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# Harm from others' drinking: reported negative experiences and predictors in general population surveys

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# HARM FROM OTHERS' DRINKING: REPORTED NEGATIVE EXPERIENCES AND PREDICTORS IN GENERAL POPULATION SURVEYS

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## THESIS FOR DOCTORAL DEGREE (Ph.D.)

By

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# POPULAR SCIENCE SUMMARY OF THE THESIS

The alcohol consumption of one person can cause hardship and suffering among family members, friends, colleagues, and even strangers. Research that focuses on harm from others' drinking is important from a public health perspective as it contributes with a more comprehensive picture of the effects of alcohol in society. Given that the majority of the adult population in both Sweden and other European countries consumes alcohol, it is of particular interest to study such harm there. The present thesis investigates some areas of harm from others' drinking using surveys of the adult general population. The results are based on the survey participants' answers to questions about experiences of harm from others' drinking that had occurred within the preceding 12 months.

About one in four participants (25%) across the European countries reported that they had experienced others' alcohol-related aggressive behavior, such as serious arguments, abuse, or physical harm. In the Swedish survey, between 1% and 5% reported severe harm, i.e., being harmed "a lot," and the results also suggested that recurrent harm was common.

There are factors at both the individual level and the country level that influence the risk of experiencing harm from others' drinking. For example, it is more common among women than among men to experience severe and recurrent harm and it is more common that harm occurs in close relationships, for instance within a family, than in more distant relationships. The results also indicated that women who were under the influence of alcohol were more susceptible to severe harm from the drinking of those close to them than men under the influence were. Further, aggressive harm from others' drinking depended on drinking patterns at the country level, with an increased risk of harm in countries where drinking to intoxication was more common.

The type of survey appeared to affect the estimated occurrence of some types of harm from others' drinking. When a telephone survey guided by an interviewer was used, the estimates of harm from strangers' drinking were higher compared with when a paper-and-pen and web survey was used, where the participants filled in their answers themselves. It is important to consider this effect when comparing estimates of harm from strangers' drinking from different types of surveys.

The thesis underlines that it is important to study harm from others' drinking to better understand the total extent of negative effects of alcohol in society. The fact that negative consequences from alcohol consumption extend beyond the individual drinker provides an argument for alcohol control policies. It is important that policymakers include the perspective of harm from others' drinking when planning and implementing alcohol policies aimed at reducing alcohol-related consequences.

# POPULÄRVETENSKAPLIG SAMMANFATTNING

*Negativa konsekvenser av andras drickande: rapporterade negativa upplevelser och prediktorer i allmänna befolkningsundersökningar*

En persons alkoholkonsumtion kan orsaka problem och lidande för familj, vänner och kollegor, men även för personer som den inte har någon relation till. Forskning som fokuserar på negativa konsekvenser av andras drickande är viktigt ur ett folkhälsoperspektiv eftersom det bidrar till en mer heltäckande bild av effekterna av alkohol i samhället. Givet att majoriteten av vuxna i Sverige och andra europeiska länder dricker alkohol, är det särskilt intressant att studera sådana problem här. Den här avhandlingen undersöker några områden av problem från andras drickande, baserat på frågeundersökningar bland den vuxna befolkningen. Resultaten baserar sig på svarspersonernas svar på frågor om upplevda konsekvenser som har skett inom de senaste 12 månaderna.

Ungefär en av fyra svarspersoner (25%) i de europeiska länderna uppgav att de hade upplevt alkoholrelaterat aggressivt beteende från andra, som till exempel gräl, kränkningar och fysiska skador. I den svenska undersökningen uppgav mellan 1 och 5% allvarliga problem, det vill säga att de påverkats ”mycket negativt”. Resultatet indikerar även att det är vanligt med återkommande problem.

Det finns faktorer på olika samhällsnivåer som påverkar risken att utsättas för konsekvenser av andras drickande. Till exempel är det vanligare bland kvinnor än män att uppleva allvarliga och återkommande problem. Det är också mer vanligt att problem uppstår inom nära relationer, så som inom familjen, jämfört med i mindre nära relationer. Resultatet pekar också på att alkoholpåverkade kvinnor är mer mottagliga, än alkoholpåverkade män, för att utsättas för allvarliga problem av andras drickande från personer de har en nära relation till. Dessutom påverkar dryckesvanorna på landnivå risken att utsättas för andras alkoholrelaterade aggressiva beteende. Risken ökar i länder där det är vanligare med berusningsdrickande.

Metoden som används för att samla in frågeundersökningen visade sig ha effekt på den uppmätta omfattningen av vissa typer av konsekvenser från andras drickande. När en telefonundersökning användes som insamlingsmetod, med en intervjuare som ställde frågor, uppmättes högre andelar av problem från okända personers drickande. Det var jämfört med när en pappers- och webbenkät användes, där svarspersonerna själva fick fylla i formuläret. Det är viktigt att beakta den här metodeffekten när omfattningen av konsekvenser från okända personers drickande jämförs mellan undersökningar med olika insamlingsmetoder.

Avhandlingen understryker vikten av att studera problem från andras drickande för att bättre förstå den totala omfattningen av negativa effekter av alkohol i samhället. Att negativa konsekvenser av alkohol sträcker sig längre än till den enskilde individen som dricker, bidrar med argument för restriktiva alkoholpolitiska insatser. Det är viktigt att beslutsfattare beaktar det här perspektivet vid införandet av åtgärder som syftar till att minska alkoholrelaterade problem.

# ABSTRACT

**Background:** Alcohol consumption is among the top risk factors for ill health and premature death and can also lead to a range of problems in relation to other people such as family members, friends, co-workers, and among strangers in public places. Research into harm from other people's drinking has increased substantially in the last decade and has developed into a separate research field. Previous research has shown that a comprehensive picture of alcohol-related problems in society is only obtained if harm from others' drinking is taken into account. Moreover, the high prevalence of harm from others' drinking in many populations suggests that this is relevant to address from a public health perspective.

**Overall aims:** The aim of the present thesis was to add to this research field by investigating some areas of harm from others' drinking and related predictors in the context of the adult general population of Sweden and 19 European countries. The areas included different types of self-reported severe harm from others' drinking and the effect of survey administration mode on self-reported experiences of harm from others' drinking. Related predictors included sociodemographic factors, relationship to the drinker causing harm, one's own drinking habits, and country-level drinking patterns.

**Data and method:** Data stemmed from comprehensive self-reported adult general population surveys conducted in Sweden (the Habits and Consequences survey) and across 19 European countries (the RARHA SEAS survey). Three of the studies were based on cross-sectional data and one on longitudinal data. To assess the association between self-reported harm from others' drinking and potential predictors, multiple types of binary regression models were used (Poisson regression with robust error variance, logistic regression, multi-level regression).

**Results:** The prevalence of severe harm, i.e., being harmed "a lot," from a known or unknown drinker in the preceding 12-month period ranged between 1.2% and 4.9% in the adult general population of Sweden (**Study I**). Problems were reported more often by women than men. The correlation between one's own drinking habits and signs of alcohol dependence and experiencing severe harm from a known person's drinking was modified by gender. One's own drinking habits, i.e., higher drinking frequency and higher frequency of heavy episodic drinking, increased the risk of severe harm from a known person's drinking among women, but not among men. Having signs of one's own alcohol dependence increased the likelihood to report such harm among both men and women, although the association was much stronger among women.

Among Swedish adults reporting harm from a known person's drinking in a baseline survey, the majority (52.5%) reported harm again one year later (**Study II**). An increased risk of reporting one-year persistence of such harm was found among women, among those who reported harm within closer relationships, e.g., with a partner, parent, or another household member, and among those perceiving harm as more severe at baseline.

Experiences of others' alcohol-related aggressive behavior in the preceding 12-month period were reported by one in four men and women across 19 European countries (**Study III**). A higher prevalence of heavy episodic drinking at the country level increased the risk of experiencing aggression-related harm at the individual level. However, only a small part of the variance of such harm was explained by the country-level heavy episodic drinking prevalence.

Prevalence estimates of harm from strangers' drinking are likely to be higher in interviewer-administered surveys (telephone interviews) compared with in self-administered surveys (paper-and-pencil or web questionnaires) (**Study IV**). No such difference between survey modes was found regarding reports of harm from a known person's drinking.

**Discussion and conclusion:** This thesis has documented new findings in several areas of harm from others' drinking and related influencing factors at the individual and the country level in Sweden and across European countries. The thesis reinforces the idea that alcohol consumption may not only have consequences for the drinkers themselves, but may also inflict severe problems in interactions with other persons. That negative consequences from alcohol consumption extend beyond the individual drinker is important knowledge from a public health perspective and should be considered in alcohol policies.

## LIST OF SCIENTIFIC PAPERS

I. Sundin E, Galanti MR, Landberg J, Ramstedt M. (2021). Severe harm from others' drinking: A population-based study on sex differences and the role of one's own drinking habits. *Drug and Alcohol Review, 40*(2), 263-71.

II. Sundin E, Galanti MR, Room R, Landberg J, Ramstedt M. Predictors of one-year persistence of harm from a known person's drinking: Findings from a longitudinal population-based study in Sweden. Manuscript.

III. Sundin E, Landberg J, Galanti MR, Room R, Ramstedt M. (2022). Country-level heavy episodic drinking and individual-level experiences of harm from others' drinking-related aggression in 19 European countries. *European Addiction Research, 28*(2), 134-42.

IV. Sundin E, Landberg J, Galanti MR, Room R, Ramstedt M. (2018). Are differences in population prevalence of alcohol's harm to others related to survey administration mode? *Drug and Alcohol Review, 37*(3), 375-81.

# CONTENTS

# LIST OF ABBREVIATIONS

| | |
|---|---|
| 95% CI | 95% confidence interval |
| AP | Attributable proportion |
| APC | Consumption of alcohol per capita |
| AHTO | Alcohol's harm to others |
| CATI-ambitious | Computer-assisted telephone interviews performed by trained interviewers with a more ambitious procedure |
| CATI-standard | Standardized computer-assisted telephone interviews |
| GBD | Global Burden of Disease |
| HED | Heavy episodic drinking |
| IAQ | Interviewer-administered questionnaires |
| N/A | Not applicable |
| OR | Odds ratio |
| RARHA SEAS | The Joint Action on Reducing Alcohol-Related Harm Standardized European Alcohol Survey |
| RERI | Relative excess risk due to interaction |
| RR | Relative risk |
| SAQ | Self-administered questionnaires |
| WHO | World Health Organization |

# 1 INTRODUCTION

Despite giving pleasure to many people, alcohol consumption is well-established not only as a risk factor for harm to drinkers themselves (GBD 2017 Risk Factor Collaborators, 2018), but also as causing harm to individuals in the drinkers' surroundings (Nutt et al., 2010). Such harm may occur within the family, among friends, at work, or from complete strangers in public places. A substantial part of the costs of alcohol for the society is connected to harm from others' drinking in terms of, e.g., decreased quality of life and out-of-pocket expenses for relatives and victims of alcohol-related crime (Laslett et al., 2010). This form of alcohol-related harm has become termed alcohol's harm to others (AHTO), although several different terms exist in the literature, e.g., collateral damage, externalities, second-hand effects, and social harm (Giesbrecht et al., 2010; Warpenius et al., 2016). The core meaning of these terms refers to problems related to alcohol consumption that go beyond the individual drinker.

AHTO encompasses a wide range of problems of differing severity and in various contexts. A useful conceptualization is offered by Laslett and Room and colleagues (Laslett et al., 2010; Room et al., 2010; Room et al., 2016). They distinguish between harms from others' drinking at the societal level in terms of costs for social institutions, e.g., healthcare systems, and harms emerging at the individual level, i.e., caused by direct social interaction in private or public settings. The present thesis is mainly focused on the latter and takes an epidemiological perspective to study the experiences of AHTO in different groups of individuals.

Harm from others' drinking was long neglected in epidemiological research on alcohol-related problems, where the main focus was to assess the role of alcohol in various health problems for the drinker (Warpenius et al., 2016). Within the emerging epidemiological research tradition on AHTO, it is now known that restricting the scope to health problems affecting drinkers significantly underestimates drinking-related harm in a population. According to some studies, the problems that arise for people in drinkers' social circles and the community at large are even greater than those that occur for the drinkers themselves (Nutt et al., 2010).

