

- We could replicate the peak of suicides on New Year's day with our data, but not the above-average upswing of suicides in New Year's week.
- The findings may help counteract the myth that suicides peak on Christmas
- The timing of suicide preventive efforts may be adjusted according to the findings

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Physical domestic violence exposure is highly associated with suicidal attempts in both women and men. Results from the national public health survey in Sweden

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Background: Studies on a national level concerning domestic violence (DV) among both men and women are few. DV and its relation to other social and health outcomes within the framework of the Swedish Public Health Survey have remained unexplored. **Aim:** To compare women and men regarding their social situation and health status in relation to self-reported exposure to physical DV as measured in the Swedish National Public Health Survey. **Methods:** This study used cross-sectional data from the Swedish Public Health Survey, years 2004–09 with a total sample of 50 350 respondents, of which 205 women and 93 men reported DV exposure. Logistic regression analyses stratified by sex with physical DV exposure as the outcome measure were conducted, and the multivariate models were fitted using the likelihood ratio test. **Results:** Being foreign-born [women odds ratio (OR)= 1.52, men OR= 1.92] and lack of social support (women OR= 2.81, men OR= 1.92) were associated with DV exposure among both sexes. Higher psychological distress (women OR= 2.81, men OR= 1.92) and hazardous drinking (women OR= 1.61, men OR= 2.33) were also associated with DV exposure. Among women, financial problems were associated with DV exposure (OR= 1.83), whereas among men, sum of medicines used and higher odds of DV were associated (OR= 1.17). Further, suicidal attempts were associated with DV exposure among both women (OR= 5.59) and men (OR= 8.34). **Conclusions:** In this national survey, prevalence rates of violence exposure were lower than in other studies, but despite this, both women and men exposed to physical DV reported increased odds of having attempted suicide.

Introduction

Violence is a global and pervasive threat to health, with a wide range of consequences for physical as well as mental well-being.

Interpersonal violence has caused approximately 73 000 deaths in Europe in 2002¹ and has been ranked the third cause of death among young people in the European region annually.² Apart from affecting mortality rates, violence also contributes to a substantial

proportion of the global health care costs.³ Interpersonal violence may also impact mental health, leading to, for example, posttraumatic stress disorder and depression but also social dysfunction, exacerbation of psychotic symptoms, substance abuse and medicine use.^{4–9} It has also been associated with suicidal thoughts and attempts,^{4,5} risk behaviors that are considered important mental health indicators in a population. Suicide rates have been suggested as indicators to track progress towards improvement of mental health in societies.¹⁰ Although suicide is more common among men, its association with domestic violence (DV) has mainly been studied among women.^{4, 5}

Interpersonal violence may take different forms—physical, psychological or sexual—and may be perpetrated by men, women, family members or someone unknown to the victim.¹¹ The term DV refers to interpersonal violence between family members and/or intimate partners, whereas the commonly used term intimate partner violence is even narrower in that it refers only to the latter.¹² In this study, the term DV will be used as a label for self-reported experience of physical violent acts occurring in the home.

Most prevalence studies have focused on domestic or intimate partner violence against women, but in recent years, increasing attention has been directed towards these types of violence against men due to the fact that violence exposure is prevalent among both women and men¹³ but may differ in various aspects. For instance, men are more likely to be exposed to violence in public places, whereas women are more likely to experience violence in their homes, i.e. DV.¹⁴ A recent Swedish study regarding violence experiences, based on a representative population sample, found that women to a larger extent were exposed to psychological and sexual violence while men were more likely to experience physical violence.¹⁵ Another recent population-based study regarding intimate partner violence in Sweden found similar last year prevalence of partner violence exposure between women and men, but higher estimates for women regarding lifetime violence experiences.¹⁶ Other population-based studies from different countries have found higher past year and lifetime prevalence among women, but concluded that a substantial number of men also reported such experiences.^{13,17–18} Although studies on men exposed to domestic and/or intimate partner violence are scarce, there is a growing body of research on this topic.¹⁹ The debate on gender-specific explanations of DV has on the one hand suggested similar prevalence rates of exposure among men and women,^{20–22} and on the other hand pointed at gender differences in its detrimental consequences.^{23–25} Associations between violence exposure and social adversities such as unemployment and low education have been found for both sexes,²⁶ and repetitive violence has been linked to more serious consequences than single violent events.²⁷ In this regard, violence in intimate relationships may be considered as a strong single risk factor, because it is to a larger extent recidivistic than violence by strangers.²⁸

