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Update of Canada's Low-Risk Alcohol Drinking Guidelines: Overview of Reviews of the Association Between Alcohol Use and Aggression and Violence

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CCSA, 500–75 Albert Street
Ottawa, ON K1P 5E7
613-235-4048
info@ccsa.ca

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Table of Contents

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Executive Summary

Key Messages

- There is consistent evidence linking alcohol to perpetration of intimate partner, male-to-female sexual and general violence, with most event-level evidence suggesting that consuming alcohol, especially large quantities of alcohol, at the time or prior to the incident is associated with a greater likelihood of perpetration.
- The strength of the relationship between alcohol and aggression or violence varies according to the sex/gender of perpetrator, with larger effects found for male than for female perpetrators.
- Efforts to reduce or eliminate alcohol-related aggression and violence need to focus on reducing alcohol use, especially among those who may be likely to perpetrate violence or get involved in violent incidents, such as young adults.
- Persons who have a history of perpetrating alcohol-related violence should avoid drinking altogether.
- Drinking alcohol does not make a person responsible for violence done toward them; therefore, guidance on alcohol should focus on reducing alcohol use in the context of perpetration.

Violence is an important public health problem resulting in injury, death, mental illness and disability, with evidence suggesting that approximately 50% of violent incidents involve alcohol. With a view to inform the update of Canada's Low-Risk Alcohol Drinking Guidelines (LRDGs), the purpose of this report is to provide an overview of recent reviews of the literature on alcohol and aggression or violence (A/V). It focuses on three common forms of A/V that have shown high rates of alcohol involvement: intimate partner A/V, male-to-female sexual A/V, and non-intimate and non-sexual A/V (i.e., general A/V). The role of alcohol in both A/V perpetration (i.e., being aggressive or violent toward another adult) and victimization (i.e., having an act of aggression or violence done toward them) was considered. Relevant details about findings related to sex and gender differences are reported where available. The report is intended for members of the Low-Risk Alcohol Drinking Guidelines (LRDG) Scientific Expert Panels and those interested in understanding in detail the process followed in developing the new guidelines, such as policy makers, healthcare professionals and alcohol scientists.

A comprehensive search of the literature published from the year 2000 to January 2022, including systematic reviews, was performed. A total of 3,826 records were identified and after removal of duplicates, 2,744 titles and abstracts were retrieved. In the end, 54 studies, including 30 studies focusing on intimate partner A/V, 10 on male-to-female sexual A/V and 14 on general A/V were retained and included in the present overview.

Although the exact mechanisms of the association between alcohol use and A/V are unknown, there is overwhelming evidence that alcohol consumption, especially intoxication, is associated with perpetration of A/V, including intimate partner A/V, male-to-female sexual A/V and general forms of A/V. Some evidence indicates that alcohol may increase the severity of A/V. The strength of the relationship between alcohol and A/V was found to vary according to the sex or gender of perpetrator, with larger effects found for male than for female perpetrators.

The literature on the association between alcohol and A/V victimization is less clear. The findings suggest there is likely an association, but there are some mixed and null findings in addition to noteworthy limitations of this literature. However, attributing A/V victimization to alcohol consumption contributes to beliefs that victims of A/V who had used alcohol are responsible or blameworthy for being victimized. Moreover, evidence suggests that interventions to prevent gender-based violence that place the burden to avoid risk of victimization on women and girls are ineffective. Overall, therefore, while alcohol might be a contributing factor in A/V victimization, we state unequivocally that drinking alcohol does not make a person responsible for violence done toward them. Thus, we conclude that lower-risk drinking guidelines should focus on reducing alcohol use by potential perpetrators.

Therefore, efforts to reduce or eliminate alcohol-related A/V need to focus on reducing alcohol use, especially among those who may be likely to perpetrate A/V or get involved in violent incidents. Because A/V decreases with age and is perpetrated more by men than women, prevention efforts should focus on young adults, particularly young men.

1.0 Introduction

Violence is an important public health problem resulting in injury, death, mental illness, and disability (American Public Health Association, 2018; Krug et al., 2002; Mercy et al., 2003). It is a leading cause of death worldwide, especially among young people (World Health Organization, 2020), and experts now recognize that a public health approach is needed focusing on violence prevention (American Public Health Association, 2018). Alcohol use comes with many health risks, including acute and chronic physical health harms (World Health Organization, 2018). It also contributes to many social harms, including aggression and violence. Evidence suggests that approximately 50% of violent incidents involve alcohol (Brewer & Swahn, 2005). Numerous research studies have examined the association between alcohol and violent and aggressive behaviour. These studies have been conducted by investigators from many disciplines including psychology, criminology, sociology, epidemiology, public health and other areas of research. Many recent reviews of the literature have also been published. However, these reviews have yet to be fully integrated and synthesized to better illuminate understanding of the nature of the association between alcohol and violence. To inform the update of Canada's Low-Risk Alcohol Drinking Guidelines (LRDGs), we aimed to conduct an overview of meta-analyses and literature reviews of the wide range of research on the relationship between alcohol consumption by adults and aggressive or violent behaviour.

At the outset of this review, it is important to define the terms "aggression" and "violence." Aggression is a broad term referring to any behaviour intended to harm another person where the target of that behaviour is motivated to avoid harm (Anderson & Bushman, 2002; Baron & Richardson, 1994; Bushman & Huesmann, 2010). Violence has been defined as a more specific form of aggression that is intended to cause severe physical harm (e.g., injury or death) toward the target (Anderson & Bushman, 2002) or involves contact with the law (Hoaken & Stewart, 2003). There is a great deal of variation in how these terms are used in the literature, with some researchers using them interchangeably and others using the term violence to refer to a wide spectrum of behaviours (i.e., not just severe forms of aggression) (National Collaborating Centre for Mental Health, 2015). Because of the range of definitions and usages of these terms, unless a specific form of A/V is being discussed, we refer to both aggression and violence (A/V) jointly throughout the report, referring generally to behaviours that are intended to harm, hurt or injure another person. Reviews on accidental harms or injuries or behaviours that might be considered inherently anti-social but not intentionally harmful, such as drinking and driving, were not examined in this overview.

We summarize research on the relationship between alcohol and both A/V perpetration and victimization. In the context of this overview, perpetration refers to the act of carrying out A/V and victimization refers to the process of being victimized (see Notes on Terminology). It is important to note, however, that A/V does not always involve a clear victim or perpetrator; that is, when both parties are aggressive, a person can be both a perpetrator and a victim in the same incident of A/V.

Notes on Terminology

- In the context of this overview, perpetrator refers to the person who was aggressive or violent **toward another** person or persons. Perpetration refers to the act of carrying out A/V.
- Victim refers to the person or persons **to whom** the aggressive or violent act was done (commonly referred to in the literature as the victim, target or survivor); that is, the person who was victimized by the perpetrator. Victimization refers to the process of being victimized.
- These terms are not meant to label those who experience violence. Use of terms "victim" or "victimization" is by no means intended to assign blame, imply weakness or guilt, or otherwise stigmatize those who experience A/V, nor is it meant to imply any particular response or impact of the A/V on the person.
- We use the terms "sex and gender" throughout this overview because, while some studies restricted their analyses to sex (biological attributes), both alcohol consumption and A/V are inextricably linked to gender (socially constructed roles, norms, values and behaviours).

1.1 Theories About the Role of Alcohol in Incidents of Aggression and Violence

While evidence suggests that alcohol is a causal contributing factor in A/V (e.g., see meta-analysis of experimental research in Bushman (1997) and Exum (2006)), alcohol is neither necessary nor sufficient for A/V to occur. That is, A/V occurs without alcohol consumption and alcohol consumption occurs without A/V. There are multiple factors affecting the alcohol-A/V relationship, including the effects of alcohol experienced by people who consume alcohol; their personalities, beliefs and attitudes and other characteristics; the immediate drinking situation; and the culture within which the drinking occurs (Choenni et al., 2017; Exum, 2006; Graham et al., 1997; Graham et al., 1998; Parrott & Eckhardt, 2018).

Alcohol has a myriad of effects on cognition and problem solving, perception and attention, volition and emotions. One well-known theory describes alcohol's effect on attention as "alcohol myopia" — "the short-sighted information processing that is part of alcohol intoxication" (Steele & Josephs, 1990, p. 922). This theory posits that alcohol-related A/V is the result of an interaction of alcohol-induced focus on salient features of the environment combined with situational factors where aggression provoking stimuli are salient and inhibiting stimuli less salient (see also Giancola et al., 2010). However, other effects of alcohol are also implicated in A/V, including impaired cognitive executive functioning that reduces the ability of the person who consumes alcohol to accurately appraise the situation, see the perspectives of others, consider the consequences and defuse a situation (Eckhardt et al., 2015; Giancola, 2000). Research has shown that alcohol impairs risk appraisal (Zeichner & Pihl, 1979), increases impulsivity and risk taking (Pihl & Peterson, 1993), and impairs problem solving in conflict situations (Sayette, 1993), all effects that make aggression more likely in certain situations, especially with greater intoxication.

As apparent for effects such as alcohol myopia where A/V is dependent on the salient features of the environment, the link between alcohol and A/V is dependent on the situation. Situational factors, such as permissiveness, intoxication of people generally in the environment, frustrating or provoking stimuli, and environmental cues have been shown to be predictive of aggressive behaviour, both in the natural environment (Graham & Homel, 2008) and in experimental contexts (see also Graham et al., 1996 and Ito et al., 1996).

The broader culture also influences the relationship between alcohol and A/V. This relationship is stronger in cultures where alcohol-related A/V is both expected and accepted. Conversely, alcohol-related A/V is less likely in cultures where there are no expectations that people will become violent when drinking and where intoxication is not accepted as a reason or excuse for violence. These cultural variations are demonstrated in the classic cross-cultural study by MacAndrew and Edgerton (1969) that found some societies where violence almost always occurred when people were drinking and others where violence was rarely associated with drinking. Evidence from research on young adult drinking and barroom violence suggests that drinking to intoxication and alcohol-related violence is normalized in Canada (Graham et al., 2013; Wells et al., 2009; Wells et al., 2011; Wells et al., 2013). On the other hand, a cross-national study of alcohol consumption and intimate partner violence (IPV) found that the percent of respondents and partners who were drinking at the time of their most severe incident of IPV in the past two years was lower in Canada than in some other countries such as the Czech Republic and India (Graham et al., 2011).

Finally, with respect to perpetration of A/V, the characteristics of the people who consume alcohol are also critical when understanding the relationship between alcohol and A/V. Some people never become aggressive when they drink, while others, regularly engage in A/V when they drink. Experimental and survey research have identified a number of personal characteristics that moderate the relationship between alcohol and aggression, including aggressive personality, expectations about the effects of alcohol, hyper-masculinity and marital dissatisfaction (for IPV) (Graham et al., 1998). Studies of A/V in licensed premises indicate that A/V is more likely for men, individuals associated with a subculture of violence and people high on impulsivity (Graham & Homel, 2008).

The exact mechanisms by which alcohol consumption is related to being the victim of A/V are different from those involved in A/V perpetration. In particular, for risk of being victimized, alcohol's effects on cognition may impair a person's ability to recognize or avoid risky situations (Davis et al., 2009; Testa & Livingston, 2018). In fact, a common tactic used by perpetrators of sexual A/V is to convince or trick targets into consuming alcohol to gain their compliance, or to target women who are intoxicated (Tyler et al., 1998). Additionally, being in risky settings in which people are intoxicated may increase a person's likelihood of being exposed to potential perpetrators (Lindgren et al., 2009). Moreover, the association of alcohol with victimization is likely bi-directional. That is, being the victim of A/V can lead to increased alcohol consumption, with some victims drinking as a way of coping with trauma-related symptoms (Fossos et al., 2011; Kaysen et al., 2007; Khantzian, 1997; Ullman et al., 2013). This latter mechanism, though important, is not relevant to the current overview, which is concerned with alcohol's role in increasing the likelihood of A/V.

1.2 The Present Overview

The goal of this rapid overview of recent reviews of the literature on alcohol and A/V is to inform the update of Canada's LRDGs by clarifying and synthesizing knowledge on the association between alcohol and A/V. We identified three common forms of A/V that have shown a high rate of alcohol involvement: intimate partner A/V (IPV), male-to-female sexual A/V (SV), and a category of general A/V (GV) that includes male-to-male A/V, as well as other forms of non-intimate, non-sexual A/V between adults and non-specific A/V. In terms of IPV, research has consistently found higher rates of IPV by intimate partners who consume large quantities of alcohol (Desjardins & Hotton, 2004; Foran & O'Leary, 2008; Jeyaseelan et al., 2004; Kyriacou et al., 1999; White & Chen, 2002; Wolff et al., 2006) and that IPV often occurs after one or both of the couple have been drinking (Thompson & Kingree, 2006). Research has also linked IPV toward women to drinking occasions of the male

partner (Fals-Stewart, 2003; Jejeebhoy, 1998; Natera et al., 1997; Rao, 1997). Additionally, studies in the United States have found that aggression by a male toward a female partner is more severe and injurious when the male partner has been drinking (Brecklin, 2002; Leonard & Quigley, 1999; Martin & Bachman, 1997; Testa & Quigley, 2003; Thompson & Kingree, 2006); a similar link between drinking and IPV severity has been found in cross-national research (Graham et al., 2011).

Evidence also suggests an important link between alcohol and male-to-female sexual violence (SV) perpetration (Abbey et al., 1996; Abbey et al., 2004; Harrington & Leitenberg, 1994; Koss, 1988; Presley et al., 1997; Senn et al., 2014; Seto & Barbaree, 1995; Testa, 2002; Tjaden & Thoennes, 2006). Although women can perpetrate SV toward men and there are instances of SV among LGBTQS+ populations, most SV is perpetrated by men toward women (Brooks, 2013; de Crespigny et al., 1998; Fisher et al., 2000; Fox & Sobol, 2000; Garland et al., 2004; Graham & Homel, 2008; Graham et al., 2014; Kelley-Baker et al., 2008; Parks & Miller, 1997; Parks & Zetes-Zanatta, 1999; Ronen, 2010). As such, we restrict our review to male-to-female SV.

There is a high rate of non-intimate and non-sexual physical A/V that involves men as both perpetrators and victims (Fox & Zawitz, 2007; United Nations Office on Drugs and Crime, 2019), especially A/V in public drinking settings (Graham & Homel, 2008). Thus, originally, we selected male-to-male A/V as the third category. However, few reviews were found that focused specifically on alcohol and male-to-male A/V, possibly because male-to-male A/V is considered the default normative form of physical violence (Duncan et al., 2020) and not considered to be a special form of A/V needing its own review. Given this lack of reviews on male-to-male A/V, the third category was changed to a more general form of A/V (GV) that includes other forms of non-intimate non-sexual A/V between adults as well as male-to-male.

Thus, consistent with Crane et al. (2016), the final categories of A/V included in this review were:

- Intimate partner A/V (IPV)
- Male-to-female sexual A/V (SV); and
- General A/V (GV) between adults (i.e., non-intimate and non-sexual A/V).

Finally, although this overview covers a large volume of the literature on alcohol and A/V, it does not examine the link between alcohol and A/V among specific populations and communities, such as Indigenous peoples and 2SLGBTQ+ for whom the relationship between alcohol consumption and A/V may be related to distinct factors, such as the impacts of discrimination and colonization. Such a focus is very important for targeted programming, but it remains under-studied at the present time. Thus, research is greatly needed to assess the role of alcohol in A/V in diverse populations to ensure the appropriateness of public health and health promotion advice for specific groups.

2.0 Methods

2.1 Search Protocol

After developing the search strategy in consultation with a research librarian at the Centre for Addiction and Mental Health (CAMH), we conducted a comprehensive search of the literature published from 2000 up to completion of the search, January 21, 2022, using the following databases: Medical Literature Analysis and Retrieval System Online (MEDLINE) and Excerpta Medica Database (EMBASE) using the OVID platform, PubMed, PsychINFO, PsychNET, Web of Science, Criminal Justice Abstracts, Cochrane CENTRA, and other reviews from our personal collections. Search subject terms used were based on controlled vocabulary (MeSH keywords) in combination with adjacency operators and free text terms for the following concepts: SV, gender-based violence, IPV, male-to-male violence, alcohol consumption or intoxication, and reviews (see Appendix 1).