Another important finding in research on AHTO is that those affected are not the same people as those negatively affected by their own drinking. The most obvious example is in gender: women are more often and more seriously affected by many types of harm from others' drinking than men (Huhtanen et al., 2012), which is in contrast to health problems, where the prevalence is higher among men (GBD 2017 Risk Factor Collaborators, 2018). Hence, research suggests that it is necessary to take AHTO into account to obtain a more comprehensive picture of the epidemiology of alcohol-related harm in the population.

Alcohol consumption is common in many societies, with the largest proportion of consumers found in Europe, where the majority of the population (60%) drinks alcohol (World Health Organization, 2018). This suggests that many individuals are at risk of being harmed by the

drinking of someone else, which has also been verified in research. In a study of 17 European countries, more than 60% of the population had experiences of harm from others' drinking in the preceding 12 months (Callinan et al., 2016).

Widespread drinking and AHTO provide an additional argument for the public health perspective to control and restrict alcohol consumption and related harm through state legislation. In short, this perspective calls for a policy that affects the whole population, not only the heavy drinkers – an idea supported by numerous studies showing a strong association between population drinking and alcohol-related harm in a society. However, the public health perspective has sometimes been criticized for allowing the state to restrict individual freedom (Skog, 1999). A main argument used is that individuals, not the state, should be responsible for the consequences of their own drinking. However, Skog (1999) argued that a strong case for the public health perspective is made when harm from others' drinking and related predictors are documented – and alcohol evidently creates harm not only for the individual drinker. Thus, epidemiological research on AHTO can be regarded as a way of developing the public health perspective on alcohol by offering a wider empirical justification for the use of the perspective.

The overall aim of this thesis was to improve knowledge of the occurrence and related predictors of AHTO in the adult population, using the major research tradition in this field, namely general population surveys (Rossow, 2015). A special focus was to increase knowledge of severe types of AHTO, but effects of survey mode when assessing AHTO in general population surveys were also addressed.

# 2 CONCEPTUAL FRAMEWORK

The following sections give an overview of epidemiological research on AHTO among adults, with a focus on the tradition of general population surveys. A short description of the epidemiological perspective on alcohol consumption and harm is presented first, followed by an introduction to the AHTO perspective.

## 2.1 ALCOHOL CONSUMPTION AND HARM

Studying alcohol consumption and related social and health outcomes in a population often requires an epidemiological study design. Epidemiology can be defined as the study of the occurrence and distribution of diseases and other health-related conditions in a population. It also covers related factors that influence and determine diseases and other health-related conditions and the application of this information to reduce and prevent such conditions (Gordis, 2014). In the area of alcohol and harm, the epidemiological approach has focused on the role of alcohol in harm to the entire population (the population level), as well as in subgroups of the population. Epidemiology is also concerned with ways of preventing harms in the population, an issue that will not be discussed in this thesis.

The role of alcohol in social and health harms is hard to establish. Although many harms would not have occurred without drinking, alcohol is not always the single cause, acting together with many other factors. The issue of causality is particularly difficult in AHTO, since the exposure of alcohol consumption and the harm occur in different persons. Consequently, information about alcohol consumption in the person causing harm is often lacking in the current survey-based research literature focusing on the person experiencing harm. Although the term AHTO suggests a causal relationship, establishing causality is a challenge. As mentioned by Rossow and Ramstedt (2016), the possibility to establish causality depends on many factors, e.g., the type of harm being experienced, effects of drinking over a short or long time, the relationship between the persons experiencing and causing the alcohol-related harm, and who reports the drinking and the harm.

Although establishing causality in research on AHTO is hard, investigating such harm in the population is important. For instance, experiences of harm from others' drinking are often attached to stigma (Hellum et al., 2022; Orford, 2017) and individuals with such experiences seldom have a collective voice to put these problems on the agenda (Orford et al., 2013). Therefore, investigating individual perceptions of harm is essential to broaden our understanding of the negative consequences of alcohol consumption in society. A major goal with this research field is to make these harmful experiences visible from a population perspective and across subgroups of the population.

### 2.1.1 Harm to the drinker

Most epidemiological research on the relationship between alcohol consumption and harm has concentrated on harm to the drinker, especially health effects. A major tradition consists of studies assessing the role of alcohol in various health problems in prospective and case-control studies. By summarizing these findings in meta-analyses, knowledge of health problems from drinking has improved substantially in recent years and forms the basis of the World Health Organization's (WHO) Global Burden of Disease (GBD) study (Murray et al., 2017). The GBD study has become the major source of knowledge for understanding the causes and risk factors of health loss in and across societies, including alcohol consumption. According to the GBD study, alcohol consumption is one of the seven most harmful risk factors for ill health and death around the world, accounting for 1.6% and 6.0% of the global disease and injury burden in terms of disability-adjusted life-years, for women and men, respectively (GBD 2016 Alcohol Collaborators, 2018).

Another influential epidemiological approach to study the relationship between drinking and harm is the time series approach, assessing associations between drinking and various forms of adverse consequences (Norström et al., 2005). Although this tradition usually focuses on harms to the drinker, e.g., liver cirrhosis, some studies have examined outcomes that today would be recognized as including AHTO, such as drunk driving, sickness absence, and violence. These studies have been important to promote a public health perspective on the prevention of alcohol-related problems by showing that alcohol-related problems decline when population drinking is reduced.

The association between drinking and harm has also been assessed in general population surveys by relating measures of self-reported drinking to various adverse consequences of drinking (Dawson et al., 2000). This approach captures a broader range of harm than those measured in health registers and covers harm affecting a large proportion of the population.

### 2.1.2 Harm from others' drinking

Earlier research on harm from others' drinking was restricted to some specific areas such as drunk driving (Irwin et al., 2017; Kelly et al., 2004; Taylor et al., 2010), alcohol-related violence (Campbell et al., 2009; Foran et al., 2008; Murdoch et al., 1990), and problems from prenatal exposure to alcohol due to consumption during pregnancy (Lange et al., 2017; Popova et al., 2016; Riley et al., 2011). A broader and more coherent approach including epidemiology has emerged only in the last 10–20 years, with the book "Mapping the social consequences of alcohol consumption" (Klingemann et al., 2001) being a landmark. In this book, AHTO was termed "social harm" and was presented as the forgotten dimension of alcohol-related problems. Several chapters highlighted many of the harms that would be studied in the tradition of general population surveys on AHTO: problems from friends' and relatives' drinking as well as harm in public places. Subsequently, an epidemiological research tradition of AHTO based on general population surveys has developed (Room et al., 2016).

Cross-sectional general population surveys are important for public health planning as they provide information about certain health conditions in the population and in subgroups thereof (Ahrens et al., 2014). In addition, survey findings can help policymakers make informed decisions for policies and to prioritize in allocation of resources. This is also the case regarding harm from others' drinking. By conducting general population surveys, researchers can reveal these types of harm and add to the overall view of alcohol-related harm in the society. The first survey-based AHTO study was published in the mid-1980s (Fillmore, 1985), but it was not until around 2000 that the number of studies started to increase significantly (Giesbrecht et al., 2010).

Other approaches capturing AHTO outside the scope of the present thesis are, e.g., studies regarding children of parents with alcohol abuse/dependence and the subsequent risk of negative outcomes for the children. This includes studies based on parents with an alcohol-related diagnosis recorded in a health register (Berg et al., 2016; Jaaskelainen et al., 2016; Rossow et al., 2015) and surveys targeting adolescents asking about experiences of parents with drinking problems (Elgan et al., 2011; Pisinger et al., 2016; Ramstedt et al., 2022). However, since the focus of this thesis is on the adult population, these types of studies will not be discussed in this review.

#### *2.1.2.1 Experiencing various harms in different social roles with differing impact*

The emerging survey tradition in studying harm from others' drinking is based on a conceptualization by Laslett and Room and colleagues (Laslett et al., 2010; Room et al., 2010). The focus is on harm occurring within social interactions between individuals, with distinctions made between harms occurring in different social roles in the private and public sphere. Harms in the private sphere often involve problems arising from social interactions between known persons, e.g., family members, friends, and colleagues, whereas harms in the public sphere often occur as a result of meeting drunk strangers in public places. Although less common, harm from a known person may occur in the public sphere and harm from strangers may occur in the private sphere.

Following this conceptualization, a number of studies have been published covering different aspect of harm from others' drinking in different populations. However, in addition to distinguishing between harm from a known person and strangers, and harm occurring in private and public spheres, it is relevant to consider that different types of harm from others' drinking have more or less severe impact on the harmed person (Grittner et al., 2021; Rossow et al., 2016; Stanesby et al., 2020). Another dimension that should also be considered is whether the harm occurred as a single or occasional event, or if the harm was persistent over a period of time. The exposure to AHTO may be short-term with varying impact or long-term with large impact on well-being. These additional dimensions are important to consider when interpreting the relevance of the results from general population surveys on harm from others' drinking.

In Table 1, examples of types of harm from others' drinking are presented, grouped based on different harm dimensions. The dimensions include whether the harm is caused by a known person or a stranger and if the harm is likely to have severe or non-severe impact. Another dimension is whether the harm is persistent over time or not. The examples are derived from previous survey-based studies on AHTO and include the most common types of harms included in the literature, such as different types of problems occurring among family and friends, problems at the workplace, and nuisances from known persons and from strangers (see, e.g., Ferris et al., 2011; Laslett et al., 2011; Mäkelä et al., 1999; Rossow, 2015).

Examples of harms with less severe impact are occasional nuisances, such as a family member failing to do their household duties because of their drinking or having a social occasion negatively affected because of a friend's improper alcohol-related behavior. Less severe alcohol-related occasional nuisances from drunk strangers could be difficulties sleeping due to drunken noises or being annoyed at drunk strangers vomiting or urinating in public places. However, if such nuisances are experienced frequently, they may lead to severe harm. For instance, if a person's sleep is interrupted frequently due to strangers making noise in the streets, it might lead to sleep deprivation.

An example of severe harm from a known person's drinking is family problems (Grittner et al., 2021; Stanesby et al., 2020), such as being threatened by or afraid of a spouse due to their drinking behavior or financial troubles due to expenses for alcohol or loss of income. Other examples of severe harm from strangers' drinking are being a victim of a traffic accident with an intoxicated unknown driver, and being a victim of alcohol-related violent behavior from a stranger. These types of severe harms may be persistent over time, e.g., if the traffic accident causes long-term harm, or not, e.g., if the violent behavior only causes severe damage at the time of the event, without causing long-term effects.

It should be noted that some of the examples of harm described in Table 1 could be caused by either a stranger or a known person, although they are only described in one of these dimensions in the table. One such example is being in a traffic accident, which could be caused by either a known or an unknown intoxicated driver.

**Table 1.** Examples of different types of harm from others' drinking, grouped as harm from a known person or a stranger, as severe and non-severe[a] harm, and as persistent and non-persistent harm.

| **Type of harm** | **Harm from a known person's drinking** | **Harm from a stranger's drinking** |
|---|---|---|
| **Severe harm** | | |
| Persistent | • *Family problems occurring regularly over time:*<br>a) children witnessing violence in the home, b) spouses or partners feeling threatened or afraid at home, c) financial troubles in the family. | • *Experiencing traumatic events with long-term consequences:*<br>a) being involved in a traffic accident where the driver was intoxicated, b) physical harm.<br>• *Nuisances occurring regularly over time:*<br>a) being kept awake at night by drunken noise. |
| Non-persistent | • *Family problems occurring occasionally:*<br>a) children witnessing violence in the home, b) spouses or partners feeling threatened or afraid at home, c) financial troubles in the family. | • *Experiencing traumatic events with short-term consequences:*<br>a) being involved in a traffic accident where the driver was intoxicated, b) physical harm. |
| **Non-severe harm** | | |
| Persistent | • *Nuisances occurring regularly over time:*<br>a) a family member failing doing house duties, b) a social occasion being negatively affected by a known drinker, c) having to "cover" for a colleague at work. | • *Nuisances occurring regularly over time:*<br>a) having clothes or other belongings ruined, b) being annoyed by vomiting, urinating, or littering. |
| Non-persistent | • *Occasional nuisances:*<br>a) a family member failing doing house duties, b) a social occasion being negatively affected by a known drinker, c) having to "cover" for a colleague at work. | • *Occasional nuisances:*<br>a) having clothes or other belongings ruined, b) being annoyed by vomiting, urinating, or littering, c) being kept awake at night by drunken noise. |

[a] Assumptions about severe and non-severe harm are based on studies investigating perceived severity of harm from others' drinking (Grittner et al., 2021; Stanesby et al., 2020).