Since 2004, the Swedish National Institute of Public Health annually distributes a public health survey to a representative sample of the Swedish population aged 16–84, as a means of assessing the health status of the general population. Previous studies based on data from the Swedish Public Health Survey have focused on physical violence exposure in general and concluded that violence victimization is not equally distributed throughout society.^{8,14,29–30} However, studies on a national level concerning DV are few in Sweden and although previous population-based findings are in line with international research on public health data^{31–33} the specific relevance of DV exposure among women and men according to the Swedish Public Health Survey has remained unexplored. This study will focus on physical DV exposure and its consequences in terms of social and health status.

Objectives

This study aims to compare women and men regarding their social situation and health status in relation to self-reported exposure to

physical DV as measured in the Swedish National Public Health Survey.

Research questions:

- (1) Are demographic and socioeconomic factors associated with physical DV exposure in men and women?
- (2) Does psychological health differ between women and men in relation to physical DV exposure?

Methods

Design and study sample

This study uses cross-sectional data from the Swedish Public Health Survey, years 2004–09. Data were collected through questionnaires and national register variables linked through citizens civic registration number. A random sample of 20 000 individuals (10 000 individuals years 2005–07) aged 16–84 (18–84 years in 2004) registered in Sweden is selected annually to participate. The survey covers areas like physical health, mental well-being, social and financial circumstances. The number of missing cases has increased for each year, from 39% in 2004 to approximately 48% in 2009, resulting in a total sample of 50 350 respondents.

Ethical considerations

The Swedish National Public Health Survey has been approved by the ethical committee at the Swedish National Board of Health and Welfare and the Regional Ethical Review Board in Stockholm approved the contents and ethical aspects of this study (DNR2008/1269/5).

Specification of variables and measures

Domestic violence

The variable DV was created from two questions; a question about physical violence exposure the past year (yes/no) and a consecutive question about where the violence took place within the home as an alternative answer. The first question was used to differentiate non-exposed from missing cases, and all women and men who answered yes to both the first and the second question were coded as exposed to DV.

Demographic and socioeconomic characteristics

Education Information was obtained from the education register at Statistics Sweden, concerning completed education (primary school/secondary school/university). In this study, education was defined as low up to secondary school and high equivalent university studies.

Employment status Current employment status was defined as either being employed or having one's own company, and was categorized as unemployed vs. employed.

Financial problems Information about respondent's current financial situation was based on two questions. The first one refers to being able to acquire 15 000 Swedish Krona (14 000 years 2004–05; approximately USD 2140/2000) in case of an unforeseen situation (yes/no). The required amount in this question was suggested by Statistics Sweden as equivalent to a typical worker's salary. The second question concerned having difficulties to cover current expenses during the last year. These two questions were merged into a dichotomous variable where any positive answer to the original questions was coded as having financial problems and expressed as Yes vs. No.

Social support Past year social support was defined by merging two questions concerning emotional support and access to practical help and classified as No vs. Yes.

Children A question concerning if there are any children under the age of 18 living in the respondent's household was coded as Yes vs. No.

Health status

Psychosomatic symptoms Twelve questions concerning current psychosomatic symptoms (i.e. pain in shoulders/neck/back, headache, fatigue, anxiety or sleeping problems, etc.), recoded as present or absent were merged into a sum variable indicating the number of symptoms reported.

