



Trends in rates and characteristics of intimate partner homicides between 1990 and 2013



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ARTICLE INFO

Article history:

Received 15 November 2016

Received in revised form 30 January 2017

Accepted 31 January 2017

Available online 8 February 2017

Keywords:

Homicide rate

Intimate partner homicide

Gender

Perpetration

Victimization

Exposure-reduction theory

ABSTRACT

Purpose: Research addressing intimate partner homicide (IPH) across time and gender is lacking. The present study compares rates of IPH and non-intimate partner homicide (non-IPH) over time. Moreover, gender-specific trends of IPH rates and characteristics are examined.

Methods: The study is based on all solved homicides ($N = 1725$) in Sweden between 1990 and 2013. The dataset is an extension of the European Statistical Database on Lethal Violence and holds information from police files, court verdicts and forensic psychiatric reports.

Results: There has been a significant decrease of IPHs and non-IPHs, although, IPHs remained relatively stable until 2006. While there has been a modest decline in male-perpetrated IPHs, the low rates of female-perpetrated IPHs have remained stable. Male-perpetrated IPHs are gradually less likely to involve alcohol and be preceded by known history of IPV. The majority of female-perpetrated IPHs involved alcohol and history of known IPV, characteristics that remained stable over time.

Conclusions: It is crucial to consider intimate relationships as well as gender in order to gain nuanced insight to trends of homicide rates and characteristics. Our findings demonstrate distinct trends across homicide types, as well as gender-specific rates and characteristics of IPH.

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1. Background

The World Health Organization has identified violence against women as a public health issue, and has repeatedly stressed that intimate partner violence (IPV) is a global issue, which is in violation of women's human rights (WHO, 1996, 2002, 2013). At the far end of this spectrum is intimate partner homicide (IPH), which not only deprives victims of their lives but also has detrimental effects on victims' and perpetrators' children. A Swedish case-control study on the health consequences in the progeny of the victims and perpetrators of intimate partner femicide established an elevated risk in several domains. These included an increased risk of major mental disorders, substance use disorders and self-harm in children who were under the age of 18 years when exposed to the femicide (Lysell, Dahlin, Langstrom, Lichtenstein, & Runeson, 2016). In terms of financial burden imposed on society,

the average expense for a homicide offense in the U.S. has been estimated to be 17 million dollars per case (DeLisi et al., 2010).

1.1. Time trends of homicides and intimate partner homicides

Overall, homicide offenses increased in the 1960s, followed by a steady decline from the early 1990s in the U.S. and Western Europe (Aebi & Linde, 2010; Eisner, 2008; LaFree, Curtis, & McDowall, 2015; Weiss, Santos, Testa, & Kumar, 2016). Research addressing this phenomenon however, is predominantly from the U.S. context (Weiss et al., 2016). Less consideration has been taken to trends over time concerning homicides specifically involving intimate partners, particularly outside of the U.S. (see e.g. Block & Christakos, 1995; Browne, Williams, & Dutton, 1999; Dugan, Nagin, & Rosenfeld, 1999; Jennings & Piquero, 2008; Reckdenwald & Parker, 2012). Although Wolfgang (1957) suggested classification of homicides into subtypes depending on the victim-offender relation as far back as six decades ago, there has been a long tradition of treating homicide as a homogenous construct. In other words, this neglect to classify different homicides may be a partial explanation for the lack of research on trends of IPH. There has, however, been a recent paradigm shift in which the advantage of disaggregating into meaningful subtypes is now acknowledged (Ioannou & Hammond, 2015). Furthermore, disaggregation of

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homicides into subtypes improves the ability to assess to what extent individuals are victimized by their partners, and to gain a refined and nuanced insight into the varying characteristics and possible precursors involved.

It has been demonstrated in some studies that IPHs have decreased in the U.S. and Western Europe (Corradi & Stockl, 2014; Fox & Zawitz, 2007; Greenfield et al., 1998), and on the other hand, the United Nations Office on Drugs and Crime (UNODC, 2013) has stressed that the decline of IPH is modest in comparison to other types of homicide, and actually appear relatively constant over time (UNODC, 2013).

Additionally, there seems to be differences when accounting for the gender of the perpetrator. Studies from the U.S. report that the decline in IPH is predominantly found in female perpetrators with male victims, while the drop of intimate partner femicide, perpetrated by a male partner, is comparably modest (Block & Christakos, 1995; Fox & Zawitz, 2007; Reckdenwald & Parker, 2012). Fox and Zawitz (2007) found that between 1976 and 2005 in the U.S., IPHs involving male victims declined by 75%, while the killing of females by an intimate partner was stable for two decades, followed by a smaller decrease from the beginning of the 1990's. It was further noted that the greatest decrease was identified in black male victims (83%), followed by white male victims (61%) and black females (52%). The decrease of IPHs involving white females, on the other hand, decreased by 6% between 1976 and 2005, indicating a distinct and fairly stable trend for this specific group of IPH victims. It was further elucidated that the proportion of female homicide victims killed by an intimate had increased, and correspondingly, the proportion of male homicide victims had decreased (Fox & Zawitz, 2007).

