

Intimate partner violence, sociodemographic factors and mental health among population based samples in Sweden

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To my daughter Line-Sofia

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ABSTRACT

Aims: To explore the prevalence of Intimate Partner Violence (IPV) and its association with sociodemographic factors, symptoms of depression, perceived need for mental care and primary health care utilization. Another aim was to explore the prevalence of suicidal ideation and attempts over a 26 year period and associations between sociodemographic factors and lifetime suicidal ideation. **Method:** Two postal surveys and face-to-face interviews. Prevalence's were used in descriptive data. Crude and adjusted Odds Ratios with 95% Confidence Intervals were used in bivariable and multivariable logistic regression analyses. **Results:** Compared to men, women reported higher prevalence of sexual violence for past year and earlier life. For past year, 11.0% of the men and 8.0% of the women reported exposure to physical violence, whereas 15% of the women and 11.0% of the men reported such violence for earlier in life (**Study I**). Being single and having poor social support was associated with lifetime exposure to physical and/or sexual IPV among women, whereas among men, a relationship of ≤ 3 years was associated with IPV (**Study I**). Being exposed to physical, sexual violence as well as isolating control during past year, was associated with self-reported symptoms of depression among women (**Study II**). Women exposed to physical IPV past 5 years were three times more likely to perceive the need for mental health care as compared to unexposed women (**Study III**). Of the women aged 20-30 years, 45% reported lifetime suicidal ideation in 2013/15 compared to 1989/91 when 33% reported this. Self-reported rates of attempted suicide remained similar. Among women aged 31-49 years, 35.4% reported lifetime suicidal ideation in 2013/15 compared to 2000/02 when 23.1% reported this. In this age group, lifetime suicide attempts increased from 0.0% in 2000/02 to 3.6% in 2013/15. Having compulsory and/or high school education, being unemployed, being a student and being single was associated with lifetime suicidal ideation (**Study IV**). **Conclusions:** Both women and men were exposed to IPV, however, the exposure showed different patterns between men and women. IPV was associated with

symptoms of depression and need for mental care among women. Current finding indicate an increasing trend in suicidal ideation and attempts which should be further explored in future studies.

Keywords: Intimate Partner Violence, population based, sociodemographic factors, symptoms of depression, perceived need for care, suicidal ideation and attempts

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SAMMANFATTNING PÅ SVENSKA

Både partnervåld i en nära relation samt självmordstankar och självmordsförsök är omfattande folkhälsoproblem som kan leda till allvarliga hälsokonsekvenser samt stort lidande för den enskilde individen och dess familj. Avhandlingen har följande tre syften: (i) att studera förekomsten av självrapporterat partnervåld och samvarierande faktorer bland vuxna män och kvinnor i Sverige. (ii) Att studera förekomsten av självrapporterade självmordstankar och försök bland vuxna kvinnor samt (iii) att studera sambanden mellan sociodemografiska faktorer och självmordstankar bland kvinnor över en 26 års period (från 1989 till 2015).

Resultaten är baserade på tre olika insamlingsmetoder. Studie I-II är baserade på två olika postenkäter som skickades ut till slumpvis utvalda män och kvinnor i åldern 18-65 år som var folkbokförda i Sverige år 2009. Studie III och IV är baserade på personliga, strukturerade intervjuer som gjordes med ett stratifierat urval av kvinnor födda 1965,-70, -75, -80 och -93 och folkbokförda i Göteborg. Intervjuer med kvinnorna gjordes vid fyra olika tillfällen under perioden 1989 till 2015. Deskriptiva analyser samt logistisk regression användes i samtliga studier för att beskriva förekomsten av partnervåld, självmordstankar och självmordsförsök samt samvarierande faktorer.

Resultaten från **studie I** visade att fler kvinnor än män rapporterade att de varit utsatta för sexuellt partnervåld både under det senaste året och i perioden före det senaste året. Medan fler män än kvinnor angav att de utsatts för fysiskt partner våld under det senaste året, angav fler kvinnor än män att de utsatts för fysiskt partner våld under perioden före det senaste året. Kvinnor som rapporterade att de var singlar och hade ett dåligt socialt stöd, riskerade att i högre utsträckning ha varit utsatta för fysiskt och/ eller sexuellt partnervåld i perioden före det senaste året, jämfört med de kvinnor som hade ett fast förhållande och rapporterade ett bra socialt stöd. Män som rapporterade att deras nuvarande parrelation varat i tre års tid eller kortare period, riskerade att i högre utsträckning ha varit utsatta för fysiskt och/ eller sexuellt partnervåld i perioden före det senaste året, jämfört med de män som hade en längre parrelation. Resultaten från **studie II** visade att kvinnor som utsatts för fysiskt, sexuellt samt kontrollerande partnervåld under det senaste året, i högre utsträckning riskerade att uppleva depressiva symptom jämfört med kvinnor som inte varit utsatta för partnervåld under det senaste året. **Studie III** visade att jämfört med de kvinnor som inte upplevt något fysiskt partner våld under de senaste fem åren, så riskerade de kvinnor som varit utsatta, att i högre utsträckning rapportera att de mått så psykiskt dåligt att de hade känt ett behov av att söka hjälp för det. Av de våldsutsatta kvinnor som känt ett behov av att söka vård, uppgav 45 % att de inte haft någon öppenvårdskontakt under de senaste 5 åren. Resultaten från **studie IV** visade

att bland kvinnor i åldern 20-30 år, var det fler kvinnor som rapporterade att de hade självmordstankar 2013/15 jämfört med 1989/91. Bland kvinnor i åldern 31-49 år var det fler kvinnor som rapporterade både självmordstankar och försök 2013/15 jämfört med 2000/02. Riskfaktorerna varierade något under tidsperioden 1989 till 2015 men sammantaget fann vi att kvinnor som hade grundskoleutbildning och/eller gymnasieutbildning riskerade att i högre grad rapportera självmordstankar jämfört med de kvinnor som hade en högskoleutbildning. Vidare fann vi att de som var studenter och singlar i högre utsträckning riskerade att ha haft självmordstankar jämfört med de som hade ett arbete eller en fast relation.

Konklusion: Resultaten från denna avhandling visar på ett behov av insatser riktade mot både män och kvinnor för att minska förekomsten av partnervåld och dess skadliga effekter på den psykiska hälsan. Vidare visar denna avhandling att det finns våldsutsatta kvinnor som har ett behov av att söka vård för psykiska problem men trots detta inte tar kontakt med öppenvården. Framtida forskning behövs för att studera potentiella barriärer till vård för våldsutsatta kvinnor. Vidare behövs mer forskning i större grupper av kvinnor för att följa utvecklingen av självmordstankar och självrappporterade självmordsförsök över tid.

LIST OF PAPERS

This thesis is based on the following studies, referred to in the text by their Roman numerals (I-IV). The original publications (I-II) are reprinted with the permission of the copyright holders.

- I. Lövestad, S., Krantz, G.
Men's and women's exposure and perpetration of partner violence: an epidemiological study from Sweden.
BMC Public Health 2012; 12:945.
- II. Lövestad, S., Löve, J., Vaez, M., Krantz G.
Prevalence of intimate partner violence and its association with symptoms of depression; a cross-sectional study based on a female population sample in Sweden.
BMC Public Health 2017; 17:335.
- III. Lövestad, S., Vaez M., Löve, J., Hensing G., Krantz, G.
Exposure to physical partner violence and associations with perceived need and primary health care utilization: pooled analyses of a population based study on women in Sweden
(*Manuscript*).
- IV. Lövestad, S., Löve, J., Vaez, M., Waern, M., Hensing, G., Krantz, G.
Suicidal ideation and attempts in population-based samples of women: temporal changes between 1989 and 2015
(*Revision submitted to BMC Public Health*).

CONTENT

ABBREVIATIONS.....	13
DEFINITIONS IN SHORT.....	14
1 INTRODUCTION.....	16
1.1. Conceptual framework	17
1.1.1. Defining partner violence.....	19
1.1.2. Defining suicidal behaviour	20
1.2. Theoretical framework	21
1.2.1. The public health perspective.....	21
1.2.2. Gender	23
1.3. Previous research on Intimate Partner Violence.....	24
1.3.1. Prevalence on exposure to IPV	24
1.3.2. The gender symmetry/ asymmetry debate	26
1.3.3. Associations between sociodemographic factors and IPV.....	29
1.3.4. IPV and associations with mental health	30
1.3.5. IPV and health care utilization	30
1.3.6. IPV and perceived need for mental healthcare.....	31
1.4. Previous research on suicidal ideation and attempts	32
1.4.1. Prevalence of suicidal ideation and attempts	32
1.4.2. Sociodemographic factors associated with suicidal ideation	32
2 AIM.....	33
3 METHODS.....	34
3.1. Design and study populations	34
3.1.1. Target population in studies I-II	34
3.1.2. Studies III-IV: Women and alcohol in Sweden(WAG)1986-2015	37
3.2. Measures.....	42
3.3. Statistical analyses.....	47
3.4. Ethical considerations.....	49
4 RESULTS.....	51

4.1. Prevalence of IPV.....	51
4.2. IPV and associated factors	53
4.3. Suicidal ideation and attempts.....	54
5 DISCUSSION	56
6 CONCLUSION	69
FUTURE PERSPECTIVES.....	70
ACKNOWLEDGEMENT	72
REFERENCES	74

ABBREVIATIONS

DSM III-R	Diagnostic and Statistical Manual of Mental Disorders third edition, revised version.
DSM IV	Diagnostic and Statistical Manual of Mental Disorders fourth edition
CBS	Controlling Behaviour Scale
CI	Confidence Interval
CTS	Conflict Tactics Scale
EU	European Union
IPV	Intimate Partner Violence
IT	Intimate Terrorism
NCK	National Centre for Knowledge on Men's Violence Against Women
OR	Odds Ratio
SCV	Situational Couple Violence
SEK	Swedish crown's
U.S.	United States
VAWI	Violence Against Women Instrument
WAG	Women and Alcohol in Gothenburg
WHO	World Health Organization

DEFINITIONS IN SHORT

Confidence Interval (CI)	An estimated range of values which at certain level of confidence includes the true but unknown value of the measured variable of interest.
Covariate	Additional exposure and/or confounder variables in a logistic regression model.
Dependent variable	Outcome variable in a regression model
Epidemiology	“The study of the distribution and determinants of health-related states or events and the application of this study to the control of diseases and other health problems (WHO ¹)”
Exposure variable	Variable that represents an exposure in a statistical model.
Intimate Partner Violence (IPV)	In study I , exposure to and perpetration of IPV was defined as the proportion of respondents reporting at least one or more acts in each of the scales (physical, sexual IPV and/or controlling behaviour) in the past 12 months or ‘earlier in life’. In study II , exposure to IPV referred to the proportion of respondents exposed to at least one or more acts of physical, sexual IPV and/or controlling behaviour in the past 12 months. In study III , exposure to physical IPV was defined as the proportion of respondents reporting at least one or more acts of physical violence during past 5 years.

¹ World health Organization, health topics. <https://www.who.int/topics/epidemiology/en/> (2019-02-26)

Independent variable	A variable that independently determines the dependent variable.
Logistic regression	A method for analysing data in which there is a categorical outcome with two or more categories.
Odds	The probability of having or developing the outcome divided by the probability of not having or developing the outcome.
Odds Ratio (OR)	The odds among the exposed divided by the odds among the unexposed.
Outcome variable	Variable that represents the observed values of the outcome, i.e. the health-related state or event (e.g. symptoms of depression) in a statistical model.
Self-reported symptoms of depression	In this thesis self-reported experience of symptoms of depression was defined as the proportion of respondents experiencing two or more out of five symptoms, 'almost every' day or 'once a week'.
Self-reported suicide attempts during lifetime	Self-reported suicide attempts during lifetime was defined as the proportion of respondents who reported that they had made an attempt to take their own life during past 12 months and/or 'earlier in life'.
Self-reported lifetime suicidal ideation	In this thesis, lifetime suicidal ideation referred to the proportion of respondents who reported having thoughts of taking their own life and/or seriously had considered to take their own life during past 12 months and/or 'earlier in life'.

1 INTRODUCTION

Violence is a serious public health concern and affects a large proportion of the population world-wide. Violence is a major contributor to death, diseases and disability: globally more than 1.3 million people die each year as a result of self-directed, interpersonal and collective violence, accounting for 2.5% of global mortality [1]. Apart from death and physical injuries, violence may lead to serious, long lasting physical and mental health effects including reproductive health problems, chronic heart disease, depression and a large number of other serious health outcomes [1]. Besides negative impacts for the individual and their families, there are substantial costs for society in terms of direct and indirect costs for medical and legal services, lost earnings and productivity as well as reduced quality of life [2].

Intimate Partner Violence (IPV) is defined as violence between intimate partners whereas suicidal behaviour is a type of self-inflicted violence [3]. The overwhelming burden of intimate partner violence is borne by women at the hands of men, however, because of its nature, the occurrence and impacts of intimate partner violence is frequently 'hidden' and therefore underestimated [4]. Population-based surveys indicate that 15–71% of women worldwide experience physical and/or sexual violence by an intimate partner at some point in their lives [4]. During the last decades, population based surveys on men's exposure to IPV have emerged and these studies show that also men can be exposed to violence from their female partner [5]. However, women's perpetration of IPV and men's exposure to IPV is an ongoing discussion. Suicidal behaviour, including suicidal ideation and attempts, are known to be strongly associated with completed suicide [6]. In high income countries men outnumber women in suicide deaths [7] whereas suicide ideation and attempts are found to be more common in women [8, 9] than in men. The prevalence and characteristics of suicidal behaviour vary largely between different communities, different demographic groups and over time [7]. Therefore, up-to-date surveillance of suicidal behaviour is an important component of national and local suicide prevention efforts [7].

The magnitude of IPV and suicidal behaviour is best explained through a pyramid where the most visible outcomes of IPV and suicidal behaviour can be compared with the apex of the pyramid that represents the deaths recorded in the official statistics [1]. Next to the apex, are those victims of violence who come to the attention of official health authorities through the emergency care [1]. Finally, the broad bottom of the pyramid represents the non-fatal violence which is not reported to any health authority, but still may have serious, lifelong health and social consequences [1]. For

example, it is estimated that only 50-60% of all suicide attempts are known to the health care systems [10], indicating that a large proportion of suicide attempts remain unnoticed. Further, suicidal thoughts are more common than attempted and completed suicide, however its extent is still unclear [3]. Therefore, the prevalence, consequences and risk factors of exposure to violence such as IPV and suicidal behaviours which are represented in the bottom of the pyramid, are best captured through population based surveys with self-reported data [1, 3, 11].

1.1. CONCEPTUAL FRAMEWORK

There is no universal definition of the term ‘violence’ and the way it is conceptualised depends much upon its purpose [12]. A widely used definition is given by the World Health Organization (WHO) which defines violence as:

“The intentional use of physical force or power, threatened or actual against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation.” [3].

This definition includes that force or power has to be used intentionally by someone (oneself, a person or a group) in order to be classified as violence. This definition therefore excludes unintentional incidents as for example road accidents [3]. Further, it also includes a range of violent acts that go beyond physical acts, such as threats, psychological harm and power which do not necessarily lead to injury, disability or death [3]. This definition shows that if the consequences of violence were to be defined in terms of death, physical injuries or harm, the extent of adverse effects of violence would be limited.

One of the major challenges when performing research on IPV and suicidal behaviour is to develop clear operational definitions of the different types of violence. In its 1996 resolution, the World Health Assembly declared violence as a leading public health problem and called on the WHO to develop a typology of violence that describes the complex patterns and the links between different types of violence [3]. This typology has since then been widely used and is displayed in figure 1. It divides violence into three broad categories according to those who are involved in the violent act; 1) self-directed violence, 2) interpersonal violence and 3) collective violence [3]. Self-directed violence has two subcategories: (i) suicidal behaviour and (ii) self-abuse. Self-abuse includes acts of self-mutilation, while suicidal behaviour includes suicidal thoughts

and attempted suicide. *Interpersonal violence* is subdivided into: (i) family and intimate partner violence on one hand, and (ii) community violence on the other hand. Community violence includes violence that generally takes place outside the home whereas family and intimate partner violence includes child abuse, abuse of elderly and intimate partner violence. The last category, *Collective violence*, is divided into (i) social (ii) political and (iii) economic violence. The subcategories of collective violence include violence perpetrated by larger groups of individuals or states [3]. The typology further classifies violence according to types of acts: physical violence (e.g. slapping, hitting, kicking, and beating), sexual violence (e.g. forced intercourse and other forms of coerced sex), psychological violence (e.g. intimidation and humiliation) and deprivation and neglect [3, 13]. These types of acts may overlap, for instance, being exposed to IPV may include exposure to physical, psychological and sexual violence at the same time.

Drawing upon the WHO typology as a conceptual framework, the focus of this thesis lies within the violence categories defined as *intimate partner violence* and *suicidal behaviour*, with the latter including *suicidal thoughts* and *attempted suicide* (Figure 1).

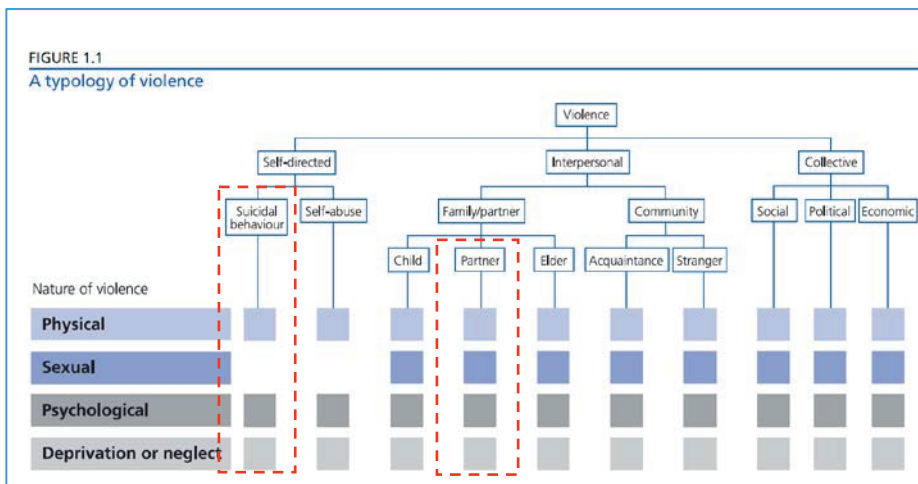


Figure 1. The WHO violence typology. Focus in this thesis are the categories marked with red: suicidal behaviour and Intimate Partner Violence. Reprinted from WHO (2002).