Psychological distress Psychological distress was measured with the short version of the General Health Questionnaire (GHQ12), which contains 12 questions that focus on two main problems the past weeks: the inability to cope with their 'normal' functions and level of anxiety. Answers were coded 0 or 1 and then summarized into a global score where high scores indicate more problems. A cut-off score of three has been suggested to indicate impaired mental well-being.³⁴

Suicidal behavior This measure is based on two questions; one concerning serious thoughts of suicide and the other suicide attempts (lifetime), which were merged into a single variable expressed as suicidal ideation, suicide attempt vs. no. Negative answers to both questions were categorized as no; a positive answer to suicidal ideation only was categorized as suicidal ideation and reports of suicide attempts were categorized as suicide attempts irrespective of answers concerning suicidal thoughts.

Hazardous drinking Hazardous drinking was measured with the short version of the Alcohol Use Disorders Identification Test, which consists of the three first questions of the original version. Each question scored 0–4 was merged into a sum variable (0–12), where high scores indicate higher alcohol consumption the past year. The sum variable was then categorized as Yes vs. No, based on recommended cut-off scores for hazardous consumption (women ≥ 4 , men ≥ 5).³⁵

Medicine use Eleven questions regarding different kinds of medications (i.e. painkillers, blood-pressure, sleep-/asthma-/gastritis-medicine, anti-depressives, etc.) were dichotomized as Yes or No and merged into a sum variable, indicating the number of medications consumed by respondents during the past 3 months.

Analyses Data from 2004–09 were pooled and prevalence of exposed vs. non-exposed women and exposed vs. non-exposed men was calculated. Logistic regression analyses stratified by sex with physical DV exposure as the outcome measure were conducted to explore differences in demographics, socioeconomic situation and health status among both women and men. Multivariate logistic regression was conducted with all factors that were significantly associated with the outcome in the binary analyses, and the multivariate models were fitted using the likelihood ratio test. Results from the regression models are expressed as odds ratios (ORs) with 95% confidence intervals (CIs).

Results

A total of 205 (0.7%) out of 27 832 women and 93 (0.4%) out of 22 518 men reported physical DV exposure. As presented in Table 1 (binary analysis), violence-exposed women were younger, more often born outside Sweden (21.5 vs. 12%), and fewer violence-exposed women had a university education (14 vs. 22%) when

compared with non-exposed women. Further, exposed women were more often unemployed (66 vs. 57%), had financial problems (63 vs. 29%), reported less social support (36 vs. 11%) and more often had children at home (39 vs. 31%). They also reported more psychological distress (59 vs. 19%) and suicidal behaviors (ideation 22 vs. 10%; attempts 31 vs. 4%) as well as hazardous drinking (27 vs. 15.5%) and more use of different medicines (2.3 vs. 1.9%) than the non-exposed.

Men who reported exposure to DV had a similar profile; they were younger, more often foreign-born (26 vs. 11%), unemployed (64 vs. 49%), had more financial problems (60 vs. 22%) and less social support (39 vs. 15%). In addition, they experienced more psychological distress (45 vs. 13%), and reported more suicidal behaviors (ideation 16 vs. 7%; attempts 29 vs. 2%) as well as hazardous drinking (33 vs. 15%) and more use of different medicines (2.4 vs. 1.5%). However, in contrast to females in this sample; educational level and presence of children at home did not differ between the exposed and non-exposed men.

The multivariate analysis (Table 2) revealed that being foreign-born (women OR = 1.52; men OR = 2.16) and experiencing lack of social support (women OR = 2.43; men OR = 2.06) remained associated with DV exposure for both sexes. For women, having financial problems remained associated with higher odds of physical DV exposure (OR = 1.83). Concerning health related factors, the multivariate analysis (Table 2) confirmed that high psychological distress was associated with almost three times higher odds of violence exposure among women (OR = 2.78) and almost twice as high among men (OR = 1.91). Further, suicidal ideation and attempts were also associated with physical DV exposure among women (OR = 2.00 and 5.59), and among men suicidal attempts were associated with more than eight times higher odds of DV (OR = 8.34). Hazardous drinking was associated with higher odds of physical DV exposure (women OR = 1.61; men OR = 2.33), and among men sum of medicines used was also associated with DV exposure (OR = 1.17).

