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## Abstract

**Introduction:** While the prevalence of intimate partner violence (IPV) perpetration by men who use substances is high, limited evidence exists about how best to reduce IPV among this group.

**Method:** A systematic narrative review with meta-analysis was conducted to determine the effectiveness of interventions to reduce IPV by men who use substances. Inclusion criteria were: randomised and non-randomised controlled trials; adult heterosexual male IPV perpetrators where at least 60% of participants were alcohol and/or drug users; the intervention targeted IPV with or without targeting substance use (SU); outcomes included perpetrator and/or victim reports of IPV, SU or both. The Cochrane Effective Practice of Organisation of Care Tool was used to assess methodological quality.

**Results:** Nine trials (n= 1014 men) were identified. Interventions were grouped into: 1) integrated IPV and SU interventions (n=5); 2) IPV interventions with adjunct SU interventions (n=2) and 3) standalone IPV interventions (n=2). Cognitive behavioural and motivational interviewing therapies were the most common approaches. Data from individual trials showed a reduction in SU outcomes in the short-term ( $\leq 3$  months) (n=2 trials) and IPV perpetration at different time points (n=3 trials) for interventions compared with treatment as usual (TAU). Meta-analysis with integrated IPV and SU interventions showed no difference in SU (n=3 trials) or IPV outcomes (n=4 trials) versus SU TAU.

**Conclusions:** Little evidence exists for effective interventions for male IPV perpetrators who use substances. Meta-analysis shows that outcomes in integrated intervention groups are not superior to TAU. Greater attention needs to be paid to the nature of the relationship between IPV and SU in intervention design, the optimum approach to and duration of intervention, and type and timing of outcome measures.

<sup>1</sup>the term 'Hazardous' drinkers or drinking was used across a number of the included studies.

## Introduction

Intimate partner violence (IPV), defined as threatening or coercive behaviour, violence or abuse between ex/current partners, is a recognised global public health issue, harming women, men and those self-identifying as LGBTQ+ and their families (Scarduzio et al., 2017; Vos et al., 2006). As women are purportedly more likely to be victims of sexual violence, severe physical violence or murder by their partner (World Health Organisation (WHO), 2016), IPV interventions have predominantly focused on measures to protect women (Rivas et al., 2015). Although crucial, such interventions only respond to one aspect of this complex phenomenon, often resulting in short-term success (Clarke & Wydall, 2015). Thus, attention has turned to secondary prevention by seeking to rehabilitate those who perpetrate IPV (Bowen, Brown & Gilchrist, 2003). A coordinated response that prioritises the needs of victims and survivors while concurrently addressing the behaviour of perpetrators is likely to be more effective in preventing future violence (Clark & Wydall, 2013; Davis & Biddle, 2017; Diemer, Humphreys, Lmaing & Smith, 2013). However, the effectiveness of current perpetrator programmes remains unclear.

Current perpetrator programmes largely adhere either to a psycho-educational feminist perspective (e.g., the 26-week Duluth programme) or to a cognitive behavioural therapy (CBT) approach (Pence & Paymar, 1993). Two meta-analyses on the effectiveness of psycho-educational interventions indicate low effect sizes on recidivism, with similarly poor results being found for CBT interventions (Feder, Wilson & Austin, 2008; Feder & Wilson, 2005; Smedslund et al., 2011; Tarzia et al., 2018). Criticisms include inconsistent (non-comparable) measurement of outcomes, insufficient evaluation of context and short-term follow up (Gondolf, 2012). Reviews of motivational interventions have also found inconclusive evidence of the effectiveness of IPV perpetrator programmes (Miller & Rollnick, 1991; Vigurs et al., n.d.). However, recent UK health service guidance highlights that the cost of IPV is “so significant that even marginally effective interventions are cost effective” (National Institute for Health and Clinical Excellence (NICE), 2014). Thus, in addition to uncertainty surrounding the effectiveness of IPV perpetrator interventions, there is a need for rigorous evaluation of existing interventions.