To maintain transparency and objectivity, two reviewers independently conducted Level-1 (title and abstract) and Level-2 (full-text) screening. A random sample of excluded full-text article titles (N=30) was reviewed by a third team member, resulting in no changes. Three authors completed data extraction and risk of bias assessment for the final sample of articles. Any conflicts or inconsistencies in judgments between authors were resolved by discussion and consultation with a third independent reviewer and broadly by the review team.

2.1.1 Eligibility Criteria and Study Selection

Articles obtained from the search results and those included based on screening were assessed by the authors first for the following inclusion criteria:

1. Examined alcohol consumption as an exposure as it relates to perpetration and victimization of A/V, including A/V occurrence and severity across three types of A/V:
    i. Intimate partner A/V (IPV)
    ii. Male-to-female sexual A/V (SV)
    iii. General A/V (GV) between adults (i.e., non-intimate and non-sexual A/V).
2. The review was published in 2000 or later.
3. The full text of the article was available in English.

2.1.2 Restrictions and Exclusions

No restrictions were placed on geographic location, observation period or follow-up time, or sample size. However, reviews were excluded if they (1) included no studies of adults in the general population (i.e., we excluded reviews that focused solely on youth under 18 years of age, incarcerated populations or those in treatment for alcohol or drug addiction); (2) focused on interventions or evaluations; and (3) focused on studies that examined only density of alcohol outlets or used density of alcohol outlets as a proxy for alcohol consumption.

The present overview included reviews that examined the relationship between alcohol and violence where alcohol consumption was likely to have occurred or might have occurred before or during the violence. That is, we excluded reviews that examined alcohol consumption as an outcome of violence or where violence was a predictor of alcohol use. Although alcohol consumption in reaction

to violence (e.g., as a coping mechanism) has been identified as an important negative health consequence of violence, particularly for victims (Fossos et al., 2011; Kaysen et al., 2007; Khantzian, 1997; Ullman et al., 2013), findings related to alcohol consumption following experiences of violence do not inform drinking guidelines in terms of risk of subsequent violence.

2.1.3 Data Extraction and Synthesis

Using a data extraction form developed a priori, three team members extracted the following information from each review article:

a) Authorship

b) Publication years of the review and its included studies

c) Type of review (e.g., meta-analysis, narrative review (i.e., not meta-analysis))

d) Type of studies included in review: cross sectional, longitudinal, experimental laboratory based, emergency room and hospital injuries based

e) Sex or gender of perpetrators and victims examined in the review

f) Sample characteristics of studies included in the review: sex or gender, membership in specific subpopulations (e.g., college students, clinical sample, pregnant women, etc.), countries and regions

g) How alcohol consumption was measured: usual frequency of drinking, usual number of drinks consumed, usual total consumption over a specified period (e.g., weekly, monthly), heavy episodic or binge drinking (e.g., consumption of four, five or more drinks on a single occasion for men and women, maximum drinks per occasion), event-level (i.e., drinking immediately before or during A/V), blood alcohol concentration (BAC) when violence occurred, drinking problems or drinking disorder, etc.

h) How A/V was measured: victimization and perpetration, type of violence (e.g., coercion, harassment, minor to severe physical, sexual assault or rape, verbal, psychological, etc.), severity of aggression, time period for which perpetration or victimization was measured (e.g., past year, during relationship, on one occasion, ever in lifetime, number of incidents, etc.)

i) For IPV: type of perpetrator-victim relationship (i.e., male-to-female, female-to-male, male-to-male, female-to-female)

j) Number of studies included in the review, and number of relevant studies included in the present overview if not all studies were relevant

k) Findings or measures of effects reported for the exposure-outcome relationship

l) Quality and risk of bias findings and limitations (describe issues)

m) Other notes related to focus of review if different from our overview (e.g., search for risk factors), relevant implications, etc.

2.1.4 Critical Appraisal (Risk of Bias and Review Quality)

For each review paper, one reviewer evaluated the risk of bias and quality of included reviews (Whiting et al., 2016), using the following three steps from the ROBIS instrument (Whiting et al.,

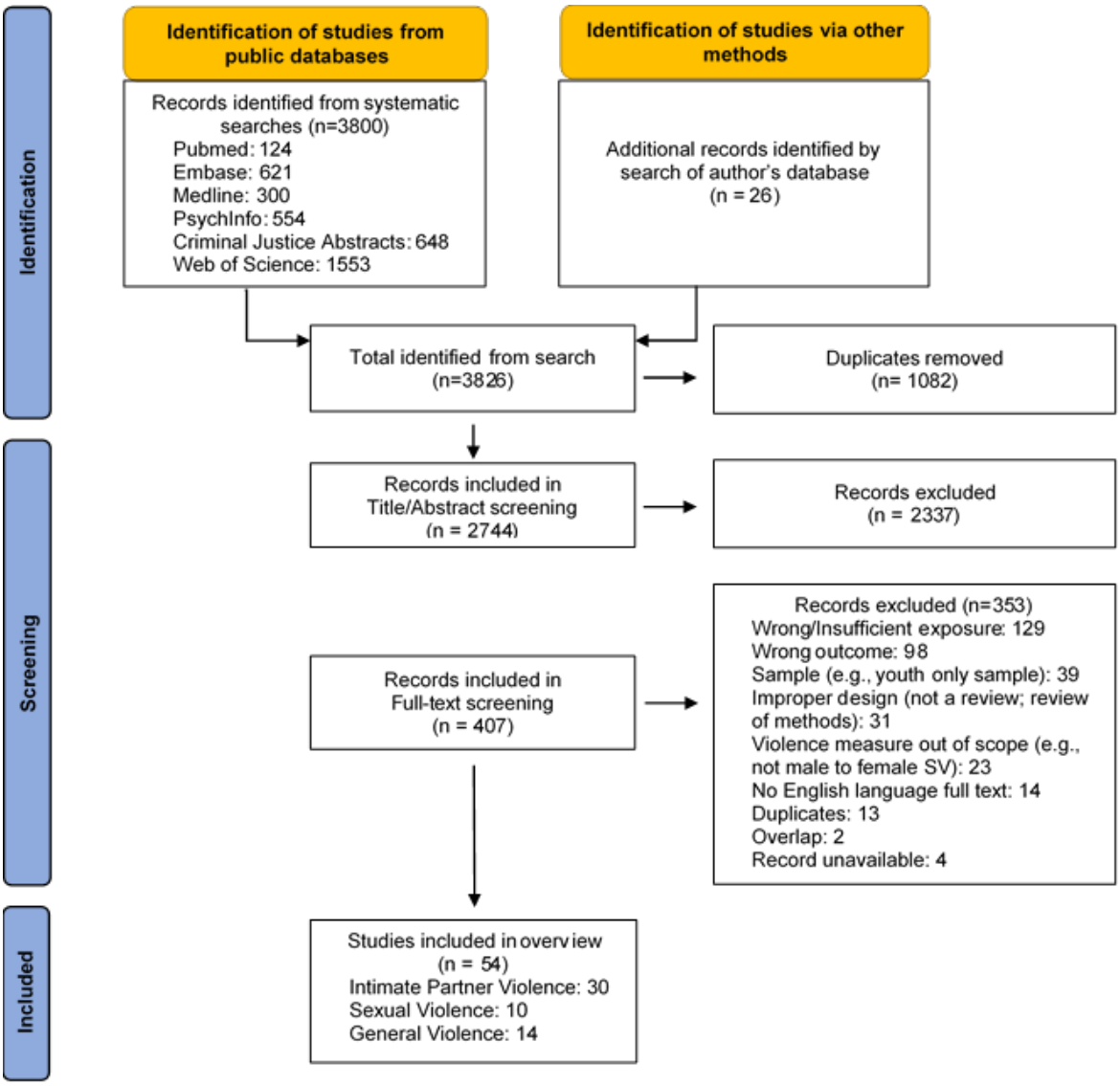
2016) to determine systematically the strength of included reviews, as well as their conceptual and methodological quality:

1. Assess relevance or whether the review addresses the PICO (i.e., population or problem, intervention or exposure, comparison, outcome) or posited objective;
2. Identify methodological concerns and limitations with the review process and the methodological steps used to minimize risk of bias in summary estimates and review findings (i.e., definition of eligibility criteria, search strategy and identification or selection of studies, data collection and analytical approach);
3. Evaluate risk of bias in the interpretation of review findings and determine if authors appropriately disclosed or addressed any limitations identified in Phase 2 domains.

3.0 Search Results and Structure of Overview

As shown in the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) chart (Page et al., 2021; Figure 1), the initial search resulted in 3,826 records. After removal of duplicates, 2,744 titles and abstracts were retrieved. Screening of abstracts resulted in 407 full-text articles being retrieved. A further 353 records were excluded based on review of full-text articles, resulting in 54 reviews included in the present overview, including 30 reviews of IPV and 10 reviews of SV. No reviews were found that specifically examined male-to-male A/V, however, 14 reviews were found that examined A/V by men or A/V in general (GV) considered to be broadly applicable to this category of violence. Characteristics of the 54 reviews included in the present overview are summarized in the attached Appendix 2. More detailed descriptions and findings from reviews are reported below.

Figure 1: PRISMA flow chart



3.1 Risk of Bias and Limitations of Primary Literature

As per Cochrane recommendations for any systematic review, each review in the present overview was assessed in terms of risk of bias. All reviews included in this overview were classified as having a high risk of bias because of methodological concerns with the review or measurement issues related to alcohol consumption or A/V. Although some reviews specifically addressed bias, many did not complete a formal assessment of bias. Some reviews were further limited by their search strategy, with use of too few or overly specific search terms or limited databases. Several reviews did not provide adequate detail of the search methodology used, such as whether screening and data extraction procedures were done independently by more than one reviewer. In many cases, a predefined study protocol was not evident, and the extent to which these reviews deviated from pre-specified methodology is unknown. However, given the general consistency of findings across

reviews and the availability of a number of well-done reviews, these potential biases are unlikely to affect the overall findings.

There was a great deal of heterogeneity in the measures used for alcohol consumption making it difficult to compare estimates across studies. Some reviews reported on "alcohol use" or "alcohol "abuse"" or "alcohol problems" without providing a definition or adequate information to determine the specific measures used in the studies. In some reviews, results for different measures were not distinguished or comparisons of findings were made when studies had important differences in measures or methods (e.g., use and overuse were combined and reported as one measure of alcohol consumption). The meaning and time reference or acuteness or chronicity for alcohol "abuse" or "problems" were not always reported.

Similar to alcohol measures, violence measures included in the reviews varied and were sometimes not well defined, with some reviews providing only a broad definition. Some measures were study specific or unspecified in the review. The frequency and time frames for A/V (e.g., any incident within lifetime, within a specified period of time such as past year, or during the current relationship, or number of incidents in a specified period of time) were also undefined in some reviews. Despite these limitations, however, there were some common validated measures used across many studies such as the Sexual Experiences Survey (Koss & Oros, 1982; Koss et al., 2007), and standard measures of heavy episodic drinking such as the five and over drinks and four and over drinks measure of heavy episodic drinking for men and women, respectively.

Related to measurement issues, some terminology used in this literature is ambiguous or undefined. Terminology has also evolved over time, with more recent wording using less stigmatizing language relating to people experiencing difficulties related to alcohol use or violence. For example, previous terms such as "alcohol abuse," "alcoholic/alcoholism," "batterer" or "abuse" in reference to A/V are no longer considered useful. In the present overview, we use currently accepted terminology and definitions where possible and put terms in quotation marks when the exact meaning is not evident in the review.

Many reviews examined various risk factors for A/V or several different outcomes associated with alcohol use, including A/V but also other consequences of drinking. Thus, studies of alcohol use and A/V were sometimes only a subset of those reviewed. In the present overview, we report only on the subset of studies relevant to the association between alcohol use and A/V. Variability in findings also emerged depending on whether the study examined bivariate or multivariate results. For example, some studies of SV reported a non-significant relationship between alcohol and SV when past perpetration was controlled for. Others explored moderating variables that altered the relationship between alcohol and A/V. As with all research, there is a general bias for null findings to be less likely to be reported; however, a number of reviews took this bias into consideration.

Finally, limitations of reviews partially reflect challenges inherent to this field. A key challenge in this literature is that a causal contribution of alcohol cannot be assumed in most studies. Cross-sectional studies are problematic because temporal ordering cannot be determined. Even longitudinal designs, while helpful in identifying distal associations, are not useful in detecting whether alcohol is causally linked to specific incidents of aggression. Event-level studies in real life settings (e.g., studies comparing naturally occurring A/V events across multiple drinking occasions within individuals over time) are potentially better at determining whether there is a dose–response relationship between alcohol and violence, but again the exact role of alcohol in the aggressive incident is not fully captured. While experimental studies in controlled laboratory settings, where standard doses of alcohol are administered to participants and aggressive responses are measured, provide better assessments of a potential dose–response relationship between alcohol and

violence, their limitations are also noteworthy. For example, the potential for bias due to reliance on student samples in lab-based studies has been noted (Giancola et al., 2002). Additionally, the external validity of such research has been questioned because incidents of aggression in the laboratory may not reflect naturally occurring A/V (Tedeschi & Quigley, 1996). Smyth (2013) demonstrated that among primarily experimental (e.g., alcohol *v.* placebo) as well as animal-based studies, none of the studies were able to claim that a biological response alone was able to fully account for the link between alcohol and violence, illustrating that A/V incidents are complex interactive processes influenced by social, situational, cultural and individual factors (Graham & Homel, 2008). Finally, due to ethical reasons, alcohol doses administered in these studies (BAC ≤ .13) are lower than many naturally occurring instances of alcohol intoxication (Ito et al., 1996); therefore, experimental studies are generally unable to assess the role of high levels of intoxication on A/V. However, key strengths of experimental studies are the controlled administration of alcohol and the ability to measure the effects of specific moderating personal and situational variables. Finally, in terms of limitations of studies on A/V victimization, those examining the relationship of homicide or violent injury with alcohol consumption of the victim may partially reflect alcohol's role in perpetration.

Despite these potential sources of bias, as noted in the discussion, a key strength of this overview is its rigorous synthesis of a vast and diverse literature, spanning multiple disciplines (e.g., sociology, epidemiology, criminology, epidemiology), research designs (laboratory based and experimental, cross sectional, longitudinal), and samples (general populations, college and student populations, clinical populations) across three major domains of A/V. Each type of methodological design comes with its own unique set of limitations, but each addresses the limitations of other designs. As such, if the results are consistent **despite** these multiple domains of heterogeneity, we will be more confident in the overall results.

3.2 Structure of Overview

Results are reported separately for IPV, male-to-female SV and general violence (non-partner) (GV). For each type of violence, findings are reported separately for the role of alcohol in A/V perpetration (i.e., alcohol consumption by the person who perpetrates violence) and victimization (i.e., alcohol consumption by the person being victimized), respectively. Some reviews examined alcohol use by perpetrators only, victims only, or both perpetrators and victims, and thus findings for some reviews are reported under more than one section. Some reviews or studies included only men, some only women and some both sexes. Relevant details about findings related to sex or gender differences are reported where available.

Additionally, it should be noted that some reviews examined more than one type of A/V (e.g., non-partner GV and IPV toward women). When it was possible to separate findings by the type of violence, we included the findings in the relevant sections of this overview. If we were unable to distinguish findings for each type of violence, we included the review in the most relevant section. For example, many reviews of IPV included SV by a partner, and these reviews were included in the IPV section rather than the SV section. However, it is possible that some reviews included in the SV section might have included, but not distinguished, findings related to sexual violence by partners.

In each section below, we report results in the following structure: 1) findings on A/V event-level alcohol use (i.e., alcohol use during or just prior to A/V); and 2) findings on the association between drinking patterns (e.g., heavy episodic drinking, usual quantity and frequency of drinking) or problems from alcohol (e.g., "alcohol abuse," drinking problem or harmful or hazardous drinking) and A/V. Therefore, some reviews are discussed under multiple sections. Within each of these

sections, findings from meta-analyses are reported first when available, followed by descriptions from narrative reviews (i.e., reviews that did not use meta-analytic methods to summarize findings). When quantitative data were reported in the analyses, we provide parameter estimates, confidence intervals or p-values. For narrative reviews, when quantitative findings are not available, we summarize the findings and report statistics when given.

