.7; 0.4–1.2)	19 (0.4; 0.2–0.6)
Attempted vag. or anal penetration	2 (0.1; 0.0–0.4)	15 (0.8; 0.5–1.2)	17 (0.4; 0.3–0.7)
Forcing to penetrate	2 (0.1; 0.0–0.3)	1 (0.1; 0.0–0.3)	3 (0.1; 0.0–0.2)
Any hands-on	34 (1.4; 1.0–2.0)	132 (5.7; 4.8–6.8)	166 (3.5; 3.0–4.1)
Past 12 months			
Kissing	3 (0.1; 0.0–0.4)	10 (0.3; 0.1–0.7)	13 (0.2; 0.1–0.4)
Fondling/rubbing	3 (0.1; 0.0–0.4)	14 (0.5; 0.3–0.9)	17 (0.3; 0.2–0.5)
Undressing	0 (0.0; 0.0–0.2)	5 (0.2; 0.1–0.5)	5 (0.1; 0.0–0.2)
Oral penetration	0 (0.0; 0.0–0.2)	2 (0.0; 0.0–0.3)	2 (0.0; 0.0–0.1)
Attempted oral penetration	1 (0.0; 0.0–0.2)	2 (0.1; 0.0–0.4)	3 (0.1; 0.0–0.2)
Vaginal or anal penetration	1 (0.0; 0.0–0.2)	6 (0.3; 0.1–0.6)	7 (0.1; 0.1–0.3)
Attempted vag. or anal penetration	2 (0.1; 0.0–0.4)	5 (0.3; 0.1–0.6)	7 (0.2; 0.1–0.4)
Forcing to penetrate	0 (0.0; 0.0–0.2)	0 (0.0; 0.0–0.2)	0 (0.0; 0.0–0.1)
Any hands-on	10 (0.4; 0.2–0.8)	32 (1.2; 0.8–1.8)	42 (0.8; 0.6–1.1)

^a N respondents that reported each behaviour (unweighted) and weighted proportion in % representative of sex and age in Belgian population

Table 2 Perpetrator-victim relationship by type of hands-on sexual aggression

Item	(ex-) Partner		Family member		Friend		Date/acquaintance		Someone responsible for		Colleague/classmate		Someone else	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Kissed	9	13.4	1	1.5	27	40.3	14	20.9	–	–	8	11.9	8	11.9
Fondled	9	14.3	7	11.1	16	25.4	16	25.4	–	–	8	12.7	7	11.1
Undressed	4	100	0	0.0	0	0.0	0	0.0	–	–	0	0.0	0	0.0
Oral penetration	5	83.3	0	0.0	1	16.7	0	0.0	–	–	0	0.0	0	0.0
Attempted oral penetration	6	60.0	0	0.0	3	30.0	0	0.0	–	–	1	10.0	0	0.0
Vaginal/anal penetration	9	90.0	0	0.0	0	0.0	1	10.0	–	–	0	0.0	0	0.0
Attempted vag./anal penetration	5	55.6	0	0.0	1	11.1	1	11.1	–	–	1	11.1	1	11.1
Forcing to penetrate	1	50.0	1	50.0	0	0.0	0	0.0	–	–	0	0.0	0	0.0
Total	48	28.1	9	5.3	48	28.1	32	18.7	0	–	18	10.5	16	9.4

Characteristics of sexual aggression

Perpetrator-victim relationship

In most cases, the target of sexual aggression was the (ex-) partner ($n=48$, 28.1%) or a friend ($n=48$, 28.1%). The answer “Someone I was responsible for (e.g., patient, pupil, subordinate, arrestee, believer, ...)” was never selected. All results on the relationship between perpetrator and victim are shown in Table 2. Multiple answers

were possible. Most male perpetrators (90.2%) indicated that the act was directed at one or more women, ten (7.6%) perpetrators acted against another man, and three (2.3%) indicated that the sex was unknown. Of the 34 female perpetrators, 29 (85.3%) targeted one or more men, and five (14.7%) targeted another woman.

