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Does drinking modify the relationship between men's gender-inequitable attitudes and their perpetration of intimate partner violence? A meta-analysis of surveys of men from seven countries in the Asia Pacific region

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ABSTRACT

Background and aims Although men's alcohol misuse and less gender-equitable attitudes have been identified as risks for perpetration of intimate partner violence (IPV), less is known about how men's gender-equitable attitudes and drinking act together to increase risk of IPV. This study aimed to assess the independent relationships of lower gender-equitable attitudes and drinking to perpetration of IPV and their interaction among men in seven countries. **Design** Secondary analysis of the United Nations Multi-Country Study on Men and Violence (UNMCS) and Nabilan Study databases consisting of (1) unadjusted and adjusted logistic regression to measure the association of perpetration of IPV with gender-equitable men (GEM) scale score and regular heavy episodic drinking (RHED) and (2) meta-analyses of prevalence and effect estimates adjusted for country-level sites and countries. **Setting and participants** A total of 9148 ever-partnered 18–49-year-old men surveyed in 2011–15 from 18 sites in Bangladesh, Cambodia, China, Indonesia, Papua New Guinea, Sri Lanka and Timor Leste. **Measurements** The outcome variable is reported perpetration of physical or sexual IPV in the previous year. Independent variables: GEM scale scores; RHED, defined as six or more drinks in one session at least monthly (compared with other drinkers and abstainers). **Findings** Pooled past-year prevalence of perpetration of IPV was 13% [95% confidence interval (CI) = 9–16%]. GEM scores and RHED were independently associated with perpetration of IPV overall and in most sites. Pooled odds ratios (ORs) for perpetration of IPV with less equitable GEM scores were 1.07 (95% CI = 1.04, 1.09) and with RHED were 3.42 (95% CI = 2.43, 4.81). A significant interaction between GEM score and RHED ($P = 0.001$) indicated that RHED increased the relationship of less gender-equitable attitudes and perpetration of IPV. **Conclusion** Both gender-inequitable attitudes and drinking appear to be associated with perpetration of intimate partner violence by men, with regular heavy episodic drinking increasing the likelihood of intimate partner violence among men with less equitable gender attitudes.

Keywords Alcohol, cross-cultural, gender-inequitable attitudes, interaction, intimate partner violence, meta-analysis, perpetration.

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INTRODUCTION

Intimate partner violence (IPV) affects one in three women globally [1]. Higher prevalence rates of IPV are found in low- and middle-income countries (LMIC) than high-income countries, with evidence showing that more vulnerable women (e.g. who are less educated, poorer and younger) are disproportionately more likely to be victims of IPV [2]. Women experience significant short- and long-term health effects from IPV [3]. Men are far

more likely to perpetrate serious partner violence than women, with 95% of all convicted homicides perpetrated by males in 2011 throughout the world [4]. The vast majority of family violence homicide is perpetrated by males (e.g. 82% in Australia (1989–2017) [5] and more than 90% in Singapore, Italy and Norway (2009–11) [4]).

Statistics on drinking and alcohol-related harm show that men in LMIC are twice as likely to be drinkers, drink three times the amount that women do and are more likely to drink in a heavy episodic way if they drink [6]. This places many women in LMIC and elsewhere at increased risk of a range of harms related to the drinking of men, including physical and sexual violence, having to leave home, financial difficulties and responsibility for caring for drinkers in their families [7–10]. The World Health Organization (WHO) Multi-Country Study on Women's Health and Domestic Violence in 10 countries found that the risk of experiencing IPV increased when women and/or their partners had attitudes supportive of violence and problems with alcohol [11]. An earlier study of 13 countries found that alcohol misuse, particularly by men, contributed to increased severity of intimate partner assaults [12].

The relationship between harmful gendered norms and attitudes, gender inequity and IPV [13,14] is the crux of the ecological model described in the United Nations (UN) Women's Framework to underpin action to prevent violence against women [15]. The Framework stresses that in LMIC (and HIC) varying individual, relationship, community, societal and structural factors (including differences in culture, religion, policy, law and drinking patterns) lead to perpetration of IPV [15]. Drawing upon this framework, the UN Multi-Country Study on Men and Violence (UNMCS) was led by four UN agencies [United Nations Development Programme (UNDP), United Nations Population Fund (UNFPA), UN Women and United Nations Volunteers (UNV)] and involved interviews with men and women in seven countries in Asia and the Pacific. The UNMCS provided evidence on 'how masculinities relate to men's perceptions and perpetration of violence against women' (https://www.svri.org/what-we-do/research-support/un-multi-country-study-men-and-violence) [16–18]. The UNMCS analyses to date [18,19] and research elsewhere have identified gender inequity as the primary driver of IPV [13,20,21]. Moreover, the UNMCS studies have additionally identified alcohol as risk factor for IPV [18,19], with the association between alcohol use and IPV also well established in global evidence [22,23].