Robust evidence supports an association between SU (i.e. alcohol and drug use) and IPV, with a consensus that SU can increase both the frequency and severity of violence (Cafferky et al., 2018; Leonard & Quigley, 2017). Findings have highlighted that rates of physical or sexual violence perpetration among men receiving treatment for SU are far higher than those within the general population (Gilchrist et al., 2017; Gilchrist et al., 2015; O’Farrell et al., 2003; O’Farrell et al., 2004; Taft et al., 2010; Ten Have et al., 2014). Additionally, a recent study concluded that 14% of physical IPV in the general population was attributable to SU (Ten Have et al., 2014). One substance particularly attributed to violence is that of alcohol, with the suggestion that the elimination of hazardous drinking

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would result in a reduction of general population violence by 44% (Fergusson, Boden & Horwood, 2013). Such findings have led many to identify a need to acknowledge a relationship between IPV and SU (Gilchrist et al., 2017) and focus on developing integrated IPV and SU interventions (Capaldi et al., 2012; Gilchrist & Hegarty, 2017; Leonard & Quigley, 2017; McMurrin, 2017).

Illustrative of this, a narrative review by Tarzia et al. (2018) concluded that whilst there was little evidence in terms of the effectiveness of IPV interventions in health settings, those that addressed both IPV and SU concurrently demonstrated promise. Furthermore, naturalistic studies have identified associations between reductions in IPV perpetration and successful completion of SU treatment (Murphy & Ting, 2010). There continues, however, to be little understanding concerning the factors associated with reductions in IPV perpetration and SU (Gilchrist et al., 2015; Gilchrist et al., 2017). Consequently, while integrated approaches are being developed to target co-occurring IPV and SU, knowledge and understanding of what works for whom is limited (Gilchrist et al., 2015). As such, this review aims to determine the effectiveness of interventions to reduce IPV perpetration by men who use substances.

## **Method**

A systematic review with meta-analysis was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols (PRISMA- P; Moher et al., 2015). This protocol was registered with the International Prospective Register of Systematic Reviews (PROSPERO 2017: CRD42017056596).

## **Search Strategy**

Identified via published articles and by consulting experts, searches were performed combining three topics: IPV, interventions, and substance use (online file). Citations were managed using Endnote software. The following databases were searched from inception date to 25 May 2018 for relevant studies: MEDLINE, EMBASE, CINAHL, PsycINFO, SSCI, IBSS and Social Services Abstracts, with an update in MEDLINE to 8 April 2019. Clinical trial databases were searched to identify additional studies (NIHR Research Register, [www.who.int/ictrp/](http://www.who.int/ictrp/) and National Health and Medical Research Council, Australia). Consultations with experts, and forward-backward reference list searches of recent reviews were also conducted.

## **Eligibility Criteria**

The PICOD (i.e. Population, Intervention, Control, Outcome and Design) format was applied in formulating inclusion criteria, using the hierarchy assessment method of eligibility. Randomised controlled trials (RCTs) or non-randomised controlled trials (nRCTs) were eligible if: 1) the intervention targeted IPV or relationships among adult heterosexual males, 2) included samples where

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at least 60% were described as current hazardous drinkers or who met criteria for abuse or dependence on alcohol or drugs (i.e. substance use (SU), 3) interventions were compared to either IPV perpetrator or SU treatment as usual (TAU), or an intervention of a lesser intensity or frequency, and 4) outcome measures included perpetrator and/or victim reports of IPV perpetration, and/or SU, and/or marital satisfaction/conflict. There were no language restrictions.

### **Data Collection and Extraction**

Titles and abstracts were assessed by GG and EG, with disagreements resolved by DSL. Several authors (GG, EG, MM, GF, AH, DSL, AJ) assessed full texts against eligibility criteria. Conflicting results were resolved by a third reviewer (DSL, AJ or JH). Two authors (DSL, AJ) extracted data from eligible trials into a custom spreadsheet, describing interventions using the Template for Intervention Description and Replication (TIDieR) checklist (Hoffmann et al., 2014). Specifically, extraction included information around the intervention rationale, associated materials and procedures followed, facilitators, intervention frequency/duration, and modifications made.