Across the reviews, we examined the extent of overlap (i.e., degree to which the same papers were reviewed) and excluded those that were identified as having substantial overlap (i.e., 70% or more) with other reviews in terms of included studies as well as in analyses or findings (i.e., reached the same conclusions). Specifically, we excluded two reviews of male perpetration of IPV (but retained portions of these reviews examining victimization), and two reviews of perpetration of GV. Some reviews were included that overlapped substantially, but differed in their focus, analyses or findings, for which the overlap is identified in the results section. Where it was possible to determine overlap in the remaining reviews, no or only minor overlap was identified (e.g., one to three studies in common with another review). We have noted in the results section when caution is required for specific reviews because of potential overlap. However, it was not always possible to determine which studies were included in some reviews because of lack of clarity in the review and overlap may exist that was not identified.

Finally, as noted above, some reviews did not provide details about the specific measures used in the studies they reviewed. Where the alcohol consumption measure is not specified in our summary, it means it was unspecified in the review or the review included a variety of measures.

4.0 Alcohol and Intimate Partner Violence

This section describes 30 reviews that examined the relationship between alcohol use and IPV, including physical., sexual and other kinds of partner violence (e.g., psychological, emotional, financial). Of these, 24 reviews examined alcohol use by perpetrators (Alebel et al., 2018; Boyacioğlu et al., 2021; Cafferky et al., 2018; Cao et al., 2021; Capaldi et al., 2012; Choenni et al., 2017; Crane et al., 2016; Cummings et al., 2013; Duval et al., 2020; Foran & O'Leary, 2008; Gil-Gonzalez et al., 2006; Larsen & Hamberger, 2015; Lee et al., 2020; Li et al., 2010a; Mallory et al., 2016; Marshal., 2003; Moffitt et al., 2013; Mojahed et al., 2020; Rothman et al., 2012; Schumacher et al., 2001; Semahegn & Mengistie, 2015; Shamu et al., 2011; Shorey et al., 2011; Tenkorang et al., 2021). Seventeen reviews examined alcohol use by victims (Ali & Naylor, 2013; Bacchus et al., 2018; Cafferky et al., 2018; Cao et al., 2021; Capaldi et al., 2012; Cummings et al., 2013; Devries et al., 2014; Duval et al., 2020; Larsen & Hamberger, 2015; Li et al., 2010a; Marshal., 2003; Muluneh et al., 2021; Schumacher et al., 2001; Shamu et al., 2011; Shorey et al., 2011; Spencer et al., 2019; Stith et al., 2004). Two examined the relationship between alcohol consumption and severity of IPV (Capaldi et al., 2012; Larsen & Hamberger, 2015). Nine reviews examined both male-to-female and female-to-male IPV (Cafferky et al., 2018; Capaldi et al., 2012; Choenni et al., 2017; Cummings et al., 2013; Duval et al., 2020; Marshal., 2003; Rothman et al., 2012; Shorey et al., 2011; Spencer et al., 2019), while the remaining reviews examined only male perpetrator–female victim IPV (Alebel et al., 2018; Ali & Naylor, 2013; Bacchus et al., 2018; Boyacioğlu et al., 2021; Cao et al., 2021; Devries et al., 2014; Duval et al., 2020; Gil-Gonzalez et al., 2006; Larsen & Hamberger, 2015; Lee et al., 2020; Li et al., 2010a; Mallory et al., 2016; Moffitt et al., 2013; Mojahed et al., 2020; Muluneh et al., 2021; Schumacher et al., 2001; Semahegn & Mengistie, 2015; Shamu et al., 2011; Spencer et al., 2019; Tenkorang et al., 2021; Thompson & Kingree, 2006). In most reviews, the IPV involved an opposite-sex partner, or the sex or gender of the partner was not identified or was implied to be the opposite sex. No reviews were found that examined only female-to-male IPV or IPV specifically among same-sex partners.

4.1 Alcohol and IPV Perpetration

Summary of Findings: Alcohol and IPV Perpetration

- Event-level alcohol consumption was associated with perpetration of IPV, but the strength of the relationship varied by sample and sex or gender of perpetrator (larger for male than for female perpetrators).
- Patterns of heavy episodic drinking and drinking to intoxication were positively associated with IPV perpetration, with weaker associations found for drinking frequency.
- As with event-level drinking, the relationship between usual drinking pattern and IPV perpetration was stronger for men than for women.
- Drinking problems or alcohol use disorder were positively associated with IPV perpetration, with stronger relationships for male than for female perpetrators (although some inconsistent findings were also reported).
- Some evidence suggested that alcohol use was associated with more severe IPV.

4.1.1 IPV Event-Level Alcohol Consumption by Perpetrators

This section describes findings from reviews that examined event-level alcohol use by the perpetrator in IPV; that is, alcohol use at the time or prior to IPV perpetration. Seven reviews (Capaldi et al., 2012; Choenni et al., 2017; Crane et al., 2016; Duval et al., 2020; Larsen & Hamberger, 2015; Moffitt et al., 2013; Shorey et al., 2011) of alcohol use during or just prior to perpetration of IPV were identified.

Meta-Analyses

One meta-analysis of experimental research on the relationship between alcohol consumption and IPV was found. In their review of 22 experimental studies on alcohol and aggression, Crane et al. (2016) identified six studies of the effects of acute alcohol consumption on aggressive behaviours related to intimate partners by men who had consumed alcohol compared to a control group of men who had not consumed alcohol. Couples' conflict resolution within their relationship was assessed in three studies in which participants' verbal behaviours toward their partner were coded as negative or hostile. In the other three studies, after listening to audio-recordings of fictitious female intimate partners engaging in ambiguous but provocative interactions with others, participants' thoughts and feelings were recorded and coded for aggressive content. An overall medium effect size (Cohen's d = .45, 95% CI [.24, .66], $p < .001$) was found for the relationship between alcohol consumption and aggressive behaviour.

Narrative Reviews

Six literature reviews (Capaldi et al., 2012, Choenni et al., 2017; Duval et al., 2020; Larsen & Hamberger, 2015; Moffitt et al., 2013; Shorey et al., 2011) examined alcohol consumption during or just before IPV, including two reviews of dating violence (Duval et al., 2020; Shorey et al., 2011), one of couples (Capaldi et al., 2012), one of clinical and other specialized samples (Larsen & Hamberger, 2015), one of studies in a specific geographic area (Moffitt et al., 2013), and one review that examined both alcohol and drug use (Choenni et al., 2017).

Shorey et al. (2011) reviewed the relationship between alcohol and dating violence perpetration (including physical, psychological and SV) in 26 studies of male college students, 11 of female students, and eight that combined male and female college student perpetrators. Four studies reported findings related to the use of alcohol during or immediately prior to perpetration of dating violence (findings related to drinking patterns or problems, victimization and SV are described in subsequent sections). They reported the following percentages of perpetrators who had consumed alcohol or had been under the influence prior to violence: (1) 100% of male and 18% of female perpetrators of physical dating violence; (2) 58% of male and 75% of female perpetrators of psychological dating violence; and (3) 31% to 50% of perpetrators and (4) 40% of perpetrators, respectively, among two samples that combined male and female perpetrators of physical dating violence. The number of drinks consumed was not reported.

Duval et al. (2020) conducted a review of factors associated with risk of dating violence and SV perpetration among undergraduate college students, including 10 studies that examined alcohol consumption. However, only one study examined alcohol consumption at the time of A/V and it found that both the perpetrator and victim were drinking at the time in all reported incidents of physical "abuse."

Larsen and Hamberger (2015) reviewed factors related to male- and female-perpetrated IPV among clinical and other specialized samples (e.g., women in alcohol treatment, military personnel,

arrestees for IPV), including 12 studies that examined alcohol or drug use. Findings from individual studies of drinking at the time of IPV were as follows: 78% of men and 67% of women had used alcohol or drugs at the time of their arrest for IPV; 46% of male and 17% of female perpetrators had been drinking prior to the incident; male perpetrators were more likely than female perpetrators to have been drinking in both one-sided and mutually violent incidents (two studies). This review also reported findings related to the effects of alcohol on the severity of IPV. Their findings suggest that both one-sided and mutual IPV toward women were more severe when the perpetrator had been drinking, and that both physical and emotional "abuse" were more severe when the perpetrator had been drinking, for both male and female perpetrators. Results were not provided for all 12 studies; therefore, there may have been null findings in this review which were not reported.

Capaldi et al. (2012) included one study in their review of risk factors for IPV between couples that found that alcohol "involvement" was associated with more severe IPV perpetration for women but not for men (after controlling for women's alcohol use and other variables).

In their review of literature related to alcohol use and male-to-female IPV in the Canadian northern territories, Moffitt et al. (2013) described general patterns of family violence or IPV linked to alcohol consumption based on four studies. Only one study looked at alcohol use during IPV, which found 65% of victims of an IPV incident reported that their partner had been drinking during the incident.

In a systematic review of studies on the association of alcohol and illicit drug use with perpetration of IPV and child maltreatment, Choenni et al. (2017) examined 69 studies related to alcohol consumption and IPV involving cohabiting couples in community, clinical and specialized (e.g., pregnant women, specific occupations) settings in industrialized countries. Findings from one study included in their review indicated that alcohol-dependent patients used more alcohol in the 12 hours prior to violent conflicts (not defined) with a partner than prior to non-violent conflicts.

4.1.2 Drinking Patterns or Problems Associated with IPV Perpetration

This section describes findings from reviews that examined the association between drinking patterns and alcohol problems with IPV perpetration. Quantitative estimates of the relationship between alcohol and IPV from meta-analyses are reported first, followed by findings from narrative reviews.

Meta-Analyses

Eight meta-analyses (Alebel et al., 2018; Cafferky et al., 2018; Foran & O'Leary, 2008; Gil-Gonzalez et al., 2006; Mallory et al., 2016; Muluneh et al., 2021; Rothman et al., 2012; Tenkorang et al., 2021) of the relationship between drinking pattern or problems and IPV were found. Two reviews examined male and female perpetrators (Cafferky et al., 2018; Foran & O'Leary, 2008), two male perpetrators only (Gil-Gonzalez et al., 2006; Mallory et al., 2016), three focused specifically on African samples (Alebel et al., 2018; Muluneh et al., 2021; Tenkorang et al., 2021), and one on dating violence (Rothman et al., 2012). All eight meta-analyses found a positive relationship between alcohol consumption and male and female IPV perpetration, with estimates larger for men than for women. As shown below in the more detailed descriptions of the meta-analyses, results also suggest that alcohol "abuse" and dependence or alcohol problems and heavy or binge drinking tend to be more strongly associated with IPV perpetration than usual drinking pattern, and that quantity (i.e., amount consumed on an occasion) and overall volume of drinking (total amount consumed over a specified time period) tended to be more strongly associated with IPV than frequency of drinking.

A meta-analysis including 50 study estimates by Foran and O'Leary (2008) found small to moderate effect sizes for the relationships of alcohol use (across a variety of alcohol consumption measures) or "abuse" and past-year IPV perpetration by men toward women (r = .23, 95% CI [.21, .24], p < .05, 46 estimates), and small effect sizes for female-to-male perpetration (r = .14, 95% CI [.08, .20], p < .05, 8 estimates), among married, dating or divorced individuals in clinical and community samples. Effect sizes for male-to-female (but not female-to-male) violence varied depending on moderators included in the estimation, such as age, socioeconomic status, hostility, drug use and marital satisfaction. Estimates for male-to-female perpetration (30 estimates) indicated that the relationship was strongest for substance use dependence and usual quantity consumed. The effect size for alcohol dependence was r = .33, 95% CI [.21, .44], 10 estimates) and r = .22 for problem drinking (95% CI [.17, .26], 20 estimates). For drinking pattern, effect sizes varied from r = .12 (95% CI [.04, .19], 6 estimates) for frequency of drinking to r = .27 (95% CI [.17, .37], 5 estimates) for usual quantity consumed.

In their meta-analysis of published and unpublished research on the relationship between alcohol or drug use and physical IPV perpetration and victimization between adult heterosexual couples, Cafferky et al. (2018) included a total of 285 studies that examined either alcohol, drugs or both. Samples included both community and specialized populations (military, hospital., treatment, etc.) but studies of dating violence were excluded. From these, they obtained 277 estimates of the alcohol-perpetration relationship for men and 77 for women. Across all alcohol measures, the relationship between alcohol use and problems and IPV perpetration was stronger for men (r = .22, 95% CI [.21, .24]) than for women (r = .15, 95% CI [.12, .18]). Given the large number of study estimates included in this meta-analysis, overlap with other reviews is likely; however, it is unknown which studies were included in each part of the meta-analysis.

A meta-analysis by Mallory et al. (2016) of community and clinical samples, focusing on cultural differences in several risk factors for IPV perpetration (including various measures of physical, sexual or psychological IPV) by men toward women, examined 163 effect sizes related to alcohol "abuse" (not defined) in countries around the world. They found an overall effect size r = .24, 95% CI [.19, .28], p < .001). We were unable to determine which studies were included in this estimate and the extent of overlap with other reviews.

In their analysis of 22 cross-sectional and case-control studies involving clinical and community samples of women reporting alcohol consumption and abuse (various measures) by male perpetrators of IPV toward them, Gil-Gonzalez et al. (2006) found an overall odds ratio (OR) of 4.57 (95% CI [3.30, 6.35]) across 11 studies included in their meta-analysis, suggesting a link between alcohol consumption by men and IPV perpetration. The review authors, however, noted wide heterogeneity, lack of cohort studies and misspecification bias in exposure in 15 of the studies; thus, these findings should be interpreted with caution.

Alebel et al. (2018) reviewed eight studies from Ethiopia that examined a number of risk factors, including alcohol use by partner, for physical and psychological IPV among pregnant women. Their meta-analysis based on three studies found that 54% of pregnant women whose partner consumed alcohol reported IPV compared to 11% of women whose partner did not consume alcohol (overall OR = 11.4, 95% CI [2.3, 56.6]).

Muluneh et al. (2021) reviewed 50 studies examining factors associated with husband or male partner-to-female IPV in sub-Saharan African countries. Their meta-analysis of 11 cross-sectional studies found a positive and significant association between alcohol use by the male partner and physical, sexual or emotional violence perpetration (OR = 2.39, 95% CI [1.84, 2.99]).

In a review and meta-analysis of the association between alcohol use by perpetrators and physical IPV toward HIV-infected women in sub-Saharan African countries, Tenkorang et al. (2021) found an overall OR of 2.41 (95% CI [1.26, 4.63]) based on four study estimates. Alcohol use was measured using the AUDIT (Saunders et al., 1993) in one study, but unspecified in the other three. IPV included physical., sexual and psychological violence occurring during pregnancy in two studies, after HIV diagnosis in one study and during lifetime in one study.

A meta-analysis of 28 cross-sectional studies of the relationship between three types of alcohol use measures (quantity and frequency, heavy episodic drinking and problem use) and dating violence perpetration among youth and young adults provided odds ratios for both fixed and random effects models (Rothman et al., 2012). In random effects models, for frequency and quantity drinking measures the OR were 1.70 (95% CI [1.39, 2.08]) for combined samples of men and women (all estimates); 1.52 (95% CI [1.14, 2.10]) for men (six studies), and 1.44 (95% CI [1.14, 1.81]) for women (in six studies). For heavy episodic drinking, the combined OR was 1.47 (95% CI [1.17, 1.85]). The overall random effects OR for problem alcohol use and dating violence was 2.33 (95% CI [1.94, 2.80]).

Narrative Reviews

As described in this section, findings from 14 reviews (Boyacioğlu et al., 2021; Cao et al., 2021; Capaldi et al., 2012; Choenni et al., 2017; Cummings et al., 2013; Duval et al., 2020; Lee et al., 2020; Li et al., 2010a; Marshal., 2003; Mojahed et al., 2020; Schumacher et al., 2001; Semahegn & Mengistie, 2015; Shamu et al., 2011; Shorey et al., 2011) also found mostly a positive association between alcohol consumption and perpetration for men and women, but more mixed findings for women than for men. Problem drinking, "abuse" or dependence, and heavy episodic drinking were mostly found to have a positive association with perpetration of IPV (alcohol measures in the reviews were often unspecified). Also, for many reviews, it was not reported whether studies with null findings were found or included.