#### *2.1.2.2 Predictors of harm from others' drinking at different societal levels*

What influences the risk of experiencing harm from others' drinking is embedded at different levels of society, from the individual and regional levels to the national level. Wilsnack and colleagues (2018) have introduced a conceptual model describing social factors affecting the harm from others' drinking, from social circles at the individual level of friends and families, and drinking contexts in the local area, to alcohol policies and drinking patterns at the country level. They further suggest that factors may interact within and across the different levels of society. In the present research literature based on cross-sectional population surveys, the most common focus has been on individual-level harm and predictors, whereas few studies have addressed influencing factors at the local, regional, and country level.

Examples of influencing factors at the societal and individual levels are presented in Figure 1. The risk of experiencing harm from others' drinking requires meeting and interacting with other people who drink alcohol. It is likely that the more exposure one has to other people who drink alcohol, the more likely one is to experience related problems. At the societal level, alcohol policies are likely to influence drinking patterns through, e.g., availability restrictions and pricing of alcohol (World Health Organization, 2010). Thus, the risk of experiencing alcohol-related harm may be influenced by policy measures at the country level.

At the individual level, there may be subgroups that more often meet people who drink alcohol. One example is younger people, who drink more often and more frequently drink large quantities (Moskalewicz et al., 2016; World Health Organization, 2018), and therefore may be at higher risk of experiencing harm from others' drinking. In addition, own drinking habits may determine the risk of exposure to other people who drink alcohol, as previous research has suggested that an individual's level of alcohol consumption is predicted by the drinking patterns in their social network (Ali et al., 2010; Rosenquist et al., 2010).

Other factors that may play a role in experiences of harm from others' drinking are gender and social inequalities. In terms of their own alcohol-related problems, individuals with a low socioeconomic position are disproportionally more likely to suffer from alcohol-related diseases and death (Probst et al., 2020). Men and women generally have different drinking patterns, with men drinking more (World Health Organization, 2018), but the effect of gender in alcohol-related harm is not straightforward. Potential harm may depend on the gender of the person drinking alcohol and the drinking setting. There are also studies suggesting that the association between alcohol consumption and aggression is stronger among men than women (Giancola et al., 2009; Gussler-Burkhardt et al., 2005). This would suggest that men are more likely to cause alcohol-related consequences, which studies have confirmed regarding their own drinking (Wilsnack et al., 2000). Therefore, in some drinking settings, e.g., in the home, men may be more likely than women to cause harm to family members. In drinking settings with friends, men may be more likely to cause alcohol-related harm among male friends.

It is also plausible that different risk factors have a combined excessive risk of harm from others' drinking compared with each of those factors assessed individually. For instance, if a

person has two risk factors of harm, such as being young and a woman, the combined effect of harm may exceed the individual risks of being young and a woman. Such combinations of risk factors may be applied within and across different levels of society. As an example, the effect of country-level drinking patterns on harm from others' drinking may differ between men and women at the individual level.

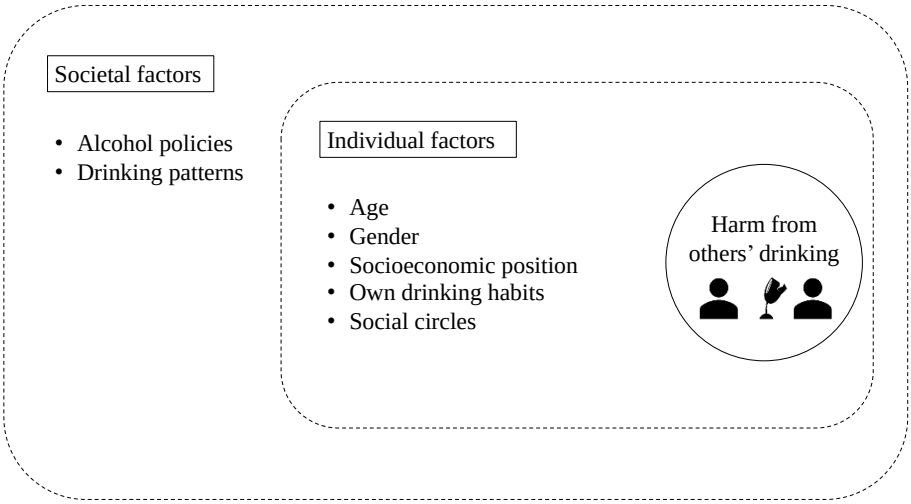


**Figure 1.** Examples of influencing factors of harm from others' drinking at the societal and individual levels.

# 3 PREVIOUS SURVEY FINDINGS

The most common design for studying harm from others' drinking has been the cross-sectional study; such studies have been performed in several countries. In addition to studying the occurrence of problems in the population, they have served to identify groups that more commonly experience these problems. One goal of such mapping is to better assist policymakers in tailoring policy responses and allocation of resources. With information on the magnitude of harm from others' drinking and subgroup differences, policymakers can make informed suggestions and decisions to improve health and social well-being in the population.

In the following sections, an overview of results from previous survey-based research on AHTO is presented alongside comments on some of the limitations of the current literature on AHTO. The results from the following kind of studies are included: cross-sectional general population studies, longitudinal studies, and methodological studies addressing challenges in surveys on AHTO. The overview describes the occurrence of harm in different populations, stability of harm over time, and related predictors at various societal levels.

## 3.1 THE OCCURRENCE OF HARM

Findings from general population surveys suggest that the estimated 12-month prevalence of experiencing negative consequences from another's drinking ranges greatly between populations, from around 10% to 80% (Huhtanen et al., 2012; Karriker-Jaffe et al., 2017; Laslett et al., 2011; Waleewong et al., 2017). These figures partly reflect true differences, but are also the result of different harm types being included in different studies. In general, more severe harms such as being physically harmed by a drunk person are less common than less severe harms such as annoyances due to others' drinking behaviors (Callinan et al., 2016; Laslett et al., 2011). In the European Joint Action on Reducing Alcohol-Related Harm Standardized European Alcohol Survey (RARHA SEAS), encompassing 19 countries (Callinan et al., 2016), less serious harms (e.g., being woken up at night or being annoyed by vomiting, urinating, or littering) were reported by around 16% to 32% of respondents, while harms defined as more serious in character (e.g., being in a serious argument or being harmed physically) were reported by approximately 2% to 14% of respondents.

A limitation of the present cross-sectional survey literature on AHTO is that many measurements of harm include both more and less severe consequences with varying impact. Many surveys ask about harm from others' drinking in general, e.g., experiencing "negative consequences" from a known person who drinks heavily, which is important to get an overall picture of harm in a society (Callinan et al., 2016; Laslett et al., 2011). However, such harm may include minor types that are not relevant for public health responses. Researchers have called for more attention on negative consequences from others' drinking that are more likely to impact health and social well-being, not on minor nuisances (Rossow et al., 2016; Stanesby et al., 2020). As an example, Stanesby and colleagues (2020) suggest improving the knowledge base on perceived severe forms of harm from others' drinking, including physical,

financial, practical, and severe emotional harm. Therefore, in addition to assessing experienced harm in general, studying the range of perceived severe harm from others' drinking is important. Taking the affected person's perceived impact of AHTO into account is essential in order to better understand experiences of harm from others' drinking. The present thesis will explore this area of harm in more detail.

### 3.1.1 Cross-country comparisons

Comparing estimates of AHTO between countries creates the opportunity to place a specific country's ranking in relation to those of other countries so that determinants of harm at the societal level may be revealed. Hence, prevalence estimates of AHTO based on surveys are increasingly being compared between countries (Callinan et al., 2016; Ramstedt et al., 2015; Rekve et al., 2012). One example of a study that used the same questionnaire in all included countries is the European RARHA SEAS study, which revealed large country variations in AHTO (Callinan et al., 2016). The overall prevalence of AHTO varied from around 40% in Portugal to 85% in Bulgaria. Central-Eastern and Eastern European countries tended to report the highest levels of harm, while the lowest prevalence was found in the south (in Portugal and Spain/Catalonia). Excepting Sweden (which ranked somewhat lower than average), Nordic countries reported relatively high levels (up to 64%), whereas no clear pattern was found in Central-Western or Western European countries.

It is clear that the prevalence of AHTO varies between countries, although such differences may partly be due to cultural differences in perceptions of harm and differing methodological approaches (Rossow et al., 2016). To limit the impact of cultural perceptions when comparing AHTO between countries, researchers have suggested that asking about more concretely defined harms is preferable (Room et al., 2016). The goal is to minimize the room for subjective perceptions that may influence the interpretation of the studied outcomes. One goal in this thesis was to investigate country differences in harm from others' drinking by using concrete measurements, such as asking about physical harm.

### 3.1.2 Harm from others' drinking over time

Although cross-sectional studies are appealing in many ways, they are not able to capture changes of harm over time, as they explore the situation at a single point in time. The harms addressed in cross-sectional studies include both new problems and problems that endure over time. Harm that is recurrent over time is likely to have a greater impact and be more severe than harm that occurs once. To investigate persistent harm over time, longitudinal studies are warranted. While numerous studies have examined longitudinal patterns of alcohol-related harm to the individual (see, e.g., de Bruijn et al., 2006; Hasin et al., 2011), there are very few longitudinal studies focusing on changes and predictors of persistent harm from others' drinking over time.

The only published epidemiological survey addressing long-term effects of others' drinking was conducted in Australia in a 3-year follow-up study between 2008 and 2011 (Laslett et al., 2015). The result showed that about half (49%) and more than half (56%) of those harmed by

a known and unknown drinker, respectively, in 2008 were still subject to harm three years later. At the population level, 14.4% experienced harm from a known person at both timepoints and the percentage harmed by a stranger at both timepoints was 20.3%. There is an urgent need for more follow-up surveys that create the opportunity to explore harm from others' drinking that is persistent over time and related predictors of not being able to escape these problems. This thesis has explored this topic further.

## 3.2 INFLUENCING FACTORS OF HARM

Most influencing factors of harm from others' drinking in the present research literature have been assessed at the level of the individual. There are only a few studies that have assessed the relationship between AHTO and contextual factors at the local, regional, and country level. This is a limitation, as it is highly likely that factors beyond the individual level correlate with harm from others' drinking. Information on this is essential in order to fully understand how harm from others' drinking can be reduced.

### 3.2.1 Sociodemographic and socioeconomic factors

The survey literature on AHTO has also addressed correlates associated with harm and shown that AHTO is not evenly spread across subgroups of the population. One of the most important and consistently shown correlates of harm from others' drinking is age (see, e.g., Ferris et al., 2016; Karriker-Jaffe et al., 2014; Storvoll et al., 2016; Waleewong et al., 2017). Younger people experience harm more often than older people.

Gender is also correlated with AHTO, although the direction of the association seems to differ depending on which type of harm that is assessed. In general, it is more common among women to be harmed by someone else's drinking than it is among men (see, e.g., (Huhtanen et al., 2012), although the inverse pattern has been revealed for specific types of harm, e.g., physical assault in public places (see, e.g., Bellis et al., 2015; Storvoll et al., 2016). It should also be noted that these gender patterns are not always the same in all countries (Room et al., 2019).

Other sociodemographic factors found to be associated with the risk of harm are partner status and geographical area. Urban residents are more likely to be harmed than residents in less populated areas (Moan et al., 2015; Rossow et al., 2004; Storvoll et al., 2016) and persons without a partner have an elevated risk of AHTO, in particular for problems related to public places (Adlaf et al., 2004; Greenfield et al., 2009; Moan et al., 2015; Rossow et al., 2004; Seid et al., 2015; Storvoll et al., 2016).