### **Methodological Quality**

Two authors (DSL, AJ) assessed trial methodological quality as high, medium or low risk using the Cochrane Effective Practice of Organisation of Care (EPOC) tool for assessing risk of bias (Higgins et al., 2011). This included assessing for randomisation, allocation concealment and contamination. Conflicting assessments were resolved through discussion.

### **Data Synthesis and Statistical Analysis**

Trial methodologies, interventions and outcomes were described in line with a narrative synthesis method (Ryan & Cochrane Consumers and Communication Review Group, 2013). In terms of statistical analysis, if sufficient in number, and suitable in terms of statistical and methodological heterogeneity, a comparison was made between intervention and control group data (Higgins & Green, 2011). Specifically, the analysis plan required at least two RCTs with combinable data for the pre-specified outcomes. A meta-analysis using a random effects model was performed using Review Manager Version 5.1. Statistical heterogeneity was estimated using the I-squared (I<sup>2</sup>) statistic, where I<sup>2</sup> >50% may be indicative of substantial heterogeneity. Due to limited data, it was not possible to examine the effectiveness of individual components of interventions on outcomes.

## **Results**

### **Study Selection**

Following removal of duplicates, 5,202 citations were screened and 176 full-text articles were assessed for eligibility. Application of the inclusion criteria resulted in a total of 13 manuscripts from nine trials

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(Figure 1). Nine trials were included and grouped into three intervention types (Table 1): 1) integrated IPV and SU interventions (n=5); 2) IPV interventions with adjunct SU interventions (n=2), and 3) standalone IPV interventions (n=2). The meta-analysis included four trials from the integrated IPV and SU interventions group (Easton et al., 2007; Easton et al., 2017; Kraanen et al., 2013; Mbilinyi et al., 2011). There were insufficient data to conduct meta-analyses for the two other intervention types.

Insert Table 1

### **Intervention characteristics**

Table 1 outlines RCT characteristics. Seven interventions were delivered to men individually (Easton et al., 2017; Kistenmacher, 2000; Kraanen et al., 2013; Mbilinyi et al., 2011; Murphy et al., 2018; Satyanarayana et al., 2016; Stuart et al., 2013). Of these, six were delivered face-to-face with one delivered by phone (Mbilinyi et al., 2011). One intervention was delivered to men in a group (Easton et al., 2007) and one provided both group and individual sessions (Palmstierna et al., 2012). Four interventions employed the principles of CBT (Easton et al., 2007; Easton et al., 2017; Palmstierna et al., 2012; Satyanarayana et al., 2016). Of these, three adopted CBT in targeting both IPV and SU simultaneously (Easton et al., 2007; Easton et al., 2017; Satyanarayana et al., 2016), while the remaining intervention targeted IPV alone (Palmstierna et al., 2012). Another trial adopted both CBT and motivational interviewing (MI) (Kraanen et al., 2013), using both approaches to target IPV and SU simultaneously. One included a standard IPV programme, using MI in targeting SU specifically (Stuart et al., 2013). Of the final two trials, one used MI in targeting IPV and SU simultaneously (Mbilinyi et al., 2011), while the other used MI in targeting IPV alone (Kistenmacher, 2000).