These reviews included studies of community and various other samples, two that examined male and female perpetration (Capaldi et al., 2012; Marshal., 2003), one male perpetration only (Schumacher et al., 2001) and one that did not clearly distinguish the sex or gender of perpetrators (Choenni et al., 2017). Other reviews included a special focus on dating violence (Duval et al., 2020; Shorey et al., 2011), specific populations: Hispanic Americans (Cummings et al., 2013); African American men (Lee et al., 2020), or specific countries (Boyacioğlu et al., 2021; Cao et al., 2021; Li et al., 2010a; Mojahed et al., 2020; Semahegn & Mengistie, 2015; Shamu et al., 2011).

Marshal (2003) examined 30 study estimates of the association between alcohol use and IPV as part of a review of the effects of alcohol on marital satisfaction and interactions, including violence. Samples included couples, men in treatment for violence or alcohol problems, female victims and probability samples. IPV was measured using the Conflict Tactics Scale (CTS) (Straus et al., 1996) in 22 studies and another violence measure in eight studies. They categorized alcohol use into four categories: diagnosis of dependence or "abuse"; alcohol problems not formally diagnosed (e.g. based on the Michigan Alcohol Screening Test [MAST]) (Selzer, 1971) or Alcohol Dependency Scale (ADS) (Skinner & Allen, 1982); symptoms related to alcoholism, and alcohol consumption measures (e.g. quantity-frequency index, quantity, frequency, average daily consumption, weekly volume; and heavy use (e.g., five or more, being drunk or high). With respect to perpetration of IPV by married men, in eight of the studies, "alcoholics" were found to be more likely than non-alcoholics to be violent. Other findings from this review were that violent male partners or violent couples were more likely than non-violent male partners or couples to drink at problematic levels (six studies), drink more frequently (one study), drink higher quantities (three studies), have problems from alcohol (one

study), or were more likely to use alcohol (one study). However, one study found no significant difference in alcohol use between violent and non-violent men. Findings from two studies suggested a curvilinear relationship, such that the risk of violence is higher among men who drink heavily, but violence becomes less likely after a specific level of drinking or intoxication. For married women, heavy alcohol use was found to be related to increased perpetration of pre-marital or marital aggression (three studies). The authors of the review noted that the majority of studies included in their review involved treatment samples, and that only four studies took into account potential comorbidities and other factors related to both alcohol use and IPV such as depression, which might confound the alcohol-violence relationship.

In their review of risk factors for IPV, Capaldi et al. (2012) examined the relationship between various alcohol measures (frequency, volume, heavy episodic drinking, "abuse" and alcohol use problems across various studies) and IPV experiences between couples, including a range of mild to severe IPV, mostly measured using the CTS (Straus et al., 1996). The review reported a small association between alcohol problems and perpetration by men and women. Higher volume of alcohol consumption was associated with higher incidence of IPV perpetration for men and recurrence of IPV perpetration for women. Also, lifetime alcohol "abuse" or dependence was associated with perpetration in two studies including both men and women. Various measures of alcohol consumption were associated with female-to-male and male-to-female IPV perpetration (although there were also some null findings). The review reported some mixed findings of the relationship between alcohol and IPV depending on measures, samples and which variables were controlled for in the analyses.

Schumacher et al. (2001) examined risk factors for four categories of male-to-female IPV: Court-involved Male Physical Aggression (CMPA), Repeated or Severe Male Physical Aggression (RSMPA), Severe Male Physical Aggression (SMPA) and Any Male Physical Aggression (AMPA). They cited five studies that found a relationship between alcohol problems and CMPA (r = .21 to r = .58) and one study that found a relationship between quantity but not frequency comparing CMPA to non-AMPA. Seven studies included in this review found that problems from alcohol consumption were related to IPV perpetration in community samples, with correlations ranging from r = .24 to r = .70. The studies in this review overlapped almost completely with those in Foran and O'Leary (2008); however, we have retained this review because they examined different aspects of the alcohol-violence relationship.

The review by Choenni et al. (2017; described above), included clinical (in treatment for substance use or for violence) samples, social and healthcare samples and general population samples. Most cross-sectional general population studies in their review found a significant association between alcohol use (a variety of measures, some unspecified) and IPV. Similarly, evidence from four longitudinal studies of general population samples showed a consistent concurrent relationship between alcohol and violence, although the longitudinal link was less clear. Their review of clinical samples resulted in mixed findings relating to the relationship between alcohol dependence or being in alcohol treatment and IPV. However, some findings suggested that heavier drinking by male partners put women at greater risk of IPV, whereas the same risk was not found for male partners of women who drank heavily. Choenni et al. (2017) noted that the relationship between IPV and alcohol consumption and problems was moderated by other factors such as personality, psychological disorders, relationship satisfaction and education, although alcohol remained significantly associated with IPV after controlling for other factors in general population samples.

In addition to reviewing studies of alcohol use at the time of physical dating violence (as described above), Shorey et al. (2011) reviewed studies that included various measures of alcohol consumption and alcohol problems. For studies with separate analyses of male or female

participants, a positive relationship between alcohol problems and dating violence was found in all six studies of male perpetrators and in three of four studies of female perpetrators. More frequent drinking was related to increased risk of physical perpetration for men in five of nine studies reviewed and for women in three of six studies. Heavy episodic drinking (i.e., consuming five or more drinks on an occasion) was positively related to perpetration for men in one study. In one study that compared men with women, average weekly consumption was positively related to psychological dating violence for men but not for women. Findings from four studies in which data were not analyzed separately by sex or gender, found the following: binge drinking was related to physical dating violence perpetration (one study); higher BAC in the past month was related to higher risk of perpetrating psychological dating violence (one study); and having problems from alcohol was related to increased risk of physical or psychological dating violence (two studies).

Duval et al. (2020) found mostly positive associations between men's alcohol use and dating violence perpetration (including SV) in their review of risk factors for dating violence among undergraduate students in the United States. One study of male students found a positive association between alcohol use (including measures of daily consumption, number of drinks and heavy drinking, details not reported) and both physical and sexual dating violence perpetration. Another study found that frequent heavy alcohol use was associated with dating violence perpetration. However, in one study, intoxication was not found to be related to increased physical or psychological dating violence, and in another, "alcohol consumption" (unspecified) was not related to perpetration by women.

Cummings et al. (2013) reviewed factors related to IPV among Hispanic Americans. Their review included 19 cross-sectional., case-control and longitudinal studies that included alcohol as an individual level predictor of IPV. Alcohol measures included quantity and frequency measures and patterns over time, problems (e.g., AUDIT (Saunders et al., 1993), CAGE (Ewing, 1984)), and heavy use (e.g. five plus drinks per occasion). While they found mostly a consistent positive relationship between drinking patterns and IPV for both men and women, findings related to alcohol problems and heavy drinking were mixed, with some studies in their review finding increased likelihood of the occurrence of both male and female-perpetrated IPV among those with alcohol problems or alcohol "abuse" and some finding a positive association only for women, some only for men and some finding no relationship.

Lee et al. (2020) examined alcohol use as a predictor of IPV perpetration toward female partners among African American men as part of their review of alcohol and drug use as moderators in the relationship between adverse childhood experiences and IPV perpetration. Alcohol consumption measures included frequency of intoxication, binge or heavy drinking, alcohol "abuse" or dependence, problems from alcohol use, as well as measures combining alcohol and drug "abuse" or dependence. Of nine studies that included a measure of alcohol use, seven studies found a significant, positive association between alcohol use and IPV perpetration, while two of the studies did not find the relationship to be significant.

Li et al. (2010a) included two studies of the relationship between alcohol use and IPV perpetration in their review of risky sexual behaviour in China. In a cross-sectional study of mothers with infants (i.e., 6 to 18 months), findings were that their male partners who use alcohol were more likely to be perpetrators than partners who did not use alcohol (OR = 1.26, 95% CI [1.02, 1.57]), and among mothers who had experienced "abuse," 79% of their male partners use alcohol. The second study using a general population sample found that women who use alcohol (compared to those who not use alcohol) were more likely to "hit" their partner (OR = 2.85, 95% CI [1.13, 7.23]) and male respondents who had been inebriated in the past year (compared to those who had not been inebriated) were more likely to "hit" their partner (OR = 3.09, 95% CI [1.56, 6.12]).

Shamu et al. (2011) reviewed risk factors related to physical, sexual or psychological male-to-female IPV perpetration and victimization among pregnant women in African countries. Their review included cross-sectional, case-control and cohort studies, more than half of which were non-randomized samples. Odds ratios for five studies included in their review ranged from 2.89 to 4.10 for the association of partners' drinking with IPV. Specifically, the following odds ratios were found for various partner drinking measures: "drinks heavily" in two studies (OR = 3.37, p = .0001 and OR = 3.85, p-value not reported); drinks occasionally in two studies (i.e., used alcohol sometimes, frequently, always or never) (OR = 4.10, p-value not reported and OR = 2.52, p-value not reported); drinks alcohol ever in one study (OR = 2.89, p <.001).

In a review of risk factors for IPV victimization among pregnant women in Turkey, Boyacioğlu et al. (2021) found that three out of seven studies that included "alcohol use of the partner" found a positive association with IPV occurring while the woman was pregnant or ante natal. No definition or measurement details regarding "alcohol use of the partner" were provided.

In three reviews included in this overview, findings from a small number of their included studies suggested a link between alcohol consumption and IPV perpetration. However, it is unknown how many of the studies in their reviews examined alcohol as a predictor or whether there were any null findings. Three studies included in a review by Cao et al. (2021) of IPV-related factors among female IPV victims in China found a positive association between "alcohol use" by the perpetrator and IPV. In a systematic review of risk factors for dating violence toward women in Ethiopia, Semahegn and Mengistie (2015) also found that "alcohol consumption" of "husbands" was related to dating violence ever having occurred. Finally, in a review of risk factors for IPV in Arab countries, Mojahed et al. (2020) reported that four studies included in their review concluded that "alcoholism" of the perpetrator was a risk factor for IPV among 55 risk factors identified in the review.

4.2 Alcohol and IPV Victimization

Summary of Findings: Alcohol and IPV Victimization

- Event-level drinking was associated with greater risk of being the victim of IPV.
- Findings were inconsistent relating to drinking pattern of the victim, but generally suggested that IPV victimization was associated with a pattern of heavy episodic drinking and intoxication, as well as drinking problems or alcohol use disorder.
- Estimates of associations were usually smaller than were found for drinking by perpetrators and some estimates were non-significant.

4.2.1 IPV Event-Level Alcohol Consumption by Victims

Three reviews were found that reported study-specific findings of alcohol being used by the victim during or just prior to IPV (Capaldi et al., 2012; Duval et al., 2020; Shorey et al., 2011). Similar to reviews about perpetrators' alcohol use, no reviews reported findings that would allow computation of the dose–response relationship between alcohol consumption and IPV victimization.

Shorey et al. (2011) reviewed three studies providing data on dating violence victimization for male college students, five for female students and two studies that combined results for male and female students. Two studies reported findings related to the use of alcohol during or immediately prior to being the victim of dating violence (findings related to drinking patterns or problems are described in the following section). One study found that 61% of male victims and 75% of female

victims of physical dating violence reported being under the influence of alcohol at the time, and 33% of male victims and 72% of female victims of psychological dating violence reported being under the influence. Another study combining findings for men and women found that victimization from physical dating violence was associated with prior drinking (the number of drinks was not reported).

In their review, Duval et al. (2020) cited one study that found that all university students who reported being the victim of physical dating violence were "under the influence" of alcohol at the time.

In their review of risk factors for IPV among couples, Capaldi et al. (2012) included findings from one study that indicated alcohol "involvement" was associated with more severe IPV for female victims but not for male victims (after controlling for other variables including women's alcohol use).

4.2.2 Drinking Patterns or Problems Associated with IPV Victimization

Meta-Analyses

Six meta-analyses (Bacchus et al., 2018; Cafferky et al., 2018; Devries et al., 2014; Muluneh et al., 2021; Spencer et al., 2019; Stith et al., 2004) were found that examined the association of drinking patterns or problems from drinking with IPV victimization (two were included in the previous section on perpetration). As described in detail below, small, positive correlations were reported for the association between alcohol use by males and females and victimization from IPV. However, odds ratios for IPV victimization and alcohol use were inconsistent for female victimization and none were reported for male victimization. Meta-analyses findings also suggested that heavy episodic drinking or problems from alcohol consumption were more strongly associated with IPV victimization compared to usual frequency or quantities consumed.

Most meta-analyses included community or general population samples, two included separate analyses for men and women (Cafferky et al., 2018; Spencer et al., 2019), three focused on women (Devries et al., 2014; Stith et al., 2004; Bacchus et al., 2018), and one reviewed studies from sub-Saharan Africa (Muluneh et al., 2021).

Cafferky et al. (2018) included 233 estimates of the relationship between alcohol consumption (frequency or quantity) or problematic alcohol use (i.e., problematic drinking levels or alcohol dependence) with IPV victimization for both men and women from clinical and community samples. They found effect sizes of $r = .15$ (95% CI [.11, .18], $p < .001$, 58 estimates) for men and $r = .18$ (95% CI [.16, .20], $p < .001$, 162 estimates) for women. The sex or gender difference was not found to be significant. They found a significantly ($p < .001$) larger association between problematic alcohol use by the victim and physical IPV victimization ($r = .201$, 95% CI [.18, .22], $p < .001$, 133 estimates) compared to drinking pattern (e.g., frequency or quantity measures) and physical IPV victimization ($r = .139$, 95% CI [.11, .17], $p < .001$, 100 estimates).

Spencer et al. (2019) examined risk markers identified in 391 studies of physical IPV victimization among men and women and found a significant overall association between "alcohol use" (unspecified) and physical IPV victimization ($r = .19$, $p < .001$), with a significantly stronger relationship for women ($r = .21$, $p < .001$) than for men ($r = .14$, $p < .001$).

Stith et al. (2004) found an overall effect size of $r = .13$ ($p < .001$) across 11 study estimates for the association of women's alcohol consumption (unspecified) or alcohol problems with physical IPV victimization in samples of heterosexual married or cohabiting couples. All except two of the study estimates were positive and significant ($p < .05$).

In their analysis of seven longitudinal studies of female victims of IPV in programs and the general population (12 estimates), Devries et al. (2014) found that IPV victimization (various measures used) was related to past alcohol use (various measures used) among women who had been victims of IPV, but not all findings were significant, and some studies did not control for previous IPV victimization. Their meta-analysis of three studies of binge drinking resulted in an odds ratio of 1.27 (95% CI [1.07, 1.52]) indicating that women who engaged in binge drinking were more likely to report subsequent IPV victimization. In addition to the small number of estimates included in the meta-analysis, a limitation noted by the review authors was that only one of the seven studies controlled for the drinking of the violent partner; thus, the extent that findings are partly or wholly related to alcohol consumption of perpetrators is unknown.

Devries et al. (2014) also examined 41 cross-sectional studies including only females in victimized or general population samples, with all except one of the studies finding a positive association between past alcohol consumption and being a victim of IPV; however, not all were significant. An odds ratio of 1.80 (95% CI [1.58, 2.06]) was found across 38 estimates. The authors noted that only two studies controlled for male perpetrators' drinking.

In a review by Bacchus et al. (2018) focusing on the health effects of IPV on women in mostly general population samples, three longitudinal studies were found that reported findings related to the relationship between alcohol use and subsequent IPV victimization. All three studies found a positive relationship, but only one estimate was significant, and the overall odds ratio was not significant (OR = 1.11, 95% CI [0.91, 1.35], $p = 0.672$).

In four studies included in the meta-analysis by Muluneh et al. (2021) described above, women who drank alcohol were significantly more likely than women who did not drink to have experienced IPV by a male partner, with an overall odds ratio of 2.77 (95% CI [1.34, 4.21]).

Narrative Reviews

There were mixed findings for both men and women from 11 reviews (Ali & Naylor, 2013; Cao et al., 2021; Capaldi et al., 2012; Cummings et al., 2013; Duval et al., 2020; Larsen & Hamberger, 2015; Li et al., 2010a; Marshal., 2003; Schumacher et al., 2001; Shamu et al., 2011; Shorey et al., 2011) examining the association between alcohol consumption and IPV victimization. Although some reviews found a positive association between being the victim of IPV and alcohol consumption or having problems from alcohol, others found no relationship, and some found a negative relationship between problems from alcohol or alcohol consumption, especially frequency of drinking.

