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Changes in the prevalence of forcible rape, physical violence, and physical partner violence among men and women in Norway: a population-based repeated cross-sectional study in 2013 and 2022

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Abstract

Background Repeated prevalence studies are necessary to monitor the government's progress toward preventing community violence over time. This study aims to identify possible changes in self-reported physical violence, forcible rape, and physical partner violence in the Norwegian general population between 2013 and 2022.

Methods The 2022 and 2013 studies employed a cross-sectional design, utilizing identical sampling procedures and measures in 2022. Participants aged 18–74, including males and females, were randomly selected from the Norwegian National Population Registry. Data were collected through phone interviews. The response rate in 2022 was 25.3% of those who answered the phone and 42.9% in 2013. The total number of respondents was 4,295 in 2022 and 4,527 in 2013.

Results Confidence intervals from bootstrapped analyses were used to evaluate crude differences in prevalence estimates between 2013 and 2022 for women and men separately. Among women, the lifetime prevalence of self-reported forcible rape increased from 9.4% in 2013 to 14.4% in 2022 (Δ prevalence = 5.0%, 95% Cl 3.1–6.8); severe physical violence in adulthood increased from 22.5% to 29.4% (Δ prevalence = 6.9%, 95% Cl 4.4–9.5); and physical partner violence in adulthood increased from 9.2% to 11.2% (Δ prevalence = 2.0%, 95% Cl 0.7–3.4). There were no statistically significant changes in self-reported forcible rape, physical violence, and physical partner violence among men between 2013 and 2022. Logistic regression analyses (adjusted for gender, age, education, financial situation, and marital status) corroborated these findings showing overall increased odds of self-reported forcible rape (adjusted odds ratio [aOR] = 1.70, 95% Cl = 1.42–2.04), severe physical partner violence (aOR = 1.32, 95% Cl = 1.09–1.58) and severe physical violence (aOR = 1.25, 95% Cl = 1.14–1.37) in the 2022 survey compared to the 2013 survey.

Conclusions Forcible rape, physical violence, and physical partner violence were highly prevalent in 2022 and remain significant challenges in Norway. The reported exposure to all three severe violence forms increased among females between 2013 and 2022. These findings call for immediate action and underscore the need for continued

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governmental efforts toward preventing violence. Given the high prevalence, these efforts should be targeted towards the general population.

Keywords Violence, Gender, Prevalence, Repeated measures, Time trends, Public health, Epidemiology

Background

Physical and sexual violence are well-documented public health concerns with profound consequences for individuals, families, and communities [1-5]. Recently, the government in Norway has estimated the socioeconomic costs and negative impacts of intimate partner violence to be 8 billion Euros in 2021 [6].

A systematic review based on a comprehensive analysis of population-based surveys from a wide range of countries across different regions by the World Health Organization (WHO) concluded that about one in four women overall have experienced physical and/or sexual partner violence (IPV) after the age of 15 [7]. The highest rates of IPV were observed in the least developed countries, specifically in the sub-regions of Oceania (37%), Southern Asia (35%), and Sub-Saharan Africa (33%). In certain low-income countries, prevalence can exceed 40% [8, 9]. Conversely, the WHO study indicates that the lowest rates are found in high-income countries, including those in Europe (16-23%), Asia (18-21%), and Australia and New Zealand (23%) [7]. Further, in 2013, the European Union Agency for Fundamental Rights (FRA) surveyed 28 member states and found that one out of three women had experienced physical or sexual violence since the age of 15 [10]. The lifetime prevalence of IPV against women in Nordic European countries were among the highest [10, 11]. The lifetime prevalence in Denmark (32%), Finland (30%), and Sweden (28%) were clearly above the EU average of 22%. These figures align with the findings from the first national prevalence study conducted in 2008 on violence against women in Norway, which revealed that 26.8% of 2,143 ever-partnered women had experienced some form of violence by their partner during their lifetime, and 5.5% had experienced such violence in the preceding year [12]. Among the same sample, 9.4% of women reported that their partner had tried to force them to have sex. Additionally, our cross-sectional Norwegian population study conducted in 2013 reported that 9.4% of women and 1.1% of men had experienced forcible rape during their lifetime [13, 14].

Likewise, studies among both youth and elderly in Norway confirm that females, to a greater extent than males, are exposed to sexual violence and interpersonal violence [13, 15–17]. Regular population-based qualityof-life surveys conducted by Statistics Norway reveal that 15% of women report having been subjected to forced or attempted forced sexual intercourse last year, compared to 3% of men [18]. This adverse experience is associated with a reduction in quality of life [19]. Further empirical cross-sectional studies corroborate that partner violence is strongly correlated with decreased quality of life, underscoring the profound impact of such experiences on health [20]. These statistics reveal that violence affects women's safety, health, and quality of life, even in countries with high levels of socioeconomic status and gender equality [11].