In Canada, IPH rates have fluctuated, however over the past 30 years an overall decline has been reported (Dawson, Bunge, & Balde, 2009). Again here, when gender was considered, it was revealed that the decrease in male victims of IPHs was greater compared to the decline found in female victims of IPHs between 1991 and 2004. In other words, homicide type and gender need to be considered when addressing trends of homicide across time. Up to date research from different geographical settings that address IPH across time and gender is lacking (Reckdenwald & Parker, 2012). Moreover, research addressing potential trends in offender and incidents characteristics over time is scarce.

1.2. Gendered nature of IPH

The Global Study on Homicide demonstrates that, at a global level, 95% of the perpetrators and 80% of the victims of homicide are male. In domestic homicides, on the other hand, two-thirds of the victims are female (UNODC, 2013). Thus, IPH is characterized by gender asymmetry: while female victims are more likely to be victimized by an intimate partner or family member, male victims are more likely to be victimized by acquaintances or strangers (Fox & Zawitz, 2007; Garcia, Soria, & Hurwitz, 2007; Juodis, Starzomski, Porter, & Woodworth, 2014; Stockl et al., 2013). As the majority of victims of IPHs are female, and the likelihood of being killed by an intimate partner is six times higher for women (Stockl et al., 2013), criminological theories have predominantly focused on behaviours and patterns in male-perpetrated IPH, which has led to a gap of knowledge regarding IPH perpetration and victimization across genders (Eriksson & Mazerolle, 2013; Stockl et al., 2013). Research that takes into account the victim-offender relationship, and gender is crucial for advancing scientific knowledge, and more importantly, in identifying possible prevention and intervention actions.

1.3. Theoretical explanations

The feminist movement grew stronger in the seventies and had a great impact on the political and social responses to domestic violence,

resulting in the development of services for female victims of IPV (Dugan, Nagin, & Rosenfeld, 2003). Dugan et al. (2003) examined to what extent these actions may have contributed to the observed decline of IPHs. Interestingly, it has been noted that availability of domestic violence resources is associated with a decline of male victims of IPH, however no such reduction was found in female victims of IPH (Browne et al., 1999). A suggested explanation was that there were increased opportunities for women to leave abusive relationships, instead of committing homicide as a means of self-defence. In other words, it was argued that actions aiming to protect women from victimization of IPH resulted in protecting men from being victimized of IPH (Dugan et al., 2003).

Moreover, the importance of enhanced economic situations and educational opportunities for women following the improvement of women's position in society has been emphasized. This is considered to be especially essential with regard to the exposure-reduction theory. That is, the notion that factors related to reduced exposure between intimates (e.g. education, employment and divorce rates) results in reduction of violence between intimate partners (Dugan et al., 2003). In line with this theory, the ameliorative hypothesis stipulates that increased gender equality would be negatively associated with rates of male-perpetrated IPHs (Eriksson & Mazerolle, 2013; Whaley & Messner, 2002). Gender equality is hypothesized to lead to increased opportunities and resources for women, which in turn reduces their emotional and financial dependence on men. Accordingly, women may be less likely to enter and more likely to leave violent relationships (Dawson et al., 2009).

On the other hand there is the retaliation effect, also called the backlash hypothesis. This describes the possible creation of retaliation, as a result from men perceiving a loss of control in their intimate relationships (Dugan et al., 2003). Thus, higher levels of male-perpetrated IPHs are theorized to be associated with retaliation effects, while lower levels of IPHs are explained in terms of the victim's reduced exposure to the offender. It has also been highlighted that insufficient exposure-reduction may do more harm than good, and be less safe than no exposure-reduction at all (Dugan et al., 2003).

1.4. Purpose of present study

Up to date research that addresses IPH across time and gender is lacking (Reckdenwald & Parker, 2012), and examination of IPH has been particularly lacking in Europe (Corradi & Stockl, 2014; Dobash & Dobash, 2015). It has been highlighted that a challenge and direction for future research is to study general trends and patterns of severe violent crimes in which gender and domestic relationships are considered in the analyses (Walby, Towers, & Francis, 2015). Although there has long been access to data on male- and female-perpetrated IPHs in Sweden (Corradi & Stockl, 2014), no peer-reviewed studies have addressed IPH across time and gender in Sweden. Thus, two gaps in the literature are addressed: documentation of trends in which (a) homicide type variations (i.e. IPH and non-IPH), and (b) gender are investigated.

The overarching objective of present study was to examine trends in homicide rates, in which all solved homicides committed between 1990 and 2013 in Sweden were investigated. More specifically, the objectives were to:

- 1) Examine and compare overall rates of IPH and non-IPH incidents respectively.
- 2) Investigate percentages of solved homicides that constitute IPHs for each given year.
- 3) Examine and compare gender-specific rates of IPH.
- 4) Investigate trends of offender characteristics and incident characteristics across three time-periods (1990 through 1997; 1998 through 2005; 2006 through 2013), in which gender-specific trends were considered and reported if dissimilar.