Table 3 Logistic regression analysis of factors associated with sexual aggression

Predictors	aOR (95% CI)
Male (ref. female)	5.47 (3.70–8.10)***
Age	
16–24	1.56 (1.01–2.42)*
25–49	1.45 (0.97–2.17)
50–69	Ref
Late sexual initiation (ref. early)	1.05 (0.68–1.61)
3 or more sexual partners (ref. 0–2)	1.52 (1.04–2.21)*
Previous victimisation	3.40 (2.28–5.07)***

aOR adjusted odds ratio

*** $p < 0.001$ * $p < 0.05$

Coercion strategies

Most respondents ($n = 134$, 80.7%) indicated that they did not use any of the provided coercive strategies. Twenty respondents (12.0%) reported using the victim's inability to resist, for example, due to excessive alcohol consumption. Five respondents (3.0%) used or threatened to use physical force. Four respondents (2.4%) each reported using their position of authority or power or applying verbal pressure.

Factors associated with sexual aggression

The results of the logistic regression analysis of factors associated with sexual aggression and all adjusted odds ratios are summarised in Table 3. Respondents' sex and self-reported sexual victimisation were the strongest predictors of sexual aggression. More than half of the respondents who reported having committed some form of sexual aggression also reported having been a victim of some form of sexual violence ($n = 87$, 52.1%). The logistic regression model was significant ($p < 0.001$) with Nagelkerke's $R^2 = .10$.

Furthermore, participants younger than 50 years were more likely to report lifetime sexual aggression. However, this relationship was only significant for the youngest age group (16–24 years) in comparison to the oldest age group (50–69 years). A higher number of sexual partners was also related to a higher likelihood of sexual aggression, whereas early sexual initiation was not.

Discussion

Prevalence and characteristics of sexual aggression

To our knowledge, this study is the first to provide data on sexual aggression in the Belgian general population. The prevalence rates found in our study indicate that 5.7% of men (95% CI: 4.8–6.8) and 1.4% of women (95% CI 1.0–2.0) in Belgium aged 16–69 have engaged in sexual aggression. These rates are similar to those found

in previous research in the Netherlands (de Graaf et al., 2017; de Haas et al., 2010) and in a sample of young adults in Belgium (Krahé et al., 2015).

Studies that surveyed both female and male perpetrators of sexual aggression have consistently found higher rates of male sexual aggression (e.g., D'Abreu et al., 2013; Krahé & Berger, 2013; Krahé et al., 2015; Ybarra & Mitchell, 2013), as was the case in our study. Previous research found that own victimisation experiences (see Tharp et al., 2013 for a review) and certain attitudes and behaviours related to sexuality, such as impersonal sex, having multiple sexual partners, and early sexual initiation (Krahé et al., 2003; Malamuth et al., 1996; Tharp et al., 2013), are associated with sexual aggression. Our findings only partially corroborated these results. Having had three or more sexual partners was associated with sexual aggression, but early sexual initiation, i.e., before age 16, was not. Furthermore, own sexual victimisation, after the sex of the participants, was most strongly associated with sexual aggression in our study. However, we do not know whether sexual victimisation or the sexually aggressive act occurred first, which is also the case for all other variables. So we cannot make any conclusions about causality based on our analyses.

The logistic regression model used to analyse factors associated with sexual aggression was significant, but it only explained a relatively small amount of the variance. This could be attributed to the fact that we only included a limited number of factors in the model for several reasons. Firstly, the final survey focused on questions related to sexuality, aligning with the main objective of the broader research project which this study is part of. As a result, other potentially relevant factors, such as attitudes or personality traits, could not be included in the analysis. Additionally, we were cautious about over-analysing the data by introducing too many variables, given the relatively small proportion of perpetrators compared to non-perpetrators within the sample. Hence, we opted to focus on a more concise set of factors to maintain the study's focus and objectives.

The victim of the sexual aggression in most reported cases was a current or former partner and rarely a stranger which is in line with previous research (Katz-Schiavone et al., 2008). Nevertheless, other studies found smaller differences between these categories of victim-perpetrator relationship (Krahé et al., 2015). This finding may also be indicative of the types of sexual aggression that are more likely to be captured by a self-report survey such as this one.

Research suggests that a substantial number of individuals who engage in sexually aggressive behaviours will never come into contact with the criminal justice system (Lovett & Kelly, 2009). Offenses that are more likely to be reported and more likely to result in convictions are those perpetrated by strangers with prior criminal records, along with documented injuries to the victim,

involving more physical violence (Lovett & Kelly, 2009). Our findings, on the other hand, might disproportionately capture undetected and/or unconvicted perpetrators of sexual violence, resulting in systematic differences in the reported characteristics of sexual aggression.