However, methodological challenges with the aforementioned studies make comparisons across countries and populations difficult. First, there is a lack of consistency in terminology and measurement. The EU- study, for instance, used a restrictive definition of sexual violence compared to the WHO's study on violence, affecting prevalence estimates [21-23]. Second, variation in methodology causes varying data quality [22, 24, 25]. In the EU- study, Nordic countries used phone-interviews, while other countries relied on face-to-face interviews, affecting the willingness to disclose [26]. Likewise, when The Crime Survey for England and Wales (CSEW) went from face-to-face interviews to self-completion, the incidents of domestic violence increased significantly [23]. Also, only a few population-based studies of victimization include both men and women [27]. Most studies focus on domestic violence, sexual violence, and intimate partner violence (IPV) among women only, often with men predefined as perpetrators. Sexual violence against men is less prevalent but can have severe physical, psychological, and social consequences [28, 29].

Only a limited number of repeated population studies have used the same methodology over time [22]. The British CSEW-study is, to our knowledge, the only representative ongoing population survey measuring last year's prevalence of domestic abuse and sexual offences among men and women [30]. Recent reports from this study show a significant increase in self-reported sexual assault among adults aged 16 to 59 years between 2014 (1.5%) and 2022 (2.7%), combined with an increase in policerecorded sexual offenses since 2012 [31]. The CSEWstudy include a limited set of questions about domestic abuse and impact [30]. As a consequence, knowledge of the broader phenomenon and incidence of physical and sexual violence among the general population is scarce [8]. Repeated representative population studies, including various violence types, perpetrators, age groups, socioeconomic backgrounds, and gender, are needed to

understand the prevalence and impact of physical and sexual violence, temporal changes, and to reveal gender differences. It requires sampling techniques using a representative sizeable random sample instead of specific subsamples or convenience samples, which can compromise generalizability.

The primary outcome variables in this study include the prevalence of forcible rape, physical violence, and physical partner violence. These variables will be adjusted for various demographic categories, such as age, gender, and socioeconomic background. By evaluating these outcome variables, the study seeks to capture a comprehensive picture of the types of violence experienced, identify changes over time, and assess the impact of different demographic factors. This approach will facilitate a better understanding of the variations and similarities in experiences of violence between men and women, as well as across various age groups and socioeconomic strata.

This study aims to provide updated prevalence estimates of forcible rape, physical violence, and physical partner violence among the Norwegian general population and to assess changes in prevalence from 2013 to 2022 using two independent cross-sectional samples.

Methods

Study Procedures

In 2013, the Norwegian Centre for Violence and Traumatic Stress Studies (NKVTS) conducted the first nationally representative study on physical and sexual violence among men and women in Norway (referred to as"the 2013 study") [14]. The sampling procedures and participant characteristics from the 2013 study are described in Thoresen et al. (2015) [13]. In 2022, we conducted a new study using the same sampling procedures and measures to enhance comparability and reliability. By maintaining a consistent methodology, we can more confidently attribute any differences in the results to changes in variables rather than to inconsistencies in data collection. In line with the 2013 study design, a random sample of Norwegian citizens aged 18-74 was drawn from the National Population Registry of Norway (NPRN). The process of drawing the sample from the NPRN involves systematic steps to guarantee both randomness and representativeness. A computer-based random number generator is used to ensure that each individual has an equal probability of being selected. All individuals registered with a phone number received a postal invitation with study information and were then contacted by phone and invited to participate. Those who consented were interviewed by Ipsos, a national data collection agency. See Fig. 1, which displays study participation in 2013 and 2022.

Participants

Quota sampling was used to match gender and age proportions within each county. Among the potential participants in the 2022 study (N = 75,000), 32,527 individuals were not contacted or sent invitation letters due to either missing telephone numbers or because the specified respondent quota had already been reached. Of those who received invitation letters (n = 41,310), although not all of these individuals were contacted as 382 declined to participate and asked not be contacted by phone. Among those we attempted to contact, the most frequent reason for non-participation was not answering the telephone (n = 20,156). Other reasons included technical errors (e.g., incorrect telephone number), not being in the study's target group, or the quota being complete (see Fig. 1, flow diagram for details). A total of 4,299 persons, 51% men (n = 2,195) and 49% women (n = 2,100), and four non-binary people, participated in the 2022-study. This represents a response rate of 25.3% of those we could contact and who answered the phone (*n* = 17,006 [16,624 + 382]). The response rate in the 2013 study was 42.9% of those who answered the phone (n =10,546 [9,647 + 899]) with a total of 4,527 persons, 46% men (n = 2,092) and 54% women (n = 2,435); see Thoresen et al. (2015) for further details [13, 14]. For attrition analysis and exploration of selection bias in the 2022 survey, see Supplementary.