2. Methods

This nationwide study is based on all solved homicides committed in Sweden between January 1st, 1990, and December 31st, 2013. The data was retrieved from the Swedish National Council for Crime Prevention, in which information from police files, court verdicts and forensic psychiatric reports had been coded according to a specific coding scheme. The dataset is an extension of the European Statistical Database on Lethal Violence (ESDoLV) and holds all cases of homicide, set on incident-level. The dataset has been checked repeatedly in order to control that all cases of homicide identified by the judicial system are included, and that no cases have been duplicated. The definition of homicide is an intentional criminal act of violence by one or more human beings resulting in the death of one or more other human beings. According to the Swedish Penal Code, homicide covers cases of murder, manslaughter, infanticide, as well as assault leading to death. A solved case denotes an incident where a perpetrator has been charged and convicted, or where a prosecutor has identified a perpetrator who could not be charged, for example because of the perpetrator committing suicide in commission of the offense. The clearance rates have ranged between 90% and 74% between 1990 and 2013, with a slight decrease of solved homicides over time (Sturup & Granath, 2017). Data regarding history of physical violence between victim and offender in IPH cases (onwards referred to as history of IPV) is based on prior reports to the police, which are eliminated after five years, in other words the figures regarding history of IPV are conservative. The study has been approved by the Regional Ethical Review Board in Stockholm (2014/749-31/5).

2.1. Data

There were in total 1752 solved incidents of homicide between 1990 and 2013, however, as 14 (0.7%) incidents involved unknown victim-offender relationships, these were omitted from the present study. The overall number of perpetrators ($N = 2149$) and victims ($N = 1879$) exceed the number of homicide incidents ($N = 1738$) in the study dataset, as some cases involve multiple perpetrators ($n = 262$), or collateral victims ($n = 107$).

Homicides where the perpetrator was a current or former intimate partner of the victim were categorized into a distinct subgroup; IPH ($n = 450$), involving cases where the perpetrator and victim were, or had been, married, engaged, cohabitants or boyfriend/girlfriend. The remaining cases of homicide were categorized into a subgroup referred to as non-IPH ($n = 1288$). In total, 0.9% ($n = 4$) of all IPHs involved same-sex relationships during the specific time frame. As it has been argued that same-sex IPHs display different features than opposite-sex IPHs (Gannoni & Cussen, 2014; Mize & Shackelford, 2008), these cases were omitted from the analyses, in line with prior similar research (Reckdenwald & Parker, 2012). Moreover, as the age of legal responsibility in Sweden is 15 years, perpetrators who were 14 years and younger were excluded from the analyses. Thus, five perpetrators (ranging between 10 and 14 years of age) were excluded from the analyses, as were four offenders in which no age was specified.

Consequently, the final sample consists of 1725 incidents of homicide; overall 26% ($n = 444$) constitute IPHs. Within the partner-related cases, 18 (4%) incidents involved multiple victims, while 12 (3%) involved multiple offenders. The corresponding figures in non-IPHs are 89 (7%) and 249 (19%).

2.2. Statistical analyses

In order to investigate trends of homicide, disclosing rate rather than number of incidents in a given time and place is more efficient, as it takes into account the total population, hence providing more accurate measures (Mazerolle, Eriksson, Wortley, & Johnson, 2015). Accordingly, rates per 100,000 were calculated based on population figures of

inhabitants aged 15 years and older for each year, obtained from Statistics Sweden (www.scb.se). Rate of female perpetration is based on number of female inhabitants, and rate of male perpetration is based on number of male inhabitants in a given year. Changes in rates over time were analysed by using Poisson Regression Model, in which the total population (15 years and older) was regarded as the exposure factor, year was regarded as the predictor and number of incidents was regarded as the dependent variable. The analyses resulted in outcome measures called Incidence Rate Ratios (IRR). An IRR of 0.8 indicates a 20% decrease, while an IRR of 1.2 indicates a 20% increase.

Examination of gender-specific characteristics of IPH was conducted by dividing the data into three 8-year periods (1990–1997; 1998–2005; 2006–2013), in order to investigate trends of characteristics over time. Trends of age in offenders of IPH was analysed by conducting the non-parametric Kruskal-Wallis test, due to the non-normal distribution of the dependent variable. Statistical significance of categorical variables were analysed by conducting Chi-squared tests. With regard to multiple comparisons, the Bonferroni correction was not applied in order to control for Type I errors, since it has been criticised for substantially increasing the risk of Type II errors (Moran, 2003; Nakagawa, 2004). Thus, uncorrected probability values < 0.05 , derived from two-tailed tests, were regarded as statistically significant. Statistical analyses were performed using SPSS for Mac, version 23, for all analyses except the calculations of IRR, in which STATA version 13 was used. Figures were created in Excel, versions 13 and 14 for Mac.

3. Results

The majority of the offenders were male, regardless of homicide type; however, the proportion of female offenders was higher in IPHs (18%; $n = 78$) compared to non-IPHs (6%; $n = 79$; $\chi^2(1, N = 1725) = 51.8, p < 0.001$). Overall, 57% ($n = 366$) of all female homicide victims were killed by an intimate partner, while the corresponding figure for males was 7% ($n = 78$).

Fig. 1 displays rates of homicide between 1990 and 2013, in which IPH and non-IPH have been disaggregated. A visual inspection indicates a steady decline of non-IPHs from 1990 and onward, while the IPH rates remained relatively stable until 2006. The calculations with Poisson regression¹ reveal modest, yet significant, declines in non-IPHs (IRR = 0.98; 95% CI 0.97–0.99, $p < 0.001$) as well as in IPHs (IRR = 0.98; 95% CI 0.97–0.99, $p = 0.010$).