Discussion

In this population-based study using nationally representative data focusing general health, both women and men reported physical DV exposure but at lower rates than in surveys focusing violence exposure. Regardless, an important finding in this study was the association between reports of DV exposure and suicidal attempts among both women and men. That violence exposure is related to increased suicide risk among women is well-established, but few studies have included both sexes. In a recent literature review, McLaughlin et al.³⁶ identified 23 studies of the relationship between intimate partner violence and suicide. Of these, only three studies included women and men, all of which used clinical samples. Despite the fact that this population-based study did not focus primarily on the relationship between violence exposure and suicide, it still identified an evident association between these variables for both women and men.

Another finding was that being foreign-born and experiencing lack of social support were associated with DV exposure, which confirms findings from previous studies.^{18, 26, 37} The association between being foreign-born and risk of DV has previously been suggested to be explained by social and economic inequalities,³⁷ but in this study, associations that included the variables social support and financial problems remained in the multivariate analyses. However, stronger associations were found between social support and DV in both sexes and among women, financial problems was also associated with DV. Findings from this dataset suggest that further research is needed in order to elucidate the relationship between immigrant status and DV. Further, previous studies have also found associations between violence exposure and low social support,²⁰ and a recent Swedish

Table 1 Social situation and health status in women and men with and without an experience of physical DV

| Variable | Women | | Sign. (χ^2) | Men | | Sign. (χ^2) |
|------------------------|-------------------------------------|-----------------------------|-----------------------|------------------------------------|-----------------------------|-----------------------|
| | Exposed (n = 205) %/Mean (SD) | Non-exposed (n = 27 627) | | Exposed (n = 93) %/Mean (SD) | Non-exposed (n = 22 425) | |
| Age (years) | | | 0.000 | | | 0.000 |
| <29 | 33 | 17 | | 34 | 15 | |
| 30–39 | 22 | 15 | | 17 | 14.5 | |
| 40–49 | 21 | 17 | | 16 | 16.5 | |
| 50–60 | 12 | 19 | | 19 | 18 | |
| >61 | 12 | 32 | | 13 | 36 | |
| Foreign born | | | 0.005 | | | 0.000 |
| Native Swedish | 78.5 | 88 | | 74 | 89 | |
| Born outside Sweden | 21.5 | 12 | | 26 | 11 | |
| Education | | | 0.017 | | | 0.780 |
| High | 14 | 22 | | 17 | 18 | |
| Low | 86 | 78 | | 83 | 82 | |
| Employment status | | | 0.014 | | | 0.005 |
| Employed | 34 | 43 | | 36 | 51 | |
| Unemployed | 66 | 57 | | 64 | 49 | |
| Financial problems | | | | | | |
| No | 37 | 71 | 0.000 | 40 | 78 | 0.000 |
| Yes | 63 | 29 | | 60 | 22 | |
| Social support | | | 0.000 | | | 0.000 |
| Yes | 64 | 89 | | 61 | 85 | |
| No | 36 | 11 | | 39 | 15 | |
| Children at home | | | 0.011 | | | 0.835 |
| No/No answer | 61 | 69 | | 72 | 73 | |
| Yes | 39 | 31 | | 28 | 27 | |
| Psychosomatic symptoms | 5.6 (2.73) | 4.2 (2.60) | 0.000 ^a | 4.8 (2.93) | 3.2 (2.43) | 0.001 ^a |
| Psychological distress | | | 0.000 | | | 0.000 |
| Low | 41 | 81 | | 55 | 87 | |
| High | 59 | 19 | | 45 | 13 | |
| Suicidal behavior | | | 0.000 | | | 0.000 |
| No | 47 | 86 | | 55 | 91 | |
| Ideation | 22 | 10 | | 16 | 7 | |
| Attempt | 31 | 4 | | 29 | 2 | |
| Hazardous drinking | | | 0.000 | | | 0.000 |
| No | 73 | 84.5 | | 67 | 85 | |
| Yes | 27 | 15.5 | | 33 | 15 | |
| Medicine use | 2.3 (1.91) | 1.9 (1.60) | 0.000 ^a | 2.4 (2.50) | 1.5 (1.53) | 0.000 ^a |