Measures

Predictor variables

In the analyses, the predictor variables indicate whether respondents are part of either of the two samples from the 2013 or 2022 study.

Dependent variables

Forcible rape experienced during the lifetime was measured by the following items:"Has anyone ever forced you into 1) intercourse, 2) oral sex, 3) anal sex, or 4) put fingers or objects into your vagina or anus by use of physical force or by threatening to hurt you or someone close to you?"Respondents who answered yes to any one of these four questions were defined as reported being exposed to forcible rape in the analysis. These questions were introduced in The National Women's Study and later used by the National Violence Against Women Survey in the U.S [32, 33], and have previously been translated and used in Norwegian studies [13]. Severe physical violence was measured by six questions specifying concrete acts of physical violence that took place after the respondent had turned 18. The questions included severe types of violent acts such as being: 1) hit with a fist or a hard object, 2) kicked, 3) strangled,

Eligible sample in 2013





Fig. 1 Flow diagram displaying participation in two national crossectional studies on violence exposure in the general Norwegian population in 2013 and 2022

4) beaten up, 5) threatened with a weapon, and/or 6) physically attacked in other ways.?"Respondents who answered yes to any one of these six questions were defined as reported being exposed to severe physical violence in the analysis. The measures were translated and adapted from a U.S. population study for adolescents [34]. A confirming answer prompted follow-up questions on perpetrator relationships. If the respondent indicated that the acts were committed by a current or previous partner (spouse, cohabiting partner, or boyfriend/girlfriend), the response was coded as being exposed to *physical partner violence* in the analysis. Less severe physical violence experienced over the past year was assessed based on responses to four specific types of violent acts (respondents were asked to ignore unintentional acts such as those that might have occurred in play or sports): 1) being hit with an open hand, 3) being scratched, 4) being pinched hard, and/ or 5) having hair pulled. These questions were derived from the Conflict Tactics Scale [35], and respondents who answered yes to any of these four questions were defined as being exposed to less severe physical violence in the analysis.

Sociodemographic variables

Sociodemographic background variables included age, sex, perceived financial situation, marital status, and education level. Age was categorized into six distinct categories: 18-29 years, 30-39 years, 40-49 years, 50-59 years, 60-69 years, and 70-74 years. Sex was measured as either male or female. Participants' perceived financial status was evaluated by three options:"better than most people,""similar to most people,"or"worse than most people."Marital status was classified into four categories:"single/never married,""married/ cohabiting/partnered,""separated/divorced,"and"wid owed."Educational attainment was divided into three levels:"primary school: 10 years or less,""high school: 10-13 years,"and"higher education: more than 13

years."Detailed descriptions are provided in the interview guide; see supplementary materials.

Statistical analyses

Chi-square analyses were used to investigate sociodemographic differences (gender, age, marital status, financial situation, and education) between the 2013 and 2022 samples. Bootstrapping is a powerful statistical technique that estimates the distribution of a sample statistic by repeatedly resampling with replacement from the original dataset. This method enhances the robustness of estimates when comparing differences between two samples, as it requires fewer assumptions about the data's distribution and effectively handles variability. Bootstrapping with 10,000 iterations to calculate confidence intervals (CI) was used to evaluate crude differences in prevalence estimates between 2013 and 2022 for women and men separately. Due to clear differences in the age distribution between samples, and the known association between age and exposure to violence/rape, prevalence estimates were also stratified by age cohorts and compared within cohorts to limit confounding by age (see Table 3). Multivariable logistic regression models were used to explore further the risk of exposure to violence/rape in 2022 vs. 2013 to allow for adjustments for important sociodemographic differences between samples and their potential confounding role. In these models, the survey year was entered as a dichotomous predictor (i.e., 1 = 2013 and 2 =2022). Results are reported as crude and adjusted odds ratios (cOR and aOR, respectively), with a 95% confidence interval (CI).