On average 26% of all solved homicides constituted IPHs between 1990 and 2013. The percentage of all homicides involving intimate partners increased marginally up to 2006, with a peak of 37% of all solved homicides involving intimate partners, followed by a decreasing percentage (see Appendix). The somewhat increasing percentage until 2006 reflects the distinct trends between the two homicide types rather than an increase of IPHs, as a visual inspection of Fig. 1 suggests that non-IPHs have declined steadily while IPHs remained relatively stable until 2006.

In Fig. 2, the patterns of IPHs are investigated more closely by also considering the gender of the offender. The Poisson regression confirms a modest, however significant, decline of male-perpetrated IPHs (IRR = 0.98; 95% CI 0.97–0.99, $p = 0.019$), meanwhile, no significant decline was observed in female-perpetrated IPHs (IRR = 0.98; 95% CI 0.95–1.01, $p = 0.217$).

The Kruskal-Wallis test revealed that there was no significant difference in offenders' age between the three time-periods, ($H(2) = 1.7, p = 0.421$), suggesting no changes in age of offenders across time. Table 1 presents IPH offender characteristics across three time-periods, regardless of gender; however, when gender-specific trends are present, they are described in the text. With regard to occupation, no significant trends were observed; however, from 1998–2005 to 2006–2013, the proportion of men being gainfully employed at the time of the incident grew from 37% to 52%. Simultaneously, the reversed was observed

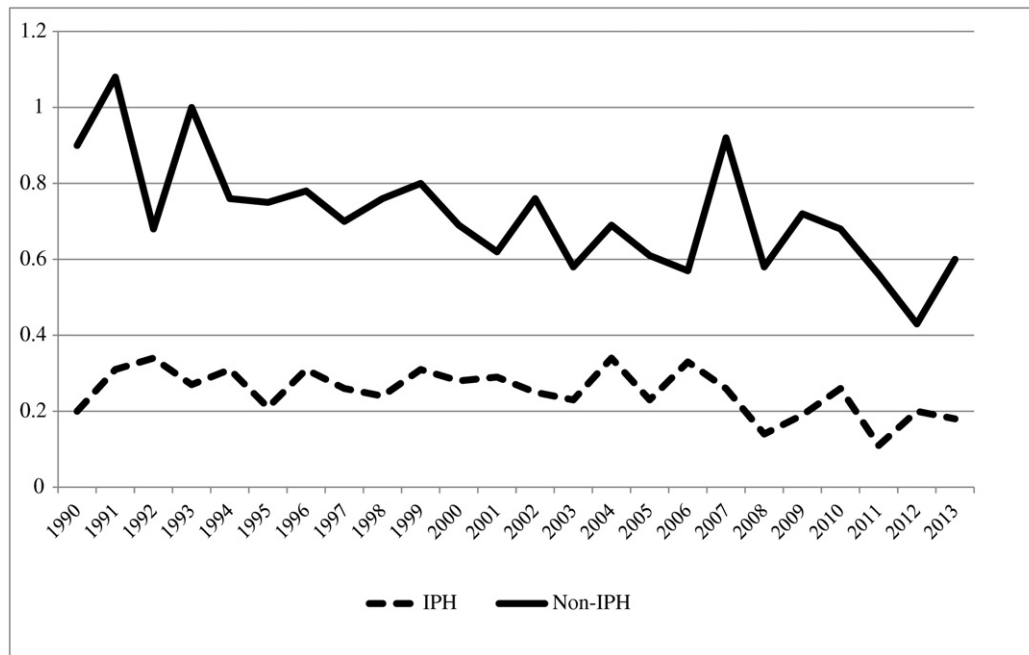


Fig. 1. Rates of intimate partner homicides (IPH) and non-intimate partner homicides (Non-IPH) per 100,000 persons 15 years and older.

in female offenders, where the percentage of female offenders being employed dropped from 33% to 18%.

Table 2 displays changes in incident characteristics over time. Regarding method of injury, use of sharp instruments has increased, and in consideration of gender, the increase is merely found in male perpetrators, $\chi^2(2, n = 366) = 10.4, p = 0.005$. Although non-significant, the descriptive figures of homicide-suicide in IPH (IPH-S) indicate decreasing percentages of offenders committing suicide in connection to the offense. All IPH-S cases involved male offenders, except for two cases (in the first and last time-period respectively).

Moreover, an overall decrease of alcohol involvement was found in both perpetrators and victims of male-perpetrated IPHs. Male offenders

committing the offense under the influence of alcohol decreased from 51% ($n = 65$) in 1990–1997, to 33% ($n = 32$) in 2006–2013, $\chi^2(2, n = 333) = 7.7, p = 0.021$. Nonetheless, commission of the homicidal act with alcohol involvement was predominant in female offenders: on average 72% were under the influence of alcohol. The same decreasing trend of alcohol intoxication was found in victims, in which a statistically significant decrease was found in female victims of IPHs, ranging from 39% between 1990 and 1997, to 21% between 2006 and 2013, $\chi^2(2, n = 337) = 9.4, p = 0.009$. Overall, alcohol intoxication was more prevalent in female-perpetrated IPHs.