1.1.1. DEFINING PARTNER VIOLENCE

As with the term 'violence', there is no single terminology for violent acts between intimate partners, thus lack of agreement in definitions and operationalization of intimate partner violence, has largely limited the possibilities to compare research findings across different studies [12]. A brief description of the most commonly used terms when researching IPV is worthy as it demonstrates one of many complexities when trying to understand and compare findings across studies. Some of the most commonly used terms are: '*battering*', '*domestic violence*', '*family violence*', '*gender based violence*', '*violence against women*' and '*intimate partner violence*'.

The term '*battering*' frequently found within the literature on partner violence, refers to severe and escalating partner violence that includes multiple forms of violence such as threats and possessive controlling behaviour from the perpetrating partner [4]. The term '*domestic violence*' includes violence against an intimate partner but may also refer to violence and abuse against children, elderly or other members within a domestic setting [14]. In this case, the perpetrator may be an intimate partner, a family member, friend or someone else who has a close relationship to the person exposed to violence [15]. The term '*family violence*', although sometimes used interchangeably with the term '*domestic violence*', refers generally to settings where people live in extended families [16]. It includes violence perpetrated by an intimate partner, but also the violence perpetrated by other family members [16]. The term '*family violence*' is increasingly being used to draw attention to the fact that different sub-types of family violence such as partner violence and child and elder abuse, may coexist within the same family and share the same, underlying risk factors [12]. The terms '*Gender-based violence*' and '*violence against women*' are often used interchangeably and emphasizes that the violence against women and girls takes place within a context of a discriminated position in society [12]. Thus, gender-based violence refers to violence against women and girls that occurs within the family but it also includes genital mutilation, "honour killings", rape during warfare, forced prostitution and so forth [12].

The term "*Intimate Partner Violence*" (IPV) was used by the WHO in preference of the term '*domestic violence*' in order to be more specific about the violence between intimate partners [13]. The WHO defines IPV as a: "*...behaviour within an intimate relationship that causes physical, sexual or psychological harm, including acts of physical aggression, sexual coercion, psychological abuse and controlling behaviours*" [4]. In this definition, *physical aggression* refers to acts such as slapping, pushing, choking, hitting with a fist, kicking, dragging and beating [17]. *Psychological abuse* refers to intimidating acts where the partner is being insulted, belittled, threatened

and humiliated whereas, *sexual coercion* refers to forced intercourse and other forms of sexual coercion [17]. *Controlling behaviours* concerns behaviours that isolates the partner from family and friends, it aims to control and monitor the partner's movements and restricts the access to information and assistance to services [17]. The term IPV includes violence among opposite and same-sex couples and does not necessarily include sexual intimacy [3]. Further, the definition includes the fact that also women may use violence against their male partners. However, within this context, it is well-known that the overwhelming burden of IPV at global level is born by women at the hands of men [3].

In this thesis I will use the term Intimate Partner Violence (IPV) or more specified terms such as 'physical partner violence' or 'psychological partner violence' when referring to specific forms of IPV. The different violent acts included in this thesis will be mentioned as follows: *physical violence* (or physical assault/aggression), *psychological violence* (or emotional violence), *sexual violence* (or sexual coercion) and *controlling behaviour* (or isolating control, 'control tactics' or controlling acts).

1.1.2. DEFINING SUICIDAL BEHAVIOUR

The WHO defines suicidal behaviour as: "... a range of behaviours that include thinking about suicide, planning for suicide, attempting suicide and suicide itself" [7]. This definition conceptualizes suicidal behaviour as a continuum, where individuals may move from having thoughts about ending their life, to developing a plan about committing suicide and obtain the means to do so, to making attempts to kill themselves and finally carrying out the act [3]. Important to note is that not all suicide deaths are planned and not all of those who survive suicidal attempts intended to do so [3]. There has been a large discussion about the most appropriate terminology and conceptualization of self-inflicted violence (suicidal behaviours) [3, 6]. What most, if not all definitions of the term 'suicide', have in common, is that it includes the intention to die [3, 6]. Several other terms have been used simultaneously to describe suicide, for example 'fatal suicidal behaviour' and 'successful suicide' [6]. These terms and others have been criticized for being misleading or pejorative [6]. *Attempted suicide* refers to self-injurious behaviour including poisoning, injury or other self-harm which may or may not lead to death [7, 9]. *Suicide plans* usually refers to planning for specific methods through which one intends to die [9], while *suicidal thoughts* includes different levels of intensity of thoughts about killing oneself [3]. The term '*suicidal ideation*' often refers to the various thoughts of killing oneself, of being tired of life and a desire to not wake up from sleep [3]. The term may also include making specific plans for suicide [18].

In this thesis I will use the term suicidal thoughts or suicidal ideation synonymously. The term suicidal ideation will further include the act of having made plans on how to take one's life.

1.2. THEORETICAL FRAMEWORK

1.2.1. THE PUBLIC HEALTH PERSPECTIVE

Since my background is within public health science, this thesis is written from a public health perspective. This means that my knowledge about IPV and suicidal behaviour is based on various disciplines such as medicine, epidemiology, sociology, psychology, economics and gender studies [3]. For example, analysing IPV through a gender perspective gives insight in how structural inequality, control and power within relationships, as well as construction of masculinities and femininities are important drivers for IPV [4]. Another example is the human rights perspective, which helps to describe and understand the obligations of states, and their responsibility to eliminate violence and discrimination both against women, but also people with mental illness [4]. The human rights perspective further gives insight into the right to the highest attainable standard of health, including access to health information and equal access to health-care according to need among those experiencing suicidal behaviour and exposure to IPV [19].

There are various definitions of 'public health'. However, Beaglehole et al. [20] suggests that common to most definitions of public health is: *"...a sense of the general public interest, a focus on the broader determinants of health, and a desire to improve the health of the entire population"* pp. 2084 [20]. This definition highlights that populations are in focus (rather than the individual) and that medical care is far from the only determinant that influences on people's health [20]. The definition also stresses the importance of emphasising collective actions in order to address the social determinants of health and reduce unfair and preventable health inequalities [20]. From this perspective, rather than being the result of a single factor, IPV, suicidal behaviours and other mental health problems, are the outcome of a complex interplay between multiple risk factors and causes accumulated over time [3, 4].

Within the public health perspective it is of importance to consider the social determinants of health. The Social determinants of health are defined by the WHO as:

“...conditions in which people are born, grow, live, work and age. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels. The social determinants of health are mostly responsible for health inequities - the unfair and avoidable differences in health status seen within and between countries” [21].

The concept ‘determinant’ in this case, may be used in a broader sense; as a factor which is related to the outcome, without specifying whether this relationship is causal or non-causal. The term ‘determinant’ can therefore be used in a purely descriptive way, in order to describe associations between different factors [22]. The WHO as well as researchers and practitioners are increasingly using the ‘ecological framework’ (Figure 2) containing the social determinants. This model explains the complex interplay between personal, situational, and sociocultural factors that combine and cause violence over time [13]. The ‘ecological model’ consists in a four level framework that seeks to identify and organize risk and protective factors in order to contribute to knowledge for corresponding prevention strategies [23]. From micro to macro, the four nested circles comprise: *individual level, relational level, community level and societal level.*

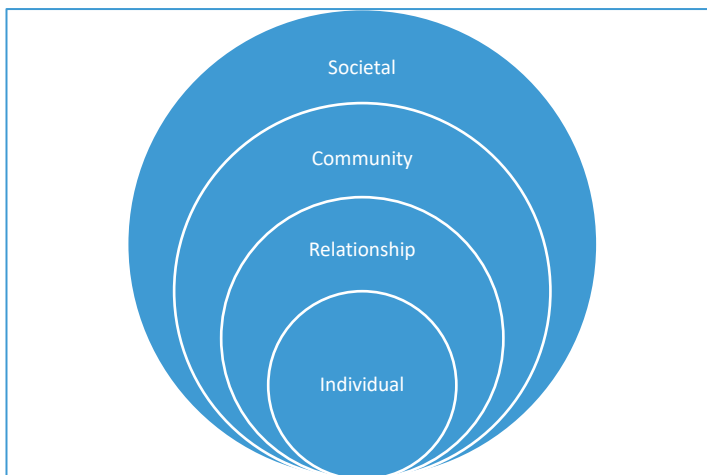


Figure 2. The ecological model, adapted and reprinted from WHO (2010).

The *individual level* contains biological and personal characteristics that may increase the risk for an individual to become a victim or perpetrator of IPV, or become suicidal. These factors include demographics, attitudes, impulsivity, health conditions and other characteristics. For instance, young age is known as a risk factor for being a perpetrator or victim of IPV [4], as well as experiencing suicidal ideation and attempts [24]. The second level contains *relational factors* such as proximal relations with peers, intimate partners and family members [3]. For example, previous research indicates that those who do not have a stable relationship, are more likely to experience suicidal ideation than those within a stable relationship [25]. Another well-known example is that of women who are divorced; they are more likely to be exposed to IPV as compared to cohabiting, married women [26].

The *community level* identifies the context in which social relationships are embedded and seeks to identify characteristics that increases or decreases the likelihood for intimate partner violence or suicidal behaviours. Examples at this level include health care services, workplaces, neighbourhoods and schools [3, 23]. For instance, social norms about gender and power at community level shape the presence of and the response to IPV against women [27]. Yet another example at community level, are stressors of acculturation and dislocation that may increase the risk for suicidal ideation and attempts among vulnerable groups such as refugees, internally displaced people and newly arrived migrants [7]. The fourth and final level consists of *societal factors* such as cultural norms and attitudes as well as health, educational, economic and socioeconomic policies that influence on levels of social and economic inequality [3]. Lack of political will to implement laws and policies against IPV is one example at societal level that will either maintain or increase the occurrence of IPV [27]. Lack of timely, effective access to health care as well as lack of policies to reduce harmful use of alcohol are examples of risk factors for suicidal behaviour at societal level [7].

1.2.2. GENDER

From the perspective of social constructivism, gender is seen as a social construction. This means that being a 'man' or being a 'women' is not a predefined and fixed state, but rather an outcome created through repeated social practices [28]. According to the Australian sociologist Raewyn Connell [28], men and women learn how to *do* gender through a process of socialization which starts at birth and continues throughout life. This means that in our daily lives we perform 'masculinities' or 'femininities' in order to live up to social expectations, e.g. in the way we dress,

communicate and act. For instance, the practice of violence is typically perceived as a masculine behaviour, thus the practice of violence is one means by which men can perform masculinity [29]. For example, compared to girls and women, boys and men face more 'opportunities' where they learn how to use violence, i.e. through sports, violence in public spaces and jobs in which violence is used as self-defence [29, 30]. Further, gender norms contribute to that men's use of violence is normalized, receives encouragement, training and support whereas women's violence is discouraged [29]. This in turn influences on how violence is used, experienced and interpreted depending on whether the perpetrator is a women or a man [29]. From the perspective of gender as a social structure, IPV must be understood in the context of structural inequalities that places women and men in unequal positions with unequal opportunities to labour, and unequal power and control over material and nonmaterial resources [29]. For example, Women in paid work have significantly lower wages than their male counterparts [31]. The availability of different resources affect the possibilities to cope with or end a violent relationship [30]. Thus, the gender gap in wages between men and women, create an economic dependency that increases men's control over women and contribute to maintain women' in violent relationships [29].

1.3. PREVIOUS RESEARCH ON INTIMATE PARTNER VIOLENCE

1.3.1. PREVALENCE ON EXPOSURE TO IPV

Since the 1980s, but particularly since the 1990s, there has been a growing number of population-based surveys investigating IPV. Most of these studies have investigated IPV against women at the hands of male intimate partners [32] and prevalence estimates generated by these studies differ widely in a global context.

To better understand the magnitude of violence against women and its negative impact on women's health, '*The WHO Multi-Country Study on Women's Health and Domestic Violence against Women*' [13] was published in 2005. This survey contained data based on 24 000 women in ten different countries, including: Bangladesh, Brazil, Ethiopia, Japan, Peru, Namibia, Samoa, Serbia and Montenegro, Thailand, and the United Republic of Tanzania. Questions about exposure to physical, sexual and psychological IPV, as well as controlling behaviour were assessed using a standardized questionnaire and specially trained teams to inquire the women. The study found large variations in prevalence of IPV between different countries, regions and

settings. Among the women, past year prevalence of physical IPV ranged from 3% in Japan to 29% in Ethiopia. Experience of past year exposure to sexual violence ranged from 1.1% to 44.4%, while past year prevalence of psychological violence showed prevalence rates between 12% to 58% [13]. Originally the intention was to include men in the survey, however, for economic and security reasons this was not done. The authors concluded however, that men's exposure to IPV, as well as their reasons for perpetrating IPV needed to be further explored [13].

Up to date, the most comprehensive survey at the European Union (EU) level was published in 2014 and called: '*Violence against women: an EU-wide survey, main results*' [32]. This study was performed across the 28 Member States of the EU, including 42 000 women. Contrary to the *WHO Multi-Country Study*, the results from this study did not show that large disparities in prevalence rates between the countries included in the study. For instance, experience of physical and/ or sexual partner violence in the past 12 months ranged from 6% in Belgium to 2% in Poland (with the past year prevalence being 5% in Sweden) [32].

In Sweden, the first large-scale study that more closely investigated IPV against women, was called "*Captured Queen*" (2001) [33]. This study included 6926 women, out of which 3% reported having experienced physical violence and 3% reported having experienced sexual violence at the hand of a current partner during the 12 months prior to the survey. Out of the respondents, 12% stated that their current partner had used controlling tactics [33].

With regard to surveys performed on both women and men, there are some examples of large-scale surveys, mainly performed in the U.S. For example, in 2000, Tjaden and Thoennes [34] published a study including randomly selected men (N= 8000) and women (N= 8000) in the U.S. Their study showed large disparities in lifetime prevalence of exposure to physical violence between men and women: 7% of the men and 20.4% of the women reported having experienced physical violence by a current or former partner at some point in their life, whereas for past year prevalence of physical violence, the rates were more similar (0.6% for the men and 1.1% for women) [34]. Yet another large-scale survey from the U.S. including men and women (N=70156) found that 20 % of the women and almost 11% of the men had experienced physical IPV at some point in their life [35].

In the Nordic countries, one example of national studies on IPV that included both men and women, is a study from Norway published in 2005. Findings from this study showed similar rates of exposure to physical violence past 12 months for women and men: 5.7% for women and 5.6% for men. The prevalence of lifetime exposure differed

somewhat more with 27.1% of the women and 21.8% of the men reporting experience of such violence at some point in their life [36]. In Sweden, the most comprehensive study on violence and health on both men and women was published in 2014 by The National Centre for Knowledge on Men's Violence Against Women (NCK)[5]. This study included 5681 women and 4654 men. Findings from the study showed that 7% of the women and 1 % of the men had been subjected to sexual violence in their adult life, by a current or former partner. Moreover, 14% of the women and 5 % of the men reported that they had been exposed to physical violence by a current or former partner. With regard to controlling behaviour, 12% of the women and 4% of the men reported exposure to such violence by a current or former partner [5]. During the last ten years, other population based surveys, on smaller samples of men and women, have been performed in Sweden. One example is the study performed by Nyberg et al [37], which was part of the same project as study I-II in this thesis. In their study, Nyberg and her colleagues [37], found that 7.6% of the men and 8.1% of the women had experienced physical violence during past 12 months. Moreover, men and women had similar rates of past year exposure to sexual violence: 2.3% of the men and 2.5% of the women reported such experience for 12 months prior to the survey.

With this background on studies showing exposure to different types of IPV among both men and women, it is important to note that at the time when study I was performed, there was no previous study exploring exposure and perpetration of IPV among women and men in Sweden. The project in which study I is included, started in accordance with the recommendations from the WHO multi country study to further explore exposure and perpetration of IPV among men, as well as the reasons behind such perpetration [13].

1.3.2. THE GENDER SYMMETRY/ ASYMMETRY DEBATE

One of the most long lasting controversies within the field of research on IPV continues to be the one between two distinctly different perspectives: the gender symmetry and the gender asymmetry debate [38, 39]. These two approaches are based on different theoretical perspectives, conceptualizations of IPV, as well as different sources of data and instruments. Researchers supporting the idea of gender symmetry in IPV, claim that within opposite-sex relationships, women are equally likely, or sometimes even more likely than men [40], to perpetrate violence [41, 42] In contrast, feminist researchers argue that in opposite-sex relationships, men are more likely than women to perpetrate violence against their female partners (gender asymmetry) [43]. Although this perspective acknowledges that women may be violent against their partner, women's violence is predominantly seen as a way of

self-defence [43]. The notion of gender symmetry in IPV started among family-violence oriented researchers and is based on conflict theory. According to Straus [44], the conflict theory assumes that:

“...conflict is an inevitable part of all human association, including that of the family. A key factor differentiating what the public and many professionals regard as ‘high conflict families’ is not the existence of conflict per se, but rather, inadequate or unsatisfactory modes of managing and resolving the conflicts which are inherent in the family” pp.85 [44].