Of these reviews, four reviewed studies with various samples including community and general population samples (Ali & Naylor, 2013; Capaldi et al., 2012; Marshal., 2003; Schumacher et al., 2001), one reviewed clinical and specialized samples (Larsen & Hamberger, 2015), two reviewed studies of dating violence (Duval et al., 2020; Shorey et al., 2011), and four focused on specific populations (Chinese women) (Cao et al., 2021; Li et al., 2010a); Africa (Shamu et al., 2011); Hispanic Americans (Cummings et al., 2013).

In a review of risk factors for male-to-female IPV victimization, Schumacher et al. (2001) (described above for perpetration) found mixed results for the association of alcohol consumption with being the victim of IPV, although one study found that being drunk at least once in the past year was related to both minor ($r = 0.26$) and severe ($r = 0.37$) victimization.

In the review by Marshal (2003) (described above under perpetration), two studies found that married women with alcohol problems were more likely to be victims of aggression by a partner.

However, two other studies found that alcohol use or average daily consumption by married women had a negative relationship with IPV victimization.

As described above for perpetration, Capaldi et al. (2012) also examined the relationship between various alcohol measures among couples with IPV experiences compared to couples who reported no IPV. For women, one study found that alcohol problems were associated with being the victim of IPV. For men, alcohol problems were found to be associated with victimization in two studies, and "alcohol use" was associated in one study. However, in other studies of female victims of IPV, various measures of alcohol use or problems (problems from alcohol, drinking five or more drinks per occasion, volume, heavy episodic drinking and alcohol "abuse") were not found to be associated with victimization. Null findings were also found for men; namely, alcohol "abuse" or dependence was found to be not associated with victimization. It is unknown how many studies in this review of risk factors examined alcohol use.

Ali and Naylor (2013) reviewed nine studies that reported a positive association between IPV victimization and alcohol "abuse" for women. It is unknown whether there any null findings.

In their review including clinical and specialized samples (described under perpetration), Larsen and Hamberger (2015) (see other findings above) found one study indicating that higher "intensity" drinking but not higher frequency predicted victimization among female "alcoholics."

Shorey et al. (2011) examined the association between alcohol consumption patterns and dating violence victimization, including SV. They found the following: usual drinking pattern and most alcohol consumed on a single occasion did not differ for female victims of dating violence compared to non-victims (three studies); general drinking pattern was not related to increased risk of physical victimization (one study combining men and women); having a higher peak BAC in the past month was related to increased risk of psychological dating violence (one study). No studies included in this review examined usual drinking pattern for male victims. Having problems from alcohol was related to increased risk of victimization for men (two studies), but findings were mixed for women — positive and significant in two studies but unrelated in one study.

In ten studies examining dating violence among male and female university students, Duval et al. (2020) found that the number of heavy drinking episodes (i.e., five or more drinks for men or four or more drinks for women) was strongly correlated with dating violence victimization among university students, especially SV. Three studies found that heavy alcohol use was associated with re-victimization.

Li et al. (2010a) (described above) found that 18% of women "abuse" victims drank alcohol, with OR = 1.75, 95% CI [1.39, 2.20] found for the relationship between using alcohol and being a victim of IPV among Chinese mothers with babies. Findings from a general population study in China found that women who use alcohol were more likely than those who do not use alcohol to be "hit" by their partner (OR = 1.68, 95% CI [1.01, 2.78]).

Two studies included in the review by Cao et al. (2021) of intimate violence against women in China found a positive association between alcohol use by the victim and IPV. As noted previously, it is not known how many studies in their review examined alcohol use nor whether some studies found no relationship.

Two studies reviewed by Shamu et al. (2011) reported odds ratios for alcohol consumption or problems of pregnant women in African countries predicting higher risk of IPV. One study reported an OR = 4.59 (p = .0002) for the association between having alcohol problems (defined as ever had a fight, accident, injury, casual sex or been arrested after drinking), compared to no alcohol problems, and risk of IPV victimization. The second study reported an odds ratio of 11.60 (p < .0001) for

having one or more drinks per month in the last three months, compared to not drinking, for risk of IPV victimization.

In their review of IPV among Hispanic Americans, Cummings et al. (2013) found mostly positive associations between alcohol consumption and IPV for both men and women; however, some null findings were also reported. Notably, one study in their review found that infrequent drinking by women or by both partners in a couple was associated with a higher risk of male-to-female IPV, but that more frequent drinking by men was associated with a higher risk of being the victim of IPV for men. Their results related to the relationship between alcohol problems and IPV victimization varied for both men and women, with some studies finding an increased risk and others finding no risk, while others found differences depending on sex or gender.

5.0 Alcohol and Male-To-Female Sexual Violence

We identified ten reviews that focused on the role of alcohol in male-to-female sexual A/V (SV), including seven reviews (Abbey et al., 2014; Crane et al., 2016; Li et al., 2010b; O'Connor et al., 2021; Shorey et al., 2011; Steele et al., 2020; Testa, 2002) that focused on the role of alcohol in SV perpetrated by men, and six reviews that focused on alcohol use by female victims (Duval et al., 2020; Kefale et al., 2021; Li et al., 2010b; Shorey et al., 2011; Steele et al., 2020; Testa, 2004). The reviews drew mostly on cross-sectional evidence, with a few focused on other designs, and one focused specifically on experimental studies (Crane et al., 2016), while another focused specifically on longitudinal observational evidence (Steele et al., 2020). In addition, research on alcohol and SV is limited by the narrow scope of the populations from which samples are drawn. Much of the evidence on alcohol and SV is drawn from studies using college samples or community samples of college-aged young adults. Although the focus on younger samples is reasonable given that young women are more at risk of SV than older women (Cotter & Savage, 2019), it is nevertheless unclear the extent to which these findings are generalizable to other populations.

5.1 Alcohol and SV Perpetration

Summary of Findings: Alcohol and SV Perpetration

- Small-to-medium effect sizes were found for the relationship between event-level alcohol consumption and SV perpetration, although some experimental paradigms did not produce a significant effect of alcohol on SV. As well, moderating factors such as personality and attitudes were also noted in the relationship.
- Positive associations were found between perpetration of SV and both drinking patterns and drinking problems, particularly for heavy episodic drinking. However, not all studies found significant associations, especially when key variables such as past perpetration were controlled.

5.1.1 SV Event-Level Alcohol Consumption by Perpetrators

Three reviews (Abbey et al., 2014; Crane et al., 2016; Testa, 2002) identified small-to-medium effect sizes for the relationship of both alcohol consumption and intoxication with SV perpetration. However, mixed findings were also sometimes noted, particularly in instances of more severe sexual assault (e.g., rape).

Meta-Analyses

Crane et al. (2016) performed a meta-analysis of 14 laboratory-based experimental alcohol administration studies on male-to-female sexual aggression, with 12 studies using college and community samples measuring hypothetical SV using vignettes and two using sexual imposition paradigms (e.g., exposing a female confederate to sexually explicit images or videos). The authors concluded that acute alcohol intoxication (measured using BAC; amounts varied and were not described in detail) had a small-to-medium effect on sexual aggression, with a Cohen's *d* of .32 (95% CI [.19, .44], $p < .001$) for the alcohol group compared to the control. Although not included in their quantitative analyses, the authors noted the importance of moderating variables identified in some studies (e.g., in one study, the relationship between alcohol consumption and SV was found only for men who scored high on hostility) as well as mediating variables (e.g., the relationship

between alcohol and SV was mediated by personal sexual arousal and perceived sexual arousal of the female target). As noted in the IPV section, Crane et al.'s analyses identified a range of effect sizes across studies (including experiments of SV, IPV and male-to-female GV) suggesting that some studies found null effects. As well, Crane et al. (2016) found no significant dose effect across studies.

Narrative Reviews

Two reviews (Abbey et al., 2014; Testa, 2002) identified a positive association between higher alcohol consumption and SV perpetration. Abbey et al. (2014) reviewed 43 studies of the relationship between alcohol use and SV among college and college-aged community samples in the United States and Canada. The review included 12 studies involving experimental alcohol administration (10 of which were included in the meta-analysis by Crane et al. (2016). Abbey et al. (2014) found that the relationship between alcohol consumption and SV varied depending on the experimental paradigm, with one paradigm (six studies) resulting in no relationship, while two other paradigms (three studies each) found a significant increase in SV with alcohol. As with Crane et al. (2016), significant moderators (e.g., hostility of participant) and mediators (e.g., perceived arousal of target woman) were noted. Abbey et al. (2014) also described two event-level studies that found that perpetrators of sexual assault had consumed more alcohol than men in comparable dating interactions and that men who used force as a tactic were more likely to be intoxicated.

Three additional studies addressed event-level drinking and **severity** of SV. Of two studies that included drinking by perpetrator and victim, one study that examined only whether the victim or perpetrator were drinking (not amount consumed) found that severity was associated with only the victim's drinking. However, the second study, which included number of drinks consumed, found that SV was significantly associated with only the perpetrator's alcohol consumption. Additional analyses of the second study identified a curvilinear relationship between the perpetrator's drinking and assault severity, with severity increasing between zero and four drinks, plateauing until nine drinks and then declining. The third study examined only perpetrators' drinking and found that those who drank most heavily committed the most severe assaults.

In a narrative review of studies of police reported sexual assault and rapes, Testa (2002) found that the proportion of perpetrators who had been drinking at the time varied from 13% to 90% depending on the study. Reports from community and college samples indicated that 60% to 65% of perpetrators and 30% to 55% of victims had been drinking or used drugs (% using only alcohol not reported). One study comparing aggressive to non-aggressive dates found that 60% of both types of date involved alcohol consumption, but aggressive dates were associated with heavier drinking by the perpetrator. Testa's (2002) review also noted that alcohol use, especially heavier drinking, was associated with more severe SV and injury. However, not all studies found this relationship, particularly when other situational variables were controlled. Testa (2002) also found that experimental studies generally supported the interpretation that alcohol increased sexually aggressive behaviour.

5.1.2 Male Drinking Patterns or Problems Associated with SV Perpetration:

Findings from five reviews included in this section (Abbey et al., 2014; Li et al., 2010b; O'Connor et al., 2021; Shorey et al., 2011; Steele et al., 2020) suggest a positive relationship between male

SV perpetration and heavier drinking. Some non-significant findings were identified, especially in studies that controlled for other variables such as past perpetration.

Meta-Analyses

Restricting their focus to longitudinal studies, Steele et al. (2020) performed a meta-analysis of college men's risk factors for SV perpetration. They identified a small positive association for alcohol use and subsequent SV (OR = 1.13, 95% CI [1.01, 1.28], p = .048) in five studies (alcohol use was measured in two studies using the Drinking and Drug Habits Questionnaire (Cahalan et al., 1969; Collins et al., 1985), two studies using self-reported past 30-day drinking habits, and one study using self-reported past semester binge drinking). The authors reported that this association was smaller than observed for other analyzed risk factors, such as past perpetration and fraternity membership, but noted that these other factors are likely to be interrelated with alcohol consumption in the context of SV perpetration.

Narrative Reviews

Of the five narrative reviews of alcohol and SV, two examined the literature broadly (Abbey et al., 2014; O'Connor et al., 2021), two focused on dating violence (Duval et al., 2020; Shorey et al., 2011) and one on clients' violence toward sex workers (Li et al., 2010b).

Abbey et al. (2014) included six longitudinal studies, all of which included alcohol in multivariate predictive models, to assess the relationship of alcohol use with SV perpetration controlling for other factors. Three studies examined the relationship between drinking pattern measured at one time and SV measured at a later time. They identified only one significant relationship between alcohol use at time one and later SV in these multivariate models. Three other studies examined perpetration trajectories over time: one found a significant positive relationship with alcohol use, one no relationship, and one found a significant negative relationship. The lack of positive findings for alcohol appeared to be at least partly attributable to the multivariate models that included past SV perpetration and other key variables. Abbey et al. (2014) also reviewed evidence from 25 cross-sectional studies comparing perpetrators to non-perpetrators. They found evidence for direct positive associations with alcohol use (frequency, usual quantity, heavy drinking, problem drinking), although three of the included studies found no relationship. As with the longitudinal studies, other explanatory factors were found to be important, such as anger, sexual dominance and hostility toward women.

O'Connor et al. (2021) reviewed 28 studies examining risk factors for perpetrating SV at higher education institutions. Nine studies included alcohol consumption, of which eight showed a positive relationship with SV, with nearly all studies using the Sexual Experiences Survey to measure SV. Among four studies that examined male-to-female perpetration, two found significant positive associations with "alcohol use," and one with heavy drinking. The fourth study found no significant association with a measure of alcohol misuse. Four other studies that did not describe the sex or gender of victims found that alcohol consumption (heavy episodic drinking, alcohol consumption, alcohol use and unspecified measures) was significantly and positively associated with SV perpetration, while no relationship was found in a fifth study that looked at alcohol use.

In their review on substance use and dating violence among U.S. college students, Shorey et al. (2011) described one study that found SV perpetration by men was more likely among those who engaged in binge drinking compared to those who do not drink alcohol. A later review of dating violence by Duval et al. (2020) had similar findings with one study finding that alcohol use was associated with physical and sexual aggression.

Li et al. (2010b) reviewed research on the role of alcohol in the client-worker relationship of male clients and female sex workers across six continents (Antarctica excluded). A subset of six studies in this review examined negative outcomes associated with alcohol use by the clients of sex workers, including SV. The review found that male clients' alcohol use (not specified) was associated with increased intensity of disagreements between client and sex worker in one cross-sectional survey from the Netherlands, and with sexual coercion and forced sex in two qualitative studies from India.

5.2 Alcohol and SV Victimization

Summary of Findings: Alcohol and SV Victimization

- Consuming higher amounts of alcohol prior to SV was associated with greater severity of SV experienced by victims in some but not all studies. This finding may relate to heavier drinking by the perpetrator because drinking by perpetrators and victims is highly correlated.
- Although there is relatively little research, some evidence suggested that women who engaged in a pattern of heavy episodic drinking, drinking to intoxication or problem drinking were more likely to be victims of SV.

5.2.1 SV Event-Level Alcohol Consumption by Victims

A review by Abbey et al. (2014) described one study that found that both perpetrators and victims in dating partners where SV had occurred had consumed more alcohol than dating partners during a comparison interaction. Additionally, of two studies where both the perpetrator's and victim's drinking were measured, one found any alcohol consumed by the victim was associated with more severe SV, while a study of number of drinks consumed found that the perpetrator's, but not the victim's drinking, was associated with greater SV severity.

In their review of survey findings of percent of perpetrators and victims who had been drinking at the time of the assault, Testa (2004) found that victims were less likely (35% to 55%) to have been drinking than perpetrators (60% to 65%). She also noted that both perpetrators and victims were more likely to have been drinking heavily on sexually aggressive dates than non-aggressive dates. Testa (2004) described evidence suggestive of positive associations between alcohol consumption and being the victim of SV; this included one study that found a positive association between heavy alcohol use (and drug use) and being the victim of SV during a date. A study of female college students over a six-week period found a seven-fold increase in likelihood of experiencing SV on days when alcohol was consumed versus days with no consumption. Specific study level details including the exact measures used were not reported.

In their review of dating violence, Duval et al. (2020) described three studies that found that 93.2% of male perpetrators of sexual aggression reported using drugs or alcohol to obtain the victim's compliance, and that in one study of female college students who had been sexually assaulted, 45 of 185 participants reported that the assault was a result of their alcohol or drug use.

5.2.2 Female Drinking Patterns or Problems Associated with SV Victimization

Meta-Analyses

A meta-analysis of six studies of SV victimization among women in higher education in Ethiopia by Kefale et al. (2021) estimated a pooled adjusted odds ratio of 2.03 (95% CI [1.44, 2.87]) for any self-reported alcohol use versus no alcohol use.

Narrative Reviews

In addition to the associations found between alcohol use and dating violence victimization where findings for IPV and SV were combined, (described above) Duval et al. (2020) described a study of first-year college women that found that both frequent binge drinking and frequent drinking were significantly related to being the victim of SV. In their review of dating violence among American college students, Shorey et al. (2011) found a positive association between women's problematic drinking (Rutgers Alcohol Problem Inventory) (White & Labouvie, 1989), Alcohol Use Disorders Identification Test (Saunders et al., 1993) and SV victimization.