There is increasing recognition of the negative impact of gendered social norms and gender inequality on health outcomes and behaviours [24], discussion of how gender and drinking intersect and discussion of what interventions are most effective in reducing perpetration of IPV [25–28]. For boys and men, ascribing to traditional norms of masculinity (including gender-inequitable attitudes) has been associated with risky health behaviours, including excessive alcohol consumption and use of harmful substances, men's use of violence against other men [29,30] and perpetration of IPV [31–33].

Although research has shown that perpetration of IPV is related to both alcohol consumption and lower gender-equitable attitudes [11], less is known about their combined impact. To our knowledge, only one cross-sectional survey, using a sample of married couples in rural India, has studied this interaction. Dasgupta [20] posited that men who are intoxicated were more likely to perpetrate IPV and that gender-inequitable attitudes would modify the perpetration of IPV-heavy drinking relationship —i.e. hypothesizing that the relationship between drinking and perpetration of IPV will be stronger for men with less gender-equitable attitudes. Contrary to their hypothesis, they found that husbands' gender equality ideologies did not moderate associations between husbands' elevated alcohol use and wives' reports of IPV victimization [20]. However, the authors suggest that the low levels of alcohol use by husbands in the study may have accounted for the null result. In a second laboratory study of self-selected paid participants in the United States who were drinkers, Lisco *et al.* [32] theorized and tested whether men with more traditional gender norms would be more likely to perpetrate IPV, and whether men (who already held chauvinistic attitudes) might become even more so when intoxicated. In this model, heavy episodic drinking (HED) would moderate (or enhance) the perpetration of IPV gender-inequitable attitudes relationship, i.e. the relationship would be stronger for men who drink more. They found that HED had (1) a direct effect on intimate partner aggression and (2) via an interaction—only when HED was present—that underlying norms of toughness and anti-femininity were associated with gender role stress, and then that this role stress was associated with intimate partner aggression [32].

AIM

Focusing upon selected key relationships identified in the UN Framework's ecological model and using data from seven LMIC, the aim of the study was to more clearly understand the independent and combined relationships of less gender-equitable attitudes and regular heavy episodic drinking (RHED) with perpetration of IPV by men. We hypothesize that that the relationship between drinking and perpetration of IPV will be stronger for men with less gender-equitable attitudes.

Secondary data analysis was undertaken of the cross-sectional UNMCS (2011–12) and Nabilan surveys (2015). Access to the secondary data was provided by the Sexual Violence Research Initiative (hosted by the South African Medical Research Council for the UNMCS)

and by the Asia Foundation for the Nabilan study. Ethical approval for the initial UNMCS study was provided by the Medical Research Council of South Africa Ethics Committee and local institutions or national ethics boards in each country. Approval for the Nabilan study was provided by the Asia Foundation. La Trobe University Science, Health and Engineering Human Ethics Committee approved the secondary data analysis study (HEC19241, 4 July 2019). For further details of the UNMCS study, including its careful ethical processes and back translation, see the study protocol and technical report (https://www.svri.org/what-we-do/research-support/un-multi-country-study-men-and-violence).

SETTING AND PARTICIPANTS

We analysed data from 9148 male married or ever-partnered (with a women) respondents aged 18–49 years. Respondents who answered yes to any of the following questions: 'Are you currently married, living with a woman or do you have a girlfriend?', and then if no: 'Have you ever been married?, 'Have you ever lived with a woman' and 'Have you ever had a girlfriend?' were included in the sample. Respondents were included from 18 sites in Bangladesh (rural, urban), Cambodia (five sites), China (one combined rural/urban site), Indonesia (rural—Purworejo and West Papua and urban—Jakarta), Papua New Guinea (Bougainville) and Sri Lanka (rural, urban sites) surveyed for the UNMCS and in Timor Leste (rural—Manufahi, urban—Dili sites) where a related study (Nabilan) was conducted. These sites are described in detail by Fulu *et al.* and in the Asia Foundation report [18,34] and were selected from rural and urban regions. Some sites asked not to be named to protect site and participant confidentiality, while others requested that they be identified to differentiate between sites with selected attributes. Within these regions, neighbourhoods, villages, census units or electoral areas were selected using probability proportional to size (PPS), except in China, where individuals were sampled from neighbourhoods and villages using the district population register. The individual response rates within each country are reported elsewhere, and varied from 59 to 93% [18]. We have included Bangladesh in order to report unique findings relating to gender-equitable attitudes but have excluded Bangladesh from analyses including measures of alcohol consumption because of the very low prevalence of drinkers in that country. In Timor Leste, Manufahi and Dili were purposively selected as rural and urban areas. The sample was representative of those municipalities and included urban and rural census enumeration areas randomly selected with selection probability proportional to population size. The response rate was 85% for men in Dili and 86% for men in Manufahi [31].