Research on the relationship between harm from others' drinking and socioeconomic status is more inconclusive. Some studies show that more highly educated respondents report harm more often (Moan et al., 2015; Ramstedt et al., 2015; Rossow et al., 2004; Seid et al., 2015), while other studies show that respondents with lower education do so (Moan et al., 2015; Ramstedt et al., 2015; Rossow et al., 2004) or that there is no difference between education groups (Adlaf et al., 2004; Karriker-Jaffe et al., 2014). Additionally, Karriker-Jaffe and

colleagues (2014) showed that low income correlated with problems from family members' drinking, though this association was not found in another study (Seid et al., 2015). Using unemployment as a measure of low socioeconomic status has indicated that lower socioeconomic status is associated with AHTO (Karriker-Jaffe et al., 2017; Seid et al., 2015; Waleewong et al., 2017).

In the Australian 3-year follow-up study (Laslett et al., 2015), predictors of discontinuation of experiencing harm from others' drinking were assessed. In other words, they looked at what factors influenced the likelihood to not report harm at the three-year follow-up survey within the group who experienced harm at baseline. In contrast to the cross-sectional studies previously presented, the Australian survey did not find gender, age, or neighborhood affluence (an indicator of socioeconomic status) to be important predictors for no longer reporting harm from known or unknown drinkers after three years. This indicates that discontinued experiences of harm from others' drinking were evenly distributed across age, gender, and neighborhood affluence among those reporting harm at baseline.

Additionally, indicators of larger gender and economic inequalities at the local, regional, and country level were found to increase the risk of individual-level experiences of harm from others' drinking in some studies (Cook et al., 2020; Karriker-Jaffe et al., 2014; Kilian et al., 2020). However, it should be noted that these associations were not repeated in all studies and depended on what type of negative experience that was examined.

### 3.2.2 One's own drinking habits

Many studies point out that there is an association between one's own drinking habits and exposure to harm from another's drinking (Marmet et al., 2017; Rossow et al., 2004; Storvoll et al., 2016). In particular, more frequent heavy episodic drinking (HED) has been found to correlate with such harm (see, e.g., Room et al., 2019; Rossow et al., 2004), although there are some exceptions in the literature (Marmet et al., 2017; Ramstedt et al., 2015). In the Australian 3-year follow-up survey, own HED was not associated with discontinued harm from a known drinker. In contrast, more frequent HED at baseline was significantly associated with no longer experiencing harm from strangers' drinking after three years.

### 3.2.3 Others' drinking habits

The number of heavy drinkers in a respondent's life at baseline was the most important factor for persistence of harm from others' drinking in the 3-year follow-up study in Australia. More heavy drinkers in the household or among non-household relatives or as an intimate partner predicted persistence of harm from known drinkers, while more heavy drinkers among non-household relatives or co-workers or as an intimate partner predicted the persistence of harm from strangers' drinking.

Findings from studies including regional factors have revealed that the risk of AHTO increases with increasing regional HED patterns (Callinan et al., 2021; Cook et al., 2020; Karriker-Jaffe et al., 2019). However, the role of HED at the regional level on the association

with AHTO appears to be dependent on gender, gender equality measures, and the type of harm experienced (Callinan et al., 2021; Karriker-Jaffe et al., 2019). There are also indications that regional-level alcohol policies aimed at reducing alcohol consumption are associated with less harm from others' drinking (Cook et al., 2020; Greenfield et al., 2019).

## 3.3 METHODOLOGICAL CHALLENGES IN SURVEYS

Although general population studies are valuable in many ways when assessing harm from others' drinking, their methodological challenges have also been addressed in the literature. An example is a paper by Rossow and Ramstedt (2016), mentioning some obstacles that are important to consider: problems of causal attribution and transferability, limitations with regard to the range of harm, and challenges in survey methodology.

Rossow and Ramstedt (2016) argued that the ability to make inferences between harm and a person's actual drinking depends on a number of factors, e.g., the kind of problem, harm that occurs instantly or that occurs due to drinking over time, and the relationship between the drinker and the harmed. For instance, asking the respondent about harm due to an "intoxicated person" may not guarantee that the harm would not have occurred if the drinker was not under the influence of alcohol, nor that it occurred because of the intoxication. If the respondent had instead been asked if harm occurred "because of" someone else's drinking, they would first have to evaluate if the person had been drinking and then if the harm was causally attributed to the drinking.

Another shortcoming is that many surveys address harms that occur infrequently. Even if these harms are important for a total overview of AHTO in a population, it is uncertain to what extent the most severe harms with a large impact on health and social well-being are included (Rossow et al., 2016). Another issue is with the transferability of findings, as the perception of harm may vary across time and countries, which impairs the comparability of surveys. The authors also mentioned two other limitations concerning survey data on AHTO: increasing non-response rates and differences in survey administration mode. A selective non-response leads to biased results, while different survey modes may result in varying findings, e.g., due to social desirability bias.

All these shortcomings are important to consider when designing new studies and interpreting results from surveys, and require further attention in this research field. However, research is still limited with respect to the implications these limitations have for survey results regarding AHTO.

### 3.3.1 Survey mode effects

The following overview of survey mode effects is based on the literature on health surveys in general and on alcohol surveys in particular.

A literature review by Bowling (Bowling, 2005) showed many potential biases for both interviewer-administered questionnaires (IAQ) (such as telephone and face-to-face

interviews) and self-administered questionnaires (SAQ) (such as postal and web questionnaires). The effects were more pronounced between different modes than within modes. These findings are in line with those of a review article by Johnson (2014) on sources of error in substance use prevalence surveys, which stated that there was a considerable body of evidence of mode effects between SAQ and IAQ. However, the mode effects seemed to be more sensitive for illicit drug use than for alcohol use.

A study based on a sample drawn from all residents in Denmark aged 15–79 years indicated that there might be one dimension of difference in estimates of harm caused by others' drinking between respondents answering an initial web survey and respondents who answered a telephone interview (Seid et al., 2015). The study assessed the relationship between causing harm from one's own drinking and being harmed by other people's drinking. The results showed that in comparison to respondents in the web survey, respondents who answered the telephone survey were less likely to be in the group causing harm/being harmed in the form of problems associated with work, finance, or injury. However, no significant difference was found between the survey modes in regard to being harmed in marriage/relationship or family contexts.

It is important to establish more evidence on how different survey methodologies influence respondent behavior in surveys on this topic. There are a number of methodological challenges regarding surveying AHTO and a fairly limited amount of research on them. Methodological studies are therefore needed to tackle these challenges and improve the reliability of studies in this field. The present thesis will cover the area of how different survey modes influence self-reporting of harm from others' drinking.

# 4 RESEARCH AIMS

The overview of survey-based epidemiological research on AHTO demonstrated that harm from others' drinking affected a large proportion of the population and was unevenly distributed across population subgroups. It further showed that the current survey-based literature suffered from methodological challenges such as limited knowledge about survey mode effects. Moreover, many of the studied types of harm from others' drinking were likely to have minor impact on the harmed persons. These limitations call for more methodological studies as well as studies focusing on more severe types of harm from others' drinking. The overall aim of the present thesis was to contribute with more knowledge in these areas, and two more specific aims were developed to accomplish this.

The first aim was to examine different epidemiological areas and related predictors of more severe types of AHTO from a general adult population perspective, with a primary focus on the Swedish context and a secondary focus on the European context. The different areas included harm reported by respondents as severe, experiences of aggressive harm, and experiences of persistent harm over time. Five study-specific research questions were addressed:

1. Do the prevalence rates of experienced severe harm from known and unknown persons' drinking and the association between such harm and one's own drinking habits differ between men and women[1]? (Study I)
2. What is the one-year persistence rate of harm experienced from a known person's drinking? (Study II)
3. Is the risk of one-year persistence of harm experienced from a known person's drinking related to baseline sociodemographic factors, one's own drinking habits, harm characteristics, or type of relationship to the person causing harm? (Study II)
4. Is there a relationship between the country-level prevalence of heavy episodic drinking[2] and reported experiences of harm from others' drinking-related aggression at the individual level? (Study III)
5. Does heavy episodic drinking at the country level modify the relationship between consumption of alcohol per capita and experiences of harm from others' drinking-related aggression at the individual level? (Study III)

The second aim was to assess differences in survey administration modes when estimating self-reported AHTO in general population surveys. The following research question was addressed:

1. Does self-reported estimated prevalence of harm from a known person's or strangers' drinking differ between survey modes after adjustment for participant characteristics? (Study IV)

[1] The term sex was used in two of the studies included in this thesis due to the journal publishers' preferences. In the thesis, the term gender is used, as the variable was self-reported.
[2] The term heavy episodic drinking is used in two of the studies included in this thesis and in the thesis. However, the term binge drinking is used synonymously in the other two studies.

# 5 MATERIALS AND METHODS

An overview of the data, design, and main analyses of the respective studies is presented in Table 2.

## 5.1 DATA SOURCES

Data mainly stem from different general population surveys with self-reported responses to questions regarding harm experienced from others' drinking and various background factors. The four respective data sets are described in the following sections.

### 5.1.1 The Habits and Consequences survey

The data used in Studies I, II, and IV are from different versions of the Swedish Habits and Consequences survey (Vanor och konsekvenser). The original samples of the respective survey versions included national general population samples generally drawn from the Swedish state personal address register, SPAR, which includes all residents in Sweden. The study samples were restricted to individuals who turned between 17 and 84 years during the specific year of the study.

#### *5.1.1.1 Data for Study I*

Data for Study I stemmed from the baseline cross-sectional Habits and Consequences survey conducted in 2013 (Ramstedt et al., 2014). Participants were asked to answer a self-reported questionnaire, either a paper-and-pencil version or a web version. A total of 15,576 individuals completed the survey, making the response rate 57.8%.

#### *5.1.1.2 Data for Study II*

The sample of Study II consisted of the participants who in the baseline Habits and Consequences survey answered that they, during the preceding 12 months, had been negatively affected because of the drinking of someone in their life, and who completed a follow-up survey one year later in 2014 (n = 1,203). The response rate in the follow-up survey based on the participants consenting to be re-surveyed was 86% (n = 7,072), including participants both with and without experiences of harm from others' drinking. This corresponded to 26,2% of the original baseline sample from 2013 (Sundin et al., 2015).

#### *5.1.1.3 Data for Study IV*

A comprehensive pilot study using three different cross-sectional survey modes was conducted in 2011–2012 (Forskningscentrum för psykosocialhälsa, 2012). The three survey modes included: (a) self-administered questionnaires (SAQ-post/web), where participants could choose between answering a paper-and-pencil version or a web version of the questionnaire; (b) standardized computer-assisted telephone interviews (CATI-standard); and (c) computer-assisted telephone interviews performed by trained interviewers with a more ambitious procedure (CATI-ambitious). A total of 6,841 participants completed the pilot

survey, with response rates ranging from 42% to 67.2% across the three different survey modes.

### 5.1.2 The RARHA SEAS survey

#### *5.1.2.1 Data for Study III*

Data from RARHA SEAS were used in Study III for the main outcome measure. RARHA SEAS is a cross-sectional study from 2015 conducted in 19 European countries using the same questionnaire (Moskalewicz et al., 2016). Survey modes were country specific and included telephone interviews, face-to-face-interviews, self-administered and mixed modes. Randomized samples including individuals aged between 18 and 65 years were drawn in each country. The response rate ranged from approximately 9% to 75% in the different countries. A total of 32,576 individuals participated in the survey.

### 5.1.3 Questionnaire

#### *5.1.3.1 Main outcomes*

The questions about AHTO derived from the WHO/ThaiHealth study (Rekve et al., 2012) and the RARHA SEAS study (Moskalewicz et al., 2016) and have previously been used in many studies from different countries. For the main outcomes in this thesis, three sections of questions regarding harm experienced from another person's drinking occurring during the preceding 12 months were used: general harm from a known person's (Studies II and IV) or strangers' drinking (Study IV), perceived harm severity from a known person's or strangers' drinking (Study I), and specific negative consequences of aggressive harm (Study III). The study-specific questions are presented in Table 3.