Finally, in their review of alcohol in the relationship of male clients and female sex workers across six continents, Li et al. (2010b) detailed a consistent positive association between alcohol use by the sex worker and victimization. Specifically, three studies reported positive associations between alcohol consumption, including binge drinking by sex workers, and SV, and that intoxication while working was associated with instances of rape and sexual coercion.

6.0 Alcohol and General Violence

A total of 14 reviews included findings on the association between GV and alcohol use. Seven reviews discussed the relationship of alcohol consumption with perpetration of violence (Chalub & Telles, 2006; Duke et al., 2018; Exum, 2006; Giancola et al., 2002; Li et al., 2010b; Perkins, 2002; Sonderlund et al., 2014), and 11 with victimization from violence (Branas et al., 2016; Bunker et al., 2017; Chalub & Telles, 2006; Cherpitel et al., 2005; Cherpitel, 2007; Duke et al., 2018; Kuhns et al., 2011; Li et al., 2010b; Norström & Ramstedt, 2005; Perkins, 2002; Zerhouni et al., 2013).

6.1. Alcohol and GV Perpetration

Summary of Findings: Alcohol and GV Perpetration

- Experimental and laboratory-based research and other research indicates that alcohol increases aggressive behaviour (medium effect sizes), with variability related to how aggression was measured in the laboratory and the sex or gender of aggressors, and with many important moderators of the association.
- Research suggests positive associations between GV perpetration and heavier drinking patterns as well as drinking problems. However, the evidence is less clear for drinking pattern than for alcohol in the event and the reviews in this area have methodological weaknesses.

6.1.1 GV Event-Level Alcohol Consumption by Perpetrators

Meta-Analyses

Exum (2006) reviewed seven meta-analyses of experimental studies investigating alcohol's effects on interpersonal aggression among men only (two meta-analyses), men and women, and sex and gender unspecified samples using controlled administration of alcohol. Most studies used one of two experimental paradigms to measure aggression, the Taylor Aggression Paradigm (TAP; Taylor, 1967), which involves administering electric shocks to a fictitious opponent in a competitive paradigm, and the teacher-learner paradigm, in which shocks are administered by the participant-teacher to a fictitious student (see Giancola & Chermack, 1998), although a few studies used other paradigms and other measures of aggression. Some studies investigated alcohol versus control, while others used a balanced placebo design intended to separate out the pharmacological effects of alcohol from the expectancy effects. The comparison was among four groups: (1) told they were given alcohol and given alcohol; (2) told they were given alcohol and given placebo; (3) told they were not given alcohol and given alcohol; and (4) told they were not given alcohol and given no alcohol. This deception has been found to be at least partially effective in confusing participants about whether they have been given alcohol, especially for lower doses.

Three meta-analyses across all studies (regardless of paradigm, use of placebo and gender of participants) reported alcohol increased aggressive responding by one-half of a standard deviation (mean effect size of .47 to .54). In separate analyses restricted to studies using a balanced placebo design, one of these three meta-analyses found a larger effect size for both alcohol and expectancy for the competitive paradigm (.24 for alcohol, .61 for expectancy) than the teacher-learner paradigm (.11 for alcohol and .19 for expectancy). A fourth analysis (paradigm not specified) also included only studies using a balanced placebo design found an effect size of .26 for alcohol and -.13 for expectancy. A fifth analysis that included only male-to-male aggression found an effect size of

alcohol versus placebo of .61, while a sixth meta-analysis, which did not specify sex or gender of participants, reported an effect size of .49. Exum (2006) also identified potential moderators of the effect of alcohol on aggression in these meta-analyses, including inhibitory conflict (e.g., occurrence of competing forces that simultaneously instigate and inhibit a behavioural response), frustration and provocation.

Narrative Reviews

Three narrative reviews of event-level drinking and GV were identified, two examining student populations (Giancola et al., 2002; Perkins, 2002) and one of alcohol, drugs and crime across various countries (Chalub & Telles, 2006).

Giancola et al. (2002) conducted a narrative review of the effects of alcohol on aggression among male only, mixed sex or gender, and sex and gender unknown samples. While there was substantial overlap in terms of the studies included in Exum (2006), we present findings from both reviews because approaches and analyses differed. Giancola et al. (2002) included both experimental and survey-based studies and focused exclusively on student populations. They found that individuals who received alcohol (versus placebo or non-alcohol) had higher levels of aggression and administered stronger and longer shocks. Reviewing potential moderators in both experimental and survey-based studies, Giancola et al. (2002) determined that expecting alcohol to make one violent, larger quantities of past alcohol consumption, specific types of biochemistry (e.g., testosterone & serotonin), the rising blood alcohol curve limb, social pressure and provocation may all moderate the association between alcohol and aggressive responding.

A review by Perkins (2002) examining various harms from alcohol use among college students who drink alcohol described one study indicating that 35% of people who use alcohol in a national survey reported being involved in an argument or fighting because of their drinking or other drug use in the last year. A second national study in this review found that 17% of people who drink alcohol indicated they had been in a fight after drinking in the past year.

In their review of alcohol, drugs and crime, Chalub and Telles (2006) described one study of prisoners in Pereira, Colombia, that found that 35.9% of murderers were under the influence of alcohol when they committed their crime, and another from Curitiba, Brazil, reported that 58.9% of people on trial for murder were under the influence of alcohol at the time.

6.1.2 Drinking Patterns or Problems Associated with GV Perpetration

Three reviews (Duke et al., 2018; Li et al., 2010b; Sonderlund et al., 2014) investigated the associations of alcohol use (e.g., recent or past alcohol use patterns, etc.) with GV.

Meta-Analyses

Duke et al. (2018) conducted a meta-analysis of 32 meta-analyses exploring the relationship of alcohol and drugs with violence perpetration, including various research designs (including some of the meta-analyses of experimental research included in the previous section) and various measures of substance use and of violence. The overall association across meta-analyses was d = .39 (95% CI [.32, .47], 23 estimates), d = .48 for male perpetrators (95% CI [.45, .50], 8 estimates), d = .23 (95% CI [.16, .30], 4 estimates) for female perpetrators, and d = .26 (95% CI [.26, .50], 11 estimates) for combined samples of male and female perpetrators. Notably, interpretation of this meta-analysis should be treated with caution due to the combination of different types of study

designs (e.g., experimental., cross-sectional) that confound drinking pattern and drinking in the event, as well as different types of violence (e.g., IPV, GV).

Narrative Reviews

Sonderlund et al. (2014) reviewed the interrelationships of sports participation, alcohol use, aggression and violence. Three of their studies focused on men; however, findings reported reflect all 11 studies included in their review, with men comprising 57.6% of their total sample. Alcohol use was generally defined (e.g., alcohol use in the past month, high frequency alcohol use in the past month, drinking to cope, etc.), whereas violence was defined as "aggression," "violence" or "alcohol-related fighting and violence." Overall, alcohol consumption and high-volume drinking were found to be positively associated with GV.

Li et al. (2010a) reviewed 18 articles on alcohol use and sexual risk behaviours and outcomes in China, one of which met inclusion for this overview. Alcohol use was defined as at least 25 g of liquor, 100 ml of wine or 200 ml of beer once per month. Violence was defined as six types of campus violence including verbal and physical sexual assault. Students who were alcohol users were more likely than non-users to become perpetrators of violence (OR = 1.88, 95% CI [1.29, 2.75]). This finding should be interpreted with caution given that there was only one study included in the review and the sample contained only students at two universities.

6.2 Alcohol and GV Victimization

Summary of Findings: Alcohol and GV Victimization

- A large proportion of homicide victims tested positive for alcohol (larger for women than men), and many were defined as intoxicated (BAC > .08 or .10), although these studies found large variability in estimates.
- Homicide mortality rate was found to be positively correlated with per capita consumption in some countries but not others.
- Emergency department studies indicated that patients with violence-related injuries were significantly more likely to have consumed alcohol than were controls, with some evidence suggesting that the relationship was stronger for men than for women.
- There were insufficient data on drinking pattern of GV victims to draw conclusions about the relationship of alcohol consumption with GV victimization.

6.2.1 GV Event-Level Alcohol Consumption by Victims

We found three meta-analyses (Branas et al., 2016; Cherpitel et al., 2005; Kuhns et al., 2011) and five narrative reviews (Chalub & Telles, 2006; Cherpitel, 2007; Norström & Ramstedt, 2005; Perkins, 2002; Zerhouni et al., 2013) of GV event-level alcohol consumption by victims. It should be noted, however, that most studies of victims of violence do not separate GV from IPV victims. That is, a substantial proportion of female homicide victims were killed by an intimate partner (Canadian Femicide Observatory for Justice and Accountability, 2020) and many female injury patients presenting at Emergency Departments were injured by an intimate partner. Thus, results may not accurately reflect the relationship between alcohol and GV victimization, particularly estimates for women.

Meta-Analyses

In a meta-analysis of 61 studies (57 papers) that examined alcohol toxicology test results for homicide victims, Kuhns et al. (2011) found 30 studies that reported the proportion of homicide victims with the presence of alcohol in their blood, and 31 studies that reported the proportion who met criteria for alcohol intoxication (i.e., at 0.08 or 0.10 blood alcohol level). The mean proportion testing positive for alcohol was 48% (range = 24% to 76%), with a great deal of variability in this estimate (Q = 3995.6, *df* = 60, $p < 0.0005$). Random effects means for intoxication at a BAC level of 80 mg/dl (in six studies) and 100 mg/dl (in 30 studies) were 33% (95% CI [21%, 48%]) and 35% (95% CI [30%, 39%]), respectively. For studies that included the sex or gender of the homicide victim (15 studies), a higher proportion of women (48%, 95% CI [41%, 55%]) than men (28%, 95% CI [22%, 34%) tested positive for alcohol.

Branas et al. (2016) conducted a meta-analysis on alcohol and firearm violence that included nine studies that examined alcohol consumption and firearm homicide. However, the analyses for prevalence estimates for alcohol involvement were restricted to U.S. data (three studies), with results yielding a weighted mean of 37.2% (SD = 7.4%) of firearm homicides involving any alcohol (BAC > 0 mg/dl) and 30.1% (SD = 4.4%) involving heavy alcohol use (BAC > 80 mg/dl). The authors also included two case-control studies that estimated the association between alcohol intoxication and firearm assault and homicide using population-based community controls. All estimates were non-significant.

Cherpitel et al. (2005) conducted a meta-analysis of 14 studies included in the Emergency Room Collaborative Alcohol Analysis Project (ERCAAP) investigating sex and gender and age-specific attributable risks of all-cause and violence-related injuries. Drinking before the violent injury was defined as a positive BAC at the time of arrival at the emergency room or self-reported alcohol consumption within six hours before the injury event, and violence-related injuries were not specifically defined. Despite significant heterogeneity in the effects across studies, attributable fractions (AF) for associations with violence-related injuries were significant and estimated to be AF = .33 (95% CI [.25, .40], $p < .001$) for men and AF = .12 (95% CI [.07, .18], $p < .001$) for women, for a positive BAC. For self-reported alcohol use, AF = .50 (95% CI [.42, .58], $p < .001$) for men, and AF = .08 (95% CI [.04, .12], $p < .011$) for women. Attributable fractions were also significant for combined samples of men and women: a positive BAC (AF = 0.28, 95% CI [.24, .31], $p < .001$) and self-reported alcohol use (AF = .43, 95% CI [.34, .51], $p < .001$).

Narrative Reviews

Five reviews included studies related to alcohol use immediately preceding victimization from violence, including two multi-country studies of emergency department injury patients (Cherpitel, 2007; Zerhouni et al., 2013), one of emergency department patients injured at home (Bunker et al., 2017), one of alcohol, drugs and crime (Chalub & Telles, 2006), and one of population level drinking and homicide mortality (Norström & Ramstedt, 2005).

Cherpitel (2007) reviewed alcohol use and injuries in emergency department settings from 1995–2007. Within the larger narrative review of 17 studies, eight investigated the prevalence of alcohol consumption related to violence-related injury, but none provided information on the sex or gender of the samples. Alcohol consumption was defined as a positive BAC upon arrival at the emergency room or self-reported alcohol consumption up to six hours preceding the injury. Violence-related injury was defined as injuries arising from intentional harm. Across all eight studies, which included data from eight countries, the prevalence of alcohol use according to BAC among those with violent injuries ranged from 22% to 70%, and those with self-reported alcohol consumption ranged from

36% to 84%. By comparison, the prevalence for BAC and self-reported alcohol use ranged from 3% to 54% and 10% to 36%, respectively, for non-violent injuries.

Zerhouni et al. (2013) reviewed 21 studies on the relationship between alcohol consumption and violence-related injuries in emergency rooms across five countries. Similar to Cherpitel (2007), violence-related injuries were compared to injuries from unintentional or accidental causes. Alcohol use was defined as a positive BAC or self-reported alcohol use up to six hours before sustaining the injury. They found that patients with injuries resulting from violence, compared to patients with non-violent injuries, were more likely to present in the emergency department with an elevated BAC, report consuming alcohol at least six hours preceding the injury event, and report adverse social consequences of alcohol consumption. Marked differences in the magnitude of proportions was found across both measures of consumption. For example, a positive BAC was observed in 17% of patients presenting with violence-related injuries in the United States, as compared to 70% in South Africa and Scotland. Similar differences in magnitude were observed for self-reported consumption. It is important to note that these studies did not distinguish between injuries sustained by a perpetrator or by victims, and that there is potentially overlap in the ERCAAP studies (Cherpitel et al., 2005; Cherpitel, 2007).

Bunker et al. (2017) reviewed patterns of at-home alcohol-related injuries among individuals (sex and gender unknown) who presented at an emergency room. Alcohol use was defined as a positive BAC upon arrival at the emergency room or self-reported alcohol consumption up to six hours preceding the injury. Of the nine studies included in the review, two studies met inclusion criteria for the current overview and found that more patients were alcohol positive when presenting for injuries involving violence as compared to other injuries. It was unclear whether the alcohol use occurred before, during or after the injury.

The review of alcohol, drugs and crime by Chalub and Telles (2006) described previously described one study from Pereira, Columbia, where 24% of murder victims had consumed alcohol, another from Curitiba, Brazil, where 53.6% of murder victim had consumed alcohol, and one from São Paulo, Brazil, in which 42.5% of homicide victims tested positive for alcohol, among those for whom a toxicological exam was performed, most of whom were young men. Significantly higher alcohol levels were reported for men than for women.

A review conducted by Norström and Ramstedt (2005) on population drinking and several mortality indicators included five studies on alcohol and homicide. Data across countries indicated that per capita consumption was associated with homicides in some countries but not others, and associations were more likely to be significant for male than for female homicides.

6.2.2 Drinking Patterns or Problems Associated with GV Victimization

One meta-analysis (Duke et al., 2018) and one narrative review (Li et al., 2010b) examined the association of drinking patterns with victimization from GV.

Meta-Analyses

As reported previously, Duke et al. (2018) conducted a meta-analysis of meta-analyses exploring the effect of alcohol, drugs and violence. They found a medium effect of alcohol use (not defined) on violence victimization (d = .42, 95% CI [.19, .64]) in five studies (with unknown sex or gender). However, three of these focused on IPV and one of these had a large estimate based on small clinical samples that likely affected the overall estimate. Estimates were smaller for the two non-IPV studies (i.e., d = .26, 95% CI [.22, .31] and d = .26, 95% CI [.22, .30]).

Narrative Reviews

In their review of 18 articles on alcohol use and sexual risk behaviours and outcomes in China, Li et al. (2010a) identified one study indicating that alcohol using students were more likely to become victims of campus violence (OR = 2.96, 95% CI [2.35, 3.73]). Alcohol use was defined as at least 25 g of liquor, 100 ml of wine or 200 ml of beer once per month and violence was defined as campus violence that included verbal and physical sexual assault.

7.0 Discussion and Implications

This report summarizes the findings of meta-analyses and narrative reviews of the relationship between alcohol consumption and aggression and violence (A/V) to inform the update of Canada's LRDGs. We focus on intimate partner A/V (IPV), male-to-female sexual A/V (SV), and non-partner and non-sexual physical A/V between adults (general A/V (GV)), including the relationship of alcohol with both perpetration and victimization.