Observing that reported incidents of rape and physical violence were particulary high among women in 2022, with the most significant increase occurring in the youngest age group, we conducted a sensitivity analysis. This involved examining interaction effects between survey year and gender, as well as between survey year and age cohort, in fully adjusted logistic models. This was done to explore if the change in adjusted odds/ risk between survey years differed for women and men or across age cohorts (i.e., we evaluated gender and age as effect modifiers). The p-values reported are from the Wald test of the interaction term in fully adjusted models (H0 = no interaction and uniform effect across gender and age cohorts). The four non-binary respondents were excluded from all analyses.

Results

Characteristics of the study populations

Table 1 displays and compares the sociodemographic characteristics between the two samples. The 2013 sample had significantly more female respondents (from 53.8% to 48.9%); they were somewhat younger (from

Table 1Sociodemographic background of participants in theNorwegian Prevalence Study 2013 and 2022

	2013 survey (n= 4527)	2022 survey (<i>n</i> = 4295)		
Characteristics	% (n)	% (n)	χ2	
Gender			<.001	
Women	53.8 (2435)	48.9 (2100)		
Men	46.2 (2092)	51.1 (2195)		
Age cohorts'years			<.001	
18–29	22.9 (1036)	16.5 (710)		
30–39	16.8 (762)	15.4 (663)		
40–49	20.8 (941)	18.6 (800)		
50–59	17.7 (802)	21.3 (916)		
60–69	16.2 (734)	19.2 (826)		
70–74	5.6 (252)	8.9 (384)		
Education			<.001	
University/college > 13 years	52.3 (2367)	62.4 (2679)		
High school 10–13 years	38.9 (1761)	33.1 (1420)		
Primary school ≤ 10 years	8.8 (397)	4.5 (192)		
Financial situation			.001	
Better than most people	28.9 (1299)	31.6 (1348)		
Like most people	62.6 (2816)	58.8 (2509)		
Worse than most people	8.5 (384)	9.7 (414)		
Marital status			<.001	
Single/never married Married/cohabiting/ partnered	23.0 (1039) 64.5 (2920)	16.4 (705) 71.5 (3069)		
Separated/divorced Widowed	10.0 (454) 2.5 (113)	9.5 (406) 2.6 (113)		

[#] P values were calculated using χ 2 test between 2013 and 2022

22.9% to 16.5% in the age group 18–29 years); had lower education (from 8.8% to 4.5% with \leq 10 years education); and more respondents were single/never married compared to the 2022 sample (from 23.0% to 16.4%).

Comparison of exposure to physical and sexual violence in 2013 and 2022 among men and women

For women, there was a 50% increase in the reported crude prevalence of forcible rape in 2022 (14.4%) compared to 2013 (9.4%), and this increase was statistically significant (change in prevalence 2022 vs. 2013 = 5.0 percentage points 95% CI 3.1–6.8). There was no statistically significant difference in the reported crude prevalence among men in 2022 compared to 2013 concerning the three most severe violence forms: forcible rape, physical partner violence, and severe physical violence. For self-reported severe physical violence, a significant increase from 22.5% to 29.4% is observed among women (change = 6.9%, 95% CI 4.4–9.5). In contrast, the reported prevalence rate among men was stable at around 45% in both

survey years. In 2022, 74% of male victims and 24% of female victims reported the perpetrator as an unknown person. Similarly, in 2013, these numbers were 72% for male victims and 26% for female victims. Self-reported exposure to physical partner violence was also significantly higher for female participants in 2022 compared to 2013, increasing from 9.2% to 11.2% (change = 2.0%, 95% CI 0.7–3.4). The self-reported incidence of less severe physical violence during the 12 months prior to the survey was significantly lower in 2022 for both women and men compared to 2013. See Table 2.

Prevalence estimates stratified by age in 2013 and 2022 among women

Overall, for female participants in the youngest age group (18–29 years), there was a significant increase for all three reported severe violence types: forcible rape, severe physical violence, and physical partner violence (see Table 3). Further, the reported prevalence of forcible rape in this age group more than doubled between the two survey years, from 8.0% to 19.2%. However, there was

a significant increase in reported forcible rape among other age groups as well (30–49 years and 60–69 years, see Table 3). Likewise, the proportion of women reporting physical partner violence almost doubled in 2022 compared to 2013 in the youngest age group, from 4.4% to 7.8%. No other age-group had a significant change in reported physical partner violence between the two survey years. Regarding severe physical violence, a significant increase could be observed for women in all age groups, except among the oldest (70–74 years) and second youngest (30–39 years) groups.