#### *5.1.3.2 Main predictors*

The questionnaires, which were similar for the different surveys, included demographic (gender, age) and socioeconomic (education) variables followed by questions about the respondent's own alcohol consumption (frequency of drinking, frequency of HED, alcohol dependence). In Study II, respondents were also asked questions about the specific type of harmful experience they had from the known person's drinking, the relationship type to the drinker, and the perceived severity of the harm. Additionally, the rates of country-level HED and consumption of alcohol per capita (APC) used in Study III were derived from WHO's Global Status Report on Alcohol and Health (World Health Organization, 2018). The main differentiating variables in Study IV consisted of the three different types of survey modes used.

**Table 2.** Overview of design, main outcome, main predictor(s), potential confounders and mediators, and main statistical analysis of the four studies.

| | Study I | Study II | Study III | Study IV |
|---|---|---|---|---|
| **Design** | Swedish cross-sectional general population survey (n=15,576). | Swedish one-year follow-up survey (n=1,203). | Cross-sectional general population surveys from 19 European countries (n=32,576) and data from the World Health Organization. | Three Swedish cross-sectional general population surveys with different survey administration modes (n=6,841). |
| **Main outcome** | Perceived severe harm from a known person's and strangers' drinking. | One-year persistence of experienced harm from a known person's drinking. | Aggressive harm from someone else's drinking (verbally abused, physically harmed, serious arguments). | Experienced harm from a known person's or strangers' drinking. |
| **Main predictor(s)** | Gender, one's own drinking habits, alcohol dependence. | Baseline factors: sociodemographic factors, relationship to the drinker causing harm, specific type of harmful consequences, perceived harm severity. | Country-level prevalence of monthly heavy episodic drinking, consumption of alcohol per capita in liters of pure alcohol. | Different survey modes. |
| **Main analysis** | Additive interactions in binary logistic regression models. | Binary Poisson regression models with robust error variance. | Gender-specific (multiplicative interactions in) two-level regression models. | Binary Poisson regression models with robust error variance. |
| **Confounders and mediators** | Age group, education level, partner status, living in an urban area. | Gender, age group, education level, one's own heavy episodic drinking frequency. | Country-level mean age, one's own heavy episodic drinking frequency, country-level prevalence of monthly heavy episodic drinking. | Gender, age group, Swedish origin, education level, unemployed/long-term sick leave, partner status, presence of children in the household, one's own heavy episodic drinking frequency, contact attempts (early vs. late respondents). |

**Table 3.** Overview of study questions.

| **Question** | **Response category, coding** | **Study** |
|---|---|---|
| 1. During the last 12 months, has there been someone in your life that you consider to have been drinking too much alcohol (it can be on a regular basis or occasionally)?<br>Examples of persons in your life: family, ex-partner, friends or colleagues. | Yes = 1, No = 0 | I, II, IV |
| (If yes on 1:)<br>2. Has that person's/those persons' drinking affected you negatively in some way? | Yes = 1, No = 0 | I, II, IV |
| (If yes on 2:)<br>3. Overall, how much has the drinking of that person/those persons affected you negatively? | A lot = 1, A little = 0 | I, II |
| 4. Have you, during the last 12 months, been negatively affected by the drinking of strangers or people you do not know very well?<br>For example, not been able to sleep, been insulted or afraid, been harmed or assaulted, have had property damaged. | Yes = 1, No = 0 | I, IV |
| (If yes on 4:)<br>5. Overall, how much has the person's/persons' drinking affected you negatively? | A lot = 1, A little = 0 | I, IV |
| In the last 12 months because of someone else's drinking… | | |
| 6. …have you been verbally abused, for example, called names or otherwise insulted? | Yes = 1, No = 0 | III |
| 7. …have you been involved in a serious argument? | Yes = 1, No = 0 | III |
| 8. …have you been harmed physically? | Yes = 1, No = 0 | III |

## 5.2 STATISTICAL ANALYSES

Based on the research questions and the structure of the data, three main statistical analyses were performed: binary logistic regression analysis (Study I), binary Poisson regression analysis with robust error variance (Studies II and IV), or two-level random effect multilevel mixed-effect binary regression (Study III). Two of the studies included interactions, one on the additive scale (Study II) and one on the multiplicative scale (Study III). The analyses in the respective studies were adjusted for the potential confounders and mediators presented in Table 2.

## 5.3 ETHICAL CONSIDERATIONS

The purpose of mapping and identifying associations with AHTO in this thesis was to gain a more comprehensive picture of alcohol-related problems. Thus, the goal was to contribute to the research field and produce knowledge that policymakers can use to prevent alcohol-related problems in the society. However, even the best intentions may result in unintentional harms. It was therefore important to consider the ethical aspects of all parts of this project.

As in all research based on surveys, the questions could be perceived as unpleasant and intrusive for the respondents, in particular regarding sensitive topics such as alcohol consumption. Some people may have felt forced to reflect on others' drinking habits or to think about traumatic events. On the other hand, a potential benefit of the research may be that respondents got a chance to reflect on potential problems from other people's drinking. Asking about an individual's perceived problems in a systematic manner may start processes that lead to improvements for the individual. It should be noted that all respondents were informed that it was completely voluntary to participate in the survey and that they could end their participation whenever they wanted, without explaining why. On the other hand, up to three reminders were sent to the respondents in the Swedish surveys, which may have caused the respondents to feel forced to participate.

Since harm from others' drinking occurs in social interactions between at least two parties, it is essential to be aware of the risk of stigmatizing or blaming the drinker who causes the problem and considering the affected as the "victim" (Warpenius et al., 2016). This is important both when studying these problems and when presenting the results. People with alcohol-related problems are already often stigmatized by society. The reality might be more complex, with more or less guilty and not guilty persons. Both the drinker and the person affected might be in need of help and treatment. At the end of the questionnaires, the respondents were provided with information on where to seek support or answers to questions concerning these issues.

The three studies based on data from the Habits and Consequence surveys were approved by the Central Ethical Review Board in Stockholm (reference number Study I: 2012/1740-31/5; Study II: 2013/2205-31/5; Study IV: 2011/1453-31/5). Concerning Study III, the Swedish Ethical Review Authority made an advisory statement that they did not object to the study

(reference number: 2020-02388). Hence, no decision was made, as the study did not include any sensitive information as described in §§ 3–4 of the Swedish Ethical Review Act.

# 6 RESULTS

## 6.1 SEVERE HARM FROM OTHERS' DRINKING AND GENDER-SPECIFIC ASSOCIATIONS

The main aim of Study I was to assess differences in gender-specific prevalence of severe harm from known and unknown drinkers and gender-specific associations between one's own drinking habits and such harm. Additive interactions in binary logistic regression models were used to determine gender-specific associations between one's own drinking and severe harm.

A gender-specific prevalence of experiencing severe harm (in terms of reporting being harmed "a lot") from a known person's or strangers' drinking was discovered in Study I, with higher past-year prevalence estimates among women than men. Such harm from a known person's drinking was reported by 4.9% (95% confidence interval (CI): 4.5–5.4) of women and 1.9% (95% CI: 1.6–2.3) of men. The corresponding prevalence of experiencing severe harm from strangers' drinking was 1.8% (95% CI: 1.5–2.1) among women and 1.2% (95% CI: 0.9–1.5) among men.

Additive interactions also revealed a gender-specific association between one's own drinking habits and experiencing severe harm from a known person's drinking. Among women, a higher past-year drinking frequency and HED frequency increased the risk to report such harm, whereas no association between drinking habits and severe harm was found among men. In the joint effect models, where the associations of gender and own drinking habits were assessed jointly with severe harm from a known person's drinking, super-additive interactions of between 0.92 and 1.47 in terms of the relative excess risk due to interaction (RERI) were revealed. See Table 4 for an example of the joint effect.

Although having signs of one's own alcohol dependence increased the likelihood to experience severe harm from a known person's drinking for both men and women, this association was also modified by gender. A super-additive interaction was found among women with such signs relative to men without signs of alcohol dependence, with a RERI estimate of 5.37. However, in terms of experiences of severe harm from strangers' drinking, no gender-specific associations were generally shown between the respondent's own drinking habits and harm.

**Table 4.** An example of adjusted[a] joint effects and measures of additive interactions (RERI) between gender and past-year drinking frequency and severe harm (harmed "a lot") from a known person's drinking.

| | Men | Women | | |
|---|---|---|---|---|
| | **OR (95% CI)** | **OR (95% CI)** | **RERI (95% CI)** | **AP** |
| Non-drinker | 1.00 | 1.29 (0.65–2.54) | N/A | N/A |
| Up to 3 times/month | 0.79 (0.41–1.50) | 2.55** (1.42–4.57) | 1.47** (0.74–2.21) | 0.58 |
| Once a week or more | 0.83 (0.44–1.56) | 2.39** (1.31–4.34) | 1.27** (0.54–1.99) | 0.53 |

** P < 0.01. [a]Adjusted for age group, level of education, partner status, and living in an urban area. AP, attributable proportion; 95% CI, 95% confidence interval; N/A, not applicable; OR, odds ratio; RERI, relative excess risk due to interaction.

## 6.2 ONE-YEAR PERSISTENCE OF HARM FROM A KNOWN PERSON'S DRINKING AND RELATED PREDICTORS

The aim of Study II was to examine the one-year persistence rate of harm experienced from a known person's drinking and to assess its predictors at baseline. Predictors included sociodemographic factors such as gender, age, and educational level, as well as the harmed person's own drinking habits. Additional potential predictors at baseline included the relationship between the harmed person and the drinker causing harm, the specific type of harmful consequences, and perceived harm severity. Modified binary Poisson regression with a robust error variance adjusted for potential confounders were used to analyze potential predictors of one-year persistence.

The persistence rate of experiencing harm from a known person's drinking a year later was 52.5%, and a higher risk was seen among women than among men (RR = 1.31, 95% CI [1.15–1.49]). Reporting harm at baseline within close relationships, e.g., from a partner, parent, or another household member, significantly predicted one-year persistence of harm. In contrast, reporting harm from a colleague was associated with a decreased risk of one-year persistence of harm. In addition, one-year persistence of harm was predicted by reporting the following specific harm types at baseline: being emotionally hurt or neglected, the person failing to do something s/he was expected to do, the person having negatively affected a social occasion, and the person having taken money or other valuables. The more severe the overall harm was perceived to be on a scale from 1 to 10 at baseline, the higher the risk of one-year persistence of harm.

## 6.3 HARM FROM OTHERS' DRINKING-RELATED AGGRESSION AND COUNTRY-LEVEL HEAVY EPISODIC DRINKING

Study III pursued two main aims. The first was to examine the relationship between the country-level prevalence of HED and the experiences of harm from others' drinking-related aggression at the individual level. The second was to explore if HED at the country level modified the link between APC and experiences of harm from others' drinking-related aggression at the individual level. The analysis used two-level random effect multilevel mixed-effect binary regression models, adjusted for country-level age structure and including the respondent's own HED patterns as a mediator.

Experiences of others' alcohol-related aggressive behavior in the preceding 12-month period were reported by one in four men (25%) and women (24%) across 19 European countries. An increase in the prevalence of monthly HED at the country level was associated with increased odds of experiencing others' alcohol-related aggression at the individual level. A 1% increase in HED was associated with 5% (OR 1.05, 95% CI [1.03–1.06]) and 6% (1.06 [1.04–1.08]) higher odds of such harm among men and women, respectively. However, according to the intraclass correlation, only a small part (6%) of the total variance of harm from others' drinking-related aggression at the individual level was accounted for by country-level prevalence of HED.

The models including the interaction term between the country-level APC and prevalence of HED indicated a stronger association between APC and experiencing harm from others' drinking-related aggression among women in countries with a higher country-level prevalence of HED. However, this association could not be confirmed in additional analyses assessing the average marginal effects of APC at different values of HED on the probability of aggression-related harm.