a: Group differences were tested using Mann–Whitney *U* Test.

study of help-seeking and non-help seeking violence exposed women confirmed that violence exposure *per se* was related to a high problem load, including poor social situations and high levels of psychological distress.⁹

High psychological distress and hazardous drinking were associated with physical DV exposure among both women and men, which confirms previous findings.^{13,24} A Swedish study using data from regions in Sweden⁸ found an association between amount of medicines used and violence exposure among women and men. This study found sum of medicines used to be related to DV exposure only among men.

Fatal and non-fatal suicide rates are considered important indicators of a country's public health status¹⁰ and intimate partner violence has previously been identified as a circumstance that is strongly associated with suicide thoughts or attempts among women in several countries.⁵ Suicidal behavior along with interpersonal violence is more common among men,^{14,38} and despite lower prevalence of exposure to DV among males, the findings from this study indicate that, just as the female group, exposed males display higher risks in this regard than non-exposed. Whereas reports of suicidal ideation were associated with DV exposure among females only, the association between suicide attempts and DV was stronger for men. One possible explanation could be that men to a larger extent attempt suicide after considering it.³⁸ Previous studies have suggested that men have fewer propensities to seek help³⁹ and in combination with higher

rates of completed suicide, it stresses the importance of recognizing this relationship in relation to public health interventions and planning health promotion strategies. It is possible that important associations between DV or intimate partner violence exposure and related health problems remain underestimated or undetected when monitoring health trends in society and planning preventive interventions. Methods such as improving questions about different types and severity of domestic or partner violence may be needed in order to more accurately assess its prevalence and associations with specific public health issues. The relevance of public health surveys is applicable both nationally as well as internationally, and therefore international or regional measurement and conceptual consensus in how to address this public health issue would be preferable. For example, specific questions about different types of violence exposure and respondent's relationship to the perpetrator could be included in public health surveys. In case of including such questions, ethical considerations should be discussed in order to minimize risks for respondents. Among primary care and mental health professionals, violence exposure needs to be included in relation to risk assessment and management of suicidal behaviors.

Limitations and strengths

One limitation is that this study is based on cross-sectional data and thus does not provide causal associations, and there is a need for

Table 2 Bivariate and multivariate associations between women's and men's demographic and socioeconomic factors, psychological health and physical DV