From this theoretical perspective, IPV is conceptualized as an ‘inadequate’ or ‘unsatisfactory’ ‘tactic’ or ‘mode’ which is used by intimate partners in order to resolve conflict and disagreements within intimate relationships [45]. The conflict theory was the base for the development of the Conflict Tactics Scale (CTS) which has been widely used in research on IPV. This scale was developed in the 1970s by the sociologist Murray Straus and his colleagues in order to measure the ways in which families attempted to ‘resolve’ and ‘handle’ their conflicts [44]. One characteristic of the CTS is that it measures discrete acts and events. Another characteristic of the CTS is that it asks about both partners; whether the respondent and the respondent’s partner has perpetrated IPV. The act-based approach has often been criticized for lumping together different forms of violence so that for example one slap equals to an serious assault [46]. Further, it has been argued that many of the act-based approaches are so highly operational that violence gets restricted to lists of discrete acts and events which lack contextual factors that could help to understand the motivation behind the violence, as well as its consequences [43]. According to Kimmel [46] and Dobash & Dobash [43], act-based approaches fail to capture the pattern of systematic, ongoing, violence over many years.

Studies based on CTS or similar act-based measures tend to find more or less equal proportions of women and men that perpetrate IPV [41, 47]. For example, in their study based on students from 31 universities across 16 countries over the world, Straus et al. [41] found that 25% of the men and 28% of the women reported having perpetrated physical violence against their partner. A meta-analysis performed by Archer [47] containing studies on CTS, found that women were slightly more likely than men to use physical violence against their partner. Much of this research, such as the study by Straus [41] relies on young, unmarried or not cohabiting couples where rates of violence are assessed through self-reported measures [48], whereas findings based on shelters and crime victimization provide asymmetrical findings in IPV [46]. For example, it is suggested that younger couples represented in general

surveys are more likely than older couples to have higher rates of IPV exposure and perpetration [46].

Some researchers supporting the gender symmetry debate argue that male victimization in opposite-sex relationships has not been taken seriously, amongst others due to cultural beliefs about how men should be able to defend themselves [40]. However, it has repeatedly been supported by studies that relative to men, women experience more sexual IPV [5, 35, 49-51], more stalking from current and former partners [49], more fearful coercive control [5, 49] and get more injured by their male partners [35, 42, 49, 51]. It is also well established that far more men kill their female partner as compared to the reverse [46, 52]. For example, a recently published study from Sweden showed that out of all female homicides, 57% of the women were killed by their partner while the corresponding figure for men was 7% [52]. Further, the fact that men use more violence in all other arenas outside the domestic setting puts the gender symmetry perspective into question [3, 46]. Another aspect to consider in the gender symmetry debate is that when asked about perpetration of IPV, women and men may estimate their use of violence and their victimization differently [46]. For instance, women are socialized not to use violence and tend therefore to remember every use of violence whereas men, for the same reason, tend to overestimate their partners' violence [46].

In an attempt to reconcile the polarized positions (gender symmetry and gender asymmetry perspective), Michael P Johnson [53] developed a typology of IPV which takes into account the context of control within intimate relationships. This typology includes three major categories which have been widely used and discussed: *situational couple violence (SCV)*, *violent resistance (VR)* and *intimate terrorism (IT)*. SCV reflects isolated acts of violence without controlling characteristics, whereas VR reflects violence used in specific situations as for example self-defence. IT is characterized by using control tactics, often (but not always) together with severe and ongoing physical violence [53]. This type of violence is found to be perpetrated mainly by men against women [53, 54] and often includes physical violence that leads to severe injuries [53]. The perpetrator uses controlling behaviour in order to deprive the partner from a range of important services and resources such as access to support systems and health care, economic resources, social life with family and friends and access to employment and wage earning [54]. According to Johnson, IT is the type of violence found in studies based on crime victimization and shelter studies, whereas SCV is found in community surveys based on instruments like CTS [53]. However, there is still controversy in this matter. For instance, some feminist researchers suggest that it is not possible to distinguish coercive control from other

forms of violence, as all IPV is gendered and rather the repetitive nature of IPV gives a more complete picture of the gendered asymmetry of IPV [55].

Taking into account the previous criticism, it is however suggested that there is a particular value of the conflict theory perspective (on which the CTS is based) which focuses on data from a wider range of couples than the data based on shelters or crime victimization studies [48]. It is further highlighted that the contribution of this perspective lies in its possibilities to detect and prevent less violent couples from evolving to more serious cases of violence where women are those more frequently victimised [48]. Studies based on CTS or similar instruments most probably capture those cases with less severe violence, where it is more likely that women and men experience less severe acts of physical aggression without patterns of severe control [48, 56].

1.3.3. ASSOCIATIONS BETWEEN SOCIODEMOGRAPHIC FACTORS AND IPV

The WHO argues that structural inequalities between women and men as well as social constructions of masculinity and gender norms are risk factors for intimate partner violence [4]. Although these factors are situated at the societal level of the ecological model, these factors are also found within other levels, for example within the level of relationships [4]. For instance, earlier research has found that growing up and having witnessed IPV as a child increases the likelihood for later exposure to and perpetration of IPV [26]. Moreover, at the individual level, previous research has found that being divorced, separated, widowed or single is associated with increased likelihood for IPV, both among men and women [51]. For instance, women who leave a violent relationship are at increased risk for attempted murder by their former partner [57]. Earlier research also found that younger age is associated with an increased risk for exposure to and perpetration of IPV [26, 51]. Further, low socioeconomic status in terms of low educational level [26], unemployment [26] and low disposal income [51, 57] are found to be associated with exposure to and perpetration of IPV. It is suggested that poverty in particular, is a key contributor to IPV as more severe and frequent forms of IPV are found among those with lower socioeconomic groups [57]. At community level, lack of social support is found to be an important determinant of exposure to IPV [58]. Good social support from friends and family may enhance self-esteem and also function as practical help during ongoing IPV or after the violent relationship has ended [57].

1.3.4. IPV AND ASSOCIATIONS WITH MENTAL HEALTH

Apart from causing, death, injury and other immediate health consequences [13], a growing body of research has repeatedly been demonstrating that IPV is associated with a range of mental health problems including anxiety [32, 59] suicidal ideation and attempts [59, 60] and depressive symptoms [59, 61]. Unipolar depression is the most frequent mental health problem among women, being twice as common in women as in men [31]. However, the term 'depression' covers a spectrum of symptoms ranging from mild, time-limited distress or mood of unhappiness, to a severe and disabling condition [62, 63]. These symptoms may include self-reported measures as well as diagnoses based on the Diagnostic and Statistical Manual (DSM)[64].

Previous research has shown strong associations between exposure to IPV and symptoms of depression [65-67]. In addition, mental health problems due to IPV may persist over long periods, irrespective of whether the woman leaves the violent relationship or not [61]. Most of studies investigating the relationship between IPV and symptoms of depression have been based on physical and sexual violence [67, 68] Few if any studies have investigated the association between controlling behaviour and self-reported symptoms of depression. Further, in Sweden there has been a general lack of population based studies investigating IPV and its association with self-reported symptoms of depression.

1.3.5. IPV AND HEALTH CARE UTILIZATION

Given the impact of IPV on women's health, women exposed to IPV have elevated health care utilization including abuse services [69], hospital outpatient services [69], emergency care [69-71], specialist services [69, 72] and primary care [69, 72]. For instance, a Swedish report published by the National Council for Crime Prevention [73] showed that 29% of women exposed to IPV, reported that they had contacted or felt the need to contact a doctor, nurse or a dentist during the year prior to the survey. The literature repeatedly shows that the higher levels of health care utilization due to IPV are associated with increased health care costs [69, 74]. A previous study from U.S. found that after adjusting for age, education and illness not related to IPV, the total annual health care costs were found to be 19% higher for women who ever had experienced IPV as compared to those who never had experienced such violence [69]. Moreover, a report published in 2006 by the Swedish National Board of Health and Welfare, estimated that IPV against women accounted for 23 to 38 million SEK annually for direct medical care costs [75]. Previous research performed outside Sweden, indicate that a substantial proportion of women who

experience IPV are found within primary care units [76-78]. Two earlier studies performed at different primary care units in Spain, found that 24.8% to 30% of the women who attended primary care units, had experienced some type of IPV during their lifetime [72, 78]. To our knowledge there is no specific study performed in Sweden that shows primary health care utilization among women exposed to IPV in population based samples.

1.3.6. IPV AND PERCEIVED NEED FOR MENTAL HEALTH CARE

Frequent mental distress is found to be a strong predictor of perceived need for mental health care among women [79]. Further, when investigating women exposed to IPV and how they prioritize their own health needs, mental health care is perceived as an important need [80]. A previous study found that women exposed to IPV reported their need for mental health care to be higher than the need for physical health care (40.4% and 19.2%)[81]. According to Andersen's Behavioural model, access to health services are a function of three sequential components: 1) predisposing factors, 2) enabling resources and 3) need for care [82]. Predisposing factors include demographic factors, social position (i.e. education, ethnicity and occupation) as well as attitudes, knowledge and beliefs about health and health services. The enabling resources refer to availability of health personnel, individual income and health insurances, as well as travel and waiting time related to health services [82]. Finally, the need for care implies how individual's perceive and experience their own health and symptoms of illness, and whether they judge their health problems to be as important as to seek professional help [82]. According to the model, self-perceived need is largely influenced by socioeconomic position and health beliefs [82]. Further, self-perceived need is an important step in order to act and finally seek care [82]. For instance, low perceived need in terms of not believing that mental health care was needed, is found to be the most common barrier to treatment among men and women with moderate or mild disorders such as anxiety and mood disorders [83]. In Sweden, little is known about women exposed to IPV and their perceived need for care due to mental health problems. Perceived need for care is best explored in population based studies which stresses the necessity of this study.

1.4. PREVIOUS RESEARCH ON SUICIDAL IDEATION AND ATTEMPTS

1.4.1. PREVALENCE OF SUICIDAL IDEATION AND ATTEMPTS

Suicidal ideation and attempts are known to be strongly associated with completed suicide [6]. In high income countries men outnumber women in suicide deaths [7] whereas suicide ideation and attempts are found to be more common in women [8, 9]. For instance, in 2016, 1134 individuals died because of suicide in Sweden and out of these, 69% were men [84]. In the same report, more women (15%) than men (11%) reported having attempted suicide at some point in life [84].

Most previous research on suicide attempts in Sweden, has focused on register data [85, 86]. This data reveals that between the mid 1990's and early 2000, there was a large increase of attempted suicides among young women aged 15 to 24 years whereas no increase was observed among older women [85, 86]. Register data is extremely valuable, however, it does not contain any data about those who attempt suicide and do not come to the knowledge of any health care service [86]. At the same time, there is an increasing concern that the mental health of young women is deteriorating [87]. Since self-reported suicidal ideation and attempts are associated both with mental illness and completed suicide, it is important to investigate whether the prevalence of suicidal ideation and attempts has increased or not.

1.4.2. SOCIODEMOGRAPHIC FACTORS ASSOCIATED WITH SUICIDAL IDEATION

It is important to investigate the prevalence of suicidal ideation over time, taking into account sociodemographic factors. Previous research has found that younger age [24], lack of stable relationships [25, 88], lack of stable employment [25], being a university student [89] and having lower educational attainment [25], are associated with suicidal ideation. However, only a few studies have investigated associations between sociodemographic factors and suicidal ideation over time. This is important since, historical and social events, such as an economic recession may alter the prevalence of suicidal ideation within specific groups at risk [90].

2 AIM

The aim of this thesis is twofold. The first aim is to explore the prevalence of IPV and its association with sociodemographic factors, symptoms of depression and perceived need for mental health care as well as primary health care utilization due to mental health problems. A second aim is to explore the prevalence of suicidal ideation and attempts over a 26 year period, as well as examine the association between sociodemographic factors and lifetime suicidal ideation.

The specific aims of included studies were to:

Study I:

Investigate, in a sample of men and women in Sweden, both exposure to and perpetration of intimate partner violence, including controlling behaviours and the associated socio-demographic and psychosocial risk factors.

Study II:

Assess the prevalence of exposure to IPV in terms of controlling behaviour, sexual and physical violence and its association with self-reported symptoms of depression in a female population based sample in Sweden.

Study III:

Explore the association between self-reported physical IPV past 5 years, perceived need for mental health care and primary health care utilization, among women from a population based sample in Sweden.

Study IV:

Assess the prevalence of self-reported suicidal ideation and attempts over a 26 years period (1989-2015) in two groups of women from the general population aged 20-30 and 31-49 years. A further aim was to investigate associations between sociodemographic factors and suicidal ideation over this period.

3 METHODS

3.1. DESIGN AND STUDY POPULATIONS

This thesis consists in four quantitative studies which are based on three different populations. Table 1 gives an overview of the design, measures and analysis performed in each of the articles included in this thesis. **Studies I-II** contain two different questionnaires and two different samples. However, the studies are based on the same project and with the same aim to investigate exposure to and perpetration of IPV among women and men in Sweden. **Studies III-IV** are based on a longitudinal project called Women and Alcohol in Gothenburg (WAG) that contains four data collection waves performed between 1986 and 2015.

3.1.1. TARGET POPULATION IN STUDIES I-II

The target population in studies I-II contained all individuals between the ages of 18 and 65 (N=5 796 868 in the 9th of December 2008) registered in the Swedish total population register maintained by Statistics Sweden. In both studies, the survey was conducted between January and March 2009 and included three reminders in order to increase the response rate.

Study I:

In study I, Statistics Sweden randomly selected 502 women and 505 men from the target population and administered the data collection. In total 282 women (56.2%) and 217 men (43.0%) responded to the survey. After excluding those who did not answer to any of the IPV items, the study sample consisted in a total of 424 individuals; 173 men (40.8%) and 251 women (59.2%). The age range was 18-65 years with an average age of 44.3 (SD = 13.53) for men and 42.8 (SD = 13.59) for women.

Study II:

From the target population, Statistics Sweden randomly selected 1006 women and 1009 men and administered the data collection. In total 624 women (62.0%) and 458 men (45.5%) responded to the survey. As with study I, respondents with missing values on all violence items were excluded (n=110), leaving a final sample of 573 women and 399 men. Study II includes only women (N=573) with an age range of 18 to 65 years and average age of 42.7 years (SD= 13.01).

Study I-II Comparison of those who responded and not responded to the survey

In both study I and II, a higher proportion of women than men responded to the survey. Compared to those who responded to the survey, a higher proportion of non-respondents were unmarried and born in a foreign country. Analysis on study II also showed that a significantly larger proportion of the non-responders were 18-29 years old, and had a low annual income (0-159,999 Swedish crowns) [37].

Table 1. Overview of study design, population, measurements and data analysis.

	<u>Study I</u>	<u>Study II</u>	<u>Study III</u>	<u>Study IV</u>
Design	Randomly selected, cross-sectional population survey	Randomly selected, cross-sectional population survey	Stratified sample, pooled cross-sectional survey	Stratified sample, repeated cross-sectional survey
Data collection	Postal survey linked to register data	Postal survey linked to register data	Face-to-face follow-up interviews	Face-to-face baseline and follow-up interviews
Year of data collection	2009	2009	1994/98 2000/02 2013/15	1989/91 1994/98 2000/02 2013/15
Study sample	Women n=251 Men n= 173	Women n=573	Women n=616	Women n=2072 ^{a*}
Age range	18-65	18-65	25-48	20-49
Measures	Exposure and perpetration of IPV Socio-demographic factors	Self-reported symptoms of depression Exposure to physical, sexual controlling IPV Socio-demographic factors	Exposure to physical IPV Perceived need for mental health care/ primary health care utilization Socio-demographic factors	Self-reported suicidal ideation/ attempts Socio-demographic factors
Analysis	Descriptive Cronbach Alpha Logistic regression	Descriptive Cronbach Alpha Logistic regression	Unweighted and weighted descriptive Chi-square Logistic regression	Unweighted and weighted descriptive Test for differences in prevalence Logistic regression
<i>a* Number of interviews, not number of individuals (some women have participated both in baseline and follow-up interviews and are therefore included in more than one data collection wave)</i>				

3.1.2. STUDIES III-IV: WOMEN AND ALCOHOL IN SWEDEN (WAG) 1986-2015

Studies III and IV are based on a four-wave, longitudinal population-based project titled *'Women and alcohol in Gothenburg' (WAG)*. This project was initiated in 1986 with the overall aim to improve the understanding of women's alcohol consumption. The WAG contains four data collection waves performed during the following years:

- Wave 1: 1986-1991
- Wave 2: 1994-1998
- Wave 3: 2000-2002
- Wave 4: 2013-2015

The project included a two stage procedure with a screening questionnaire in the first stage and face to face interviews with stratified samples in the second stage. This two stage procedure was implemented in the three first waves in order to achieve a sufficient number of women with alcohol related problems while, at the same time, keeping a manageable number of interviews [91]. Similar two-stage procedures have been employed in other studies, for example in the U.S. national study on women and alcohol by Wilsnack and colleagues [92]. The screening and stratification procedure has been described more in detail in previous articles published by Spak and Hällström [91], Spak et al. [93] and Andersson and colleagues [94]. The purpose of the screening procedure, which starts with an initial test or in this case a screening questionnaire, is to identify and/ or diagnose individuals with latent illness [22]. A description of the screening questionnaire, as well as the stratification procedure will be given here:

Stage 1. Screening questionnaire

At each data collection wave, a screening questionnaire developed for screening of alcohol related problems was mailed out to specific birth cohorts born in central and western districts in Gothenburg. In the last wave in 2013/15, the catchment area was increased to include northern and western districts of Gothenburg. This was done in order to obtain more respondents to the screening questionnaire. The questionnaire contained 13 items with a four-choice answering mode (*'not correct at all'*, *'Not particularly correct'*, *'Fairly correct'* and *'Correct'*) with a negative statement giving 0 point, and a positive statement giving 1 point, making the maximum total score 13. The respondents were divided into three groups, according to the scores obtained on the screening questionnaire: 0 points (no alcohol related problems),

1-4² points (possible alcohol related problems) and ≥ 5 points (probable alcohol related problems). Out of these groups, respondents were randomly selected and invited to face-to face interviews. All women from the group with more than 5 points were invited to face-to face interview in order to increase the number of women with possible alcohol related problems [91]. The screening questionnaire has previously been described and validated in an article published by Spak and Hällström [91]. The screening questionnaire contained 2-3 reminders depending on the data collection wave.