## 6.4 ALCOHOL'S HARM TO OTHERS AND SURVEY ADMINISTRATION MODE EFFECTS

The aim in Study IV was to assess differences in estimated prevalence of harm from strangers' and known persons' drinking between different self-reported general population survey administration modes. The three survey modes included were: self-administered postal or web questionnaires (SAQ-post/web) and two computer-assisted telephone interviews (CATI), one with standard procedure (CATI-standard) and one with a more ambitious procedure, for example including monetary incentives to the respondents (CATI-ambitious). Poisson regression models with a robust error variance adjusting for sociodemographic and behavioral factors were used to explore survey mode effects.

The highest estimate of reported harm from strangers' drinking was found in the CATI-ambitious survey mode (16.2%), followed by the CATI-standard (13.0%) and the SAQ-post/web mode (11.5%). The differences between the CATI-ambitious survey mode estimate and the estimates for the CATI-standard and SAQ-post/web were statistically significant. Adjusting for sociodemographic and behavioral factors in the Poisson regression models

revealed an increased risk of reporting harm from strangers' drinking by 28% (RR 1.28, [1.10–1.48]) in the CATI-standard mode and by 52% (1.52 [1.28–1.80]) in the CATI-ambitious mode, both compared with the SAQ-post/web mode.

The corresponding estimates for reporting harm from a known person's drinking were 17.2% in CATI-ambitious, 16.3% in SAQ-post/web, and 15.1% in CATI-standard. These differences were not statistically significant.

# 7 DISCUSSION

## 7.1 MAIN FINDINGS AND PREVIOUS RESEARCH

This thesis has documented various areas of harm from others' drinking in Sweden and in 19 European countries. The key findings and comparisons with previous research are presented below. More detailed discussions of the results are included in the respective studies.

### 7.1.1 The occurrence of severe harm from others' drinking

In Study I, it was shown that a significant part of the Swedish adult population, 5% of women and 2% of men, had experienced severe harm from a known person's drinking in the preceding 12-month period. Severe harm experienced from strangers' drinking was somewhat less common and was estimated at 1.8% among women and 1.2% among men.

The prevalence of severe harm in terms of reports of being harmed "a lot" by a known or unknown drinker was somewhat lower in Sweden than in Australia, where a similar general population survey has been conducted (Laslett et al., 2011). On average about 8% of the Australian population, both men and women, reported being harmed "a lot" by a known drinker and about 4% reported the same from a stranger's drinking. The prevalence of being harmed "a lot" by a known drinker in Sweden was among the lowest in a comparison of 18 European countries (Moskalewicz et al., 2016).

That severe harm more often arises from drinkers in a respondent's close social circle compared with a person in a more distant relationship is in line with previous research. Findings from in-depth interviews among affected family members of people with substance use problems indicate that the level of hardship experienced is greater in more close relationships, such as with parents/children and partners (Orford, 2017). Moreover, rating harm from others' drinking as more severe was more common for harm from household members than from drinkers in relationships that are often less close, such as with colleagues and friends, according to an analysis of the RARHA-SEAS surveys (Callinan et al., 2016).

Study II showed that the risk that harm from a known person's drinking was persistent over a one-year period was high in Sweden, with 52.5% of respondents who experienced harm at baseline reporting harm one year later. That many individuals experience persistent harm from a known drinker has also been shown in data from Australia, where around 50% of those experiencing harm at baseline still reported harm three years later (Laslett et al., 2015).

In Study III, it was revealed that approximately one in four people across 19 European countries reported harm from others' alcohol-related aggression in the preceding 12 months. A study in five low- and middle-income countries in Asia showed higher estimates of aggressive and violent harm from others' drinking, with estimates up to around 70% in some of the countries included (Waleewong et al., 2018). In addition, a survey based on self-selection across a range of countries found that around 40% of the participants experienced aggressive harm from others' drinking (Bellis et al., 2015).

Differences in prevalence estimates of harm from others' drinking in this thesis compared with estimates found in studies conducted in other countries may be explained by a combination of factors. Different levels of alcohol consumption and different patterns of drinking between countries are likely to play a role (Astudillo et al., 2010). Other factors may be different perceptions of and tolerance towards alcohol-related behaviors (Room et al., 2016).

### 7.1.2 Predictors of reported harm

Studies I and II indicated that women in Sweden experienced severe harm from others' drinking more frequently than men and were also more exposed to persistent harm over a one-year period. Laslett and colleagues (2011) presented similar gender differences on the basis of data from the adult population in Australia, whereas gender was not an important predictor for experiencing discontinued harm over a three-year period (Laslett et al., 2015).

The findings in Study III demonstrated that experiences of others' alcohol-related aggression were equally common among women and men across 19 European countries. That different types of alcohol-related problems were addressed in Studies I–II compared with Study III may explain the different gender patterns revealed in these studies. The types of problems assessed in Studies I–II included experiences of general harm from the drinking of a known person or of strangers. In contrast, the problems assessed in Study III were related to alcohol-related aggressive behavior with no identified relationship to the person causing the harm. Previous studies have shown that women more often experience harm from others' drinking (Huhtanen et al., 2012). However, several studies point out that this is not the case across all types of problems and that gender patterns may vary between countries with different cultures (Room et al., 2019). One example is that men and women generally experience harm from others' drinking within different relationships. Stanesby and colleagues (Stanesby et al., 2018) revealed that it was common among women to report harm from a male partner's drinking, whereas it was common among men to report harm from the drinking of a male friend or a distant family member. In addition, a previous Asian study showed that it was more common among men than women to experience aggressive harm from others' drinking (Waleewong et al., 2018).

Study II showed that experiencing harm from a known person's drinking over a one-year period was more likely among those reporting harm within close relationship types at baseline. In addition, the more severe the overall harm was perceived on a scale from 1 to 10 at baseline, the higher the risk of one-year persistence of harm. There is a shortage of longitudinal studies addressing harm from others' drinking and related predictors over time; the only study addressing a comparable research question is a three-year follow-up study from Australia (Laslett et al., 2015). This study showed similar patterns: the number of family members with heavy drinking was associated with three-year persistence of harm, while this was not the case for heavy drinking by those in more distant relationship type.

The association of one's own drinking habits and having signs of alcohol dependence with severe harm from a known person's drinking differed between men and women in Study I. For example, no association was found among men, whereas more frequent drinking habits and more frequent HED increased the likelihood of such harm among women. Similar, gender-specific associations between one's own drinking habits and experiences of harm from others' drinking have been demonstrated in the Scandinavian countries and the US (Hradilova Selin, 2004; Nayak et al., 2019; Rossow et al., 2004).

Previous studies have indicated that intoxicated women are at higher risk of victimization and that they experience greater social sanctions when intoxicated (Nolen-Hoeksema, 2004), which could be an explanation for this gender-specific association. Notably, the same gender-specific association was not seen between one's own drinking habits and severe harm from strangers' drinking. This indicates that the increased vulnerability to harm from others' drinking with increasing levels of drinking among women could be particular to harm from a known person's drinking. Possible explanations for this discrepancy may be related to contextual factors and are speculative at this stage. It is likely that harm from strangers' drinking occurs in public settings, and that this setting may have some protective factors. For instance, being surrounded by other people in a public place may decrease the risk of victimization among intoxicated women.

Furthermore, Study III showed that more frequent HED at the country level increased the likelihood to experience others' alcohol-related aggression at the individual level. Nonetheless, the country-level HED did not explain a significant part of the variance of such harm. Other studies that have investigated regional levels of HED and harm from others' drinking show similar patterns (Callinan et al., 2021; Cook et al., 2020; Karriker-Jaffe et al., 2019).

Study II showed that age, education level, and one's own drinking habits did not predict one-year persistence of harm from a known person's drinking, in contrast to findings in cross-sectional studies (Ramstedt et al., 2015). This indicates that those experiencing harm from others' drinking over time make up a diverse group in terms of these demographic factors. Similar findings have been reported in an Australian three-year follow-up study (Laslett et al., 2015).

### 7.1.3 Survey mode effects

Study IV indicated that the effect of a survey mode assisted by an interviewer, compared with a self-administered survey mode, depends on the type of harm from others' drinking that is assessed. It is more likely that respondents will give positive answers to questions about harm experienced from strangers' drinking in a survey assisted by an interviewer compared with respondents in a survey that is self-administered. However, no such differences were found regarding questions about harm experienced from a known person's drinking. There are few studies addressing survey mode effects on harm from others' drinking, although a Danish

study also indicated that survey mode was associated with only one of two types of harm from others' drinking addressed in their study (Seid et al., 2015).

## 7.2 METHODOLOGICAL CONSIDERATIONS

The results in this thesis are based on comprehensive general populations surveys consisting of relatively large sample sizes. It should be noted that section 3.3 (Methodological challenges in surveys) describes several challenges in survey-based research on harm from others' drinking. Additional considerations regarding the methodology and its possible implications for the findings in this thesis are described below.

### 7.2.1 The importance of survey mode effects (Study IV)

The first part of this section about methodological issues will consider the results from Studies I–III in the light of the findings revealed in Study IV about survey mode effects.

The focus of Study II and partly of Study I is on harm from a known person's drinking, a type of harm that in Study IV was not found to be sensitive to survey mode effects. However, Study I also included the dimension of experiencing severe harm from strangers' drinking. Reporting this type of harm in Study IV was found to be more common in surveys assisted by interviewers than in self-administered survey mode. This indicates that the level of harm revealed in Study I on severe harm from strangers' drinking may have been underreported, as the study used a self-administered survey mode. As a result, the revealed difference with higher prevalence estimates of severe harm from a known person's compared with from strangers' drinking may be exaggerated.

As Study III compared findings across 19 European countries with differing survey modes, it is highly relevant to address possible effects of the differing modes. However, most countries in Study III used interviewer-administrated survey modes: either telephone interviews or face-to-face interviews. Only two of the countries used self-administered survey modes. This indicates that survey mode effects may not be a substantial concern in the case of Study III.

### 7.2.2 Selection of participants

Sampling issues should be considered, and one type of potential bias is related to non-responses, which can limit the generalizability of findings to the target population. This is because individuals who choose not to participate in the survey may differ from those who do participate. In general, the level of non-response was higher among men and younger individuals across the surveys included in this thesis. An attempt to correct for this non-response in most of the analyses was made by including post-stratification weights to match the subgroups with the target population.

Since few studies have investigated non-response in surveys on harm from others' drinking, it is hard to evaluate the significance of the non-responses. However, additional analyses in Study IV showed no differences between early and late respondents in reporting harm from a known person's or strangers' drinking. Other findings imply that individuals experiencing

harm from others' drinking are willing to answer follow-up surveys on the topic (Sundin et al., 2015). This could suggest that non-respondents do not differ much from the participants.

The attrition in the follow-up study sample in Study II may also be of concern. Although the proportion who had experienced harm from a known person's drinking was not considered a major problem, attrition was high in certain subgroups of interest in the study. For instance, attrition was high among individuals with a low level of education and among non-drinkers. Level of education and one's own drinking habits were found not to associate with one-year persistence of harm from a known person's drinking. However, these findings should be viewed cautiously due to the high attrition in these groups.

### 7.2.3 Measurement errors

The self-reported information about harm from others' drinking and related factors is potentially affected by measurement errors. The participants' answers to the self-reported questions about harm from others' drinking included in the thesis may be affected by various types of survey response biases. For instance, the respondents may not remember incidents of harm from others' drinking that have occurred in the preceding year, leading to recall bias (Johnson, 2014). In addition, social desirability bias often leads to underreporting of true alcohol consumption levels in surveys on one's own alcohol consumption and related consequences. When asking about behaviors that are subject to social norms, such as drinking habits, people tend to underreport their actual behavior (Johnson, 2014). However, it is not evident that reporting experiences of harm from others' drinking is as sensitive to social desirability bias as reporting one's own alcohol consumption. Answering an anonymous survey about hardships due to another's alcohol-related behavior may be valuable, as researchers are taking an interest in one's troubles. A Swedish follow-up survey indicated that this may have been the case, as the group that experienced harm from others' drinking at baseline was overrepresented in the follow-up survey (Sundin et al., 2015).