There was a decrease of documented history of physical IPV in male-perpetrated IPHs, $\chi^2(2, N = 366) = 9.1, p = 0.010$, ranging from 36%

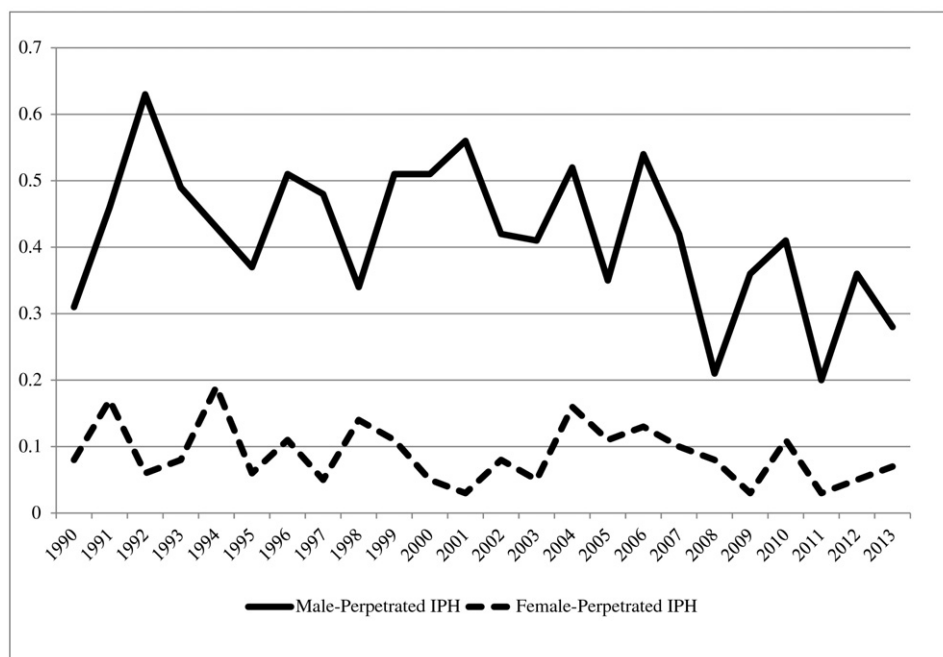


Fig. 2. Rates of intimate partner homicide (IPH) per 100,000 males and females respectively, 15 years and older.

Table 1

Time trends of offender characteristics of intimate partner homicide in Sweden between 1990 and 2013.

Variable	1990–1997 n = 157 (%)	1998–2005 n = 157 (%)	2006–2013 n = 130 (%)	χ^2	p-Value
Gender					
Male perpetrator	129 (82.2)	130 (82.8)	107 (82.3)	<0.1	0.988
Female perpetrator	28 (17.8)	27 (17.2)	23 (17.7)		
Country of birth					
Born in Sweden	103 (65.6)	97 (61.8)	74 (56.9)	2.3	0.322
Born abroad	54 (34.4)	60 (38.2)	56 (43.1)		
Occupation ^a					
Gainfully employed	51 (36.7)	42 (35.9)	49 (46.7)	3.4	0.187
Unemployed	46 (33.1)	36 (30.8)	33 (31.4)	0.2	0.918
Sick listed/disability pension	17 (12.5)	16 (13.7)	11 (10.5)	0.5	0.767
Retired	13 (9.4)	18 (15.4)	7 (6.7)	4.8	0.091
Student/other	12 (8.6)	5 (4.3)	5 (4.8)	2.6	0.277
Criminal history ^b					
Previously convicted	80 (63.0)	83 (67.5)	74 (64.3)	0.6	0.749
Never convicted	47 (37.0)	40 (32.5)	41 (35.7)		

^a N = 361; female perpetrators = 63; male perpetrators = 298 (18.7% MV).^b N = 365; female perpetrators = 74; male perpetrators = 291 (5.1% vs. 20.5% MV).

(n = 46) in the first time-period to 22% (n = 23) in the last. In contrast, this was commonly documented in female-perpetrated IPHs, with an average of 62% displaying histories of IPV.

Table 2

Time trends of incident characteristics of intimate partner homicide in Sweden between 1990 and 2013.

Variable	1990–1997 n = 157 (%)	1998–2005 n = 157 (%)	2006–2013 n = 130 (%)	χ^2	p-Value
Crime scene					
Home of perpetrator and/or victim	125 (79.6)	127 (80.9)	105 (80.8)	<0.1	0.953
Other than home	32 (20.4)	30 (19.1)	25 (19.2)		
Method of injury					
Sharp instrument	69 (43.9)	61 (38.9)	72 (55.4)	8.0	0.018
Blunt violence	27 (17.2)	26 (16.6)	13 (10.0)	3.5	0.177
Strangulation	28 (17.8)	28 (17.8)	19 (14.6)	0.7	0.712
Firearms	26 (16.6)	29 (18.5)	17 (13.1)	1.5	0.462
Other	7 (4.5)	13 (8.3)	9 (6.9)	1.9	0.382
IPH-Suicide					
Yes	30 (19.1)	26 (16.6)	14 (10.8)	3.8	0.147
No	127 (80.9)	131 (83.4)	116 (89.2)		
Perpetrator under influence of alcohol ^a					
Yes	84 (54.9)	61 (45.9)	44 (38.3)	7.4	0.024
No	69 (45.1)	72 (54.1)	71 (61.7)		
Perpetrator under influence of other substances ^b					
Yes	16 (10.7)	11 (9.4)	16 (13.3)	1.0	0.614
No	134 (89.3)	106 (90.6)	104 (86.7)		
Victim under influence of alcohol ^c					
Yes	73 (47.7)	49 (36.6)	34 (29.3)	9.8	0.007
No	80 (52.3)	85 (63.4)	82 (70.7)		
Victim under influence of other substances ^d					
Yes	13 (8.6)	4 (3.3)	8 (6.6)	3.1	0.208
No	139 (91.4)	117 (96.7)	113 (93.4)		
Known previous physical violence between victim and perpetrator					
Yes	62 (39.5)	67 (42.7)	34 (26.2)	9.2	0.010
No/unknown	95 (60.5)	90 (57.3)	96 (73.8)		

Bold values indicate significance at p < 0.05.