MEASUREMENT

Outcome variable

Self-reported perpetration of any physical or sexual perpetration of IPV in the previous 12 months was the outcome variable. As per the UNMCS protocol [18], respondents were asked: 'Have you ever…?' about specific acts of violence and regarding frequency of perpetration: 'Did this happen, once, a few or many times?'. Following each series of questions respondents answered 'yes' or 'no' to: 'Have you done any of these things in the previous 12 months?'. The acts of physical violence asked about were whether the respondent had ever: slapped a partner or thrown something at her that could hurt her; pushed or shoved a partner; hit a partner with a fist or with something else that could hurt her; kicked, dragged, beat, choked or burned a partner; and threatened to use, or actually used, a gun, knife or other weapon against her. Sexual violence was assessed using a second series of two questions: forced partner to have sexual intercourse when she did not want to; and had sexual intercourse with partner when you knew she did not want to, but believed she should agree because she was your wife/partner [18].

Independent variables

The Gender-Equitable Men (GEM) scale [14] has been used widely and tested in LMIC [35,36] to measure men's attitudes towards gender norms related to sexual and reproductive health, sexual relations, violence, domestic work and homophobia. Ten items scored on a four-point scale from 'strongly agree' to 'strongly disagree' are summed to create a continuous score ranging from 10 to 40. Higher scores indicate more gender-equitable attitudes. Generally, scores < 17 are low, 17–24 are moderate and 25 or more are high [37]. In descriptive findings, we report the GEM score in its original form to be comparable with other papers. However, for analyses relating the GEM to perpetration of IPV, we reverse-scored the GEM so that both independent variables would be coded to show that higher risk was positively related to perpetration of IPV. Alcohol consumption was assessed using the first three questions of the Alcohol Use Disorders Identification Test (AUDIT) screen (https://auditscreen.org/about/background/). RHED was categorized using participants' answers to two questions. If respondents answered 'never' in response to the first question: 'How often do you drink alcohol?', they were classified in the RHED variable as abstaining (0). The response options for the second question: 'How often do you have six or more drinks on the one occasion?' were (1) never, (2) less than monthly, (3) monthly, (4) weekly and (5) daily or almost daily. Respondents who answered (1) or (2) were

non-RHED (1) and those who answered 3, 4 or 5 were categorized as RHED (2).

ANALYSIS

The sample in each setting was a self-weighted sample, apart from in China. Response rates and unadjusted descriptive analyses are presented in Table 1. The data analysis took into account the stratification of the pooled sample in countries and the clustering of the interviews within country sites. We used random-effects models and adjusted for country site. Pooled estimates of the prevalence of reported perpetration of IPV by men across all country sites and the seven countries were generated (Fig. 1). Multivariable logistic regression analyses were undertaken for each country (Table 2) to show whether both RHED and GEM variables were important in the main effects analysis (and adjusted for age and education in Supporting information, Table S2). In the meta-analysis, random-effects models adjusting for country and country site were employed for the combined sample to test for significant associations between variables, including the interaction of RHED and GEM (Figs 2–4). We undertook random-effects meta-analyses because surveys varied by cultural background and sample composition [38,39]. The resulting pooled estimates are interpreted as mean estimates of the true varying estimates across all sites. Country- and site-level proportions and 95% confidence intervals (CIs) are presented as forest plots, with significant site differences defined as non-overlapping confidence intervals [40,41]. The I^2 statistic indicates variability in effect sizes due to heterogeneity across studies. I^2 values of 25, 50 and 75% indicate low, medium and high heterogeneity, respectively [42]. We used the DerSimonian–Laird method of two-stage inverse-variance random-effects meta-analysis (via the *ipdmetan* command) using Stata version 14.0 [42] to estimate the pooled proportion of participants who reported perpetration of IPV in the last 12 months, the pooled effect estimates (odds of perpetration of IPV associated with less GEM attitudes and more RHED) and the pooled interaction effect. The forest plots, in their final form, include the outcome and specified independent variables and do not adjust for age and education, but adjust for the study site and country effects. Missing data comprised less than 5% and were deleted listwise.