### **Population substance use characteristics**

Kistenmacher (2000) and Palmstierna et al. (2012) included samples where 66.7% and 77% of the samples, respectively, were considered 'hazardous drinkers'<sup>1</sup> or dependent on alcohol. Kistenmacher (2000) considered self-reported referrals to drug and/or alcohol treatment in the past while Palmstierna et al., (2012) assessed SU through self-reports of violence perpetration while intoxicated. The remaining seven RCTs included samples where 100% reported hazardous drinking, abuse or dependence on alcohol, cannabis, cocaine or heroin. Hazardous use was assessed using the Alcohol Use Disorders Identification Test (AUDIT) (Murphy et al., 2018; Stuart et al., 2013) and the Short Inventory of Problems (SIP; Miller, Tonigan & Longabaugh, 1995) (Stuart et al., 2013). Drug and alcohol abuse and/or dependence was assessed using the DSM-VI for five trials (Easton et al., 2007; Easton et al., 2018; Mbilinyi et al., 2011; Satyanarayana et al., 2016; Stuart et al., 2013). Kraanen et al. (2013) assessed alcohol and drug abuse and/or dependency using Measurements in The Addictions For Triage and Evaluation (MATE) (Schippers, Broekman & Buchholz, 2007), while Murphy et al. (2018) assessed alcohol abuse and/or dependency using the Clinical Institute Withdrawal Assessment for

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Alcohol tool (CIWAAR) (Sullivanm, Skyara, Schneiderman, Naranjo & Sellers, 1989). Kraanen et al. (2013) excluded those with diagnosed crack cocaine or heroin abuse and/or dependency due to them requiring more intensive inpatient treatment. Furthermore, two trials excluded men if deemed to have severe alcohol or drug dependency (Stuart et al., 2013; Palmstierna et al., 2012). Table 1 outlines recruitment settings, substance use characteristics and trial inclusion/exclusion criteria.

Insert Table 2

### **Substance use and Intimate Partner Violence Outcome Measures**

The time-line follow-back (TLFB) interview, a calendar-assisted structured interview (Fals-Stewart et al., 2000), measured substance use in most trials (Easton et al., 2007; Easton et al., 2017; Mbilinyi et al., 2011; Murphy et al., 2018; Stuart et al., 2013). The revised Conflict Tactics Scale (CTS-2; Straus et al., 1996) was used to measure IPV in all but one trial (Murphy et al., 2018). Three trials requested both female partners and male participants complete the CTS-2 (Easton et al., 2007; Easton et al., 2017; Krannen et al., 2013), while one measured partners' responses alone (Satyanarayana et al., 2016). Table 2 outlines SU and IPV related outcome measures and findings.

### **Trial Authors' Findings and Conclusions**

#### ***Integrated IPV and SU interventions***

Easton et al. (2007) compared a group SU TAU (12 Step Alcohol Course) with an integrated SU and IPV group intervention finding a non-statistically significant reduction for the treatment group in the frequency of violent episodes across time than the TAU group. Furthermore, a statistically significant reduced number of self-reported days of alcohol use across the 12 weeks of treatment was found for the SADV group as compared to the TAU group ( $p < 0.02$ ). Mean attendance for both groups was 9/12 sessions with no significant differences ( $p < 0.14$ ). More recently, Easton et al. (2017) compared individual SU TAU (CBT modified from project MATCH; Kadden, 1992), with SADV delivered individually with optional couples counselling. As above, men in this study were in treatment for alcohol and/or cannabis and/or cocaine and/or opiate dependency and use. Men receiving SADV self-reported that they were less likely to engage in aggressive behaviour after a drinking episode (primary outcome). Additionally, men self-reported fewer episodes of physical IPV and had fewer cocaine positive toxicology screens and positive breathalyser results during treatment than the drug counselling control group at a three-month post-treatment follow-up. However, these effects were not statistically significant. Seventy-one percent across the two groups completed 8/12 of the treatments.

Comparing CBT informed individual TAU for SU with an individual integrated IPV and SU intervention (I-Stop) for men in treatment for alcohol and/or cannabis and/or cocaine abuse and

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dependency, Krannen et al. (2013) reported significant reductions in both SU and IPV perpetration for men in both treatment arms post-treatment. However, no differences in outcome were found between treatment arms. Only 36.5% of participants completed 75% of treatment intervention, with no difference between the groups. Overall, the authors concluded that it was more cost-effective and efficient to implement the SU TAU rather than the intervention. Mbiliny et al. (2011) found no statistically significant changes in any of the outcomes, or differences between MI intervention and SU educational material delivered via mail. Between groups, 14% of the intervention group were lost to follow up and one discontinued versus 9% lost to follow up with two discontinued in the TAU group. There were no differences between groups regarding marital satisfaction although it was unclear as to whether the perpetrator or spouse completed this measure.