Also in line with the above are our findings regarding the coercive strategy used. Very few perpetrators indicated that they used force or threatened to do so. The vast majority of self-reported perpetrators indicated that they did not use any of the specified coercive strategies. The coercive strategy of taking advantage of the victim's inability to resist was indicated most frequently, replicating the findings of Krahe et al. (2015) in Belgium and other European countries. In contrast to both their study and the revised SES (Koss et al., 2006, 2007), we asked separately about the coercive strategy. The fact that most respondents chose none of the given response options is consistent with recent research conducted on female sexual victimisation (Canan et al., 2020). The authors found that other strategies than those of the revised SES—Short Form Victimization are often indicated (e.g., surprising the victim with the behaviour). This shows that existing scales do not cover all the coercion tactics that perpetrators of sexual aggression use to suppress the victims' will.

Furthermore, those who have used coercive tactics to obtain sex may not recognise them as such. Strang and Peterson (2017) conducted interviews with 34 men in which some reported telling lies or repeatedly asking for sex until their partner 'gave in'. However, respondents did not perceive such behaviour as verbal coercion or pressure. Moreover, respondents in Strang and Peterson's (2017) study often reported that the items were too harsh (e.g., "continually verbally pressuring her") and they, therefore, felt they did not apply. In our study, we used similar questions about coercion and provided some examples to clarify their meaning, but telling lies was not one of them and, more generally, the labels 'verbal pressure' or 'exploitation' may have deterred respondents from selecting those answers.

Limitations

One limitation of this study is its relatively low response rate. The sampling and contacting of the participants were performed by the National Register. Due to privacy regulations, it was not possible to send more than one reminder to potential participants. For the same reason, the sampling information drawn from the National Register could not be shared with the researchers, preventing us from performing a non-response analysis. That being said, the survey was introduced as a study on health, sexuality, and well-being, and not sexual violence, to limit self-selection bias. Furthermore, a low response rate does not diminish a sample's representativeness. In fact, the

response rate may be less important than the representativeness of a sample (Cook, 2002). Therefore, smaller samples can yield more reliable results than larger samples if the sample is representative of the study's population. By applying sample weights, we achieved prevalence rates of sexual aggression that are representative of the Belgian population in terms of sex and age.

Another limitation is that we cannot distinguish between sexually aggressive acts against minors and adults. It should be highlighted that children are likely part of the group 'another family member' and not 'someone I was responsible for' as the latter was further specified as "patient, pupil, subordinate, arrestee, believer," However, we cannot say for certain how these survey items were interpreted and also do not know the relationship between the perpetrator and the family member concerned and therefore cannot make definitive statements in this regard. It is striking that no one reported victimising someone they were responsible for. One possible explanation for this finding is that the line of what constitutes a transgression is drawn more clearly in, for example, a teacher–pupil relationship, and that perpetrators are less likely to disclose their behaviour out of fear of repercussions.

This brings us to the main limitation of this study, namely the risk of underreporting. This study was part of a larger study that also evaluated the extent of sexual victimisation in Belgium (Keygnaert et al., 2021). In it, we found that 42% of women and 19% of men living in Belgium experienced hands-on sexual victimisation during their lifetime. These figures are substantially higher than the prevalence rates of sexual aggression: 5.7% in men and 1.4% in women. This shows that there is a large discrepancy between the reporting of victimisation and perpetration. While a handful of perpetrators might be responsible for multiple acts of sexual aggression and therefore multiple victims, it is unlikely that this alone explains the difference in magnitude of self-reported sexual victimisation and self-reported sexual aggression (Kolivas & Gross, 2007). Many perpetrators are likely unwilling to report sexually aggressive behaviour or do not recognise their own behaviour as sexual aggression or understand a situation in which a victim does not actively resist, regardless of the reason for doing so, as consent.

Another possible explanation for underreporting could be social desirability bias, a tendency to present oneself in a favourable light. However, research suggests that this risk is not as high as commonly believed (Mathie & Wakeling, 2011). Correlations between social desirability and self-reports of sexual aggression are usually weak and nonsignificant (Cook, 2002). In addition, social desirability was found to be negatively correlated with recidivism and more likely a personality trait than a response style (Mathie & Wakeling, 2011; Tan & Grace, 2008).

A more serious threat to the validity of our results could be unintentional non-disclosure leading to underreporting. Respondents may admit to engaging in behaviour that qualifies as sexual aggression, but do not recognise it as such and therefore reject corresponding items in a sexual aggression survey (Kolivas & Gross, 2007; Strang & Peterson, 2017; Strang et al., 2013).