Another bias may be related to the subjective interpretation of what harm from others' drinking consists of. Any type of nuisance from others' drinking may be perceived as severe by some individuals, whereas other individuals may not perceive it to be harmful at all. These differences may be due to sociocultural differences in norms of alcohol consumption and a more negative view of drinking in general may lead to higher perceptions of harm. In Study III, reported experiences of others' alcohol-related aggression were assessed across 19 countries and the reporting of such behavior may differ between participants due to sociocultural differences which may lead to misclassification. Studies have implied that survey participants in countries with high levels of problematic alcohol consumption may be more willing to report alcohol-related problematic behavior (Astudillo et al., 2010). This would suggest that some of the association between country-level HED and experiencing others' alcohol-related aggressive behavior is attributable to willingness to report alcohol-related aggressive behavior.

### 7.2.4 Confounding

Residual confounding is often an issue in observational studies such as the studies in the present thesis. Although many of the analyses were adjusted for potential confounding factors, there may still be unmeasured confounders not accounted for that influenced the associations revealed in the respective studies.

## 7.3 IMPLICATIONS AND FUTURE DIRECTIONS

This thesis has documented new findings in different areas of harm from others' drinking and related influencing factors at the individual level in Sweden and at the country level across European countries. The results reinforce previous research evidence suggesting that alcohol consumption not only has consequences for the drinker, but may also create problems through interactions with other persons. The findings suggest that the perspective of AHTO should always be considered in the planning and implementation of alcohol policies, which is in line with the WHO's Global Alcohol Strategy (World Health Organization, 2010). The findings further strengthen the argument for a public health perspective on alcohol, as alcohol-related problems extend beyond the individual drinker. Governments are responsible for public health and welfare in their societies and by restricting alcohol consumption in the population, it is likely that the prevalence of AHTO will also be limited.

General policies aiming at reducing overall alcohol consumption, including heavy drinking, are highly likely to also reduce these types of alcohol-related problems. However, only a few studies have so far addressed policy effects on AHTO specifically (Cook et al., 2020; Greenfield et al., 2019). This is an area of research that needs to be developed. Including the AHTO perspective in alcohol policy research creates great potential to identify more far-reaching effects of policies, beyond those on the individuals consuming alcohol. This calls for systematic collection of data on AHTO in addition to surveillance of alcohol-related diseases and social harms to individual drinkers.

In addition, when designing policies aiming to reduce AHTO, potential stigmatization should be considered (Karriker-Jaffe et al., 2018). For instance, policies should not stigmatize people with alcohol use disorders who are not able to control their drinking. However, as many types of harm from others' drinking are likely to occur in cases of heavy drinking, programs targeting heavy drinking should not be ruled out, if they have an empirically proven effect in reducing AHTO. Nevertheless, broader interventions targeting the whole population, aiming to reduce alcohol consumptions in all groups from light to heavy drinkers, are preferable from the perspective of minimizing stigma as they do not single out specific groups.

Though this thesis has added new information to the research field of harm from others' drinking, there are still knowledge gaps that need further attention. First, more longitudinal studies are needed to address changes in harm over time and potential risk and protective factors for persistent harm. As presented in this thesis, the predictors of harm revealed in cross-sectional studies differ from risk factors of experiencing long-term harm from others' drinking. Longitudinal studies should therefore be prioritized when researchers plan new

studies. Second, although the present thesis addressed survey mode issues when investigating harm from others' drinking in surveys, methodological developments of surveys are still needed. As an example, it is essential to include more information about situational factors where harm occurs, as well as information about the behaviors and the drinking patterns in the person causing alcohol-related harm. Third, qualitative research is needed to clarify findings from survey-based studies. Interviewing people with experiences of harm is important to explain, expand, and contextualize researchers' understanding of such harm. For instance, it would be valuable to know more about what different respondents mean when they report being severely harmed, and what the related consequences of such harm are. Fourth, as the majority of studies on harm from others' drinking have assessed individual-level predictors of harm, forthcoming studies should include influencing factors at the local, regional, and country level.

## 7.4 CONCLUSIONS

This thesis has documented new findings in various areas of harm from others' drinking and related influencing factors at the individual and country level in Sweden and across European countries. The findings revealed significant occurrence of severe harm from others' drinking in these locations. The thesis reinforced the idea that alcohol consumption may have consequences not only for the drinker themself, but may also inflict severe problems in interactions with other persons. It was further shown that these problems tended to be difficult to escape, especially when harm was caused by a person in a close relationship, and that women were more exposed than men. That negative consequences from alcohol consumption extend beyond the individual drinker is important knowledge from a public health perspective and should be considered in alcohol policies.

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# 9 REFERENCES


Adlaf E, Begin P, & Sawka E. (2004). *Canadian Addiction Survey (CAS): A national survey of Canadians' use of alcohol and other drugs: Prevalence of use and related harms: Detailed report*. Ottawa: Canadian Centre on Substance Abuse.

Ahrens W, & Pigeot I (editors). (2014). *Handbook of epidemiology.* Springer Science and Business Media New York.

Ali MM, & Dwyer DS. (2010). Social network effects in alcohol consumption among adolescents. *Addictive behaviors, 35*(4), 337-342.

Astudillo M, Kuntsche S, Graham K, & Gmel G. (2010). The influence of drinking pattern, at individual and aggregate levels, on alcohol-related negative consequences. *European addiction research, 16*(3), 115-123.

Bellis MA, Quigg Z, Hughes K, Ashton K, Ferris J, & Winstock A. (2015). Harms from other people's drinking: An international survey of their occurrence, impacts on feeling safe and legislation relating to their control. *BMJ Open, 5*(12), e010112.

Berg L, Back K, Vinnerljung B, & Hjern A. (2016). Parental alcohol-related disorders and school performance in 16-year-olds-a Swedish national cohort study. *Addiction, 111*(10), 1795-1803.

Bowling A. (2005). Mode of questionnaire administration can have serious effects on data quality. *Journal of Public Health (Oxford, England), 27*(3), 281-291.

Callinan S, Ekholm O, Rosendahl Jensen H, Ramstedt M, Room R, Stanesby O, & Sundin E. (2016). Harm from others' drinking. In Moskalewicz J, Room R, & Thom B (Eds.), *Comparative monitoring of alcohol epidemiology across the EU. Baseline assessment and suggestions for future action. Synthesis report. Part A. Standardised European Alcohol Survey, (RARHA-SEAS)* (pp. 180-208). Warsaw, Poland: PARPA – the state agency for prevention of alcohol related problems.

Callinan S, Karriker-Jaffe KJ, Roberts SCM, Cook W, Kuntsche S, Grittner U, . . . Wilsnack S. (2021). A gender-focused multilevel analysis of how country, regional and individual level factors relate to harm from others' drinking. *Drugs-Education Prevention and Policy*.

Campbell CA, Hahn RA, Elder R, Brewer R, Chattopadhyay S, Fielding J, . . . Middleton JC. (2009). The effectiveness of limiting alcohol outlet density as a means of reducing excessive alcohol consumption and alcohol-related harms. *American journal of preventive medicine, 37*(6), 556-569.

Cook WK, Li L, Greenfield TK, Patterson D, Naimi T, Xuan Z, & Karriker-Jaffe KJ. (2020). State alcohol policies, binge drinking prevalence, socioeconomic environments and alcohol's harms to others: a mediation analysis. *Alcohol and alcoholism (Oxford, Oxfordshire)*.

Dawson DA, & Room R. (2000). Towards agreement on ways to measure and report drinking patterns and alcohol-related problems in adult general population surveys: the Skarpo conference overview. *Journal of substance abuse, 12*(1-2), 1-21.

de Bruijn C, van den Brink W, de Graaf R, & Vollebergh WA. (2006). The three year course of alcohol use disorders in the general population: DSM-IV, ICD-10 and the Craving Withdrawal Model. *Addiction, 101*(3), 385-392.

Elgan TH, & Leifman H. (2011). Children of substance abusing parents: a national survey on policy and practice in Swedish schools. *Health Policy, 101*(1), 29-36.

Ferris J, Devaney M, Davis G, & Mazerolle L. (2016). Reporting of problematic drinkers and the harm they cause: Assessing the role of alcohol use, sex, and age of those affected by a problematic drinker. *Experimental and clinical psychopharmacology, 24*(1), 48-54.

Ferris JA, Laslett AM, Livingston M, Room R, & Wilkinson C. (2011). The impacts of others' drinking on mental health. *Medical Journal of Australia, 195*(3), S22-S26.

Fillmore KM. (1985). The social victims of drinking. *British Journal of Addiction, 80*(3), 307-314.

Foran HM, & O'Leary KD. (2008). Alcohol and intimate partner violence: a meta-analytic review. *Clin Psychol Rev, 28*(7), 1222-1234.

Forskningscentrum för psykosocialhälsa. (2012). *Slutrapportering av pilotstudien Vanor och konsekvenser - en nationell undersökning om tobak, alkohol, läkemedel och andra preparat [Final report of the pilot study Habits and Consequences - a national study on tobacco, alcohol, drugs and other substances]*. Stockholm: Forum (Forskningscentrum för psykosocialhälsa), Centrum för psykiatriforskning, Karolinska Institutet

GBD 2016 Alcohol Collaborators. (2018). Alcohol use and burden for 195 countries and territories, 1990-2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet, 392*(10152), 1015-1035.

GBD 2017 Risk Factor Collaborators. (2018). Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet, 392*(10159), 1923-1994.

Giancola PR, Levinson CA, Corman MD, Godlaski AJ, Morris DH, Phillips JP, & Holt JC. (2009). Men and women, alcohol and aggression. *Experimental and clinical psychopharmacology, 17*(3), 154-164.

Giesbrecht N, Cukier S, & Steeves D. (2010). Collateral damage from alcohol: implications of 'second-hand effects of drinking' for populations and health priorities. *Addiction, 105*(8), 1323-1325.

Gordis L. (2014). *Epidemiology* (5th ed.). Philadelphia, Pennsylvania: Elsevier Health Sience.

Greenfield TK, Cook WK, Karriker-Jaffe KJ, Patterson D, Kerr WC, Xuan Z, & Naimi TS. (2019). The relationship between the U.S. state alcohol policy environment and individuals' experience of secondhand effects: alcohol harms due to others' drinking. *Alcoholism, clinical and experimental research, 43*(6), 1234-1243.

Greenfield TK, Ye Y, Kerr W, Bond J, Rehm J, & Giesbrecht N. (2009). Externalities from alcohol consumption in the 2005 US national alcohol survey: implications for policy. *International Journal of Environmental Research and Public Health, 6*(12), 3205-3224.

Grittner U, Bloomfield K, Kuntsche S, Callinan S, Stanesby O, & Gmel G. (2021). Improving measurement of harms from others' drinking: Using item-response theory to scale harms from others' heavy drinking in 10 countries. *Drug and alcohol review*.

Gussler-Burkhardt NL, & Giancola PR. (2005). A further examination of gender differences in alcohol-related aggression. *Journal of studies on alcohol, 66*(3), 413-422.

Hasin D, Fenton MC, Skodol A, Krueger R, Keyes K, Geier T, . . . Grant B. (2011). Personality disorders and the 3-year course of alcohol, drug, and nicotine use disorders. *Archives of general psychiatry, 68*(11), 1158-1167.

Hellum R, Bilberg R, & Nielsen AS. (2022). "He is lovely and awful": The challenges of being close to an individual with alcohol problems. *Nordic studies on alcohol and drugs*, 39(1), 89-104.

Hradilova Selin K. (2004). *Svenska dryckesvanor och deras konsekvenser i början av det nya millenniet [Swedish drinking habits and their consequences in the beginning of the new millennium]*. Stockholm: Centrum för socialvetenskaplig alkohol- och drogforskning (SoRAD).

Huhtanen P, & Tigerstedt C. (2012). Women and young adults suffer most from other people's drinking. *Drug and Alcohol Review, 31*(7), 841-846.

Irwin C, Iudakhina E, Desbrow B, & McCartney D. (2017). Effects of acute alcohol consumption on measures of simulated driving: A systematic review and meta-analysis. *Accident; analysis and prevention, 102*, 248-266.

Jaaskelainen M, Holmila M, Notkola I-L, & Raitasalo K. (2016). A typology of families with parental alcohol or drug abuse. *Addiction Research & Theory, 24*(4), 288-299.

Johnson T. (2014). Sources of error in substance use prevalence surveys. *International Scholarly Research Notices*, (Article ID 923290), 1-21.