Stage 2: Face to face interviews

In the next stage, based on the scores obtained from the screening questionnaire, a stratified sample from stage 1 was invited to take part in face-to-face interviews. This procedure has been applied in all waves except for the last wave in 2013/15, where all women who answered to the screening questionnaire were invited for interview. This was done in order to increase the participation rate in the interviews.

Interviews consisted in long and a short interviews with the latter focusing on alcohol related questions. Women who preferred not to participate in a long face-to face-interview were offered to participate in either a short interview or a telephone interview. Interviews were performed by health care professionals and social workers with extensive training in how to use the interview questionnaire as well as in how to classify psychiatric conditions in accordance with the Diagnostic and Statistical Manual of Mental Disorders (DSM III-R and DSM-IV). The long version of the interview contained questions including background factors, childhood conditions, intimate partner violence, alcohol consumption, mental health problems, health care related variables and suicidal ideation and attempts. Oral informed consent was obtained in 1989/91, 1994/98 and 2000/02, while written informed consent was obtained in 2013/15 from the interviewees.

As the focus of this thesis is on IPV, suicidal ideation and attempts, perceived need for care and health care utilization, this thesis only contains participants who completed a long baseline and/ or follow-up interview either by telephone or face-to- face interviews.

² In the first wave (1986), the groups based on the scores from the screening questionnaire consisted in 0 points, 1-3 points and ≥ 4 points. The increased cut-off level of ≥ 5 points in the second wave was based on an increased alcohol consumption observed among younger women.

The number of screening questionnaires mailed out to each birth cohort included in this thesis, as well as the stratification procedures are described in table 2.

Wave 1 (1986):

In 1986, 673 screening questionnaires were mailed out to women born in 1965 with a response rate of 67.9%. In total 128 women born in 1965 (including those from the attrition group), were invited to participate in a face-to-face interview. Out of the invited sample, 108 women completed a baseline interview and out of these, 95 were long baseline interviews.

Wave 2 (1995):

In the second wave in 1995, all women born in 1970 (N=1944) and 1975 (N=966) received the screening questionnaire (Table 2). After including those who had not responded to the screening questionnaire, 419 women born in 1970 and 410 women born in 1975, were invited for interview. Out of these 73.3% and 75.1% respectively, participated in a baseline interview and out of this group 265 women born in 1970 and 278 women born in 1975 completed a long baseline interview.

Table 2. Overview of mailed screening questionnaire, scores on SWAG, invited from the attrition group and final participants in baseline interviews

Birth cohort	Mailed SWAG and answered to SWAG		Stratified sample based on SWAG scores and invited for interview					Participated in interview
	Mailed SWAG	Answered	Scores on SWAG			External attrition	Total	Baseline interview Long and short
	N	n (%)	0	1-4	≥ 5	n	n	Total N (%) n ^a
1965¹	673	457 (67.9)	11	34	44	39	128	108 (84.3) 95
1970²	1944	1513 (77.8)	86	84	149	100	419	307 (73.3) 265
1975²	966	734 (76.0)	86	88	136	100	410	308 (75.1) 278
1980³	1103	829 (75.2)	142	451	236	--	491	358 (72.9) 284
1993⁴	1687	572 (33.9)	100	277	191	--	568	243 (42.8) 171

Bold numbers are total numbers of participants in short and long baseline interviews
Year for mailed screening questionnaire ¹= 1986, ²= 1995, ³= 2000, ⁴=2014
^a Long baseline interviews

Wave 3 (2000):

In the third wave, the screening questionnaire was mailed out to 1103 women born in 1980 and a total of 491 women were stratified and invited for interview (Table 2). Out of these 72.9% participated in a baseline interview and 284 women completed a long baseline interview.

Wave 4 (2013):

In the last wave in 2013, 1687 women born in 1993 received the screening questionnaire with a response rate of only 33.9% (Table 2). As earlier mentioned, due to the low response rate, no stratification procedure was applied, instead all respondents to the screening questionnaire were invited to a face-to-face interview. After excluding those who refrained from further participation, 568 women were invited for interview and out of these 43.8% completed a baseline interview. Of those born in 1993, 171 women completed a long baseline interview.

Apart from baseline interviews displayed in table 2, long and short follow-up interviews were performed in the following waves: 1994/98, 2000/02 and 2013/15. This thesis includes those women who completed *long baseline and follow-up interviews*. The total number of women who completed a long baseline and/or follow-up interview and are included in this thesis (studies III and IV), are shown in table 3.

Table 3. Overview of number of participants included in this thesis at each data collection wave.

Total numbers of long interviews by birth cohort and data collection wave					
N=2072					
Waves	1965	1970	1975	1980	1993
	N	N	N	N	N
Wave 1 1986-1991	95 ^a	NA	NA	NA	NA
Wave 2 1994-1998	85 (82 ^b + 3 ^a)	265 ^a	278 ^a	NA	NA
Wave 3 2000-2002	53 (52 ^b +1 ^a)	213 (187 ^b + 26 ^a)	202 (178 ^b +24 ^a)	284 ^a	NA
Wave 4 2013-2015	31	120	124 (123 ^b +1 ^a)	151 (141 ^b +10 ^a)	171 ^a
^a Baseline interviews					
^b Follow-up interviews					
NA The birth cohort was not selected for baseline interview					

All in all, 2072 long baseline and/or follow-up interviews are included in this thesis. As displayed in table 3, not all women were able to participate in their first (baseline) long interview in the same wave as they were stratified for interview. For instance, women born in 1970 were all stratified and invited for baseline interview in 1994/98, however, 26 of those who were stratified in 1994/98 did not complete their first baseline interview until 2000-2002.

Study III

Participants in study III included women who participated in their first follow-up interview at some point in the following waves: 1994/98, 2000/02 or 2013/15 (N=663). The decision to include only those who had participated in a follow up interview, was based on the fact that the time-frame for health care related variables varied depending on whether the women participated in a baseline or follow-up interview. For those who participated in a baseline interview, the health care related questions were asked about whether they had perceived a need for care and/or whether they had been in contact with the primary health care 'at some point in their life', whereas the time frame for follow-up interviews was referring to the time frame past 5 years'. Since questions on IPV also were asked for 'past 5 years' regarding those who participated in a follow-up interview, we decided to include only follow-up interviews in order to get more homogenous variables. The decision to choose women participating in their *first* follow-up interview was based on the decision to minimize recall bias as much as possible, i.e. including only those who were asked about IPV and health care related variables 'during past 5 years', for the first time. After excluding women with missing values on all physical IPV items (=47), the sample consisted in 616 women born in 1965, -70, -75 and 1980 with an age-range of 25 to 48 years at their first follow-up interview. A chi-square test for independence was used to test for differences between those who had or had not answered to any of the physical IPV items. The test showed no significant difference between the two groups with regard to educational level ($p= 0.831$), yearly income before tax ($p=0.406$), occupational status ($p=0.910$) and age ($p= 0.393$).

Study IV

Study IV consisted in a total of 2072 interviews (baseline and follow-up) performed during the four waves of WAG between 1986 and 2015. The total number of participants at each wave are displayed in table 3. The age range was 20 to 49 years and for comparison over the four data collection waves, the women were divided into two age groups (20 to 30 years and 31 to 49 years).

Studies III-IV: Those who responded and not responded to the screening questionnaire

With regard to studies III-IV and those who did not respond to the initial screening questionnaire, an earlier attrition analysis was performed at the first data collection wave in 1986/91, based on 113 women from the attrition group. Out of these women, 67.3% accepted to participate in an interview, thus making it possible to obtain information on socio-demographic and background factors. This attrition analysis showed that there was no significant difference between those who had answered to the screening questionnaire and those who had not in terms of age, relationship status, number of children, number of trauma in childhood and youth, education, employment status, alcohol consumption and prevalence of alcohol related problems [95].

Studies III-IV: Comparison of participants in long and short interviews

We performed an analysis in order to investigate the difference between women who completed a long interview versus women who completed a short interview. Logistic regression analysis showed that women who completed a *long interview* were older ($p = <0.0001$), had a higher educational attainment ($p= 0.0014$), and a higher alcohol consumption ($p= 0.0176$) as compared to women who completed a short interview.

3.2. MEASURES

Studies I-III: Measures of Intimate Partner Violence

In studies I-II IPV was measured with different instruments and was used either as an outcome (Study I) or as an exposure variable (Studies II-III).

Studies I and III: The Conflict Tactics Scale (CTS)

In study I, exposure to and perpetration of physical and sexual violence was based on The Revised Conflict Tactics Scale (CTS2). As mentioned in the introduction, the original Conflict Tactics Scale (CTS1) was developed in the 1970s by the sociologist Murray Straus and his colleagues [44] and consisted in scales that measured reasoning and negotiation, as well as physical aggression between intimate partners. After a major revision performed in 1996, 'The Revised Conflict Tactics Scale' (CTS2) was launched with new wordings and additional scales to measure injury and sexual coercion [96]. The CTS2 measures the behaviour of both the respondent and the respondents partner which means that the CTS2 asks how many times the respondent and their partner have perpetrated each of the acts included in the

different scales [96]. In Study I the men and women were asked whether they or their partner had perpetrated any physical (12 items) or sexual violence (4 items). The respondents were asked to indicate whether this had happened during 12 months prior to the survey (response options 0 times, 1 time, 2 times, 3-5 times or >5 times) or 'earlier in life'. Exposure to or perpetration of IPV past 12 months, was defined as having experienced or perpetrated each of the single acts at least ≥ 1 time during the past 12 months. In agreement with the WHO multi country study [13], exposure to and perpetration of any physical or sexual IPV in the past 12 months was defined as the proportion of respondents reporting at least one or more acts on each of the corresponding scales (physical and sexual violence). The same procedure was used for the time frame 'earlier in life'. In order to increase the statistical power in the logistic regression analysis, the time-frames 'past year' and 'earlier in life' for physical and sexual violence, were merged into a combined variable ('lifetime' physical and/or sexual violence).

In study III, exposure to physical IPV (4 items) was based on the original version of the CTS. The women were asked if they had experienced any physical violence during past 5 years (response options 'never', '1-2 times' and '3 or more times'). The four items were computed with an affirmative response to any of the four questions coded as 1 (exposure to physical partner violence ≥ 1 time in the past 5 years). A negative response to all of the four questions was coded with the value zero (no exposure to physical partner violence).

Studies I and II: The Controlling Behaviour Scale (CBS)

In study I and II, the subscale 'isolating control' (5 items) from the Controlling behaviour Scale (CSB) developed by Graham Kevan and Archer [97] was used to analyse whether the respondent had been subjected to controlling behaviour or not. The respondents in both studies were asked to indicate if they had experienced isolating tactics such as the partner trying to restrict the respondents time with family and friends or limit her or his activities. The response options were the same as for the questions on CTS2 ('never', '1-2 times' and '3 or more times') and in both studies exposure was defined in the same way as explained for physical and sexual violence. In study I, we analysed the lifetime prevalence of isolating control, whereas in study II we analysed isolating control for the past 12 months.

Study II the WHO Violence Against Women Instrument (VAWI)

In study II, questions on physical (6 items) and sexual violence (3 items) were based on the Violence Against Women Instrument (VAWI) developed by the WHO to assess IPV in the Multi-Country Study on Women's Health and Domestic Violence against

Women [13]. The design and implementation of the instrument in the WHO study was based on recommendations from the Network on Violence against Women (IRNVAW) together with previous research on IPV carried out using the CTS, as well as existing critique against the CTS and its methodology [13]. In our study, the translation and adaptation of the VAWI to a Swedish context was carried out by a senior researcher with extensive knowledge on IPV (last author in studies I-IV). The time frame used in this study was 'past 12 months' and exposure was defined as mentioned previously.

Study II. Symptoms of depression

In study II the outcome variable was self-reported symptoms of depression using five indicators of depressive symptoms as defined in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)[98]. We asked whether the respondents had experienced any of the following symptoms during 12 months prior to the survey: *fatigue/ tiredness, difficulty falling asleep, trouble concentrating, feeling down/low and suicidal thoughts*. The response options ranged from 'almost every day' to 'almost never or never'. Experience of depressive symptoms was defined as having experienced a symptom 'almost every day' or 'once a week'. In order to increase the cell frequencies, the five items were summarized and dichotomized with those experiencing depressive symptoms defined as experiencing two or more symptoms.

Study III. Perceived need for care and mental health care utilization

In study III, two different measures were used as outcome variables: perceived need for mental health care and primary health care utilization due to mental health problems. Perceived need was assessed with the question: *'During the past 5 years, was there any time when you felt so mentally distressed that you needed to seek mental health care, or have you ever felt so mentally distressed that you could have benefitted from seeking help?'* Primary health care utilization due to mental health problems was assessed with the question: *'Have you had any primary health care contacts due to mental health problems in the past 5 years?'* Response options for each of the questions was 'yes' or 'no' with 'no' being the reference category in the bivariable and multivariable logistic regression analyses.

Study IV: Suicidal ideation and attempts

In study IV, suicidal ideation and attempts were based on Paykel et al [99] and Meehan et al [100]. These items have been used in previous studies performed on the data from WAG [101, 102]. The items used in Paykel et al [99] and Meehan et al [100] are rather similar since they both use specific wordings when asking about suicidal ideation and attempts [100]. However, Meehan et al [100] takes it a step further by allowing respondents to clarify whether they got injured or received

medical care due to the attempted suicide, which according to the authors [100], leads to more precise estimates regarding attempted suicide.

In WAG, the questions on suicidal ideation and attempts were based on Paykel et al [99] in the first data collection wave, whereas in the last three waves, the questions were based on Meehan et al [100]. For reasons of comparability across the four waves, we did not use the questions on injuries or medical care since these were not presented in the first wave of WAG. Thus, the respondents were asked if they *ever* had experienced any of the following questions: (i) thoughts of taking their life, even if they would not really do it? (suicidal ideation) (ii) reached the point where they seriously considered to take their life, and perhaps made plans how to go about it? (suicidal ideation) and (iii), made an attempt to take their own life? (attempted suicide). Women completing a follow-up interview in 1994/1998 and 2000/02 were asked if they had experienced suicidal ideation and attempts during the past 5 years³ (instead of ever). All women were asked if they had experienced the three questions during the 12 months prior to the survey. A positive response to either question (i) or (ii) past 12 months was considered as experiencing suicidal ideation. A positive response to either question 1 or 2 for ever/during past 5 years was considered as experiencing suicidal ideation earlier in life. Women giving a positive response to either of the merged variables (past 12 months or earlier in life) were considered as experiencing lifetime suicidal ideation. The same procedure was applied for suicide attempts (question iii)

Background and sociodemographic factors

Age

In study I, *age* was used as an independent exposure variable when analysing the association between sociodemographic factors and IPV. Age was categorized into two groups, 18-30 vs 31-65 years with the latter as the reference category. In study II, age was used as exposure variable and categorized into 18-25 and 26-65 years with the latter as the reference category. In study III, age was a continuous variable and used as an exposure variable. In study IV, two age groups (20-30 and 31-49) were used across the four waves in order to estimate associations between sociodemographic factors and suicidal ideation according to age group at each wave.

Educational level

In study I, educational level was used as an exposure variable, dichotomized into 'basic education' (≤ 13 years) and 'university education' (> 13 years) with the latter as the reference category. In study II, educational level was dichotomized into

³ This time frame was changed to 'ever' in the latest wave in 2013/15, in order to be consistent with the baseline interviews.

'elementary school' vs. 'university and/or high school' and used as exposure variable. In study III and IV educational level was divided into three groups: 'compulsory school' (≤ 9 years), 'secondary education' (10-12 years), 'post-secondary education' (>12 years) and used as exposure variable (study IV), and as a potential confounder variable in study III.

Relationship status

Relationship status was used as exposure variable in study I and dichotomized into 'married/ cohabiting' versus 'not married/cohabiting' (including boy-girlfriend, single, divorced, widowed), using 'married/ cohabiting' as the reference category. In study II we used the same categorization for relationship status as in study I, using it for adjustment. In studies III and IV relationships status was classified into three categories: 'married/ cohabiting', 'divorced/ separated' and 'widow/ single' and used as exposure variables.

Current occupational status

In study I occupational status was dichotomized into 'employed' (reference category) and 'unemployed' (students, parental leave, pensioner, those in early retirement or sick leave more than 3 months). In study II instead, we categorized those who were employed together with those in parental leave and on leave of absence and used this category as the reference whereas all other composed those considered as a 'vulnerable' group for depression (students, unemployed, sick-leave... and so forth). In study III and IV, current occupation was categorized into: (i) those who were working half-time or more ('employed'), (ii) homeworkers, unemployed, women who responded 'not working because of other reasons' as well as those on disability pension or sickness absence exceeding three months ('unemployed'), and (iii) those studying half-time or more ('students'). Participants on parental leave were categorized based on their occupation prior to parental leave.

Income

Income was used in study I and III, as a primary exposure variable in study I and as an exposure variable in study III. In study I the variable consisted in 'total household income per month' whereas in study III the variable referred to 'annual income before tax'. In study I the variable was dichotomized into those with 0-39.999 Swedish crowns versus 40.000 SEK or more per household, with the latter as reference category. In study III the variable was dichotomized into ≥ 100.000 SEK (reference category) and < 100.000 SEK respectively, in order to increase the statistical power for bivariable and multivariable regression analysis.