Risk of violence exposure in 2013 and 2022, adjusted for sociodemographic characteristics

As can be seen in Table 4, the fully adjusted logistic regression analyses showed that participants in the 2022 study had significantly higher odds of exposure to forcible rape (aOR = 1.70, 95% CI = 1.42-2.04), physical partner violence (aOR = 1.32, 95% CI = 1.09-1.58) and severe physical violence (aOR = 1.25, 95% CI = 1.14-1.37) compared to the 2013 sample. For forcible rape

Table 2 Prevalence of violence and sexual abuse among women and men in the 2022 survey (n = 4295) compared with the 2013 survey (n = 4527)

	2013 survey		2022 survey		95% CI*	
	Women	Men	Women	Men	Women	Men
Types of violence	% (n)	% (n)	% (n)	% (n)		
Forcible rape (lifetime)	9.4 (229)	1.1 (24)	14.4 (300)	1.7 (37)	3.1—6.8	- 0.2-1.2
Physical partner violence (18 years or older)	9.2 (224)	1.9 (40)	11.2 (236)	2.5 (55)	0.7—3.4	- 0,0-1.3
Severe physical violence (18 years or older)	22.5 (548)	44.5 (928)	29.4 (618)	45.9 (1008)	4.4—9.5	- 1.6-4.3
Less severe physical violence (12 months before the survey)	5.0 (121)	6.0 (126)	3.1 (66)	2.7 (59)	- 3.0 0.7	- 4.6 2.1

In bold: Differs significantly (p < 0.05)

* Confidence intervals (CI) for the differences between 2013 and 2022 were calculated by bootstrapping. The difference is considered not statistically significant if the CI crosses zero

Table 3	Age cohorts among women in 2013 and 2022, and proportion subjected to forcible rape, physical partner violence, and
severe p	ysical violence

	Total women		Forcible rape		Physical partner violence				Severe physical viole		lence
	2013	2022	2013	2022		2013	2022		2013	2022	
Age	n=2435	n=2100	%	%	p‡	%	%	p ‡	%	%	p ‡
18–29	523	344	8.0	19.2	<.001	4.4	7.8	.035	17.7	26.4	=.002
30-39	391	303	11.3	18.5	.007	9.2	10.6	.537	29.8	29.7	.984
40–49	514	408	9.0	14.7	.006	11.9	12.4	.811	25.4	36.6	<.001
50-59	456	450	12.9	11.3	.459	11.7	12.2	.800	25.4	32.2	.026
60–69	394	397	6.6	12.6	.004	9.1	13.5	.054	16.7	26.7	=.001
70–74	148	187	8.1	9.1	.751	9.4	9.0	.899	16.8	18.5	.678

In bold: Differs significantly (p < 0.05)

Age years

^{\pm} P values were calculated using χ^2 test between the age cohorts in 2013 and 2022

Table 4	Risk of violence	exposure in 20	13 compared to	o 2022, with	ı crude odds	ratios (cOF	R) and adjusted	d odds ac	cording to
sociode	mographic chara	acteristics (aOR)							