^a N = 401, female perpetrators = 68; male perpetrators = 333 (9.7% MV).^b N = 387, female perpetrators = 64; male perpetrators = 323 (12.8% MV).^c N = 403, female perpetrators = 70; male perpetrators = 333 (9.2% MV).^d N = 394; female perpetrators = 67; male perpetrators = 327 (11.3% MV).

4. Discussion

The overarching aim of the present study was to examine trends of homicide rates in which intimate partner relationships and gender were considered in the analyses. Moreover, the aims were to investigate offender and incident characteristics of IPHs over time, wherein gender was considered. Our findings elucidate modest but significant decreases in solved non-IPHs and IPHs, albeit, the latter remained relatively stable until 2006. The slightly increasing proportion of solved homicides that constituted IPHs (as can be seen in the figure in [Appendix](#)) until 2006 is a reflection of the gradual decrease of non-IPHs while the IPHs remained relatively stable until 2006, followed by a decrease.

In line with prior studies ([Block & Christakos, 1995](#); [Dawson et al., 2009](#); [Fox & Zawitz, 2007](#)), our Swedish findings elucidate distinct trends of IPH rates depending on the gender of the offender. However, in contrast to previous studies, our findings disclose a modest decrease of male-perpetrated IPHs, while the low rates of female-perpetrated IPHs have remained stable.

Western European countries have the lowest rates of homicide worldwide ([LaFree, 1999](#)); accordingly, it has been discussed that drastic declines of homicide rates may not be realistic to expect and that a minimum threshold of homicide rates may have been reached ([Aebi & Linde, 2010](#)). The low rates of homicides in western European countries, irrespective of homicide type, are hypothesized to be associated with low rates of firearms and the high quality of health services. Unlike, for example, the U.S. ([FBI, 2016](#)), Canada ([Dawson et al., 2009](#)) and Switzerland ([Marwalder & Killias, 2012](#)) where the use of firearms is predominant, use of a sharp instrument is the most common method in Sweden, in line with several other western European countries ([Povey, Coleman, Kaiza, & Roe, 2009](#); [Savolainen, Lehti, & Kivivuori, 2008](#)). Our findings further suggest that the use of sharp instruments has become more dominant during the studied period in Sweden, since the decrease in male-perpetrated IPHs mainly concerned other methods of killing.

The implication of health services on homicide rates has received some international support, as the decline in rates of completed homicides is greater than the decline in rates of attempted homicides ([Aebi & Linde, 2010](#)).² However, it would be of value to examine whether this applies to IPHs specifically. One can speculate that the quality of health services is less relevant for IPHs, as they tend to take place inside a home in absence of witnesses and be characterized by excessive violence (see e.g. [Dutton, 2002](#); [Pereira, Vieira, & Magalhaes, 2013](#)). In further consideration of advancements of services, future research would benefit from addressing plausible developments with regard to social and mental health services.

Factors associated with trends of IPH rates over time is outside of the scope of current study, however, previous studies that have incorporated these factors in their analyses have suggested that reduction in male-perpetrated IPHs can be explained in the light of the ameliorative hypothesis ([Whaley & Messner, 2002](#)) or the exposure-reduction theory ([Dugan et al., 2003](#)). With regard to gender equality, Sweden has globally been positioned as one of the highest ranked countries for seven years in a row by the Global Gender Gap Index ([Schwab et al., 2015](#)), suggesting enhanced gender equality based on aspects of health, education, economic participation and political empowerment. Also, the Gender Equality Index, which is a synthetic measure of gender equality (incorporating elements related to e.g. work; money; time; health and power), elucidates that Sweden is one of four leading countries in terms of achieving parity ([EIGE, 2013](#)). In the light of the cultural tradition of striving for gender equality and the social welfare system in Sweden, the Swedish context makes up an interesting example with regard to rates and characteristics of IPV and IPH. Related to the realm of gender equality, [Dugan et al. \(2003\)](#) emphasize that the status of women and its progress over time is meaningful in the light of exposure-reduction theory, as the independence of women due to financial resources and education opportunities mitigates the need of staying in abusive

relationships. Thus, it would be of interest, and a direction for future research, to investigate associations between factors related to gender equality and rates of IPH over time in a Swedish context. Researchers from the U.S. have progressed from merely documenting trends of IPH rates to investigating factors that may be associated with these trends (Dawson et al., 2009), an approach yet to be adopted within the European context.