Other variables

In study I and II we measured 'access to social support' as this is shown to be an important factor with influence on IPV. The measure has been used earlier in the Swedish Level of living surveys [103] and was constructed out of four items inquiring about social and economic support. 'Duration of present relationship' was used as an exposure variable in study I and dichotomized as having had a relationship for ≤ 3 years versus >3 years with the latter category as the reference. The decision to include this variable was based on previous literature where short relationships and having multiple partners is shown to be a risk factor, particularly among men, for perpetrating IPV [104]. *Witnessing IPV as child* was included as a confounder in study II as it is known to be associated with both exposure and perpetration of IPV as well as depression [105-107]

3.3. STATISTICAL ANALYSES

Studies I-IV are cross-sectional studies. SPSS software was used for all statistical analyses. In all studies (I-IV) descriptive analysis were used with prevalence (%) and frequency (n). In all studies (except for study III) we used *lifetime* and *past year prevalence*. *Lifetime prevalence* (or 'earlier in life') is defined as the proportion of individuals who have been exposed to IPV or suffered suicidal behaviour at least once in their lifetime, while the *past year prevalence* (or past 12 months) is the percentage of individuals who experienced the IPV or suicidal behaviour in the 12 months prior to the survey. In all studies (I-IV), Logistic regression analyses were used which is suitable when analysing outcomes with two or more categories and the exposure variable is either categorical or continuous. In all studies (I-IV), bivariable and/or multivariable analyses were performed using logistic regression with Odds Ratios (OR) and 95% Confidence Intervals (CI)

Studies III-IV: weighted analyses

In study III-IV, as the material was oversampled with individuals who had indicated possible alcohol problems on the original screening questionnaire, the prevalence rates, crude and adjusted OR and 95% CI were calculated on weighted values based on sampling fractions, correcting for the different response rates in the various groups. This approach has been used and described in previous studies based on WAG

[91, 93]. The analyses were carried out in SPSS 24 using the Complex Samples Plan which adjusts for weighting scheme as well as for stratification [108].

Study I: Association between IPV and sociodemographic factors

To investigate the association between sociodemographic factors and exposure to violence, the physical assault and sexual coercion scale were merged and used as a single variable. Bivariable and multivariable associations between sociodemographic factors and IPV were analysed with logistic regression, calculating OR with 95% CI. Variables statistically significant in the bivariable analyses, were entered one by one in the multivariable model for confounding analysis.

Study II: Association between IPV and symptoms of depression

Bivariable and multivariable analyses were performed producing crude and adjusted OR with 95% CI in order to analyse associations between different forms of IPV, exposure variables and symptoms of depression. Exposure variables showing statistically significant associations with symptoms of depression in the crude analysis were entered one-by-one into the hierarchical logistic regression analysis.

Study III: Association between IPV and perceived need for mental care/ primary health care utilization due to mental health problems

Descriptive statistics were presented with unweighted total numbers (N), unweighted frequencies (n) and weighted prevalence (%). Chi-square test was used to test for differences ($p \leq 0.05$) in physical IPV by sociodemographic factors. Separate bivariable and multivariable analyses were performed producing crude and adjusted OR with 95% CI in order to analyse associations between IPV experiences and (a) perceived need for mental health care and (b) primary health care utilization due to mental health problems. All multivariable models were adjusted for age at first follow-up interview (continuous variable) and time at first follow-up interview (i.e. 1995, 2000 and 2015)

3.3.4 Study IV: Association between sociodemographic factors and suicidal ideation

Descriptive statistics were presented with unweighted and weighted n and %. To test for significant differences in prevalence of suicidal ideation and attempts, 95% CI were computed in 1986/91 and 2013/15. Bivariable associations between each

sociodemographic factors and lifetime suicidal ideation were estimated with logistic regression, weighted OR and 95%.

3.4. ETHICAL CONSIDERATIONS

In **studies I-II**, a postal questionnaire was sent to the randomly selected participants. The questionnaire contained a letter with information on the study background and its purpose. The letter informed that the sample selection was based on a random selection from the Swedish register on all inhabitants in Sweden kept by Statistics Sweden. The letter also informed that all data was protected by the Personal Data Act and Secrecy Act in Sweden. Furthermore, it stated that participating in the survey was voluntary, that data obtained through their responses to the questionnaire (based on those who chose to participate) would be delivered in an anonymised data file to researchers at University of Gothenburg. Further, Statistics Sweden was to keep the identification key in order to ensure anonymity of the data. By answering and submitting the questionnaire mailed out by Statistics Sweden, the respondents were considered to have given their informed consent ('informerat samtycke') to participate in the study.

Regarding **studies III and IV** and the screening questionnaire, the screening questionnaire included a letter with information on the study background and its purpose. The information further stated that participation was voluntary and withdrawal from the study was possible at any time. The women were also informed that in case of answering to the questionnaire, they could possibly be asked to participate in a personal interview and potential participation in the interview was voluntary. In stage 2, the women received an invitation letter to participate in a face-to-face interview, including information about the background of the study and its purpose. In the last wave (2013/15), once the women had accepted the invitation and assisted to the interview, a second opportunity was offered were the women obtained oral and written information about the background and purpose of the study as well as their right to withdraw from the study at any point. The women were also informed that personal data was going to be stored in a separate safety box. In the last wave, the women gave their written informed consent to participate whereas in previous waves, the informed consent was obtained orally.

In **study I and II**, as the study was designed specifically for investigating IPV, ethical and safety recommendations for research on violence against women were followed according to the recommendations by WHO [11]. For example, before the survey was mailed to the randomly selected sample of women and men, a letter was mailed in advance with the aim to inform about the upcoming survey and the possibilities to decline further participation in the survey. Further, only one postal survey per household was sent in order to minimize possible retaliatory violence by potential

perpetrator. In addition, the questions were framed asking whether or not the respondent had experienced specific acts such as being slapped, beaten or hit, instead of using loaded terms such as 'rape' and 'abuse'[11]. Contact information to a general practitioner (last author in studies I-IV), a psychologist and a contact person at Statistics Sweden was provided for referral and additional information.

The safety recommendations in **study III** were also performed in accordance with the recommendations stated by WHO in that the interviews were conducted in a way that participants were free to reschedule and relocate the interview according to the time and place that was most convenient and safe for them [11]. Further, in the invitation letter to the interview, the background and purpose of the study was framed as a study about alcohol and health related issues which according to the WHO suggestions, enables the respondent to explain the survey to others safely [11]. All research team members were carefully selected by the project management and received specialized training and continuous support from a psychiatrist with large working experience. Available helplines to local services and resources were given to the women in case of necessity.

Ethical approval

The regional Ethics review Board in Gothenburg gave approval for this research project (Dnr: 693-12).

4 RESULTS

4.1. PREVALENCE OF IPV

An overview of the prevalence of exposure to different types of violence in each study (I-III) is presented in table 4.

Study I-III: Prevalence of exposure to IPV during past 12 months

In studies I and II, we asked the respondents if they had been exposed to different forms of violence during 12 months prior to the survey. The findings from study I, showed that a higher proportion of men (11%) than women (8%) reported exposure to at least on act of physical violence during past year, whereas more women (3.2%) than men (0.6%) reported exposure to at least one act of sexual coercion (Table 4). In study II, 7.5% of the women reported exposure to at least one act of physical violence during past 12 months and 2.8% reported exposure to at least one act of sexual violence during the same time period. In study II we also measured exposure to controlling behaviour during past 12 months, thus 25% of the women reported having experienced at least one control tactic during this time period.

Table 4. Overview of exposure to different types of violence in studies I-III

Type of violence	Study I				Study II	Study III
	Past 12 months		Lifetime		Past 12 months	Past 5 years
	Women N=251	Men N=173	Women N=251	Men N=173	Women N=573	Women N=616
	%	%	%	%	%	% ^a
Physical	8.0	11.0	15.0	11.0	7.0	14.0
Sexual	3.2	0.6	9.6	3.5	2.8	--
Controlling	--	--	41.4	37.0	25.0	--

^a Prevalence (%) are weighted in study III

Study I & III: Prevalence of exposure to IPV for 'earlier in life' and 'past 5 years'

In study I, we found that a higher proportion of women (15.9%) than men (11%) reported having experienced at least one act of physical violence in their life (Table 4). The same pattern was seen regarding exposure to sexual violence were 9.6% of the women and 3.5% of the men reported subjection to at least one act. We also analysed exposure to controlling behaviour for 'earlier in life' and found that 41.4% of the women and 37% of the men reported experience of at least one act of controlling behaviour during lifetime. In study III, we asked the women about physical violence for the time frame 'past 5 years' and found that 14% of the women reported experienced at least one act of physical violence during the 5 years prior to the survey.

Study II: Co-occurrence of exposure to different forms of violence

In study II we also analysed the co-occurrence of violence exposure among the women. We found that out of the 159 women who were exposed to at least one type of violence during past 12 months (physical, sexual violence and/ or controlling behaviour), 16.4% were exposed to both controlling behaviour and physical violence, while 4.4% were exposed to both controlling acts and sexual violence. Another 2.5% had been subjected to all three types of violence during the past 12 months.

Study II: Perpetration of different types of violence

In study I. Among the respondents, a higher proportion of men (8.1%) than women (5.2%) reported the use of at least one act of physical violence during past 12 months. Men also reported a higher prevalence of using sexual coercion (5.1% vs 0.8%) during this period (Table 5). With regard to lifetime estimates, a higher proportion of women (11.6%) than men (8.1%) stated that they had perpetrated at least one act of physical assault in their lifetime. The use of sexual coercion during lifetime was reported to similar extent among women and men (2.0% vs. 2.3%).

Table 5. Overview of the prevalence (%) of perpetration to physical and sexual violence in study I

Type of violence	Past 12 months		Lifetime	
	Women N=251	Men N=173	Women N=251	Men N=173
	%	%	%	%
Physical	5.2	8.1	11.6	8.1
Sexual	0.8	5.2	2.0	2.3

Study I: Exposure to and perpetration of physical/ sexual violence

Descriptive analysis in study I showed that out of those men who had been exposed to physical and/ or sexual violence combined during lifetime, 63.9% (n=23) had also used physical/ sexual violence at least once in their lifetime. Among women exposed to physical and/ or sexual violence combined during lifetime, 39.4% (n=26) also had used this type of violence at some point in their life.

4.2. IPV AND ASSOCIATED FACTORS

In **Studies I-II** we analysed IPV associated with different factors. In study I we analysed the associations between sociodemographic factors and different forms of IPV whereas in study II we analysed the association between different forms of IPV and symptoms of depression. In study III we analysed the association between physical IPV past 5 years and perceived need for mental health care on one hand and health care utilization due to mental health problems on the other hand. Each of the result are described more in detail as follows.

Study I: Association between sociodemographic factors and exposure to IPV

In study I, one of the aims was to investigate the association between sociodemographic factors and IPV. Due to small sample size, we merged exposure to lifetime physical and sexual violence to one variable and estimated the association between sociodemographic variables and the combined variable of lifetime physical and/ or sexual violence. We found that after adjusting for age, civil status, total household income, duration of present relationship and social support, women who were 'single/divorced' had 3.10 times higher OR (95% CI 1.06-9.12) of experiencing exposure to physical and/ or sexual IPV during lifetime compared to those being within a married or stable relationship (Table 5 in study I). We also found that women

who reported poor social support had almost three times higher OR (OR 2.79; 95% CI 1.31-5.92) of reporting exposure to physical and/ or sexual violence during lifetime as compared to women who reported that they had social support. For men, after adjusting for age, civil status, household income, duration of present relationship, the only sociodemographic factor that remained statistically significant was duration of present relationship. Men with a relationship of ≤ 3 years, had 4.20 higher OR (95% CI, 1.15-15.40) of reporting exposure to physical and/ or sexual IPV during lifetime, as compared to men with longer relationships.

Study II: Associations between IPV and symptoms of depression

After adjusting for sociodemographic factors we found that those exposed to each form of IPV during past 12 months more likely to report symptoms of depression as compared to those who had not reported exposure to any form of IPV (Table 5, study II). In the final models the OR for each of the violence forms were as follows: controlling behaviour (OR 2.43; 95% CI 1.56-3.79), physical violence (OR 3.06; 95%CI 1.50-6.24) and sexual violence (OR 4.67; 95%CI 1.35-16.18).

Study III: Association between physical IPV and perceived need for mental care/ health care utilization

After adjusting for sociodemographic factors, weighted analysis showed that women exposed to physical IPV during past 5 years had more than three times higher OR (3.54; 95% CI 1.77-7.11) than women without such experience to perceive the need for mental health care compared to women without such experience of IPV (Table 2, study III). After adjusting for sociodemographic factors, exposure to physical IPV during past 5 years did not remain significantly associated (OR 1.74; 95% CI 0.91-3.31) with health care utilization due to mental health problems (Table 3, study III).

4.3. SUICIDAL IDEATION AND ATTEMPTS

In Study IV, we analysed the prevalence of suicidal ideation and attempts over a 26 year period. We also estimated the patterns of association between sociodemographic factors and suicidal ideation over time.

Study IV: Prevalence of suicidal ideation and attempts

In study IV, one of the aims was to assess the prevalence of self-reported suicidal ideation and attempts among women included in the data collection between 1989 and 2015. We found that among women aged 20-30 years, a higher proportion reported having had suicidal thoughts at least once during their lifetime in 2013/15 as compared to 1989/91 (45.0% versus 33.0%) (Table 3, study IV). Within this age group, rates for attempted suicide were similar between 1989/91 and 2013/15. Among women aged 31-49 years, a higher proportion of women reported lifetime

suicidal ideation in 2013/15 compared to 1989/91 (35.4% and 23.1% respectively). Out of this age group no one reported having attempted any suicide in 2000/02 whereas in 2013/15, 3.6% of the women reported this.

4.4.2 Study IV: Associations between sociodemographic factors and lifetime suicidal ideation

Another aim in study IV was to investigate the association between sociodemographic factors and suicidal ideation over time. All associations are displayed in table 4 in study IV. Here I will only refer to those variables that showed statistically significant associations with lifetime suicidal ideation. *Among women aged 20-30*, those who had ≤ 9 years of education (OR 3.86; CI 1.68-8.89), were students (OR 1.73; CI 1.11-2.81), unemployed (OR 4.23; CI 2.23-8.01) and were singles (OR 1.80; CI 1.12-2.88), all showed higher OR of lifetime suicidal ideation in 1994/98. In 2000/02 those who had a high-school education (OR 3.01; CI 1.89-4.79), had ≤ 9 years of education (OR 8.00; CI 3.40-18.78), were students (OR 2.38; CI 1.51-3.75) and singles (OR 3.31; CI 2.02-5.42) had higher OR of reporting lifetime suicidal ideation compared to their reference categories. In 2013/15 those who had high-school education had 3.37 times higher OR (CI 1.72-6.59) to report lifetime suicidal than those with ≥ 12 years of education. In this age group, students proved to have lower OR (0.34; CI 0.17-0.69) of reporting suicidal ideation compared to those employed. *Among women aged 31-49*, the only sociodemographic factor that showed a statistically significant association with lifetime suicidal ideation was being single (OR 2.61; CI 1.06-6.44)

5 DISCUSSION

Summary of main findings

In study I, as compared to men, women reported higher prevalence of exposure to sexual violence both for *past year* and *earlier in life*. For *past 12 months*, a higher proportion of men reported exposure to physical violence, whereas a higher proportion of women reported such violence for *earlier in life*. Interestingly and despite using different instruments, the *past year* prevalence of exposure to physical and sexual violence in study II, were similar to the *past year* rates for women in study I. A higher proportion of women than men reported exposure to controlling behaviour (Study I). The past- 5- years estimates of exposure to physical violence among women in study III, were similar to the earlier-in-life estimates of physical violence exposure among women in study I. Most of the women exposed to IPV during past 12 months, experienced a co-occurrence of physical violence and controlling behaviour (Study II). When looking at perpetration of IPV, we found that men reported a higher prevalence of using sexual violence both during past year and earlier in life. A higher proportion of men used physical violence during *past 12 months*, whereas a higher proportion of women reported the use of such violence for *earlier in life*. (Study I).

Drawing upon the ecological model, those sociodemographic factors that were associated with exposure to IPV were related to the relational level. Among *women*, being *single/ divorced* and *having a poor social support system*, was associated with exposure to lifetime physical and/ or sexual violence (Study I). Among *men*, those with *a relationship of 3 years or less*, were more likely to be exposed to lifetime IPV compared to those within a relationship of longer duration. In study II, we found that women exposed to *physical, sexual violence* as well as *controlling behaviour during past 12 months*, were more likely to report symptoms of depression as compared to those without such experience. In addition, experience of *physical violence during past 5 years* was associated with perceived need for mental care (Study III).

A higher proportion of women aged 20-30 years, reported lifetime suicidal ideation in 2013/15 as compared to 1989/91, whereas self-reported rates of attempted suicide remained similar (Study IV). A higher proportion of women aged 31-49 years reported suicidal ideation and attempts in 2013/15 as compared to 2000/02. Sociodemographic factors pertaining to the individual and relational level showed different patterns in the four study-waves. In general, having compulsory and/ or high school education, being unemployed, being a student and being single was associated with suicidal ideation.

Prevalence of exposure to IPV

We found that more men than women reported exposure to physical violence during past 12 months. This finding is in line with previous research based on the same instrument (CTS2) and performed by Straus [96]. Our finding however differs from other population based studies finding similar rates between men and women of past year exposure to IPV [34, 36, 37]. For example, in their study, Tjaden and Thoennes [34] used a modified version of the CTS and found more similar rates of past year exposure to physical violence among men and women (0.6% and 1.1% respectively). In addition, another study performed within the same research project as studies I-II presented in this thesis, found that men and women had similar rates of exposure to physical, sexual and psychological violence in the past 12 months [37]. They used the same target population and data collection procedure as in studies I-II, however they used WHO-VAWI⁴. When looking closer at the different items used in the CTS2 in study I, and the items used in the VAWI-study by Nyberg et al [37], the differences between the prevalence rates seem to be logical. For instance, the physical assault scale in the CTS2-study, contained more items (12 items) than the physical violence scale in VAWI (6 items). In particular three items that were not included in the VAWI, but included in the CTS2, showed the following prevalence of past year exposure among men: 'slapped' (4.6%), 'grabbed' (2.9%) and 'twisted arm or hair' (1.7%) (Table 1, study 1). This difference in items may have influenced our findings and have led to the higher past year prevalence in study I (CTS2) as compared to the study performed by Nyberg and colleagues.