Karriker-Jaffe KJ, & Greenfield TK. (2014). Gender differences in associations of neighbourhood disadvantage with alcohol's harms to others: a cross-sectional study from the USA. *Drug and Alcohol Review, 33*(3), 296-303.

Karriker-Jaffe KJ, Greenfield TK, & Kaplan LM. (2017). Distress and alcohol-related harms from intimates, friends, and strangers. *Journal of substance use, 22*(4), 434-441.

Karriker-Jaffe KJ, Room R, Giesbrecht N, & Greenfield TK. (2018). Alcohol's Harm to Others: Opportunities and Challenges in a Public Health Framework. *Journal of studies on alcohol and drugs, 79*(2), 239-243.

Karriker-Jaffe KJ, Tam CC, Cook WK, Greenfield TK, & Roberts SCM. (2019). Gender equality, drinking cultures and second-hand harms from alcohol in the 50 US states. *International journal of environmental research and public health, 16*(23).

Kelly E, Darke S, & Ross J. (2004). A review of drug use and driving: epidemiology, impairment, risk factors and risk perceptions. *Drug and alcohol review, 23*(3), 319-344.

Kilian C, Manthey J, & Rehm J. (2020). Gender Differences and the Role of Social Inequality in Alcohol's Harm to Others in Europe. *Journal of studies on alcohol and drugs, 81*(6), 762-769.

Klingemann H, & Gmel G (Eds.). (2001). *Mapping the social consequences of alcohol consumption*. Dordrecht: Kluwer Academic Publishers.

Lange S, Probst C, Gmel G, Rehm J, Burd L, & Popova S. (2017). Global prevalence of fetal alcohol spectrum disorder among children and youth: a systematic review and meta-analysis. *JAMA pediatrics, 171*(10), 948-956.

Laslett A, Catalano PT, Chikritzhs T, Dale C, Doran C, Ferris J, . . . Wilkinson C. (2010). *The Range and Magnitude of Alcohol's Harm to Others*. Fitzroy, Victoria: AER Centre for Alcohol Policy Research, Turning Point Alcohol and Drug Centre, Eastern Health.

Laslett A-M, Callinan S, Mugavin J, Jiang H, Livingston M, & Room R. (2015). *Beyond the Drinker: Longitudinal Patterns in Alcohol's Harm to Others*. Canberra: Foundation for Alcohol Research & Education.

Laslett A-M, Room R, Ferris J, Wilkinson C, Livingston M, & Mugavin J. (2011). Surveying the range and magnitude of alcohol's harm to others in Australia. *Addiction, 106*(9), 1603-1611.

Marmet S, & Gmel G. (2017). Alcohol's harm to others in Switzerland in the year 2011/2012. *Journal of Substance Use, 22*(4), 403-411.

Moan IS, Storvoll EE, Sundin E, Lund IO, Bloomfield K, Hope A, . . . Kristjansson S. (2015). Experienced harm from other people's drinking: A comparison of northern European countries. *Substance Abuse: Research and Treatment, 9*(Suppl 2), 45-57.

Moskalewicz J, Room R, & Thom B (editors). (2016). *Comparative monitoring of alcohol epidemiology across the EU. Baseline assessment and suggestions for future action. Synthesis report*. Warsaw, Poland: PARPA – the state agency for prevention of alcohol related problems.

Murdoch D, Pihl RO, & Ross D. (1990). Alcohol and crimes of violence: present issues. *The International journal of the addictions, 25*(9), 1065-1081.

Murray CJL, & Lopez AD. (2017). Measuring global health: motivation and evolution of the Global Burden of Disease Study. *Lancet, 390*(10100), 1460-1464.

Mäkelä P, Fonager K, Hibell B, Nordlund S, Sabroe S, & Simpura J. (1999). *Drinking Habits in the Nordic countries* (SIFA rapport 2/99). Helsinki: National institute for Alcohol and Drug Research.

Nayak MB, Patterson D, Wilsnack SC, Karriker-Jaffe KJ, & Greenfield TK. (2019). Alcohol's secondhand harms in the United States: new data on prevalence and risk factors. *Journal of studies on alcohol and drugs, 80*(3), 273-281.

Nolen-Hoeksema S. (2004). Gender differences in risk factors and consequences for alcohol use and problems. *Clinical psychology review., 24*(8), 981-1010.

Norström T, & Ramstedt M. (2005). Mortality and population drinking: a review of the literature. *Drug and alcohol review, 24*(6), 537-547.

Nutt DJ, King LA, & Phillips LD. (2010). Drug harms in the UK: a multicriteria decision analysis. *Lancet, 376*(9752), 1558-1565.

Orford J. (2017). How does the common core to the harm experienced by affected family members vary by relationship, social and cultural factors? *Drugs: Education, Prevention and Policy, 24*(1), 9-16.

Orford J, Velleman R, Natera G, Templeton L, & Copello A. (2013). Addiction in the family is a major but neglected contributor to the global burden of adult ill-health. *Social Science & Medicine, 78*, 70-77.

Pisinger VSC, Bloomfield K, & Tolstrup JS. (2016). Perceived parental alcohol problems, internalizing problems and impaired parentchild relationships among 71988 young people in Denmark. *Addiction, 111*(11), 1966-1974.

Popova S, Lange S, Shield K, Mihic A, Chudley AE, Mukherjee RAS, . . . Rehm J. (2016). Comorbidity of fetal alcohol spectrum disorder: a systematic review and meta-analysis. *Lancet, 387*(10022), 978-987.

Probst C, Kilian C, Sanchez S, Lange S, & Rehm J. (2020). The role of alcohol use and drinking patterns in socioeconomic inequalities in mortality: a systematic review. *The lancet. Public Health, 5*(6), e324-e332.

Ramstedt M, Raninen J, Larm P, & Livingston M. (2022). Children with problem drinking parents in Sweden: Prevalence and risk of adverse consequences in a national cohort born in 2001. *Drug and alcohol review, 41*(3), 625-632.

Ramstedt M, Sundin E, Landberg J, & Raninen J. (2014). *ANDT-bruket och dess negativa konsekvenser i den svenska befolkningen 2013 [ANDT use and its negative consequences in the Swedish population in 2013]* (Report nr. 55). Stockholm: STAD (Stockholm förebygger alkohol- och drogproblem), Stockholms läns landsting och Centrum för psykiatriforskning Karolinska Institutet.

Ramstedt M, Sundin E, Moan IS, Storvoll EE, Lund IO, Bloomfield K, . . . Tigerstedt C. (2015). Harm experienced from the heavy drinking of family and friends in the general population: A comparative study of six northern European countries. *Substance Abuse: Research and Treatment, 9*(Suppl 2), 107-118.

Rekve D, Laslett A-M, Room R, Thamarangsi T, & Waleewong O. (2012). *The Harm to Others from Drinking: A WHO/ThaiHealth International Collaborative Research Project*. Melbourne: Centre for Alcohol Policy Research, La Trobe University and Bangkok: Thai Health Promotion Foundation.

Riley EP, Infante MA, & Warren KR. (2011). Fetal alcohol spectrum disorders: an overview. *Neuropsychology review, 21*(2), 73-80.

Room R, Callinan S, Greenfield TK, Rekve D, Waleewong O, Stanesby O, . . . Laslett AM. (2019). The social location of harm from others' drinking in 10 societies. *Addiction, 114(3), 425-433.*

Room R, Ferris J, Laslett AM, Livingston M, Mugavin J, & Wilkinson C. (2010). The drinker's effect on the social environment: a conceptual framework for studying alcohol's harm to others. *International Journal of Environmental Research and Public Health, 7*(4), 1855-1871.

Room R, Laslett A-M, & Jiang H. (2016). Conceptual and methodological issues in studying alcohol's harm to others. *Nordic studies on alcohol and drugs, 33*(5-6), 455-478.

Rosenquist JN, Murabito J, Fowler JH, & Christakis NA. (2010). The spread of alcohol consumption behavior in a large social network. *Annals of internal medicine, 152*(7), 426-433, w141.

Rossow I. (2015). How well do survey studies capture alcohol's harm to others? *Substance Abuse: Research and Treatment, 9*(Suppl 2), 99-106.

Rossow I, Felix L, Keating P, & McCambridge J. (2015). Parental drinking and adverse outcomes in children: A scoping review of cohort studies. *Drug and alcohol review*.

Rossow I, & Hauge R. (2004). Who pays for the drinking? Characteristics of the extent and distribution of social harms from others' drinking. *Addiction, 99*(9), 1094-1102.

Rossow I, & Ramstedt M. (2016). Challenges in estimating population impacts of alcohol's harm to others. *Nordic studies on alcohol and drugs, 33*(5-6), 503-513.

Seid AK, Grittner U, Greenfield TK, & Bloomfield K. (2015). To cause harm and to be harmed by others: New perspectives on alcohol's harms to others. *Substance Abuse: Research and Treatment, 9*(Suppl 2), 13-22. doi:10.4137/sart.s23506

Skog OJ. (1999). Alcohol policy: Why and roughly how? *Nordic studies on alcohol and drugs, 16*, 21-34.

Stanesby O, Callinan S, Graham K, Wilson IM, Greenfield TK, Wilsnack SC, . . . Laslett AM. (2018). Harm from Known Others' Drinking by Relationship Proximity to the Harmful Drinker and Gender: A Meta-Analysis Across 10 Countries. *Alcoholism, clinical and experimental research, 42*(9), 1693-1703.

Stanesby O, Gmel G, Graham K, Greenfield T, Waleewong O, & Wilsnack S. (2020). Improving measurement of harms from others' drinking: A key informant study on type and severity of harm. *Nordic studies on alcohol and drugs, 37*(2), 122-140.

Storvoll E, Moan I, & Lund I. (2016). Negative consequences of other people's drinking: Prevalence, perpetrators and locations. *Drug and Alcohol Review, 35*(6), 755-762.

Sundin E, Landberg J, Raninen J, & Ramstedt M. (2015). *Negativa konsekvenser av alkohol, narkotika och tobak i Sverige: en ettårsuppföljning av beroende och utsatthet för närståendes bruk [Negative consequences of alcohol, drugs and tobacco in Sweden: a one-year follow-up of dependenc and harm from others' substance use]* (Report nr. 149). Stockholm: The Swedish Council for Information on Alcohol and Other Drugs (CAN).

Taylor B, Irving HM, Kanteres F, Room R, Borges G, Cherpitel C, . . . Rehm J. (2010). The more you drink, the harder you fall: a systematic review and meta-analysis of how acute alcohol consumption and injury or collision risk increase together. *Drug and alcohol dependence, 110*(1-2), 108-116.

Waleewong O, Jankhotkaew J, Thamarangsi T, & Chaiyasong S. (2017). Prevalence of harm from others' alcohol drinking and the relationships with demographics and the respondents' drinking behaviors in Thailand. *Journal of Substance Use, 22*(6), 605-611.

Waleewong O, Laslett AM, Chenhall R, & Room R. (2018). Harm from others' drinking-related aggression, violence and misconduct in five Asian countries and the implications. *The International journal on drug policy, 56*, 101-107.

Warpenius K, & Tigerstedt C. (2016). Positioning alcohol's harm to others (AHTO) within alcohol research: A reinvented perspective with mixed policy implications. *Nordic studies on alcohol and drugs, 33*(5-6), 487-502.

Wilsnack RW, Vogeltanz ND, Wilsnack SC, Harris TR, Ahlström S, Bondy S, . . . Weiss S. (2000). Gender differences in alcohol consumption and adverse drinking consequences: cross-cultural patterns. *Addiction, 95*(2), 251-265.

Wilsnack SC, Greenfield TK, & Bloomfield K. (2018). The GENAHTO project (Gender and Alcohol's Harm to Others): Design and methods for a multinational study of alcohol's harm to persons other than the drinker. *The International Journal of Alcohol & Drug Research, 7*(2), 37-47.

World Health Organization. (2010). *Global strategy to reduce the harmful use of alcohol.* Geneva, Switzerland: World Health Organization.

World Health Organization. (2018). *Global status report on alcohol and health 2018*. Geneva, Switzerland: World Health Organization.