Finally, Satyanaranya et al. (2016) reported that, compared with TAU (psychoeducational and pharmacological treatment for SU), the integrated cognitive-behavioural intervention (ICBI) group reported significantly lower IPV perpetration at both one and three-month follow up ( $p=0.004$ ,  $p=0.005$  respectively) after adjusting for baseline values, age at first drink, and baseline alcohol dependence scores. Twenty of the 177 men randomised were lost to follow-up. Alcohol consumption in the men was not significantly different between the treatment groups. Depression, anxiety, and stress scores in the spouses were significantly lower in the ICBI group at both 1 and 3 months follow up, compared to TAU ( $p=0.04$ ,  $p=0.006$ ,  $p=0.01$  respectively). Although preliminary, the authors concluded that findings demonstrated the feasibility and effectiveness of an integrated SU and IPV intervention with an alcohol dependant population.

### ***IPV intervention with adjunctive SU intervention***

Murphy et al. (2018) compared four individual MI sessions followed by a standard IPV programme with TAU (IPV programme) with four additional SU educational sessions. A significant reduction in alcohol abstinent days, percent of heavy drinking days, percent of illicit drug use and percent of partner violence were reported for men in both treatment arms at 12-month follow-up. However, no significant treatment x time interaction was found. The authors reported good adherence for both the intervention and control arms (completed 99/110 vs. randomised 101/118). Similarly, Stuart et al. (2013) compared a standard IPV programme plus a 90-minute brief alcohol intervention with TAU (IPV programme). Those in the treatment arm reported consuming fewer drinks per drinking day at three months ( $p=0.04$ ) but not at six months follow-up using repeated measure analyses. Adherence to intervention was found to be good at 3 and 6 months but dropped off at 12 months and more so in the intervention compared with the TAU group (completed 95/123 vs. randomised 112/129). In a post hoc analysis, men receiving the intervention reported greater abstinence from alcohol at three and six months post randomisation ( $p=.002$ ,  $p=0.01$  respectively), less severe psychological aggression and fewer injuries to partners at three and six-month follow-up ( $p=.04$ ,  $p=0.03$ ). However, there were no significant differences in physical IPV between the groups and no statistically significant differences at 12 months for any

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outcome in any analysis. Thus, it was concluded that while a brief alcohol intervention could show promise in improving alcohol and IPV outcomes, this was limited in duration.

### ***Standalone IPV interventions***

For both trials (Kistenmacher, 2000; Palmstierna et al., 2012), around 70% of the men used substances. There are no separate data presented for substance users versus non-substance users. Kistenmacher (2000) compared a group IPV programme with a no treatment control group, with no difference in IPV recidivism reported between the groups at the 6-month follow-up ( $p=0.47$ ) or on a self-report measure of motivation to change violent behaviour ( $p=0.8$ ). Completion rates were 94% of controls compared to 75% in the intervention group ( $p=0.18$ ). Men in this trial reported dependence or abuse of alcohol and/or cocaine and/or cannabis.

Finally, comparing an individual plus group IPV intervention with individual IPV plus wait list control, Palmstierna et al. (2012) reported that the intervention group improved in terms of IPV measured as physical violence, verbal aggression and material violence at 15 weeks ( $p<0.001$ ) when compared with the control group. Dropout rates were similar between intervention and control groups. Authors from both trials concluded positive findings, for MI (Kistenmacher, 2000) and CBT (Palmstierna et al., 2012), but with a need for further replication with larger samples.