Although research on IPH has been limited, gender-based violence has been on the social and political radar for decades in Sweden and parts of Western Europe. Subsequently, a number of government actions and legal reforms have taken place (see e.g. Corradi & Stockl, 2014 for a review), in which Sweden has been identified as an 'early bird country' with regard to policy development addressing intimate partner violence and homicide. Yet, the rate of male-perpetrated homicides involving female partner victims persisted to be relatively stable between 1990 and 2006, and continues to comprise a profound proportion of all solved homicides. The prevalence of IPH in Sweden and other western European countries is relatively high, despite the advancements of policy and government actions (Corradi & Stockl, 2014). This can be paralleled to the observation by Dugan et al. (2003, p. 173) that "Men's homicidal behaviour toward female intimates statistically remains the same regardless of the amount of resources available to battered women." Undoubtedly, these efforts are essential for victimized women, however, these tendencies putatively highlight the need of novel approaches in combating gender-based violence.

In the vein of the rise of women's rights, the past 50 years are generally characterized by rights revolutions, ranging from acknowledging not only women's rights, but also, for example, children's rights, which have resulted in declined rates of IPV, rape and child abuse (Pinker, 2011). The plausible implications of these tendencies on IPH rates are further accentuated when considering intergenerational transmission of trauma and violence.

In scrutiny of characteristics over time, descriptive discoveries of present study indicates a slight increase in male IPH offenders being gainfully employed at the time of the incident, while the reversed trend was observed in their female counterparts. Also, in line with studies demonstrating an overall decrease of alcohol-related homicides (Granath, 2011:5; Kuhns, Exum, Clodfelter, & Bottia, 2014), our study conveys a significant decrease of alcohol intoxication in male-perpetrated IPHs, in which both offenders and victims are less likely to be intoxicated at the time of the offense. In contrast, no decline was observed in female-perpetrated IPHs, in fact, alcohol intoxication was prevailing in female offenders of IPHs and their male victims.

Our synthesized findings on IPH characteristics in male-perpetrated IPHs over time possibly suggest a shift in the 'typical' IPH case; less likely to be clearly characterized by IPV, less likely to involve alcohol intoxication and more likely to involve male offenders employed at the time of the incident.³ Moreover, there are indications of a decreasing percentage in male offenders committing suicide in connection to the offense (homicide-suicide). These tendencies could be paralleled to the discussion on conventionality in male offenders of IPH (see e.g. Caman, Howner, Kristiansson, & Sturup, 2016a; Dobash, Dobash, & Cavanagh, 2009; Dobash, Dobash, Cavanagh, & Lewis, 2004; Thomas, Dichter, & Matejkowski, 2011) where some scholars disclose that men who perpetrate violence against intimate partners are more 'conventional' than other violent offenders.⁴ There is, however, research that underpins heterogeneity within the group of male IPH offenders (Dobash et al., 2009; Kivisto, 2015). Thus, the government actions and the legal reforms might have been efficient for preventing some subtypes of IPH (e.g. characterized by clear signs of IPV and hazardous drinking), and less efficient for the more 'conventional' subtypes. Addressing potential subtypes within IPH offenders could provide fruitful knowledge for scientific purposes, and most importantly, for risk-management. In order to further advance policy development and prevention, research on the heterogeneity among IPH offenders is required (see Kivisto, 2015).

With regard to female-perpetrated IPHs, there are no Swedish studies on rates and characteristics over time. Our previous in-depth study with a limited time frame, comparing male and female offenders of IPH (Caman, Howner, Kristiansson, & Sturup, 2016b) disclosed that the female-perpetrated IPHs were profoundly characterized by previous IPV (where the female offenders had both perpetrated and been victimized of prior IPV) and alcohol intoxication. Furthermore, diagnosis of substance use disorders (mainly alcohol use disorders) from inpatient care was a common feature in the female offenders. Present study don't have data regarding actual substance use disorders, however, if alcohol intoxication at the time of the offense can be considered a proxy of such, then one can hypothesize that the female-perpetrated cases are characterized by problematic drinking habits.

It has been maintained, in the light of exposure-reduction theory, that rates of female-perpetrated IPHs are related to the women's opportunities to leave abusive relationships (Dugan et al., 2003). An aspect related to exposure-reduction and problematic substance use worth considering is that the women's shelters have been restrictive with housing women with ongoing substance issues, possibly resulting in a subgroup of women, that is women who are in destructive relationships and have substance related issues, being especially exposed. The deficiencies and lack of services for these women was highlighted in a government bill in 2006 (Bill, 2006/07: SoU10), in which it was underscored that the social welfare committee was responsible to improve availability of services for vulnerable subgroups of women, in which women with substance related issues was one of them. One can speculate that the persistent rates of female-perpetrated IPHs in Sweden are related to a subgroup of women's reduced opportunities to leave destructive relationships, based on lack of employment and substance related issues. This is, however, speculative, and should be considered in future research.

4.1. Methodological considerations

A deficiency in the scientific landscape of homicide is the systematic omission of homicide-suicide perpetrators from prominent datasets, as they are not charged or convicted (Kivisto, 2015; Regoeczi, Granath, Issa, Gilson, & Sturup, 2016). This results in increased risk of bias, especially related to IPH, as a profound percentage of the IPH offenders commit suicide in connection to the homicidal act (Belfrage & Rying, 2004; Caman et al., 2016a; Campbell, Glass, Sharps, Laughon, & Bloom, 2007). The high-quality database on homicide in Sweden can provide clear and unique insight based on the representative population-based sample, where the offenders who commit suicide in commission of the offense are included. In line, offenders who commit crime under the influence of a severe mental disorder are included, since all offenders, regardless of mental state, are convicted either to prison or forensic psychiatric care, according to Swedish legislation.