	Forcible rape		Physical partner	violence	Severe physical violence		
	cOR (95% CI)	aOR (95% CI)	cOR (95% CI)	aOR (95% Cl)	cOR (95% CI)	aOR (95% CI)	
2013 versus 2022 Reference: 2013	1.44 (1.21–1.70)	1.70 (1.42–2.04)	1.17 (0.99–1.39)	1.32 (1.09–1.58)	1.26 (1.21–1.70)	1.25 (1.14–1.37)	
Characteristics							
Women	9.18 (7.02–12.01)	9.61 (7.30–12.66)	4.98 (3.98-6.23)	5.01 (3.97–6.32)	0.42 (0.38-0.46)	0.39 (0.36–0.43)	
Reference: Men							
Age							
Reference: 18–29 years							
30–39	1.05 (0.81–1.38)	1.15 (0.85–1.56)	1.77 (1.27–2.48)	1.91 (1.32–2.74)	1.74 (1.50–2.01)	1.67 (1.42–1.97)	
40–49	0.92 (0.71-1.20)	0.88 (0.65–1.18)	2.48 (1.82–3.37)	2.18 (1.55–3.08)	1.60 (1.39–1.84)	1.53 (1.30–1.79)	
50-59	0.98 (0.76–1.27)	0.87 (0.65- 1.18)	2.26 (1.66–3.10)	1.81 (1.28–2.56)	1.37 (1.19–1.57)	1.24 (1.05–1.45)	
60–69	0.74 (0.56–0.99)	0.61 (0.44- 0.85)	1.94 (1.40–2.68)	1.48 (1.03–2.14)	0.91 (0.78–1.06)	0.77 (0.66–0.94)	
70–74	0.70 (0.47–1.05)	0.56 (0.35- 0.88)	1.51 (0.98–2.33)	1.05 (0.65–1.72)	0.72 (0.59–0.89)	0.63 (0.50-0.80)	
Education							
Reference: > 13 years							
High school 10–13 years	1.17 (0.98–1.40)	1.38 (1.13–1.67)	1.13 (0.94–1.35)	1.43 (1.17–1.75)	1.04 (0.95–1.14)	1.01 (0.91- 1.12)	
Primary school ≤ 10 years	1.65 (1.30–2.22)	1.92 (1.38–2.67)	1.39 (1.01–1.91)	1.68 (1.19–2.39)	0.98 (0.82–1.18)	1.03 (0.85- 1.25)	
Financial situation							
Reference: Better than most people							
Like most people	1.43 (1.15–1.77)	1.15 (0.92–1.43)	1.16 (0.94–1.43)	0.91 (0.73–1.13)	0.86 (0.78-0.95)	0.91 (0.82–1.01)	
Worse than most people	4.61 (3.55–5.99)	3.14 (2.36–4.18)	3.27 (2.51–4.26)	1.84 (1.37–2.46)	1.67 (1.42–1.95)	1.68 (1.41–1.99)	
Marital status							
Reference: Single/never married							
Married/cohabiting/partnered	0.87 (0.70–1.08)	0.94 (0.73–1.21)	1.16 (0.89–1.50)	0.94 (0.73–1.25)	1.00 (0.90–1.12)	1.07 (0.94- 1.23)	
Separated/divorced	2.02 (1.53–2.69)	1.72 (1.24- 2.39)	5.25 (3.94–7.00)	3.54 (2.55- 4.92)	1.80 (1.53–2.13)	2.14 (1.76–2.59)	
Widowed	1.46 (0.90–2.38)	1.18 (0.67- 2.08)	2.04 (1.21–3.45)	1.30 (0.73–2.33)	0.63 (0.47–0.57)	0.58 (0.49- 0.68)	

In bold: Differs significantly (p < 0.05)

and physical partner violence, the adjusted ORs were pushed away from the null compared to crude ORs, suggesting negative confounding by socioeconomic factors and an underestimation of the association in crude models. The association between survey-year and physical partner violence was not statistically significant in the crude model. For severe physical violence, the crude and adjusted ORs were comparable. Overall, females have had a considerably higher risk than men of experiencing forcible rape, with >9 times higher odds (aOR = 9.61, 95% CI = 7.30-12.66) and physical partner violence with >5 times higher odds (aOR = 5.01, 95% CI = 3.97-6.32). On the other side, females had significantly lower odds of experiencing severe physical violence compared to men (aOR = 0.39, 95% CI = 0.36-0.43). Table 4 shows that all sociodemographic variables were significant independent predictors of all outcomes (for more details, see Supplementary).

Interaction analysis

There was evidence that the association between surveyyear and reported severe violence was different among females and males (i.e. gender was an effect modifier), with a stronger association in females compared to males $(aOR_{2022\ vs.\ 2013}{=}$ 1.46 and 1.09 in females and males, respectively, Wald p-value for interaction = 0.003). Further, there was evidence that the association between survey-year and reported forcible rape varied across age groups, with the strongest association in the youngest age group (a $OR_{2022 \text{ vs. } 2013}$ = 2.84, Wald p-value for interaction < 0.001). However, there was not an overall clear underlying pattern of decreasing aORs across increasing age groups. Lastly, there was some evidence that the association between survey-year and reported severe violence differed across age groups (Wald p-value for interaction = 0.057), though the underlying trend was not clear across age groups.

Discussion

This study aims to update and assess changes in the prevalence of forcible rape, physical violence, and physical partner violence in the Norwegian population. The present repeated cross-sectional study shows that physical and sexual violence among the Norwegian general population is a persistent public health problem with increased reported prevalence rates in 2022 compared to 2013.

The reported increase was only observed among women exposed to forcible rape, severe physical violence, and physical partner violence, and the increase was more pronounced within the younger age cohorts. Results show that the increase in the risk of physical and sexual violence in 2022 was amplified when adjusted for sociodemographic differences between the samples. However, the current prevalence of less severe physical violence decreased for both genders. Notably, nearly half of the men in both the 2013 and 2022 studies reported severe physical violence, often by an unknown perpetrator [36], indicating overall high levels of non-domestic violence among men in Norway.