Precisely because they limit ambiguity in interpretation, behaviourally specific questions, as used in this study, are considered most appropriate for assessing experiences of sexual violence, including sexual aggression (Kolivas & Gross, 2007). However, it seems that for a more accurate understanding of sexual aggression, not only the act itself should be phrased in a behaviourally specific way, but also the victim's response should be specifically worded to limit ambiguous interpretation of the victim's (un)will, as suggested by previous research (Strang & Peterson, 2017). While we relied on the victim's perspective to obtain prevalence rates of sexual victimisation (e.g., "Someone kissed me against my will."), it was also the victim's perspective that needed to be considered when assessing sexual aggression ("Have you ever kissed someone against that person's will?") (cf. Kolivas & Gross, 2007). Rueff and Gross (2017), in a study of male sexual aggression against women, showed that items led to more affirmative responses when they did not mention the other person's perspective (i.e., "when she did not want to", p. 328) but instead indicated "after she first refused". Strang and Peterson (2017) also showed that initial refusal did not equal lack of consent for most men in their study. Judging and acknowledging that someone has acted against the will of another person might still be too ambiguous.

Conclusion and future research

Despite its limitations, our study is the first to provide data on the prevalence, characteristics, and associated factors of sexual aggression in the Belgian general population. The fact that 3.5% of our sample disclosed sexual acts against the will of another person, and that the dark figure is likely much higher, demonstrates that sexual aggression is still far too common.

It is not possible to determine how many respondents did not report sexual aggression despite having engaged in this behaviour in the past, or to determine what the reason was for not reporting it. The interviews described in Strang and Peterson's (2017) study suggest, however, that it is less a matter of correctly interpreting the other person's behaviour and more about being aware of what actions are actually acceptable (and legal).

Future research should therefore assess the circumstances under which the unwanted sexual experience occurred with behaviourally specific questions. Based on our findings and those of other studies on coercive strategies (Canan et al., 2020), these circumstances should include

more than physical violence, threats, verbal pressure, and the exploitation of incapacitation to cover a broader range of sexual aggression. Moreover, these circumstances should be assessed in a way that leaves no room for interpretation. Strang and Peterson (2017) suggest providing specific examples of behaviours of a sexual partner that are often associated with, for example, a lack of consent such as facial expressions or with an inability to consent due to alcohol or drugs. Given the wide range of behaviours that victims might display, which includes fight, flight, freeze, appease, and faint (Katz et al., 2021), an instrument designed to represent the victim's reaction should take all these possible responses into account. Moreover, this study shows that more education and awareness about what sexual violence and sexual consent actually mean are also of utmost importance for the prevention of sexual violence in Belgium.

Appendix A

Sexual abuse (physical contact but no penetration)

- Kissing: *Have you ever kissed someone against that person's will?*
- Fondling/rubbing: *Have you ever fondled or rubbed up against someone's intimate body parts (e.g., breasts, vagina, penis, anus) against that person's will?*
- Undressing: *Have you ever removed (some of) someone's clothes against that person's will?*

Rape and attempted rape (physical contact with attempted or completed penetration)

- Oral penetration: *Have you ever had oral sex with someone or had someone perform oral sex on you against that person's will?*
- Attempt of oral penetration: *Have you ever tried, but did not succeed, to have oral sex with someone or tried to have someone perform oral sex on you against that person's will?*
- Vaginal or anal penetration: *Have you ever put a penis, finger (s) or object(s) into someone's vagina or anus against that person's will?*
- Attempt of vaginal or anal penetration: *Have you ever tried, but did not succeed, to put a penis, finger(s) or object (s) into someone's vagina or anus against that person's will?*
- Forcing to penetrate: *Have you ever made someone put their penis, finger(s) or object(s) into your vagina or anus against that person's will?*

Appendix B

See Table 4

Table 4 Frequency of sexual aggression over the past year

Item	0	1	2	3	4 or more (max. value)
Oral penetration	10	1	0	0	1 (50)
Attempted oral penetration	12	2	0	0	1 (5)
Vaginal/anal penetration	12	4	0	2	1 (4)
Attempted vaginal/anal penetration	10	4	1	0	2 (22)
Forced to penetrate	3	0	0	0	0 (-)

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Author contributions

CV and IK: Conceptualisation, Funding Acquisition, Methodology, Project Administration, Supervision; ES: Data Curation, Formal Analysis, Visualisation, Original Draft Preparation; All authors reviewed and edited the manuscript and approved it for submission.

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Availability of data and materials

The dataset is available upon request from the corresponding author.

Declarations

Competing interests

The authors declare that they have no competing interests.

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