In agreement with previous research we found that more women than men reported lifetime exposure to IPV [34, 35]. This is also consistent with studies analysing IPV exposure by a current or former partner [5, 109]. These studies usually find that men and women report similar rates of IPV exposure for current partners, whereas more women than men report IPV exposure for previous relationships [5, 56, 109]. Regardless of whether women use violence or not, several studies have found that compared to men, women exposed to IPV experience more types of IPV [51], more severe forms of violence and more control [47, 53, 56, 110]. Therefore, women may be less likely to participate in surveys if they are living with their violent partner or if the partner is nearby when the survey is performed [56]. In addition, relationships characterized by severe violence and control tactics are likely to end in separation or divorce [30]. This may be one reason why, compared to men, women report lower rates of past year exposure, yet higher rates of lifetime exposure [110]. It has

⁴ Study II in this thesis is based on the same female sample and the same instrument (VAWI) as the study performed by Nyberg, Taft, Enander, Krantz (2013)

previously been stressed that focusing solely on 'current relationship' when inquiring about IPV, gives biased results and produces gender symmetry in rates of exposure to IPV [110]. In line with this, it is reasonable to believe that past 12 months estimates also may provide biased results regarding men's and women's exposure to IPV. Another possible explanation for men's higher prevalence of exposure to physical violence during past 12 months may be that there was a selection bias, i.e. that those men who participated in this survey were particularly interested in the topic.

Similar to previous studies, women in our study (Study I) reported higher prevalence of sexual coercion than men, both for past year and for earlier in life [5, 35, 56]. The Swedish study performed by NCK found for example that 7% of the women and 1% of the men reported experience of sexual violence by a former or current partner [5]. Surprisingly, the rates of exposure to sexual coercion were much lower in our CTS2-study as compared to the VAWI study which also included men and women [37]. One potential explanation may be that the items in our study were more specifically framed compared to the items in the VAWI scale.

In study I we found that more women than men reported exposure to isolating control tactics, both for past year and earlier in life. This is in line with previous research [5, 53, 111]. As described in the introduction, Johnson argues that coercive control tactics are major components in what he labels as *intimate terrorism*, i.e. a type of violence which is mainly perpetrated by men in opposite-sex relationships and often includes severe forms of physical violence [30]. In line with the previous section about 'current' and 'former' partners (or past year prevalence versus earlier-in-life prevalence), he argues that intimate terrorism almost never is found in surveys which only address 'current intimate relationships' and not include 'previous intimate relationships' [30]. He proposes to always inquire about previous partners since that is when *intimate terrorism* also will be uncovered among men and women in general population studies [30]. For instance, in a study including respondents who disclosed IPV by a current or former partner, Johnson et al [30] found that that 22% of the former male partners and 5.4% of the former female partners had perpetrated intimate terrorism. When looking closer to specific items, they found for example that men were more likely than women to prevent their female partner from working outside of the home (31.3% vs 19.9%) [30]. Although the item in our CTS2-study not precisely is the same as in the study performed by Johnson, we found that 16.7% of the women and 9.8% of the men responded that their partner had tried to limit their activities outside the relationship. According to Stark, controlling behaviour is different from other forms of violence in that its major objective is to degradate the partner (women) by depriving her from social life and access to a range of important

services [112]. This, in turn reinforces the construction of gender identity and inequality between sexes since women from start have unequal access to resources, power and opportunities [112].

The prevalence of controlling behaviour (both past year and earlier in life estimates) were higher in our studies (I-II) as compared to previous findings from Sweden inquiring about exposure to controlling behaviour from a current or former partner [5, 33]. For instance, in *'Captured queen'* by Lundgren et al [33], 12% of the women reported experiencing controlling behaviour by a current partner whereas in our study, 25% (Study II) of the women reported this for past 12 months. A possible explanation to the higher rates in our study may be that some of the items in the isolating control scale, as for example "wanted to know where I went and who I spoke to when not together" or "felt suspicious and jealous of me" may be commonly experienced by people even though they are not within a violent or otherwise controlling relationship.

Prevalence of IPV perpetration

In study I, we found the same pattern of reporting the use of violence as for reporting the exposure to IPV. That is, women tended to report more perpetration of IPV for earlier in life (both for physical and sexual violence), whereas men reported the use of physical violence to exactly the same extent for past 12 months and earlier in life. One previous study found that compared to women, men did report a higher prevalence of lifetime use of sexual violence [113]. This was only true for past year estimates in our study whereas for earlier in life, men and women reported the use of sexual violence to almost the same extent. A study performed by Straus [41] found that more women than men (28% and 25% respectively) reported having physically assaulted their male partner during the 12 months prior to the survey. We cannot know the reasons behind why women reported more perpetration of violence for the time period 'earlier in life' than for 'past year'. However, a previous study performed on couples of men and women by Dobash and Dobash [43] found that men and women tended to agree about the violence perpetrated by women, whereas there was a large discrepancy about the frequency and impact of the violence used by the men against their female partners. The authors further found that men generally reported the use of fewer violent acts against their female partner than the violence reported by the women themselves [43].

To conclude, what has become obvious when comparing our prevalence rates with other studies, is that differences in prevalence rates to a large extent depend on how

IPV is defined, conceptualized and measured. However, even when the same instrument is used, different prevalence rates may still be observed. For example, in the WHO Multi country study, although using the same instrument, they found large variations in prevalence rates between different countries [13]. Also, in a study performed by Straus, using the CTS2 in 31 universities across different countries, prevalence rates in physical violence ranged from 17% to 45% [41]. Besides methodological difference, disparities may be caused, at least in part, by levels of equality between men and women in a country [32]. For instance, it is suggested that improved equality between the sexes creates more awareness about IPV, which in turn enables and facilitates the reporting of incidents and women's disclosure of IPV [32].

Associations between sociodemographic factors and IPV

In study I, drawing on the ecological model we found at the relational level and in accordance with previous research [51], that women being single/divorced were more likely to report exposure to lifetime physical and/or sexual violence compared to those without such experience. We have not been able to analyse this group any further. However, previous research suggests that higher levels of IPV among women may be an important reason to leave the relationship [13]. According to the WHO, another possible explanation may be that once women have left their relationship, they are more willing and able to disclose and/or recognize their partners perpetration of IPV [13]. In line with previous studies [57, 114], women with poor social support reported higher rates of lifetime exposure to IPV than those good social support. Social support may moderate the association between IPV and a range of mental health problems. For instance, one previous study found that women experiencing IPV who received social support, had a reduced risk of mental health problems [114]. We found that a relationship of 3 years or less among men, was associated with exposure to lifetime physical and/or sexual violence. This type of measure has been used in other studies, [41, 115], however we have not found results that sustain our findings. One plausible explanation could be that this group consisted of younger men and therefore shorter relationships. Younger age is known to be associated with higher rates of IPV [51]. However, important to note is that our sample was small and the confidence intervals wide (OR 4.20; 1.15-15.40) which may have influenced on the precision of the results.

Association between IPV and symptoms of depression

IPV has previously shown to be associated with poor mental health in women [104, 116, 117]. In line with earlier studies, we found that all three forms of IPV (controlling behaviour, physical and sexual violence) were associated with symptoms of depression [59, 67]. A previous meta-analysis suggested that women exposed to IPV had a 2 to 2.5 fold increased risk of depressive symptoms [118]. Further, earlier studies also demonstrated that women exposed to coercive control reported more depressive symptoms compared to respondents in non-violent relationships [30]. Our study supported earlier research in that we found that controlling behaviour was associated with symptoms of depression regardless of other forms of violence. Controlling behaviour has shown to be as harmful to mental health as physical and sexual violence, even in cases where no physical violence is present [119]. Controlling behaviour is used by the perpetrator in order to obtain obedience and deprives the partner from access to social life, economic resources, decision making and important services [54]. Previous research shows that the use of controlling behaviour including, excessive callings, harassments and stalking may persist even long after the women has left the relationship [120]. It is suggested that although men often use physical violence after a divorce or separation, the use of physical violence tends to decrease whereas control tactics tend to be maintained, simply because the woman no longer is present after the separation [120]. Such frightening and coercive control tactics logically have influence on the mental health of women exposed to such violence, even though they have left the relationship.

Associations between physical IPV and perceived need for care

As has been previously discussed, IPV is associated with a range of poor mental health outcomes [67, 107]. It follows that women exposed to IPV are more likely to need mental health care. In accordance with previous research, we found that women exposed to physical IPV were more than three-fold likely to experience the need for mental care compared to unexposed women [81, 121]. Although there are no studies to make a direct comparison with, our results are in line with previous research indicating that many women exposed to IPV perceive the need for mental health care [81, 121]. According to Andersen's Behaviour model [82], self-perceived need is an important step which enables possibilities to act and take the important step to seek care. This in turn, is largely influenced by socioeconomic position and health beliefs [82]. In study III, the majority of the women who perceived the need for care, also sought care, yet 45.1% of the women exposed to IPV had not accessed the primary health care although they perceived a need for it. This finding is in line with previous research from the U.S., showing that 49.9% of the women who perceived a need for care, had not accessed the primary health care [122]. We were not able to analyse

why the women did not seek care and whether this was due to potential barriers. Drawing on the ecological model, earlier research has found that barriers to seeking care exist on individual, relational and community level. Examples of barriers at individual level may be lack of knowledge about the health care system as well as feelings of shame and embarrassment [80, 123]. In case the women stays in a shelter, she may be obliged to focus on the most urgent problems such as finding housing and an employment, thus preventing the women from keeping medical appointments [123]. At relational level in the ecological model, the controlling partner may monitor the partner's movements, thus trying to manipulate her in accessing care [123]. As there is a lack of previous research in Sweden on this matter, there is a need for future qualitative studies that investigate the women's perspective of need for care and potential barriers to accessing care.

Suicidal ideation and attempts

In study IV, we found an increase of lifetime prevalence of suicidal ideation among women aged 20-30 and 31-49 years respectively. We also found an increase in lifetime prevalence of attempted suicide among the older women. One of the challenges when comparing prevalence rates over time, is that population-based studies generally show large disparities with regard to prevalence rates of suicidal ideation and attempts measured over time. Earlier studies have used shorter time periods [124-127] and/or presented data for men and women as a composite group [124, 127]. This hampers the comparison with our data since it is based on women only. Moreover, there are large variations between instruments, methodology and time periods under study, as well as cultural differences in participants' willingness to disclose suicidal ideation [7, 128]. Taken together, this makes it difficult to determine whether differences in prevalence reflect real variations or are differences due to methodological disparities. Having this said, the increasing prevalence of suicidal ideation found in study IV, is in accordance with data published by the National Board of Health and Welfare in 2017 [87], showing increasing trends of depression and anxiety among young women in Sweden.

At individual level, and in line with previous research, we found that being a young women with low educational attainment was associated with lifetime prevalence of suicidal ideation [126]. Higher educational attainment is believed to benefit mental health through the attainment of important advantages which mitigate life stressors, i.e. more economic and social resources, as well as better access to and use of mental health services [129]. It is suggested that low educational attainment may lead to increased risk for suicidal ideation through social disadvantage [9]. For example, during the last decades, the qualification requirements for paid employment have

increased, and those without a university degree have less favourable employment conditions and prospects compared to those who do have a university degree [130]. This may affect the mental well-being of young adults and could be one of many explanations for our finding that young women with compulsory school and/or high school education were more likely to report suicidal ideation compared to women with higher educational attainment.

In agreement with previous research we found that among young women (20-30 years), being a student, and being unemployed was associated with lifetime suicidal ideation. It has earlier been suggested that lack of self-confidence, lack of good social support as well as feelings of worthlessness may contribute to suicidal ideation among students [131, 132]. However, we found a negative association between student status and suicidal ideation in 2013/15. One explanation to this finding may be that the group of students in the wave 2013/15 was different than the group of students in 1994/98 and 2000/02. For instance, the items used in this study did not discriminate between whether the students were university students or if they were in vocational training. These factors may vary according to socio-political changes, policies and decisions. Also the educational attainment in Sweden has increased in the last decades which means that the number of female students has almost doubled since the beginning of the 1990s [133]. Thus, it is possible that a larger proportion of the young women responding that they were students in 2013/15, already had high educational attainment and opted for a continuation of their university studies. As those with high educational attainment are less likely to experience suicidal ideation, a plausible explanation may be that this group was mentally better-off than the previous groups of students included in WAG.

In study IV, it is likely that the association between unemployment and lifetime suicidal ideation among young women in 1994/98, at least in part, is related to the situation for young adults in the general population at that time. Between 1990 and 1993, there was an economic recession in Sweden which contributed to a drop in employment rates among all age groups. However, this drop was particularly pronounced among people aged 20-24 years [130, 134] with a decline from about 60 to 39 per cent [130]. In addition, the labour market did not recover to the same extent as it did for older age groups [130]. At relational level we found that single women in both age groups were more likely to report lifetime suicidal ideation than those who were married/ cohabiting. However, this association was not constant over the study period. The association between relationship status and health outcomes has been discussed in earlier research. It is suggested that apart from the emotional support, socio-economic resources, in terms of stronger social integration and more economic

resources are the underlying reasons why those who are married or cohabiting have better health outcomes than singles [135].

Taken together, the findings from study IV showed determinants for suicidal ideation and attempts at individual and relational level. However, as discussed previously, factors such as unemployment or education are dependent on the socio-political context at societal level, including decisions and policies on social welfare.

Methodological considerations

Important to note is that the four studies in this thesis are based on cross-sectional studies. Cross-sectional studies serve the purpose of describing the prevalence of defined characteristics and to analyse associations with the aim to generate hypothesis which are to be addressed in other studies [136]. This means that our results do not allow for any conclusions to be drawn about causal relationships, i.e. we cannot say that the exposures in our studies preceded the outcomes. Further, the studies I-IV were based on self-report information gathered in the questionnaires and interviews and thus, of subjective nature.

Studies I-II

The main strengths of study I and II is that they were based on randomly selected populations of men and women in Sweden. This made it possible to explore IPV among both men and women in Sweden which at the time for study I was rather novel within a Swedish context. One of the most obvious limitations is the rather low response rate and the drop-out rates in both studies, but particularly among men and in the CTS2 study. The lower response rate among men has been found in previous studies performed in Sweden including both large-scale surveys investigating IPV [5], as well as studies investigating other topics [136]. In line with these studies we also found that more none-responders were unmarried, foreign-born, were younger and had a lower annual income [5, 136]. Considering that these groups tend to have higher prevalence of IPV exposure [4, 35, 137], this may have led to an underestimation of our results. The lower response rate in these groups may have influenced on the precision of our estimates due to possible differences between responders and none-responders. This may further have influenced on the generalizability of our findings, i.e. the extent to which we can generalize our findings to the population at large [136]. There may be several reasons why none responders chose not to participate, for example being exposed to IPV and fearing to be identified by the partner, or not having experienced exposure to IPV at all, and therefore considering participation as unimportant. Other reasons may be lack of time and difficulties in understanding Swedish. As both questionnaires were in Swedish, this is a possible reason for the generally lower response- rate among foreign- born men and women. As mentioned above, other studies including those who have not specifically investigated IPV [136], have also found unmarried persons to be

overrepresented among none- responders. One plausible explanation may be that unmarried persons belong to the younger age groups which in turn also are overrepresented in the group of none- responders. Having this said, declining participation rates in epidemiological studies is an increasing problem in Sweden, as well as in other high-income countries world- wide [136, 138].

Another limitation, mainly in study I and among men, was the small sample size which restricted the possibilities to perform separate analyses on each of the violence types, and limited our possibilities to further investigate perpetration of IPV. For instance, we merged lifetime physical assault and lifetime sexual coercion in order to get enough power for the logistic regression analyses. For the same reason we dichotomized the variables in order to obtain enough cell frequencies for further analysis. This may limit the interpretations of associations.

As previously described in the introduction, CTS2 has repeatedly been criticized for measuring discrete acts and events without taking into account contextual factors. Logically CTS2 or VAWI cannot capture the whole pattern of systematic, ongoing, violence, neither the motives behind it. It is not possible to discriminate between the meaning and intentions of each of the acts included. For example, a women pushing a man in self- defence will get the same score as a man who pushes a women down the stairs [139]. The violence may have different meanings and consequences for men and women. For instance, a large number of authors have shown that although women perpetrate violence against their partner, they seldom invoke fear in their partner or control them [53, 140]. Important to note is also that all men are not coercive and violent and some men are exposed to IPV by their female partners [46]. Thus surveys using instruments such as CT2 and VAWI do not yield a 'true' picture of the extent of IPV or the context in which it occurs. However, each research method has its limitations and according to Kimmel, one of the main problems is that those who claim gender symmetry in IPV do often not understand the context behind the data [46]. Although we have not analysed our data according to the typology of Johnson, we have reasons to believe that the instruments used in our studies, at least in part, capture what Johnson 'calls situational couple violence'[53], i.e. isolated acts of violence without severe control between partners. The value of these instruments used in surveys is that they give an insight into the prevalence of IPV among men and women in the general population who may never seek care or help from any services.

In study II, it is important to note that we did not use any diagnostic instrument of depression nor a validated instrument when we used the measure of 'symptoms of depression' in study II. The five items included were indications of symptoms of

depression in line with those nine symptoms mentioned in the DSM-IV. However, we are aware that we are not measuring depression disorder from a clinical point of view, instead we believe that we have captured depressive symptoms from the perspective of primary care practice seen as a continuum. We have measured items close to what would be labelled as subsyndromal depression, i.e. symptoms that do not meet the criteria for a diagnosis but include two or more symptoms of depression without having a constantly depressed mood or an inability to experience pleasure. In addition, these type of symptoms, if they go on for a prolonged time, they may be an indication of later depression. The items included in our study are also items commonly found in a variety of scales used to measure depression [141]. We are also aware that our compound measure of symptoms of depression and a cut-off level of 2-5 symptoms most certainly include more 'false positives' compared to what is required for a psychiatric diagnose according to DSM-IV. However, even with a cut-off level of 3-5 symptoms, the observed association with IPV remained without any major change.