The relationship between alcohol consumption and A/V has been assessed in terms of alcohol's involvement or contribution to A/V in the event (i.e., at the time of the incident) and associations of A/V with general drinking patterns (frequency, heavy episodic drinking, drinking to intoxication) and with drinking problems. We include experimental studies that are useful for examining the effects of alcohol on A/V under controlled conditions. Other studies examine drinking at the time of violence or victimization from institutional records (e.g., emergency department data on alcohol consumption by patients, crime data), as well as cross-sectional or longitudinal survey data with a focus on more distal associations between self-reported drinking patterns and experiences of A/V.

7.1 Alcohol and A/V Perpetration

Overall, this overview confirms that there is consistent evidence linking alcohol to A/V perpetration, including IPV, SV and GV. Importantly, for ethical and practical reasons it is not possible to directly measure a dose–response relationship between alcohol consumption and A/V for perpetration that occurs naturally in real-world settings. However, most event-level evidence, regardless of the type of violence, suggests that having consumed alcohol, especially large quantities of alcohol, at the time or prior to the A/V incident was associated with a greater likelihood of perpetration. Importantly, however, the strength of the relationship varied by sample and the sex or gender of the perpetrator, with larger effects found for male than for female perpetrators. Experimental studies suggest a direct contribution of alcohol with aggressive behaviour. However, reviews of this literature demonstrate significant heterogeneity in effects based on, for example, experimental paradigm, as well as many important moderators of the association such as social pressure, frustration and provocation. Some evidence also pointed to a link between alcohol use and severity of A/V, particularly for IPV.

Cross-sectional and longitudinal studies using self-report data of alcohol consumption and A/V indicated that patterns of heavier alcohol use, especially a pattern of heavy episodic drinking and drinking to intoxication, were associated with all forms of A/V. Stronger associations for men then for women were found in the IPV literature. Finally, drinking problems and alcohol use disorders were found to be positively associated with A/V, with stronger relationships for male than for female IPV perpetrators.

Across many reviews, heterogeneity in effects was found and reviewers found important moderators and sometimes mediators of the alcohol and A/V association, including sociodemographic, personality, psychological, physiological and situational factors (Abbey et al., 2014; Choenni et al., 2017; Crane et al., 2016; Exum, 2006; Foran & O'Leary, 2008; Giancola et al., 2002). These findings confirm that the link between alcohol and A/V is complex and dependent on many other factors (see also Graham et al. 1996).

7.2 Alcohol and A/V Victimization

Event-level drinking was found to be associated with IPV victimization and higher amounts of alcohol consumed before SV were associated with greater severity of SV. Rates of alcohol consumption among homicide victims suggested frequent involvement of alcohol (although there was high variability), and emergency department studies also indicated that victims of violence were significantly more likely to have consumed alcohol than controls. Finally, findings suggest that drinking patterns, especially heavy episodic drinking and drinking problems, were associated with A/V victimization. However, evidence about alcohol's association with A/V victimization must be considered in light of limitations of this literature (see below).

7.3 Limitations of Overview

In addition to inherent limitations of studies in this field, several limitations of the present rapid overview are noteworthy. This overview was restricted to reviews published from 2000 onward. It is possible the overview excluded important reviews published prior to 2000 and missed key findings related to alcohol consumption and A/V, although several meta-analyses of meta-analyses were included. Another issue with several reviews included in this overview is that they did not focus specifically on alcohol use, but they explored alcohol among many possible risk factors for A/V, and many reviews reported findings for alcohol in only a small subset of studies. In addition, many reviews did not report null findings, and it is unknown whether none were found or whether only positive findings were reported. Finally, to conduct a rapid overview of the literature we excluded some types of violence, including female-to-male SV, same-sex SV and domestic violence involving children.

Despite these limitations, as noted in the risk of bias section, the strength of this overview is its rigorous synthesis of a very large literature on three major types of A/V from multiple disciplines (e.g., sociology, epidemiology, criminology, epidemiology), with different research designs (experimental, cross-sectional, longitudinal), and samples (general populations, college and student populations, clinical populations). Each type of methodological design comes with its own unique set of limitations, but each also addresses the limitations of other designs. Thus, this rigorous overview shows consistent findings across multiple domains of heterogeneity, lending confidence to our conclusion that alcohol has an important causal role in A/V.

7.4 Implications for Updating LRDGs

A/V is an important public health concern (American Public Health Association, 2018; Krug et al., 2002; Mercy et al., 2003), especially among young adults (Krug et al., 2002; Mercy et al., 2003; World Health Organization, 2020). Although the exact mechanisms by which alcohol contributes to A/V are unknown, there is overwhelming evidence that alcohol consumption, especially intoxication, is associated with perpetration of A/V, and some evidence indicates that alcohol may increase the severity of A/V. However, there are insufficient data to define the exact dose–response relationship. Thus, although existing research does not allow the calculation of a risk curve for alcohol and A/V, as is the case for alcohol with diseases and injuries, it is reasonable to infer that individuals can reduce their risk of perpetrating A/V by limiting their alcohol consumption. It seems likely that avoiding drinking to intoxication, in particular, will reduce individuals' risk of perpetrating alcohol-related violence.

Therefore, efforts to reduce or eliminate alcohol-related A/V need to focus on reducing alcohol use, especially among those who may be likely to perpetrate A/V or get involved in violent incidents. Because A/V decreases with age and is perpetrated more by men than women, prevention efforts should focus on young adults, particularly young men. Overall, people should be encouraged to avoid drinking high levels of alcohol, or avoid drinking altogether, to reduce their risk of perpetrating violence. Persons who have a history of alcohol-related violence should avoid drinking altogether.

The literature on the association between alcohol consumption and victimization is less clear. The findings described above suggest there is likely an association between alcohol consumption and being the victim of A/V, but there are some mixed and null findings in addition to noteworthy limitations of this literature (see Sections 3.1 and 7.3 above). Alcohol's role in victimization likely reflects many different mechanisms that may work in combination, such as alcohol intoxication reducing the ability to avoid or escape danger, use of alcohol after A/V by victims due to trauma, increased exposure to risk in drinking settings (e.g., exposure to people who are intoxicated and therefore more likely to perpetrate A/V), targeting by perpetrators of people who are intoxicated, and use of substances to control victims. An important concern with attributing A/V victimization to the victim's consumption of alcohol is that this attribution can be used to support the belief that victims of A/V who consumed alcohol are responsible or blameworthy for being victimized. This is especially relevant to victimization from sexual and IPV, because women's drinking, and their intoxication in particular, has been subject to negative judgment (Brooks, 2013; Grubb & Turner, 2012; Klostermann & Fals-Stewart, 2006; Schuller & Stewart, 2000; Weiss, 2009), which may result in women being less likely to seek help or report the crime to police if they were drinking or intoxicated (Clay-Warner & Burt, 2005; Flowe & Maltby, 2018; Wolitzky-Taylor et al., 2011).

A related aspect of alcohol consumption by victims is whether a lack of concordance in the perpetrator's and the victim's drinking (i.e., one person is drinking more than the other or only one of the parties is intoxicated) affects the likelihood of A/V. This is particularly important for IPV because mutual drinking habits and patterns can affect relationship dynamics between intimate partners (see reviews by Marshal (2003) and Capaldi et al. (2012)). However, it is also relevant to sexual and male-to-male violence, especially violence that is predatory in nature (i.e., taking advantage of an intoxicated victim). Finally, some research findings suggest that perpetrators choose victims who are intoxicated or use alcohol to make their victim more vulnerable or incapacitated (Duval et al., 2020; Franklin, 2010; Testa, 2004).

In a review of interventions to prevent gender-based violence, the authors concluded that approaches that place the burden to avoid risk of victimization on women and girls are ineffective and that prevention must focus on changing the attitudes and behaviours of the people who perpetrate violence, often young men (Morrison et al., 2007). For example, the engagement of men and boys in action to prevent violence and change social norms about A/V has been recommended (Jewkes et al., 2015). Similarly, the World Health Organization and London School of Hygiene and Tropical Medicine (2010) reports that "Educating women on how to avoid high-risk situations (such as hitchhiking, abusing alcohol or becoming involved with older men)....has been associated with greater acceptance of rape myths" (p. 47).

Therefore, while evidence from this review clearly indicates that alcohol is a contributing factor in A/V victimization, we state unequivocally that drinking alcohol does not make a person responsible for violence done toward them. Thus, we conclude that lower-risk drinking guidelines should focus on reducing alcohol use by potential perpetrators.

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Appendix 1

Search Terms: Rapid Overview of existing reviews related to alcohol use and violence to inform low-risk drinking guidelines

We conducted a comprehensive search of the literature from 2000 to January 21, 2022, using the following databases: Medical Literature Analysis and Retrieval System Online (MEDLINE) and Excerpta Medica Database (EMBASE) using the OVID platform, PubMed, PsychINFO, PsychNET, Web of Science, Criminal Justice Abstracts, Cochrane CENTRAL., and one author's (KG) personal database. Search subject terms used were based on controlled vocabulary (MeSH keywords) and in combination with adjacency operators and free text terms for the following concepts: sexual violence, gender-based violence, IPV, male-to-male violence, violence, alcohol consumption or intoxication, and reviews.

SEARCH TERMS for Title/Abstract search

Types of violence (adults only):

IPV/domestic violence (Exclude: family, non-spouse/partner)

Sexual violence (Male-to-female only; Exclude: family)

General violence (Male-to-male, male-to-female, or unspecified gender/general violence)

Note: The following keywords will be combined for each type of violence e.g.: (alcohol use keywords AND violence keywords AND review keywords)

Alcohol Use Keywords:

General (use in all searches): alcohol, consum*, intoxicat*, binge, heave episodic drink*, alcohol drink*, alcohol use, alcohol consum*, drinking behavior, drinking pattern*, alcohol intoxicat*, risky drinking, problem drinking, substance*

alcohol-involv*, alcohol-related, alcohol-induced, alcohol effect*, alcohol-influenced, alcohol-caused, alcohol-associated

drinking context*, drinking location*, drinking setting*, drinking partner*, Risk, risk taking

Specific to IPV: home, at home, with partner, with family, with spouse, date, dating, concordance, alcohol abus*, alcohol depend*, substance abuse treatment, alcohol abuse treatment

Specific to sexual violence: nightlife, bar*, public drinking setting*, licensed establishment*, party, parties, licensed venue*, public drinking space*, club*, barroom*, pub, drinking venue*

Specific to male-to-male physical: peer, nightlife, bar*, public drinking setting*, licensed establishment*, party, parties, licensed venue*, public drinking space*, club*, barroom*, pub, drinking venue*, sport*, fraternity, hockey, football, locker room, beer, non-partner, non-sexual

AND

Violence Keywords:

General (use in all searches): aggress*, violen*, abuse*, victim*, perpetrat*, batter*, aggress*

male*, female*, mn, womn, gender*, gender-based

IPV: partner*, spous*, wife/wives, dating, date*, girlfriend*, boyfriend*, husband*, famil*, relationship*, domestic, intimate partner violence, IPV, intimate partner victim*, intimate partner perpetrat*, intimate partner aggress*, intimate partner abuse, relationship violence, batter* wom$n, dat* violen*, domestic violen*, domestic abuse, violence against women, VAW, spous* violen*, spous* abuse, spous* aggress*, wife abuse, women abuse, family violen*, family abuse, sexual abuse

Sexual/gender-based violence: sexual* violen*, sexual* aggress*, sexual* persisten*, sexual assault*, sexual* harass*, sexual* coerci*, attempted rape, rape, acquaintance rape, sexual* victim*, sexual* perpetrat*, female victim*, male perpetrat*, SES, sexual experiences survey, gender-based violence, dating violence. sexual* abuse*, violence against women, VAW

Male-to-male/general physical: non-partner violence, non-sexual violence, male-to-male violence, male-to-male aggress*, fight*, brawl*, peer*, violence against strangers, violence against peer*, stranger, acquaintance

AND

Review Keywords:

review, systematic review, rapid review, meta-analy*

Appendix 2

Characteristics of reviews organized by type of aggression and violence (A/V), e.g., intimate partner (IPV), sexual (SV), general (GV) (in alphabetical order by author's name)

Review authors, year of publication (reference #)	Type of review M=Meta-analysis N=Narrative	Type of studies in review (Lg = Longitudinal; CS=cross-sectional; Ex=Experimental; ER=Emergency room/injuries; CC=Case-control; Co=Cohort)	Year of studies included in review	Sample characteristics (M=male; F=female; GP=general population; Cl=clinical; S=students)	Alcohol measures (P=perpetrator consumption; V=victim consumption) HED=Heavy episodic drinking F=frequency Q=quantity V=volume	Violence measures (P=perpetration; V=victimization)	Total number of studies in review	Number of studies included in our overview	Focus of review and other relevant information
Intimate Partner A/V (IPV):									
Alebel et al., 2018[7]	M	Interviewer administered surveys	Up to Feb 2018	Pregnant F in Ethiopia	P Intimate partner used alcohol vs. did not use alcohol	V during pregnancy WHO (physical, psychological)	8	3	Examined other factors in IPV (e.g, education)
Ali et al., 2013	N	Various	1990-2011	M, F GP, Cl	V Use or abuse P (Excluded due to overlap with other reviews)	V M to F, F to M Various (physical., sexual or psychological)	46	26 P, 9 V	Explored factors for IPV (Note: excluded review of P due to overlap in studies with other reviews)
Bacchus et al., 2018	M	Lg	Up to Nov 2016	F	V Varies (e.g., binge within last year, binge before IPV)	V within last year (most physical., psychological., some threats, verbal or emotional)	18	3	Study of health effects of IPV on women. Other factors were adjusted in alcohol studies; most Lg studies did not adjust for time 1

Boyacioğlu et al., 2021	N	CS, CC, Co	Jan 2005 to Jan 2019	Pregnant F in Turkey GP, CI	P Alcohol use of partner	V while pregnant/ante natal Varies (most physical., sexual., emotional., verbal and economic)	22	7	Looked at prevalence in Turkey and various predictive factors and coping factors
Cafferky et al 2018	M	CS, Lg, CC, Co	1980 - 2000	M, F GP, CI	P, V Any alcohol use; Problems vs. consumption; F categories (daily/almost, few times week, occasional, undefined, past 3, 6 12 months, ever)	P, V M to F; F to M Physical IPV (various undefined type, severity or time frame)	983	538 alcohol, 376 P, 231 V	Looked at substance use overall and drugs vs alcohol. Published and unpublished literature. Excluded dating violence among students. Overlap with other reviews unknown, but likely substantial
Cao, et al 2021	N	CS, CC	2006-2019	F in China GP, CI	P, V Alcohol use	P, V M to F Study-specific questions, or modified CTS. Includes physical., psychological., sexual., economic	29	3 P, 2 V	Examined risk factors for IPV among Chinese women
Capaldi et al., 2012	N	Lg, CS	1980 - 2011	M, F GP, CI Heterosexual couples where both reported IPV. United States, Canada, United Kingdom, New Zealand, or Australia	P, V Varies – frequency, volume, HED, problems/abuse, use	P, V M to F; F to M Mostly CTS, criteria: range of mild to severe IPV with non-aggressive comparison group	170 estimates	13	Explored many factors in IPV

Choenni et al., 2017	N	Ex, CS, Lg, ER	2000 - 2013	M, F cohabitating couples; GP, Cl, specialized (e.g., pregnant women) in industrialized countries	P Alcohol use in prior 12 hours to violent conflict; self-reported alcohol use; heavy drinking; 'excessive alcohol consumption'; alcohol 'abuse' and dependence; drinks/week	P M to F; F to M Violent conflicts with partner; physically violent IPV; psychological IPV; sexual coercion	69	12	Review on association between alcohol and illicit drugs with perpetration of IPV & child maltreatment
Crane et al., 2016 (see also SV)	M	Ex	1981 - 2014	M, F GP, S	P Laboratory administered alcohol vs. control	P M to F Verbally aggressive behaviours, thoughts/feelings or hostility in reaction to audio-vignettes or couple's conflict resolution sessions	22	6	Meta-analysis on the proximal effects of acute alcohol consumption on M to F aggression. See also SV section
Cummings, et al (2013)	N	CS, Lg, CC	2000 - 2011	M, F Hispanics in U.S.A. GP	P V Alcohol consumption (quantity frequency, volume, patterns over time), problems [AUDIT, CAGE], heavy use (5+)	P V M to F; F to M Physical., verbal., sexual IPV	19	19	Examined factors related to IPV among Hispanics
Devries, et al 2014	M	Lg, CS	Up to Jun 2013	F GP	V Lg: Binge (varies e.g., past year or 30 days) CS: varies	V M to F Lg: Physical (2 studies) or physical/sexual (1 study) CS: Physical 21 studies, Physical/sexual 17 studies	Long: 22 CS: 41	Lg:7, 3 in meta CS: 38 in meta	Review of alcohol as predictor and result of IPV victimization. Overview excluded alcohol use post-IPV. Only 1 Lg and 27 CS controlled for partner drinking

Duval et al., 2020	N	CS	2006 - 2016	M, F S from U.S. higher education institutions	P Drinking at time of event; higher peak blood alcohol level; daily consumption, number of drinks, heavy drinking V Binge, higher levels, and frequent drinking; blackout; 'under the influence'; higher peak blood alcohol level	P M to F; F to M Verbal-emotional & threatening 'abuse' perpetration; physical., sexual., and psychological dating violence V M to F; F to M Physical abuse; Sexual violence; physical dating violence; verbal-emotional 'abuse'; re-victimization	23	18	Review of factors associated with risk of dating violence perpetration and victimization among university students. Combined dating violence and sexual violence for most findings. (See SV section for SV specific findings)
Foran & O'Leary, 2008	M	CS	1980 - 2006	M, F Married, dating, or divorced CI, GP	P Alcohol use or 'abuse'; dependence; consequences [AUDIT, MAST]; consumption (frequency, quantity, patterns); binge	P M to F; F to M Past-year IPV	50	50	Review on alcohol and IPV P based on married, dating or divorced individuals
Gil-Gonzalez et al., 2006	M	CS, CC	1996 - 2004	F GP, CI	P Alcohol Consumption	V M to F IPV (physical., sexual., battering, or emotional abuse)	22	11	Review of alcohol and IPV P based on community and clinical samples of Fs
Larsen et al (2015)	N	CS	2002 - 2013	M, F CI, Specialized (female in alcohol treatment, military personnel, etc.)	P Alcohol use at time of arrest V Drinking 'intensity' and frequency	P V M to F; F to M IPV, IPV severity; physical & emotional 'abuse'; minor violence	12	P 12 V 1	Review of gender differences in the perpetration, motivation, and impact of IPV in clinical samples. Comparison of alcohol and drugs. Alcohol findings not reported for all studies.