| Variable | DV exposure | | | |
|------------------------|--------------------------|---------------------------------------|--------------------------|---------------------------------------|
| | Women | | Men | |
| Social situation | Crude OR (95% CI) | Adj. OR (95% CI) ^{a,b} | Crude OR (95% CI) | Adj. OR (95% CI) ^{a,b} |
| Foreign born | | | | |
| Native Swedish | 1 | 1 | 1 | 1 |
| Born outside Sweden | 2.05 (1.46–2.86) | 1.52 (1.00–2.30) | 2.80 (1.75–4.46) | 2.16 (1.19–3.89) |
| Education | | | | |
| High | 1 | | 1 | |
| Low | 1.78 (1.18–2.67) | | 1.08 (0.62–1.89) | |
| Employment status | | | | |
| Employed | 1 | | 1 | |
| Unemployed | 1.45 (1.08–1.96) | | 1.835 (1.19–2.81) | |
| Financial problems | | | | |
| No | 1 | 1 | 1 | |
| Yes | 4.18 (3.14–5.56) | 1.83 (1.26–2.65) | 5.54 (3.64–8.45) | |
| Social support | | | | |
| Yes | 1 | 1 | 1 | 1 |
| No | 4.61 (3.45–6.14) | 2.43 (1.68–3.53) | 3.70 (2.43–5.64) | 2.06 (1.19–3.56) |
| Children at home | | | | |
| No/No answer | 1 | | 1 | |
| Yes | 1.44 (1.08–1.90) | | 1.05 (0.68–1.65) | |
| Health status | Crude OR (95% CI) | Adj. OR (95% CI)^{a,b} | Crude OR (95% CI) | Adj. OR (95% CI)^{a,b} |
| Psychosomatic symptoms | 1.21 (1.15–1.27) | | 1.26 (1.17–1.36) | |
| Psychological distress | | | | |
| Low | 1 | 1 | 1 | 1 |
| High | 6.04 (4.55–8.00) | 2.78 (1.93–3.97) | 5.46 (3.63–8.23) | 1.91 (1.07–3.44) |
| Suicidal behavior | | | | |
| No | 1 | 1 | 1 | 1 |
| Ideation | 4.13 (2.77–6.18) | 2.00 (1.28–3.12) | 4.08 (2.14–7.80) | 1.94 (0.93–4.03) |
| Attempt | 13.16 (9.18–18.86) | 5.59 (3.70–8.45) | 22.16 (12.94–37.96) | 8.34 (4.25–16.37) |
| Hazardous drinking | | | | |
| No | 1 | 1 | 1 | 1 |
| Yes | 2.00 (1.46–2.72) | 1.61 (1.09–2.37) | 2.85 (1.84–4.43) | 2.33 (1.36–3.99) |
| Medicine use | 1.16 (1.07–1.26) | | 1.32 (1.19–1.46) | 1.17 (1.03–1.32) |

a: Final model includes only variables that appear in the column.

b: All analyses are adjusted for age.

longitudinal studies including violence exposure as a covariate in relation to different outcomes for both sexes. Also, the fact that different variables had different time frames may further limit interpretations of the associations. Another limitation concerns lack of information on the perpetrator of the reported abuse, and the severity or frequency of the violence experienced. The comparatively lower prevalence of reported DV exposure may be due to weakness of the study design, as the questions related to violence exposure were generally stated and only requested information about physical violence exposure. Higher incidence of violence is usually reported in studies where concrete questions of violent incidents are asked.⁴⁰ It is therefore likely that the prevalence of DV is underestimated. In addition, physical violence in intimate relationships is often concurrent with psychological and sexual violence, which were not measured in the survey. Thus, the underestimation of DV prevalence might have led to an underestimation of its association with health and social adversities. In turn, results from this study could be considered conservative and associations between victimization and found adversities could thus be reliable. A strength is the large sample size including both male and female victims and non-victims of DV and information about health and social factors in a nationally representative Swedish sample.

Conclusion

Results from this study indicate that both women and men exposed to physical DV are at higher risk of having attempted suicide.

Further, both females and males exposed to DV reported more negative social and psychological problems with some differences with regard to gender. However, current public health survey data may seem insufficient as a means to assess valid prevalence's of domestic or intimate partner violence, or to study its specific impact on different aspects of public health.

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Conflicts of interest: None declared.

Key points

- Associations were found between exposure to physical DV and suicidal attempts in both women and men.
- Results from this study indicate that both women and men exposed to physical DV reported social as well as

psychological adversities, but there were some differences with regard to gender.

- Our findings indicate that current public health survey data may be insufficient in terms of assessing associations of domestic or intimate partner violence and different aspects of public health. Adding specific questions about different types of violence exposure and respondent's relationship to the perpetrator in public health surveys may be needed in order to more accurately assess its prevalence and associations with specific public health issues.

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