Studies III-IV

The main strength with studies III-IV is that data was derived from populations based samples of women. Another strength is that all the interviews were performed with well trained staff with extensive training and work experience. This is important when investigating such sensitive topics as IPV and suicidal behaviours. One major limitation of studies III-IV is that several variables measuring background factors, have changed throughout the data collection waves which heavily restricted the possibilities to choose variables which we could analyse and compare over time. For example, yearly income before tax was not included in the project until the second data wave in 1994/98, therefore this variable is not included in study IV. The changes also refer to the items on IPV which changed in 2013/15, as well as the items on suicidal ideation and attempts that changed in 1994/98. Although these main variables included in the thesis have not changed dramatically, this may still influence on the validity of the results. Another major limitation with studies III-IV is that despite having a longitudinal design, relatively few women have performed at least two long interviews (n=368). This hampered for example our possibilities to examine causal relationships between IPV and depression which was the original aim of the project.

In study III there was a lack of (i) additional variables on why the women who perceived the need for mental care did or did not seek primary care and (ii), the lack of precision of the item measuring 'perceived need for mental care'. In the first case, this means that we could not perform further analysis on possible reasons and

barriers to care among the women exposed to IPV. In the second case, it has limited the possibilities to compare our findings with other studies since they usually frame the question on 'perceived need' in a more specific way than the item we used. For example, a study by Lipsky and Caetano [142] used the following question: *"During past 12 months, was there any time when you needed mental health treatment our counselling for yourself but did not get it?"* Answering affirmatively to this gives the information that the respondent has a need for care but the need was not fulfilled. In our study the question: *"During the past 5 years, was there any time when you felt so mentally distressed that you needed to seek mental health care, or have you ever felt so mentally distressed that you could have benefitted from seeking help?"* does not give any information about whether the need for care was fulfilled or not. Thus, contrary to most other studies in this area, we cannot know whether the need for care of the women in our study was fulfilled or not.

One of the main limitations that may affect the results in study IV is the low response rate to the screening questionnaire in the last wave in 2013/15. Although we increased the catchment areas to include also parts of the northern and western districts, the response rate to the screening questionnaire was only 33.9%. As we do not have any background factors related to the none-responders born in 1993, we cannot analyse whether they differed from those who responded to the screening questionnaire. As has previously been discussed in the methods section, an earlier attrition analysis showed that there was no statistical difference between those who answered and not answered to the screening questionnaire. However, important to note is that this analysis was performed more than twenty years ago which means that we do not know whether we would obtain the same results today if we could perform an attrition analysis of those who did not answer to the screening questionnaire. Thus, we cannot know for certain if those who responded to the screening questionnaire differed from none-responders, and if this has affected the prevalence rates in study IV. However, taking into account previous research and analyses of none-responders [5, 136] it is reasonable to assume that none responders belonged to groups with lower socioeconomic position.

We looked closer into the differences between those who performed long and short interviews and found that those completing long interviews were older and had a higher educational attainment than those completing short interviews. As studies III-IV only consist in women who completed long interviews it is possible that our results on IPV and suicidal ideation and attempts are underestimated as younger age [24, 143] and low socioeconomic position [25, 144] are associated with IPV and suicidal behaviour and attempts. Therefore we cannot generalize our findings to the population at large, however we believe that our findings are a relatively good

representation of women in Gothenburg and other larger cities in the Nordic countries.

Apart from the limitations mentioned above, study III and in particular study IV are influenced by the same problem as study I. For instance, due to sample size, many of the sociodemographic factors in study III and IV had small cell frequencies which lead to wide confidence intervals. This will influence the precision of the associations found in our study. For the same reason we did not explore temporal changes in lifetime suicide attempts, nor the associations between sociodemographic factors and suicide attempts. Also, as already discussed in studies I-II, the screening questionnaire was in Swedish which may affect the generalizability of our results.

Ethical considerations

In study III, although the interviews were performed with well trained staff and in a way that made participants feel safe, we cannot exclude that there was an underreporting of physical IPV due to shame, embarrassment or fear for being disclosed by the partner. Previous research has found that women exposed to severe violence and who cohabit with the violent partner are less willing to participate in studies than those not cohabiting [145]. Both IPV and suicidal ideation and attempts may have been influenced by social desirability, i.e. the willingness to report confidential information which is likely to occur in response to socially sensitive questions [139, 146].

6 CONCLUSION

Both men and women were exposed to IPV, however the exposure showed different patterns depending on whether the time-frame was past year or earlier in life. The fact that a higher proportion of women than men reported exposure to physical IPV for earlier in life is in line with previous research and suggests that it may be less sensitive for women to respond to questions on IPV that occurred earlier in life compared to questions on exposure to IPV for past year. Findings from this thesis suggest that conclusions about differences in prevalence of exposure to and perpetration of IPV among men and women has to be drawn with caution, since acts based measures such as CTS2 and the WHO-VAWI instrument not measure the severity of violence nor the context, meaning or interpretation of the various acts.

In line with previous research we found that women exposed to IPV were more likely to have symptoms of depression, in addition we also found that exposure to controlling behaviour was associated with symptoms of depression. This indicates that women's exposure to controlling behaviour is an important factor to consider within the primary health care. Further, our findings suggest that although women exposed to IPV may feel the need for mental health care, there may be groups of women who perceive different barriers and therefore do not seek mental health care. Reasons for potential barriers to care should be further explored in qualitative studies.

Our results raise a general concern about an increasing trend in suicidal ideation among young and middle aged women. The findings in this thesis indicate that variations in the prevalence of suicidal ideation may depend on socioeconomic changes in the society at large. Larger population based studies are needed in order to investigate whether the increasing trend in suicidal ideation is seen in other parts of the country. Future studies should look closer into the relationship between potential changes in environmental conditions and patterns of suicidal ideation and attempts among women in the general population.

FUTURE PERSPECTIVES

Based on the findings from study I and the research that has emerged in high income countries since then, there is a need to go beyond descriptive studies describing the magnitude of IPV. This does not mean that we do not need to monitor the development of IPV through repeated large-scale surveys, however in high income countries, there is now a large amount of surveys demonstrating the prevalence as well as risk factors of IPV. More research needs to be carried out on the causes of violence with the aim to deepen the knowledge about risk and protective factors related to IPV. For instance, despite emerging studies, there is still a lack of qualitative studies that address factors contributing to IPV such as attitudes and beliefs among men [13]. There is also a lack of longitudinal studies aimed at providing more knowledge for future design of preventive interventions. Such studies could include policy changes, school based programmes and programmes that target perpetrators of IPV [13].

There is also a need for qualitative studies in a Swedish context that address the need for care and potential barriers that are faced among women exposed to IPV. These studies should explore potential barriers at individual level, as for example whether low disposal income, lack of time and knowledge about the health care system are barriers to seeking care. Future studies also need to consider the community level from the perspective of the women. For example, once the women do seek care, do they get the help they need? Are they referred to specialized services and how does the health care staff receive women exposed to IPV? These studies should further be performed from an intersectional perspective addressing different groups of women exposed to IPV.

Findings from study IV support the need for a clinical and public health focus on younger, socioeconomically disadvantaged women in order to prevent suicidal ideation and attempts. For example, it is important to maintain generous safety net programs in order to mitigate social disadvantage among those with low educational attainment to counteract increased suicidal ideation within this group. Further longitudinal population-based studies with large samples and more frequent measurement occasions are warranted to establish whether changes in suicidal ideation and attempts reflect changes in environmental conditions and life circumstances for women in the general population in Sweden. Future studies should closely monitor whether the increasing patterns of suicidal ideation persist and try to focus on mechanisms behind this trend. This

includes early access to help and early detection within the primary health care settings.

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REFERENCES

1. World Health Organization. Global status report on violence prevention 2014. Geneva, Switzerland; 2014.
2. Rutherford A, Zwi AB, Grove NJ, Butchart A. Violence: a priority for public health? (part 2). *J Epidemiol Community Health*. 2007;61(9):764-70.
3. Krug Etienne G DLL, Mercy James. A, Zwi Anthony. B, Lozano Rafael. The world report on violence and health. Geneva, Switzerland: World Health Organization (WHO); 2002.
4. World Health Organization. Preventing intimate partner and sexual violence against women: taking action and generating evidence. Geneva, World Health Organization; 2010.
5. Andersson TH, G; Lucas, S. Violence and health in Sweden. A National Prevalence Study on Exposure to Violence among Women and Men and its Association to Health. Uppsala: National Centre for Knowledge on Men's Violence Against Women (NCK);, 2014.
6. Klonsky ED, May AM, Saffer BY. Suicide, Suicide Attempts, and Suicidal Ideation. *Annual review of clinical psychology*. 2016;12:307-30.
7. World Health Organization. Preventing suicide - A global imperative. Geneva: World Health Organization; 2014.
8. Boyd A, Van de Velde S, Vilagut G, de Graaf R, O'Neill S, Florescu S, et al. Gender differences in mental disorders and suicidality in Europe: results from a large cross-sectional population-based study. *Journal of affective disorders*. 2015;173:245-54.
9. Nock MK, Borges G, Bromet EJ, Cha CB, Kessler RC, Lee S. Suicide and suicidal behavior. *Epidemiologic Reviews*. 2008;30(1):133-54.
10. Kjoller M, Helweg-Larsen M. Suicidal ideation and suicide attempts among adult Danes. *Scandinavian journal of public health*. 2000;28(1):54-61.
11. World Health Organization. Putting women first: Ethical and Safety Recommendations for Research on Domestic Violence Against Women. 2001.
12. Rutherford A, Zwi AB, Grove NJ, Butchart A. Violence: a glossary. *J Epidemiol Community Health*. 2007;61(8):676-80.

13. Garcia-Moreno C, Jansen HA, Ellsberg M, Heise L, Watts C. WHO Multi-country Study on Women's Health and Domestic Violence against women. Initial results on prevalence, health outcomes and women's responses. 2005.
14. World health Organization. Understanding and addressing violence against women. Geneva, Switzerland; 2012.
15. Flury M, Nyberg E, Riecher-Rossler A. Domestic violence against women: Definitions, epidemiology, risk factors and consequences. *Swiss Med Wkly*. 2010;140:w13099.
16. Griffin G. A dictionary of gender studies. In: Griffin G, editor. 1 ed: Oxford university press; 2017.
17. World Health Organization. Summary report. WHO Multi-country Study on Women's Health and Domestic Violence against Women. Initial results on prevalence, health outcomes and women's responses. Geneva World Health Organization; 2005.
18. Beck AT, Kovacs M, Weissman A. Assessment of suicidal intention: The Scale for Suicide Ideation. *Journal of consulting and clinical psychology*. 1979;47(2):343-52.
19. Hunt P, Backman G. Health systems and the right to the highest attainable standard of health. *Health and human rights*. 2008;10(1):81-92.
20. Beaglehole R, Bonita R, Horton R, Adams O, McKee M. Public health in the new era: Improving health through collective action. *Lancet*. 2004;363(9426):2084-6.
21. World Health Organization. The Social determinants of health [Available from: https://www.who.int/social_determinants/sdh_definition/en/].
22. Jan Van den B, Jonathan RB. *Epidemiology: Principles and Practical Guidelines*. Dordrecht: Springer Netherlands: Dordrecht; 2013.
23. Cramer RJ, Kapusta ND. A Social-Ecological Framework of Theory, Assessment, and Prevention of Suicide. *Front Psychol*. 2017;8:1756.
24. Kovess-Masfety V, Boyd A, Haro JM, Bruffaerts R, Villagut G, Lepine JP, et al. High and low suicidality in Europe: a fine-grained comparison of France and Spain within the ESEMeD surveys. *Journal of affective disorders*. 2011;133(1-2):247-56.

25. Fanous AH, Prescott CA, Kendler KS. The prediction of thoughts of death or self-harm in a population-based sample of female twins. *Psychological medicine*. 2004;34(2):301-12.
26. Capaldi DM, Knoble NB, Shortt JW, Kim HK. A Systematic Review of Risk Factors for Intimate Partner Violence. *Partner abuse*. 2012;3(2):231-80.
27. Michau L, Horn J, Bank A, Dutt M, Zimmerman C. Prevention of violence against women and girls: lessons from practice. *The Lancet*.385(9978):1672-84.
28. Connell RW, Pearse R. *Gender : In World Perspective*. Oxford: Oxford: Polity Press; 2014.
29. Anderson KL. Theorizing gender in intimate partner violence research. *Sex Roles*. 2005;52(11-12):853-65.
30. Johnson MP, Leone JM, Xu Y. Intimate Terrorism and Situational Couple Violence in General Surveys: Ex-Spouses Required. *Violence against women*. 2014;20(2):186-207.
31. World health Organization DoMHaSD. *Gender disparities in mental health2016-12-14 [cited 2016 14/ 12]*.
32. European Union Agency for Fundamental Rights. *Violence against women: an EU-wide survey. Main results*. Luxembourg: European Union Agency for Fundamental Rights,; 2014. Report No.: 978-92-9239-342-7.
33. Lundgren E HG, Westerstrand J, Kalliokoski A-M. *Slagen Dam: Mäns Våldmot kvinnor i jämställda Sverige-enomfångs undersökning (Captured queen - men´s violence against women in "equal" Sweden - a prevalence study)*. Umeå: Brottsoffermyndigheten; 2001.
34. Tjaden P, Thoennes N. *Prevalence and consequences of male-to-female and female-to-male intimate partner violence as measured by the national violence against women survey*. *Violence Against Woman*. 2000;6(2):142-61.
35. Breiding MJ, Black MC, Ryan GW. *Prevalence and risk factors of intimate partner violence in eighteen U.S. states/territories, 2005*. *American journal of preventive medicine*. 2008;34(2):112-8.
36. Haaland T, Clausen, S-E. & Shei, B. *Vold i parforhold-ulike perspektiver. Resultater fra den første landsdekkende undersökelsen i Norge*. Norsk institutt for by- og regionsforskning (NIBR). 2005.

37. Nybergh L, Taft C, Enander V, Krantz G. Self-reported exposure to intimate partner violence among women and men in Sweden: results from a population-based survey. *BMC public health*. 2013;13:845.
38. Straus MA. Blaming the Messenger for the Bad News about Partner Violence by Women: The Methodological, Theoretical, and Value Basis of the Purported Invalidity of the Conflict Tactics Scales. *Behavioral Sciences and the Law*. 2012;30(5):538-56.
39. Russell P, Dobash RED, Margo Wilson, Martin Daly. The Myth of Sexual Symmetry in Marital Violence. *Social Problems*,. 1992;Vol. 39, No. 1:pp. 71-91.
40. Carney M, Buttell F, Dutton D. Women who perpetrate intimate partner violence: A review of the literature with recommendations for treatment. *Aggression and Violent Behavior*. 2007;12(1):108-15.
41. Straus MA. Prevalence of violence against dating partners by male and female university students worldwide. *Violence against women*. 2004;10(7):790-811.
42. Archer J. Sex differences in physically aggressive acts between heterosexual partners: A meta-analytic review. *Aggression and Violent Behavior*. 2002;7(4):313-51.
43. Dobash RP, Dobash RE. Women's violence to men in intimate relationships: Working on a puzzle. *British Journal of Criminology*. 2004;44(3):324-49.
44. Straus M. Measuring Intrafamily Conflict and Violence: The Conflict Tactics (CT) Scales. *Journal of Marriage and the Family*. 1979;41(1):75-88.
45. Frye V, Manganello J, Campbell JC, Walton-Moss B, Wilt S. The distribution of and factors associated with intimate terrorism and situational couple violence among a population-based sample of urban women in the United States. *Journal of interpersonal violence*. 2006;21(10):1286-313.
46. Kimmel MS. "Gender symmetry" in domestic violence: A substantive and methodological research review. *Violence against women*. 2002;8(11):1332-63.
47. Archer J. Sex differences in aggression between heterosexual partners: A meta-analytic review. *Psychological Bulletin*. 2000;126(5):651-80.
48. Brown J. Male perpetrators, the gender symmetry debate, and the rejection-abuse cycle: implications for treatment. *American journal of men's health*. 2012;6(4):331-43.

49. Caldwell JE, Swan SC, Woodbrowm VD. Gender differences in intimate partner violence outcomes. *Psychology of violence*. 2012;2(1):42-57.
50. Chan KL. Gender Symmetry in the Self-Reporting of Intimate Partner Violence. *Journal of interpersonal violence*. 2012;27(2):263-86.
51. Romans S, Forte T, Cohen MM, Du Mont J, Hyman I. Who is most at risk for intimate partner violence?: A Canadian population-based study. *Journal of interpersonal violence*. 2007;22(12):1495-514.
52. Caman S, Kristiansson M, Granath S, Sturup J. Trends in rates and characteristics of intimate partner homicides between 1990 and 2013. *Journal of Criminal Justice*. 2017;49:14-21.
53. Johnson MP. Conflict and control: gender symmetry and asymmetry in domestic violence. *Violence against women*. 2006;12(11):1003-18.
54. Stark E. Looking Beyond Domestic Violence: Policing Coercive Control. *Journal of Police Crisis Negotiations*. 2012;12(2):199-217.
55. Walby S, Towers J. Untangling the concept of coercive control: Theorizing domestic violent crime. *Criminology and Criminal Justice*. 2018;18(1):7-28.
56. Ansara DL, Hindin MJ. Exploring gender differences in the patterns of intimate partner violence in Canada: a latent class approach. *J Epidemiol Community Health*. 2010;64(10):849-54.
57. Jewkes R. Violence against women III: intimate partner violence: causes and prevention. *Lancet*. 2002;359(9315):1423-9.
58. Escriba-Aguir V, Ruiz-Perez I, Montero-Pinar MI, Vives-Cases C, Plazaola-Castano J, Martin-Baena D. Partner violence and psychological well-being: buffer or indirect effect of social support. *Psychosom Med*. 2010;72(4):383-9.
59. Pico-Alfonso MA, Garcia-Linares MI, Celda-Navarro N, Blasco-Ros C, Echeburua E, Martinez M. The impact of physical, psychological, and sexual intimate male partner violence on women's mental health: depressive symptoms, posttraumatic stress disorder, state anxiety, and suicide. *Journal of women's health (2002)*. 2006;15(5):599-611.
60. Lacey KK, Sears KP, Matusko N, Jackson JS. Severe physical violence and Black women's health and well-being. *Am J Public Health*. 2015;105(4):719-24.