The World Health Organization identifies violence against women as a global health challenge and a violation of human rights, impacting gender equality [7]. Consistent with previous research and systematic reviews of the literature, women are at greater risk for particularly severe forms of violence, such as sexual violence and domestic violence, both of which carry a high risk of recurrence [1, 37, 38]. Violence in close relationships is a significant risk factor for adverse health outcomes [1, 4, 39]. Additionally, intimate partner violence (IPV) is more prevalent in low- and middle-income regions compared to higher-income areas [7]. A comprehensive study using national health service data highlights substantial disparities in intimate partner violence (IPV) levels across low- and middle-income countries, with poorer, younger, and less empowered women being particularly vulnerable. Women with partners who have other co-wives and those in rural areas face heightened risks. Notably, inequalities are more pronounced with physical and sexual IPV than psychological IPV [8].

Our findings confirm that women, particularly younger women, face a significantly higher burden of violence, with nine times the odds of experiencing forcible rape and five times the odds of physical partner violence compared to men. Also, in line with previous research, exposure to violence in our study correlates with sociodemographic factors. All three severe violence forms occurred more frequently among persons who were divorced or separated, who had not completed education beyond secondary school (for physical partner violence and forcible rape), and who reported lower income (see Supplementary) [40, 41]. This may indicate that women with low education and income often lack the resources or support to leave abusive relationships, increasing their risk of violence. Conversely, experiencing severe violence can also contribute to lower socioeconomic status. Previous studies show that partner violence is linked to a higher risk of divorce, which may explain why severe violence is more common among divorced or separated individuals, as victims may leave violent partners [42, 43].

The prevalence of physical and sexual violence in our study is significantly higher than those reported in global or EU-wide studies [22, 44] but comparable to the prevalence reported in Denmark, Finland, and Sweden. The reasons why Nordic countries report a high prevalence of violence against women, sometimes termed the Nordic paradox, are debated and potentially related to the methodological issues outlined in the introduction [11, 25, 45]. A related challenge is whether prevalence studies capture actual prevalence rates or a reflection of willingness to disclose exposure to violence. For example, egalitarian countries might have higher disclosure rates due to more openness, less stigma, and higher social awareness [26]. In the Nordic context, research also indicates that the emphasis on gender equality may obscure power dynamics and hinder the recognition of intimate partner violence (IPV), fostering the misconception that violence is more frequently perpetrated by strangers rather than known individuals or partners. Future research and practice in Nordic countries should critically assess how the focus on gender equality has not been successful in addressing IPV and explore its impact on societal norms and expectations concerning violence [46].

Changes in disclosure tendencies may also explain observed increases in the reported prevalence of physical and sexual violence. In 2017, #MeToo became a global movement for victims of sexual assault to share their experiences publicly to achieve social changes [47], possibly affecting respondents' memory of past events, their willingness to disclose, and their understanding of previous experiences. It is impossible to disentangle this effect in our study. Still, the observed increases across age groups may indicate general changes in responsiveness and awareness during the last decade among women. Further, the number of women seeking help at sexual assault centers in Norway has increased. In 2023 there was an 72% increase over the past decade. This trend may be attributed to improved awareness and increased accessibility, as well as a rise in the incidence of sexual assaults [48]. The British CSEW-study also reported an increase in sexual violence in 2022 compared to 2014, which was corroborated by similar increases in policerecorded sexual crimes and demands from victim support [31]. At the same time, our study did not find any significant increase in violence exposure among the oldest cohort, and interaction analyses revealed that the most substantial increase in reported prevalence of rape from 2013 to 2022 occurred in the youngest age cohorts. As young women are particularly at risk, the increased prevalence rates likely reflect changes in occurrence, as well as in disclosure tendencies.

This study has several strengths and limitations. First, the results should be interpreted in light of the low response rate. Of those who answered the phone, 25% chose to participate in 2022 compared to 43% in 2013, indicating a risk of sampling bias despite quota sampling. However, the comparisons of participants to general population data suggested a selection of respondents with higher education and income and fewer with immigrant backgrounds in our sample. This may cause more conservative prevalence estimates as these are risk factors associated with a higher incidence of violence [49] (see Supplementary). Second, we cannot conclude that the changes in prevalence estimates are due to actual increased rates or differences in reporting with crosssectional data. More regular and repeated measurement times over longer periods are needed to observe time trends and changes in incidence rates. Third, the answers are subjective experiences and prone to recall bias. Some respondents may be reluctant to disclose, causing an underestimation of prevalence estimates [50], while individuals with abuse histories might find the study more relevant, affecting participation positively [26]. Analyses of the number of calls necessary to get in contact with responders did not indicate that violence-exposed individuals were more available (see Supplementary), but this may not be a sufficient method to exclude the possibility of biased reporting in our study. Finally, the study in 2013 and 2022 did not separately address psychological violence, as prioritizing variables was necessary to reduce interview length and participant burden. Although psychological violence is inherently part of physical and sexual violence, future population-based prevalence studies should focus on developing reliable and valid survey methods to measure and understand psychological violence as a distinct phenomenon.