Lee et al., 2020	N	CS	Up to Mar 2019	M, F Black or African Americans	P Frequency of intoxication, binge or heavy drinking, alcohol 'abuse' or dependence, problems from alcohol	P M to F IPV	20	9	Review of alcohol and drug use as moderators in the relationship between adverse childhood experiences and IPV P
Li et al., 2010a	N	CS	1980 - 2008	M, F GP, Mothers in China	P Drank alcohol; Inebriated in past year V Drank alcohol;	P M to F 'Hit' V M to F Sexual violence 'hit'	18	3	Review of literature related to risky sexual behaviour in China
Mallory et al., 2016	M	CS	1980 - 2012	M, F Several countries around the world	P Alcohol 'abuse'	V M to F Physical, sexual, psychological IPV	779 estimates (49 studies)	163 estimates	Review of cross-cultural risk factors for IPV (Note: Probable overlap with studies in other reviews)
Marshal., 2003	N	CS, Lg	1981 - 1999	M, F Probability samples; CI	P, V Alcohol dependence or 'abuse'; problems not formally diagnosed (MAST, etc.); symptoms related to alcoholism; consumption (frequency, average daily, heavy use, etc.)	P, V M to F CTS; Undefined violence measures	60	30	Review of effects of alcohol on marital satisfaction
Moffitt et al., 2013	N	CS	1990 - 2012	F Canadian Territories	P Partner had been drinking	V M to F Physical., sexual., emotional., or psychological IPV	4	1	Examined general patterns of IPV and family violence linked to alcohol in the Canadian Territories

Mojahed et al., 2020	N	CS	Up to May 2018	F living in Arab countries	P 'Alcoholism', 'Alcoholic husband'	V M to F Domestic Violence Questionnaire; WHO questionnaire; hurt, insult, threaten, scream (HITS); WAST (undefined)	30	4	Review of intimate partner violence in Arab countries
Muluneh et al., 2021	M	CS	2008 - 2019	F Sub-Saharan African countries	P Alcohol consumption patterns; alcohol use V 'Drank alcohol'	V M to F Physical., sexual., emotional violence	50	15	Review on associated factors of gender-based violence against F in sub-Saharan Africa
Rothman et al., 2012	M	CS, Lg	1985 - 2010	M, F Youths (only samples with ages 18+ included)	P F and/or Q; heavy episodic drinking; alcohol problems (MAST, AUDIT)	P M to F Dating violence perpetration	28	20	Meta-analysis on the relationship between alcohol use and dating violence P among youth
Schumacher et al., 2001	N	CS	1974 - 2000	M, F GP, CI	P V Alcohol problems, Q, F	P V M to F Court-involved Male Physical Aggression (CMPA), Repeated or Severe Male Physical Aggression (RSMPA), Severe Male Physical Aggression (SMPA), and Any Male Physical Aggression (AMPA)	30	30	Examined various risk factors for M to F IPV P and V. (Note: Studies overlap with Foran & O'Leary 2008)
Semahegn et al., 2013	N	CS	2000 – 2014	M, F GP Ethiopians	P Alcohol consumption	P M to F Dating violence ever having occurred	15	15	Review of risk factors for dating violence towards F in Ethiopia

Shamu et al., 2011	N	CS, CC, Co	2000 - 2010	M, F Pregnant women in African Countries	P Partner drinking (drinks heavily, occasionally, ever) V Alcohol consumption, alcohol problems (ever had a fight, accident, injury, casual sex or been arrested after drinking); having one or more drinks in a month in last three months	P, V M to F Physical., sexual., or psychological IPV	13	5	Review of risk factors related to physical., sexual., or psychological M to F IPV P and V among pregnant F in African countries
Shorey et al., 2011	N	CS	1991 - 2010	M, F S	P Alcohol use during or immediately prior to IPV; more frequent drinking; 5+ drinks in past year; higher BAC in past month; problems from alcohol; average weekly consumption V Under influence of alcohol at time of IPV; drinking 3 hours before IPV; usual drinking pattern, most alcohol consumed at one time, higher peak BAC in past month; risky drinking patterns (AUDIT-C, binge drinking, RAPI, etc,)	P M to F; F to M Physical., psychological., & sexual dating violence V M to F; F to M Physical., psychological and sexual dating violence	45 P; 10 V	45 P; 10 V	Review on dating violence P and V and substance use among M and F university students. Mostly combined dating violence and sexual violence. (See SV section for SV specific findings)

Spencer et al., 2019	M	CS	1980 - 2016	M, F	V 'Alcohol use'	V M to F; F to M Physical IPV	391	Unknown	Examining risk markers for physical IPV V among M and F. Unknown how many estimates were included in meta-analysis related to alcohol use
Stith et al., 2004	M	Varies	1980 - 2000	M, F Married or cohabitating couples	V Alcohol consumption or problems P (Excluded due to overlap with other reviews)	P, V M to F Physical IPV	85	22	Review of risk factors for P and V of M to F IPV among heterosexual., married or cohabitating couples. (Note: Note: excluded review of P due to overlap in studies with other reviews)
Tenkorang et al., 2021	M	CS	2010 - 2017	F HIV-infected individuals from sub-Saharan African countries	P AUDIT; alcohol consumption (not defined)	V M to F Physical., sexual., and emotional IPV	20	4	Review of IPV against HIV-positive F in Sub-Saharan Africa
M to F Sexual A/V (SV)									
Abbey et al. 2014	N	CS, Lg, Ex	1993 - 2013	M, F S (Post-secondary) and similar age GP, Canada and U.S.	P Alcohol consumed; being intoxicated; administered alcohol (BAC); alcohol use (frequency, problem drinking, usual quantity, heavy drinking, etc.) V Alcohol consumed	P Sexual violence; use of force tactics; aggression (vignettes of sexual violence) V Sexual violence	43	43	Review on the relationship between alcohol consumption and M SV P. (Note: Ex studies overlap with Crane, et al., 2016)
Crane et al., 2016	M	Ex	1981 - 2014	M S	P Laboratory administered alcohol (BAC) vs. control	P Verbal hostility; aggressive thoughts and feelings in reaction to vignettes or sexual imposition paradigms	22	14	Meta-analysis on experimental literature on acute alcohol consumption effects on M to F P including SV (Note: Studies overlap with Abbey, et all, 2014).

Duval et al. 2020	N	CS	2006 - 2016	M, F S (Undergraduate) in U.S.	P V Alcohol consumption frequency and binge, heavy drinking and use, binge, and daily consumption, quantity, binge	P V Sexual Experiences Survey [SES], Sexual Coercion Scale	4 P, 4 V	4 P, 4 V	Review of risk factors for dating violence among undergraduate college students; combined physical dating violence and SV for most findings (see IPV section)
Kefale et al. 2021	M	CS	2000 – 2020	F S (Higher education) in Ethiopia	V Alcohol consumption (amounts not reported) *vs.* no use	V Sexual violence victimization	10	6	Review of predictors of SV among F students in higher education institutions in Ethiopia
Li et al., 2010b	N	CS	1980 - 2008	M, F (F sex workers and their M clients from 6 continents)	P, V Alcohol consumption, binge drinking; alcohol use	P, V Sexual coercion; forced sex and rape	76	6	Review of patterns, contexts and impacts of alcohol use associated with commercial sex. Most studies in U.S. and Asia.
O'Connor et al., 2020	N	CS, Lg	2000 - 2019	M S (College) in U.S.	P Alcohol use, heavy drinking, misuse, heavy episodic drinking	P sexual violence, Study specific	28	9	Review of predictors of campus SV P
Shorey et al., 2011	N	CS	1991 - 2010	M, F S (College)	P Binge drinking V Risky drinking patterns (AUDIT-C, binge drinking, RAPI, etc.)	P Sexual dating violence; SES V Sexual dating violence; CTS2	1 P; 1 V	1 P; 1 V	Review on dating violence and substance use in college students. Combined dating violence and sexual dating violence in most findings. (See IPV section for combined dating and sexual dating violence findings).
Steele et al., 2020	M	Lg	Up to Nov 2019	M S (College) in U.S.	P Drinking and Drug Habits Questionnaire, No day drinking habits, Past semester binge drinking	P Sexual violence; Not reported in detail	16	5	Review of risk and protective factors for M SV against F at higher education institutions in U.S.

Testa, 2002	N	CS, Ex, Police records	1990 to 2002	M, F GP S (College) Convicted sexual offenders	P % drinking at the time Alcohol use patterns and problems Heavy drinking (e.g., "drinking to get wasted vs. not drinking")	P SES, study-specific measures History of SV including verbal coercion to rape Severity V Police reported sexual assaults Severity (including victim injury)	107	56	Focus on associations between alcohol and M to F SV perpetration including occurrence and severity, and theories on effects and mechanisms. Published and unpublished literature
Testa, 2004	N	CS, Lg, Ex	1989 - 2004	M, F Various	P Alcohol use V Heavy alcohol use; alcohol consumption (including *vs.* no use) Measures not reported	P Sexual aggression, V Sexual violence; sexual aggression Measures not reported	42	25	Brief literature review of the role of alcohol in M to F SV
General A/V (GV)									
Branas et al., 2016	M	CS	1975 - 2014	M, F GP in U.S.	V Any alcohol use at time of homicide (BAC > 0mg/dl); Heavy alcohol consumption at time of homicide (BAC ≥ 80mg/dl)	V Victim of firearm homicide	51	3	Review on alcohol use and firearm violence
Bunker et al., 2013	N	ER	1969 - 2011	Sex or gender not reported Emergency room patients across 17 countries	V Self-reported alcohol use up to 6-hours prior to the injury clinical observation, positive BAC	V Injury due to violence	9	2	Focused on injuries experienced at home vs. licensed venue

Chalub & Telles, 2006	N	CS	1986 - 2006	M, F, & Sex or gender not reported P and V of murder or violent crimes	P, V "under the effect of alcohol at time of murder or being murdered" V Positive toxicology for alcohol (amount unspecified); positive BAC	P, V Being murdered or committing a murder; being victim of non-fatal incident	20	4	Review on alcohol, drugs, and crime
Cherpitel et al., 2005	M	ER	1984 - 2001	M, F Emergency room patients from 7 countries	V Positive BAC (>.00) or self-report of drinking within 6 hours of injury and no reported drinking after injury / 5+ drinks at least monthly in past year	V Risk Exposure Rate of Violent Injury (RR) / Attributable Fraction of Violent Injury (AF)	14	14	Looked at overall effects, M vs. F; also looked at "contextual data" homicide rate in country; drinking with dinner; legal drinking age. etc. (Note: Studies overlap with Cherpitel et al., 2007 and Zerhouni, et al., 2013)
Cherpitel et al., 2007	N	ER	1995 - 2005	Sex or gender not reported. Emergency room attendees from 7 countries	V Use of alcohol in 6hr prior to event; positive BAC	V Admittance due to injuries from intentional causes	17	8	Review on alcohol and injuries presenting in ER. (Note: Studies overlap with Cherpitel et al., 2005 and Zerhouni, et al., 2013)
Duke et al., 2018	M	M of meta-analyses	1970 - 2014	M, F Alcohol or drug users	P, V 'Alcohol use' vs. other drug use (undefined)	P, V Varied (violence perpetration, lab-based aggression, violent crime, hostility etc.)	32	32	Meta-analysis of meta-analyses on alcohol, drugs, and violence
Exum et al., 2006	N	Ex	1985 - 1997	M, F & Sex or gender not reported	P Administration of controlled alcohol dose (0.05 – 0.10 g/dl)	P "aggression" as measured by "delivering electric shocks" (Taylor Aggression Paradigm)	7	7	An integration of findings from experimental studies on alcohol and aggression. (Note: Studies overlap with Giancola, et al., 2002)

Giancola et al., 2002	N	Ex, CS	1975 - 1998	M, F & Sex or gender not reported S (college)	P Administration of Controlled alcohol dose (0.05 – 0.10 g/dl)	P Taylor Aggression Paradigm	Unclear (>10)	>10	Review of experimental literature on effects of alcohol on violence and potential moderators, among college students. (Note: Studies overlap with Exum, et al., 2006)
Kuhns et al., 2010	M	CS, L	1968 - 1010	M, F Homicide victims in 11 countries (mostly U.S.);	V Toxicology result positive for alcohol (varying BAC levels)	V Death from homicide	61	61	A meta-analysis of alcohol toxicology study findings among homicide victims
Li et al., 2010b	N	CS	1980 - 2008	Sex or gender not reported S in China	P, V 1+ use of alcohol (25 g liquor, 100 ml wine, 200 ml beer) per month	P, V Campus violence, defined as 6 types of behaviors including verbal and physical sexual assault	18	1	Review of patterns, contexts and impacts of alcohol use associated with commercial sex. Most studies in U.S. and Asia
Nörstrom & Ramstedt, 2005	N	Survey-Studies	1994 - 2005	M, F GP 9+ countries	V Per capita consumption	V Homicide rate	Not reported (> 20)	5	Review of the literature on mortality and population drinking
Perkins, 2002	N	CS	1986 - 1999	Sex or gender not reported; S (College)	P "Drinkers v non-drinkers' (undefined) "someone else's drinking"	P "Involved in fight or argument" (undefined) V "been pushed or assaulted"	Not reported (> 30)	3	A review of literature on consequences of alcohol misuse in college populations
Sonderlund et al., 2014	N	CS	1993 - 2008	M, F & Sex or gender not reported 57.6% M Athletes (S (University, middle, high school), former, current professional athletes, GP	P High frequency alcohol consumption (>9 days per month); high-volume alcohol consumption; alcohol use	P Verbal or physical violence; Fighting and violence; Aggression	11	6	Review on sports participation, alcohol, and violence

Zerhouni et al., 2013	N	ER	1960 - 2013	Sex or gender not reported Adults presenting at emergency rooms in 5 countries	V Positive BAC (> 0 mg/dl) or self-reported alcohol use up to 6 hours prior to sustaining the injury	V Violence-related injury presentation at an emergency room	52	21	Review and perspectives from psychological and social sciences. (Note: Studies overlap with Cherpitel et al., 2005; 2007).