### **Quality Assessment (Figure 2)**

Quality assessment found that the trials were conducted with low risk of bias but there was a lack of information or clarity for some assessment domains. Specifically, in line with the Cochrane Effective Practice of Organisation of Care (EPoC) tool for assessing risk of bias, in the integrated IPV and SU interventions, three of the five trials did not describe allocation concealment (Easton et al., 2007; Krannen et al., 2013; Mbiliny et al., 2011); one reported uneven baseline measures (Easton et al., 2017), but did attempt to correct this in analysis; and three did not comment on how incomplete outcome measures were dealt with (Easton et al., 2007; Mbiliny et al., 2011; Satyanaranya et al., 2016). Knowledge of allocation and contamination was not described except for one that suggested potential contamination issues (Satyanaranya et al., 2016). Of the two trials of IPV interventions with adjunct SU interventions, one was assessed as high risk of bias in terms of allocation concealment and incomplete outcome measures (Stuart et al., 2013), while the other did not describe allocation concealment and did not comment on allocation contamination (Murphy et al., 2018). In the stand-alone IPV interventions, one trial had contamination between groups (Kistenmacher, 2000).

Insert Figure 2

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## **Statistical power**

Of the 9 trials, five included sample sizes of less than  $n=75$  (range  $N=26-252$ ) resulting in a lack of power to determine effectiveness. One trial was a pilot (Easton et al., 2007), four trials did not report a power calculation (Easton et al., 2017; Satyanarayana et al., 2016), although two acknowledged a small sample size (Kistenmacher, 2000; Palmstierna et al., 2012). Four trials reported power calculations (Kraanen et al., 2013; Mbilinyi et al., 2011), although two did not reach recruitment targets (Murphy et al., 2018; Stuart et al., 2013).

## **Meta-analysis**

The data were limited for meta-analysis due to the heterogeneity of the interventions included in the review and the variations across control groups. Five trials either did not report appropriate or combinable outcome data for analysis. Data were examined for IPV and SU outcomes for the remaining four trials in the Integrated IPV and SU interventions group (Easton et al., 2007; Easton et al., 2017; Kraanen et al., 2013; Mbilinyi et al., 2011). There was a lack of precision of estimates (i.e. wide confidence intervals) as reflected in the meta-analysis results and  $I^2$  heterogeneity measures.

## ***Integrated IPV and SU interventions***

### ***SU Outcomes***

Data on SU from three of the integrated trials were combined (Easton et al., 2007; Easton et al., 2017; Kraanen et al., 2013). Data for abstinence from drug use and alcohol use at 12 weeks was available for two of the trials (Easton et al., 2007; Easton et al., 2017). Neither drug nor alcohol abstinence was statistically significantly different (mean difference (MD) 3.74 [confidence interval (CI) -0.10, 7.58]  $p=0.06$ ,  $I^2=59\%$ , MD 3.38 [-0.867, 15.41]  $p=0.58$ ,  $I^2=87\%$  respectively; Figure 3ai). Data from all three trials were combined for abstinence from overall SU at 8-12 weeks, and did not show a statistically significant effect in favour of the integrated interventions; rather a direction of effect in favour of the SU TAU group was found (MD 2.07 [CI 0.00, 4.13]  $p=0.05$ ;  $I^2=0\%$ ). However, it is important to note that this analysis was dominated by one trial as illustrated by the 0% heterogeneity (Easton et al., 2017; Figure 3aai). One trial used the outcome measure of substance dependency and showed no difference between groups at the final endpoint of 12 weeks MD -0.80 [-3.55, 1.95]  $p=0.57$ ; Figure 3aiii) These meta-analyses reflect the individual data from the five trials presented above in which only one trial (Satyanarayana et al., 2016) had a statistically significant effect on alcohol use. However, it was considered important to combine the data available to provide a directional overview of the interventions' effectiveness.

INSERT Figure 3ai; 3aai; 3aiii HERE

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### ***IPV Outcomes***

Data from the CTS-2 physical violence subscale were combined from four of the five trials at 4-12 weeks data points using mean and standard deviations to produce a mean difference for each (Easton et al., 2007; Easton et al., 2017; Kraanen et al., 2013; Mbilinyi et al., 2011). It is of note that this analysis was subject to moderate heterogeneity ( $I^2=51\%$ ). The combined mean difference was 0.1 [CI-0.37, 0.57]  $p=0.68$  (Figure 3bi). One trial (Satyanarayana et al., 2016) used the outcome measure of Incidence of Spousal Abuse (Hudson & McIntosh, 1981). Although the intervention group demonstrated significantly lower IPV perpetration at both one and three-month follow-up compared to the control group ( $p=0.004$ ,  $p=0.005$ , respectively), there was no statistically significant difference at the final endpoint of 12 weeks (MD -2.90 [CI 6.41, 0.61]) (Satyanarayana et al., 2016; Figure 3bii).