61. Zlotnick C, Johnson DM, Kohn R. Intimate partner violence and long-term psychosocial functioning in a national sample of American women. *Journal of interpersonal violence*. 2006;21(2):262-75.
62. Paykel ES, Brugha T, Fryers T. Size and burden of depressive disorders in Europe. *European Neuropsychopharmacology*. 2005;15(4):411-23.
63. Ayuso-Mateos JL, Nuevo R, Verdes E, Naidoo N, Chatterji S. From depressive symptoms to depressive disorders: The relevance of thresholds. *British Journal of Psychiatry*. 2010;196(5):365-71.
64. Western D, SpringerLink. *Gender-based Violence and Depression in Women: A Feminist Group Work Response* / [Elektronisk resurs]. New York, NY: Springer New York; 2013.
65. Lacey KK, Mouzon DM. Severe Physical Intimate Partner Violence and the Mental and Physical Health of U.S. Caribbean Black Women. *Journal of Women's Health*. 2016;25(9):920-9.
66. Bonomi AE, Anderson ML, Rivara FP, Thompson RS. Health outcomes in women with physical and sexual intimate partner violence exposure. *Journal of women's health (2002)*. 2007;16(7):987-97.
67. Devries KM, Mak JY, Bacchus LJ, Child JC, Falder G, Petzold M, et al. Intimate partner violence and incident depressive symptoms and suicide attempts: a systematic review of longitudinal studies. *PLoS medicine*. 2013;10(5):e1001439.
68. Johnson WL, Giordano PC, Longmore MA, Manning WD. Intimate partner violence and depressive symptoms during adolescence and young adulthood. *Journal of health and social behavior*. 2014;55(1):39-55.
69. Rivara FP, Anderson ML, Fishman P, Bonomi AE, Reid RJ, Carrell D, et al. Healthcare utilization and costs for women with a history of intimate partner violence. *American journal of preventive medicine*. 2007;32(2):89-96.
70. Fletcher J. The effects of intimate partner violence on health in young adulthood in the United States. *Social science & medicine (1982)*. 2010;70(1):130-5.
71. Hoelle RM, Elie MC, Weeks E, Hardt N, Hou W, Yan H, et al. Evaluation of healthcare use trends of high-risk female intimate partner violence victims. *The western journal of emergency medicine*. 2015;16(1):107-13.
72. Montero I, Martin-Baena D, Escriba-Aguir V, Ruiz-Perez I, Vives-Cases C, Talavera M. Intimate partner violence in older women in Spain: prevalence,

- health consequences, and service utilization. *J Women Aging*. 2013;25(4):358-71.
73. Brottsförebyggande Rådet (BRÅ). *Brott i nära relationer, en nationell kartläggning*. 2014.
 74. Bonomi AE, Anderson ML, Rivara FP, Thompson RS. Health care utilization and costs associated with physical and nonphysical-only intimate partner violence. *Health services research*. 2009;44(3):1052-67.
 75. Wefare TNBoHa. *Kostnader för våld mot kvinnor, en samhällsekonomisk analys*. 2006.
 76. Bauer HM, Rodríguez MM, Pérez-Stable EJ. Prevalence and determinants of intimate partner abuse among public hospital primary care patients. *Journal of general internal medicine*. 2000;15(11):811-7.
 77. Coker AL, Bethea L, Smith PH, Fadden MK, Brandt HM. Missed opportunities: Intimate partner violence in family practice settings. *Preventive medicine*. 2002;34(4):445-54.
 78. Ruiz-Pérez I, Plazaola-Castaño J, Vives-Cases C, Montero-Piñar MI, Escribà-Agüir V, Jiménez-Gutiérrez E, et al. Geographical variability in violence against women in Spain. *Gaceta Sanitaria*. 2010;24(2):128-35.
 79. Kimerling R, Baumrind N. Access to specialty mental health services among women in California. *Psychiatric Services*. 2005;56(6):729-34.
 80. Rodríguez M, Valentine JM, Son JB, Muhammad M. Intimate partner violence and barriers to mental health care for ethnically diverse populations of women. *Trauma, violence & abuse*. 2009;10(4):358-74.
 81. Wadsworth P, Kothari C, Lubwama G, Brown CL, Frank Benton J. Health and Health Care From the Perspective of Intimate Partner Violence Adult Female Victims in Shelters: Impact of IPV, Unmet Needs, Barriers, Experiences, and Preferences. *Family & community health*. 2018;41(2):123-33.
 82. Andersen RM. Revisiting the behavioral model and access to medical care: does it matter? *Journal of health and social behavior*. 1995;36(1):1-10.
 83. Andrade LH, Alonso J, Mneimneh Z, Wells JE, Al-Hamzawi A, Borges G, et al. Barriers to mental health treatment: Results from the WHO World Mental Health surveys. *Psychological medicine*. 2014;44(6):1303-17.

84. The Public Health Agency of Sweden. Suicidprevention 2017. En lägesrapport om det nationella arbetet med att förebygga självmord.; 2017.
85. Kosidou K, Magnusson C, Mittendorfer-Rutz E, Hallqvist J, Hellner Gumpert C, Idrizbegovic S, et al. Recent time trends in levels of self-reported anxiety, mental health service use and suicidal behaviour in Stockholm. *Acta psychiatrica Scandinavica*. 2010;122(1):47-55.
86. Bogdanovica I, Jiang G-X, Löhr C, Schmidtke A, Mittendorfer-Rutz E. Changes in rates, methods and characteristics of suicide attempters over a 15-year period: comparison between Stockholm, Sweden, and Würzburg, Germany. *Social psychiatry and psychiatric epidemiology*. 2011;46(11):1103-14.
87. The National Board of Health and Welfare. The National Board of Health and Welfare: Utvecklingen av psykisk ohälsa bland barn och unga vuxna Till och med 2016.
<https://www.socialstyrelsen.se/Lists/Artikelkatalog/Attachments/20785/2017-12-29.pdf>. Accessed 2 Jan 2019.
88. Forkmann T, Brähler E, Gauggel S, Glaesmer H. Prevalence of suicidal ideation and related risk factors in the German general population. *Journal of Nervous and Mental Disease*. 2012;200(5):401-5.
89. Pereira A, Cardoso F. Suicidal ideation in university students: Prevalence and association with school and gender. *Paideia*. 2015;25(62):299-306.
90. Conejero I, Lopez-Castroman J, Giner L, Baca-Garcia E. Sociodemographic Antecedent Validators of Suicidal Behavior: A Review of Recent Literature. *Current psychiatry reports*. 2016;18(10).
91. Spak F, Hallstrom T. Screening for alcohol dependence and abuse in women: description, validation, and psychometric properties of a new screening instrument, SWAG, in a population study. *Alcohol Clin Exp Res*. 1996;20(4):723-31.
92. Wilsnack RW, Wilsnack SC, Klassen AD. Women's drinking and drinking problems: patterns from a 1981 national survey. *Am J Public Health*. 1984;74(11):1231-8.
93. Spak L, Spak F, Allebeck P. Sexual abuse and alcoholism in a female population. *Addiction*. 1998;93(9):1365-73.
94. Andersson C, Eklund M, Sundh V, Thundal KL, Spak F. Women's patterns of everyday occupations and alcohol consumption. *Scandinavian journal of occupational therapy*. 2012;19(3):225-38.

95. Spak F, Hallstrom T. Prevalence of female alcohol dependence and abuse in Sweden. *Addiction*. 1995;90(8):1077-88.
96. Straus MA, Hamby SL, Boney-McCoy S, Sugarman DB. The revised conflict tactics scales (CTS2) development and preliminary psychometric data. *Journal of Family Issues*. 1996;17(3):283-316.
97. Graham-Kevan N, Archer J. Intimate terrorism and common couple violence. A test of Johnson's predictions in four British samples. *Journal of interpersonal violence*. 2003;18(11):1247-70.
98. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders: DSM-IV-TR*. Washington, DC: American Psychiatric Association; 2000.
99. Paykel ES, Myers JK, Lindenthal JJ, Tanner J. Suicidal feelings in the general population: a prevalence study. *The British journal of psychiatry : the journal of mental science*. 1974;124(0):460-9.
100. Meehan PJ, Lamb JA, Saltzman LE, O'Carroll PW. Attempted suicide among young adults: progress toward a meaningful estimate of prevalence. *Am J Psychiatry*. 1992;149(1):41-4.
101. Waern M, Spak F, Sundh V. Suicidal ideation in a female population sample. Relationship with depression, anxiety disorder and alcohol dependence/abuse. *Eur Arch Psychiatry Clin Neurosci*. 2002;252(2):81-5.
102. Sundin M, Spak F, Spak L, Sundh V, Waern M. Substance use/abuse and suicidal behavior in young adult women: a population-based study. *Substance use & misuse*. 2011;46(13):1690-9.
103. Östberg V, Lennartsson C. Getting by with a little help: The importance of various types of social support for health problems. *Scandinavian journal of public health*. 2007;35(2):197-204.
104. Bonomi AE, Thompson RS, Anderson M, Reid RJ, Carrell D, Dimer JA, et al. Intimate partner violence and women's physical, mental, and social functioning. *American journal of preventive medicine*. 2006;30(6):458-66.
105. Thompson RS, Bonomi AE, Anderson M, Reid RJ, Dimer JA, Carrell D, et al. Intimate partner violence: prevalence, types, and chronicity in adult women. *American journal of preventive medicine*. 2006;30(6):447-57.
106. Heise LL. Violence against women: an integrated, ecological framework. *Violence against women*. 1998;4(3):262-90.

107. Iverson KM, McLaughlin KA, Gerber MR, Dick A, Smith BN, Bell ME, et al. Exposure to Interpersonal Violence and Its Associations With Psychiatric Morbidity in a U.S. National Sample: A Gender Comparison. *Psychology of violence*. 2013;3(3):273-87.
108. Saylor J, Friedmann E, Lee HJ. Navigating complex sample analysis using national survey data. *Nursing research*. 2012;61(3):231-7.
109. Ackerman JM. The Relevance of Relationship Satisfaction and Continuation to the Gender Symmetry Debate. *Journal of interpersonal violence*. 2012;27(18):3579-600.
110. Hamberger LK, Larsen S, Campbell J. Methodological Contributions to the Gender Symmetry Debate and its Resolution. *Journal of Family Violence*. 2016;31(8):989-93.
111. Coker AL, Davis KE, Arias I, Desai S, Sanderson M, Brandt HM, et al. Physical and mental health effects of intimate partner violence for men and women. *American journal of preventive medicine*. 2002;23(4):260-8.
112. Stark E. Rethinking Coercive Control. *Violence against women*. 2009;15(12):1509-25.
113. Chang JC, Cluss PA, Burke JG, Hawker L, Dado D, Goldstrohm S, et al. Partner violence screening in mental health. *General Hospital Psychiatry*. 2011;33(1):58-65.
114. Coker AL, Smith PH, Thompson MP, McKeown RE, Bethea L, Davis KE. Social support protects against the negative effects of partner violence on mental health. *Journal of Women's Health*. 2002;11(5):465-76.
115. Fergusson DM, Horwood LJ, Ridder EM. Partner violence and mental health outcomes in a New Zealand birth cohort. *Journal of Marriage and Family*. 2005;67(5):1103-19.
116. Devries K, Watts C, Yoshihama M, Kiss L, Schraiber LB, Deyessa N, et al. Violence against women is strongly associated with suicide attempts: evidence from the WHO multi-country study on women's health and domestic violence against women. *Social science & medicine (1982)*. 2011;73(1):79-86.
117. Ruiz-Pérez I, Plazaola-Castaño J. Intimate partner violence and mental health consequences in women attending family practice in Spain. *Psychosomatic Medicine*. 2005;67(5):791-7.

118. Beydoun HA, Beydoun MA, Kaufman JS, Lo B, Zonderman AB. Intimate partner violence against adult women and its association with major depressive disorder, depressive symptoms and postpartum depression: a systematic review and meta-analysis. *Social science & medicine* (1982). 2012;75(6):959-75.
119. Anderson KL. Is partner violence worse in the context of control? *Journal of Marriage and Family*. 2008;70(5):1157-68.
120. Toews ML, Bermea AM. "I Was Naive in Thinking, 'I Divorced This Man, He Is Out of My Life'": A Qualitative Exploration of Post-Separation Power and Control Tactics Experienced by Women. *Journal of interpersonal violence*. 2015.
121. Bengtsson-Tops A, Tops D. Self-reported consequences and needs for support associated with abuse in female users of psychiatric care. *International Journal of Mental Health Nursing*. 2007;16(1):35-43.
122. Miller E, Decker MR, Raj A, Reed E, Marable D, Silverman JG. Intimate partner violence and health care-seeking patterns among female users of urban adolescent clinics. *Maternal and child health journal*. 2010;14(6):910-7.
123. Wilson KS, Silberberg MR, Brown AJ, Yaggy SD. Health needs and barriers to healthcare of women who have experienced intimate partner violence. *Journal of Women's Health*. 2007;16(10):1485-98.
124. Miret M, Caballero FF, Huerta-Ramírez R, Moneta MV, Olaya B, Chatterji S, et al. Factors associated with suicidal ideation and attempts in Spain for different age groups. Prevalence before and after the onset of the economic crisis. *Journal of affective disorders*. 2014;163:1-9.
125. Baca-Garcia E, Perez-Rodriguez MM, Keyes KM, Oquendo MA, Hasin DS, Grant BF, et al. Suicidal ideation and suicide attempts in the United States: 1991-1992 and 2001-2002. *Mol Psychiatry*. 2010;15(3):250-9.
126. Kessler RC, Berglund P, Borges G, Nock M, Wang PS. Trends in suicide ideation, plans, gestures, and attempts in the United States, 1990-1992 to 2001-2003. *Journal of the American Medical Association*. 2005;293(20):2487-95.
127. Renberg ES. Self-reported life-weariness, death-wishes, suicidal ideation, suicidal plans and suicide attempts in general population surveys in the north of Sweden 1986 and 1996. *Social psychiatry and psychiatric epidemiology*. 2001;36(9):429-36.
128. De Leo D, Cerin E, Spathonis K, Burgis S. Lifetime risk of suicide ideation and attempts in an Australian community: Prevalence, suicidal process, and help-seeking behaviour. *Journal of affective disorders*. 2005;86(2-3):215-24.

129. Phillips JA, Hempstead K. Differences in U.S. Suicide Rates by Educational Attainment, 2000-2014. *American journal of preventive medicine.* 2017;53(4):e123-e30.
130. Lager A, Berlin M, Heimerson I, Danielsson M. Young people's health: Health in Sweden: The National Public Health Report 2012. Chapter 3. *Scandinavian journal of public health.* 2012;40(9 Suppl):42-71.
131. Eskin M, Sun JM, Abuidhail J, Yoshimasu K, Kujan O, Janghorbani M, et al. Suicidal behavior and psychological distress in university students: A 12-nation study. *Archives of Suicide Research.* 2016;20(3):369-88.
132. Gonçalves A, Sequeira C, Duarte J, Freitas P. Suicide ideation in higher education students: influence of social support. *Atención Primaria.* 2014;46:88-91.
133. (SCB) SS. Statistics Sweden (SCB): Var fjärde i Sverige är högutbildad. <http://www.scb.se/hitta-statistik/sverige-i-siffror/utbildning-jobb-och-pengar/befolkningens-utbildning/>. Accessed 8 Oct 2018.
134. The Public Health Agency of Sweden: Folkhälsan i Sverige Årsrapport 2014. <https://www.folkhalsomyndigheten.se/contentassets/30d592b0c7834256bd893e1ba0d56b6c/folkhalsan-i-sverige-arsrapport-2014.pdf>. Accessed 8 Oct 2018.
135. Depaulo BM, Morris WL. TARGET ARTICLE: Singles in Society and in Science. *Psychological Inquiry.* 2005;16(2-3):57-83.
136. Strandhagen E, Berg C, Lissner L, Nunez L, Rosengren A, Torén K, et al. Selection bias in a population survey with registry linkage: Potential effect on socioeconomic gradient in cardiovascular risk. *European Journal of Epidemiology.* 2010;25(3):163-72.
137. Finnbogadottir H, Dykes AK, Wann-Hansson C. Prevalence of domestic violence during pregnancy and related risk factors: a cross-sectional study in southern Sweden. *BMC Womens Health.* 2014;14:63.
138. Galea S, Tracy M. Participation Rates in Epidemiologic Studies. *Annals of epidemiology.* 2007;17(9):643-53.
139. Chan KL. Gender differences in self-reports of intimate partner violence: A review. *Aggression and Violent Behavior.* 2011;16(2):167-75.
140. Hester M. Portrayal of Women as Intimate Partner Domestic Violence Perpetrators. *Violence against women.* 2012;18(9):1067-82.

141. Fried EI. The 52 symptoms of major depression: Lack of content overlap among seven common depression scales. *Journal of affective disorders*. 2017;208:191-7.
142. Lipsky S, Caetano R. Impact of intimate partner violence on unmet need for mental health care: results from the NSDUH. *Psychiatric services (Washington, DC)*. 2007;58(6):822-9.
143. Caetano R, Vaeth PAC, Ramisetty-Mikler S. Intimate partner violence victim and perpetrator characteristics among couples in the United States. *Journal of Family Violence*. 2008;23(6):507-18.
144. Dougé N, Lehman EB, McCall-Hosenfeld JS. Social Support and Employment Status Modify the Effect of Intimate Partner Violence on Depression Symptom Severity in Women: Results from the 2006 Behavioral Risk Factor Surveillance System Survey. *Women's Health Issues*. 2014;24(4):e425-e34.
145. McNutt LA, Lee R. Intimate partner violence prevalence estimation using telephone surveys: Understanding the effect of nonresponse bias. *American Journal of Epidemiology*. 2000;152(5):438-41.
146. Althubaiti A. Information bias in health research: Definition, pitfalls, and adjustment methods. *Journal of Multidisciplinary Healthcare*. 2016;9:211-7.