This is one of few repeated population studies with two large independent samples with identical sampling methods and instruments describing changes in prevalence estimates of different violence measures. Telephone interviews provide solid data and reduce misunderstandings and the risk of missing data. We included both men and women and a broad array of violence measures. Finally, random sampling enhances representativeness. A low response rate does not necessarily equate to low representativeness, particularly in methodologically sound studies based on random sampling techniques such as this study [51]. While achieving high response rates in population surveys aimed at the general adult population is inherently challenging, ensuring that those who do respond are typically randomly selected and representative of the broader population is more crucial.

Conclusions

The study shows a notable increase in reported severe violence, such as physical violence, forcible rape, and physical partner violence, particularly among women and younger people in 2022 compared to 2013, influenced by sociodemographic factors. Those with lower education, and income, and who are divorced or separated face higher risks, with young women being particularly vulnerable. While not directly measured, factors like #MeToo, gender equality discussions, increased awareness, and societal openness might have impacted these reported prevalence rates over the past decade.

For future studies, repeated data collections and comparable population data are necessary to calculate robust incidence- and prevalence estimates and monitor whether the reported changes in physical and sexual violence experiences are temporal or stable. Such studies allow governments to understand the magnitude of violence and implement and evaluate action plans over time. Studies should strive to include a variety of violence types, such as psychological violence, and include different age groups, genders, and sociodemographic factors, facilitating the implementation of targeted policies to prevent physical and sexual violence, particularly aimed at vulnerable populations [22, 25]. Given the high prevalence of reported violence affecting the general population in both studies and especially young women, we need to adopt a public health approach to violence prevention, targeting the health and safety of all individuals. Collaborative efforts with international research initiatives could enhance understanding of cultural and regional variations in violence prevalence and intervention strategies. To further prevent the high prevalence of physical and sexual violence, educational campaigns should be developed to raise awareness and change societal attitudes toward violence and gender norms. Moreover, strengthening community support systems and resources for victims and perpetrators can play a vital role in prevention and recovery. Additionally, enhancing training for professionals in healthcare, law enforcement, and social services to recognize and respond effectively to signs of violence can help mitigate its impacts and prevent escalation.

Abbreviations

IPV Intimate Partner Violence

CI Confidence Intervals

OR Odds Ratio

CSEW	The Crime Survey for England and Wales
FRA	European Union Agency for Fundamental Rights

WHO World Health Organization

NKVTS Norwegian Centre for Violence and Traumatic Stress Studies

Supplementary Information

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Supplementary Material 1

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Authors' contributions

M.T.G.D., H.F.A.and I.F.S. designed the study. M.T.G.D. and A.F.N. analyzed the data and M.T.G.D. drafted the paper. All authors participated in project meetings where the analysis plan and data interpretation were discussed. All authors critically revised and edited the manuscript and approved the final version.

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Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

The study was approved by the Regional Committee for Medical and Health Research Ethics in Norway (No. 186661). The Norwegian Agency for Shared Services in Education and Research performed a Data Protection Impact Assessment (DPIA) for this study to identify and reduce risks associated with the processing of personal data and to ensure compliance with the General Data Protection Regulation (GDPR). The authors confirm that all procedures adhered to the relevant principles and regulations of the Declaration of Helsinki. Each participant received detailed postal information about the study and had to give verbal consent before the interview. All participants gave their informed consent to use data for research purposes during the interviews, and participants retained the right to withdraw from the study at any time. The safety and well-being of participants were important. Respondents were encouraged to answer questions in a setting free from distractions. The survey questions mainly employed"yes"or"no"questions to keep confidentiality and reduce the risk of unintentionally disclosing sensitive information if overheard. After each interview, we evaluated whether participants required psychological support from a psychologist unrelated to the study or referrals to established help services. Notably, 62 respondents accepted support and counseling from a psychologist. According to international regulations, written consent was not needed based on Article 6 (No.1) of the EU General Data Protection Regulation (GDPR), where the following condition was met: "The collection/processing of personal data is necessary for the performance of a task carried out in the public interest."

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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