INSERT Figure 3bi and 3bii here

### **Discussion**

Overall, the results of a small number of individual trials demonstrated some reductions in SU and IPV outcomes in the short term. However, meta-analysis of four trials showed no statistically significant differences between integrated interventions and their SU TAU groups. There were insufficient data to conduct meta-analysis for the other two intervention group types (IPV interventions with adjunct SU interventions and standalone IPV interventions). Thus, it is difficult to address the objectives of this review in determining the effectiveness of intervention in reducing IPV perpetration by men in substance use treatment. That said, this review does indicate some important factors for future trials targeting IPV perpetration by those who use substances.

Although a variety of outcome measures were used in the trials, the CTS-2 was used to assess IPV in eight of the included trials and embedded within the TLFB approach for one trial (Murphy et al. 2018). While this was predominantly completed by the perpetrator, current or ex-partners also completed the CTS-2 in four trials. However, within their measurement of IPV, many of the trials remained focused on physical forms of IPV, often failing to account for coercive control (defined as an act or a pattern of acts of assault, threats, humiliation and intimidation or other abuse that is used to harm, punish, or frighten their victim”, Section 76 of the Serious Crime Act 2015) and other forms of abuse. Conversely, for SU, outcome measures adopted were variable across trials with some covering pattern of use and/or abstinence. Whilst all the trials recruited users of different substances, including alcohol, cannabis, cocaine and opiates, and reported numbers using some substance types, no results were reported by substances used nor was there any differentiation provided in relation to the severity of use by participants (i.e., dependency, hazardous, abuse). Additionally, none of the trials detailed the relationship between the IPV and SU within their populations. As such, it was impossible to evaluate

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the relationship between the substances used and type of violence. Furthermore, it is difficult to make sophisticated and meaningful comparisons between trials in gauging the effectiveness of both integrated and standalone interventions in reducing SU. Additionally, while physical IPV must be considered, it is necessary to draw on appropriate measures capturing the more nuanced aspect of violence and abuse, including psychological and coercive control (Gilchrist et al., 2018).

Sufficient data for meta-analysis were pooled for the integrated IPV and SU interventions group only. However, analysis showed no statistically significant differences in IPV or SU in comparison with the SU TAU groups. The trials were conducted with low risk of bias, although there was heterogeneity in the population recruited, intervention delivered, duration and intensity, as well as the availability of combinable data. It is important to note that men in the TAU groups in the integrated IPV and SU trials were all receiving help for their SU, thus results should be interpreted with caution. A further issue was the small sample size in a number of the trials possibly resulting in the under-powering of most of the trials. Trials were further weakened by the levels of adherence to treatment and follow-up attrition. Nonetheless, the trials provided reasonable descriptions surrounding attendance, with similar attendance between treatment arms. However, nearly half ( $n = 4$ ) of the trials did not explain how their analysis accounted for attrition or session attendance.