Moreover, an overwhelming majority of the incidents (99.3%) in the Swedish dataset involve known victim-offender relationships. This is a major advantage in terms of representativeness, since it has been underscored that some datasets within the scientific field of IPH involve a substantial percentage of missing values with regard to the victim-offender relationships (Langford, Isaac, & Kabat, 1998).

A caveat in the current study is the elevated percentage of missing values related to perpetrators' occupation and criminal history. One further limitation is the exclusion of same-sex relationships, however, due to insufficient numbers of cases involving same-sex IPH, no analyses of these specific cases could be carried out. Also, there is a risk that some victim-offender relationships that in reality were same-sex IPHs were inaccurately coded as involving acquaintances, due to failure of identification. The present dataset demonstrates that 0.9% of IPHs involve same-sex relationships, while figures from Australia (Gannoni & Cussen, 2014) and the United States (Mize & Shackelford, 2008) report that 2.1% of all IPHs were classified as occurring within same-sex relationships; however, the authors address that this figure can be

underrepresented (Gannoni & Cussen, 2014). Furthermore, one can assume that the figures of previous physical IPV are conservative, due to the private nature of domestic violence and the elimination of reports after five years. Nonetheless, even the conservative figures could provide insight to changes over time.

Lastly, it is reasonable to assume that emotion regulation, psychopathology and life stressors—factors not considered in the present study, may influence perpetration of IPH; moreover, recent research has highlighted the influence of intergenerational transmission of violence for perpetration and victimization of IPV.

5. Conclusion

It is necessary to consider intimate relationships as well as gender in order to gain nuanced insight to trends of homicide rates and characteristics. Present study demonstrates that there has been a significant decrease in both IPHs and non-IPHs between 1990 and 2013, although, IPHs remained relatively stable until 2006. Further, our findings elucidate gender-specific rates and characteristics over time. While there has been a modest yet significant decline in male-perpetrated IPHs, the low rates of female-perpetrated IPHs have remained stable. Our synthesized findings suggest a possible shift in the 'typical' male-perpetrated IPH: gradually less likely to involve alcohol and be preceded by known history of IPV. The majority of female-perpetrated IPHs involved alcohol and history of known IPV, characteristics that remained stable over time.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Acknowledgments

The authors would like to acknowledge Johanna Schönhöfer for providing assistance in the use of STATA. The authors would also like to thank Dr Li Eriksson for valuable discussions about the findings and the phenomenon of intimate partner homicides.

Appendix A

Notes

¹ The data for the independent variable of non-IPH was over-dispersed, why a generalized poisson regression (GPR) model was applied to calculate IRR of non-IPH rates.

² Note: it is highlighted in Swedish research that distinct trends of homicide and attempted homicide rates foremost are explained by other conditions, e.g. related to the definitions of attempted homicide as well as changes in the structure of homicide offenses. Thus, the hypothesis that improvement in health care has had a major impact on the homicide rates since the 1990s has gained limited support within the Swedish context (see Granath, 2011:5).

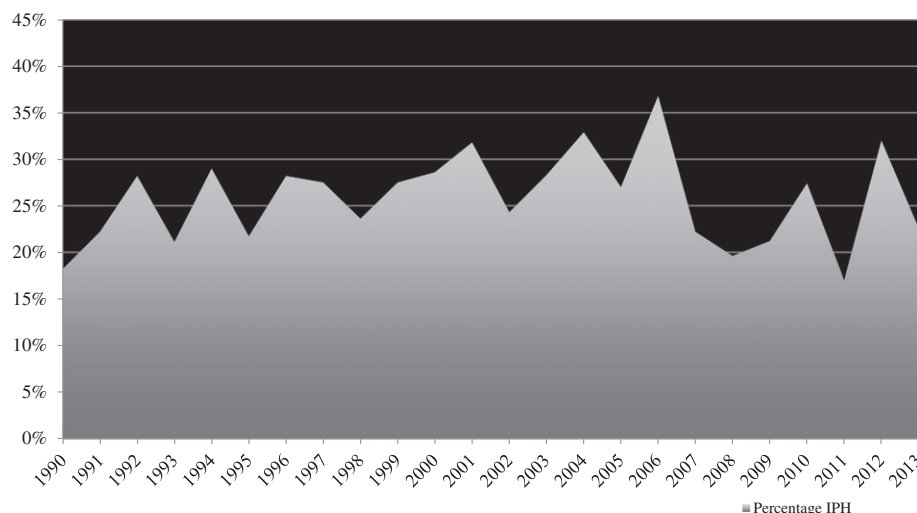
³ Dobash et al. (2009) compared offenders of intimate partner murders with (PrevConvict) and without (NoConvict) prior convictions, in which NoConvict offenders were more likely employed, less likely to have had alcohol problems during adulthood and a tendency of being less likely to have been violent toward the intimate partner victim. However, although the two groups differed in terms of socio-demographics, criminal history and personal backgrounds, the authors argue that the offenders may be similar in their orientation to women.

⁴ There are, however, scholars who denote that these men do not differentiate from other violent offenders (see e.g. Felson & Lane, 2010; Kivivuori & Lehti, 2011).

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Percentage of solved homicides that constitute intimate partner homicides



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