### ***Future Trial Recommendations***

Considering the inconclusive results surrounding the effectiveness of IPV interventions in the trials reviewed, recommendations for practical development can only be tenuous. The nine trials recruited a number of men from an array of settings, with a number of different substances recorded. Additionally, in terms of mental health, a number of trials excluded potential participants due to mental health diagnoses ( $n = 5$ ). In terms of future progression, it is important that IPV and SU interventions consider what works best for whom. Research has demonstrated variability in associations between SU and IPV perpetration across differing substances. For example, while a strong association has been found between alcohol and/or cocaine use and IPV (Cafferky et al., 2018; Smith, Hamish, Leonard & Cornelius, 2012; Stith et al., 2004), associations have been noted when considering cannabis and/or opioid use or poly-drug use. As such, the type of substances used, and the level of use (dependence, abuse, hazardous), need to be clearly defined and measured. Such considerations will enable interventions to be designed to clearly address treatment needs and tailor these in relation to individual factors, such as specific substances used, mental health, and demographic factors. Future trials must also incorporate measures accessing the multi-faceted nature of abuse in relationships. In addition to physical IPV, it is essential that outcome measures include instruments accounting for other nuanced forms of abuse (including coercive control) (Gilchrist & Hegarty, 2017). This is particularly important when considering the complex nature of substance using relationships (Gilchrist et al., 2019; Gadd et

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al., in press). Additionally, such measures would be best administered to both perpetrators and their current or ex-partners to strengthen overall validity from corroborated evidence around abuse (Capaldi & Langhinrichsen-Rohling, 2012). As a result, the integration of support services to ensure victims' safety are paramount (Capaldi & Langhinrichsen-Rohling, 2012). Overall, considering the substances used by perpetrators, their level of use and type of perpetration will enable a more complex understanding of the relationship between these factors as well as the treatment needs of those seeking support (Gadd et al., in press).

The five integrated intervention trials and the one IPV with adjunct SU intervention predominantly utilise CBT and MI approaches. While research suggests that CBT and MI are suitable for this population, there needs to be focus on how integrated interventions can be delivered to best draw on the benefit of these approaches (Crane & Easton, 2017; Lila, Gracia & Catala-Minana, 2018). One issue in need of research is the optimum duration of interventions. The current trials were, on average, 12 weeks in duration, but there was attenuation of positive treatment effect at follow-up. Research has indicated limitations with the brevity of MI sessions, suggesting more intensive MI interventions should be undertaken to develop participant engagement in addition to motivation for change (Scott, King & McGinn, 2011). Furthermore, future trials need to extend the follow-up period to examine the duration of outcomes and, potentially, any delayed effects.

Overall, not only are there a lack of referral pathways available for male perpetrators of IPV who use substances (Radcliffe & Gilchrist, 2016), treatment adherence and outcomes are significantly poorer for substance using men who are referred to standalone IPV interventions (Eckhart et al., 2008; Klostermann, 2006; Timko et al., 2012). Given this, it would be prudent and more efficient to develop a theoretically integrated SU and IPV intervention, delivered within a substance use setting and facilitated by highly trained substance treatment staff (Timko et al., 2014). It is imperative, however, that such an intervention incorporates an accessible model tailored to the complex needs of substance using men who perpetrate IPV (Gilchrist, 2003).

### ***Strengths and Limitations***

This is the first systematic review and meta-analysis to consider efficacy of IPV interventions for men who use substances. We used a high-quality methodology with additional input from experts in both the IPV and SU fields. The statistical and narrative analysis of the trials can inform future trials in this area.

The main limitation is the low number of trials identified and the still lower number suitable for inclusion in the meta-analysis. There was heterogeneity in terms of the interventions studied as well as differences in comparison groups, delivery approach, length of follow-up and assessment methods in

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determining IPV and SU behaviours. A further limitation is that two authors were not contactable to determine whether they could provide the appropriate data needed in completing the meta-analysis. This is a potential source of bias.

### ***Conclusions***

There is very little evidence for interventions for substance-using men who perpetrate IPV both in terms of number of trials and the useable data from the current trials for meta-analysis. Individual trials report improvements for men with SU and IPV perpetration in the short term but meta-analysis showed no statistically significant differences between interventions and their comparison groups. There is a need to develop and evaluate evidence-based interventions for men who use substances and abuse their partners. Overall, the matters requiring attention are: 1) The theory, content, mode of delivery, and duration of interventions; 2) The characteristics of the individuals requiring treatment, including the types of substances used, the type of abuse perpetrated, and the nature of the relationship between substance use and abuse perpetration, and; 3) What outcomes are assessed, where the information is sourced, and the duration of follow-up.

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