FINDINGS

Table 1 summarizes the demographic and socio-economic characteristics of the samples in the combined country sites. Approximately 60% of respondents from Bangladesh and China were aged 35–49 years. In Timor Leste, Indonesia and Sri Lanka 20–30% were aged 18–24 years. In China, Indonesia and Sri Lanka higher percentages of respondents had attended secondary school than respondents in Cambodia, Papua New Guinea (Bougainville) and Bangladesh. There was variation in the proportion of respondents from urban areas compared to other regions.

The mean GEM scores (higher scores reflect more positive attitudes to gender equality) varied from 19.30 in Timor Leste, where attitudes were the least gender-equitable, to a high mean score of 27.93 in China. Drinking patterns varied substantially between countries, with almost all men being abstainers in Bangladesh, and a majority abstaining in Indonesia (71.4%) and Timor Leste (51.7%). In all the other countries, more than half the study population in each country reported consuming alcohol at least once in the past year but, apart from in Papua New Guinea, of those drinking the majority never or rarely (less than monthly) had six or more drinks on a single occasion. In all countries apart from Papua New Guinea and Bangladesh, 10–15% of respondents reported drinking six or more drinks in the one sitting at least monthly. The percentage of RHED (consumed six or more drinks on a single occasion at least monthly) varied from a low of 11% in Indonesia to a high of 31% in Papua New Guinea (Bougainville), with percentages from other countries between 11 and 17% (excluding Bangladesh). The prevalence of RHED (0.6%) and non-RHED (5%) drinking were very low in Bangladesh.

Figure 1 presents the prevalence of reported physical and/or sexual perpetration of IPV in the past year by country and country site. Between 6% of participants in Cambodia and 34% in Papua New Guinea reported physical and/or sexual perpetration of IPV in the past year. The overall adjusted pooled prevalence of perpetration of IPV was 13% (CI = 9–16%).

Figure 2 depicts the relationship between lower gender-equitable attitudes (with the GEM reverse-scored for analyses) and perpetration of IPV by country and country site. The direction of the relationship was positive for all countries, but was only statistically significant in Cambodia, Sri Lanka and Indonesia and overall. Across countries and sites, a one-point worsening of GEM score was associated with an increase in the odds of perpetration of IPV of 1.07 (CI = 1.04, 1.09).

The relationship between RHED and perpetration of IPV is presented in Fig. 3. In all sites except one, the relationship between RHED and perpetration of IPV was positive, with this relationship significant in nine sites in Cambodia, Sri Lanka, Indonesia and Papua New Guinea, and overall. The pooled odds ratio (OR) of men reporting perpetration of IPV was 3.42 (CI = 2.43, 4.81) times greater if they reported drinking six or more drinks in one session at least monthly than if they abstained.

As shown in Table 2, GEM was significantly related to perpetration of IPV in all countries except Timor Leste

Table 1 Sample description, gender-equitable men (GEM) scores and drinking patterns by country.

	Bangladesh	*Cambodia*	*China*	*Indonesia*	*Papua New Guinea: Bougainville*	*Sri Lanka*	*Timor Leste*	*Total*
Survey, *n*	2395	1812	998	2576	864	1533	839	11 017
Ever-partnered men (*n*)	1572	1474	970	2447	741	1176	768	9148
Sites	2	5	1	3	1	4	2	18
% urban/capital city	47.2 Dhaka	14.0 Phnom Penh	9.3 Urban	33.5 Jakarta	NA	21.2 Colombo	51.3 Dili	NA
Age, years (%)								
18–24	7.1	13.6	11.3	23.9	19.8	20.8	30.5	17.9
25–34	32.8	42.1	30.1	32.8	35.6	36.9	37.1	35.1
35–49	60.1	44.3	58.7	43.2	44.6	42.3	32.4	47.0
Education: any high school (%)	50.1	44.1	85.9	82.3	45.9	89.2	72.0	68.1
Mean gender equality score[a] (CI)	21.9 (21.7, 22.0)	22.4 (22.1, 22.6)	27.9 (27.7, 28.2)	23.1 (23.0, 23.3)	22.6 (22.3, 22.9)	25.2 (24.9, 25.5)	19.3 (19.1, 19.6)	23.2 (23.1, 23.3)
Alcohol use[b] % (CI)								
Abstainer	94.7 (93.3, 95.8)	28.6 (26.3, 31.2)	34.8 (31.8, 37.8)	71.4 (67.2, 75.2)	25.4 (21.6, 29.6)	41.7 (37.6, 45.9)	51.7 (48.1, 55.2)	55.7 (54.1, 58.0)
Drink 6+ per session < monthly	4.7 (3.7, 5.9)	57.7 (54.8, 60.5)	53.3 (50.3, 56.3)	17.3 (14.9, 20.1)	44.1 (40.3, 48.1)	45.0 (41.1, 49.0)	31.8 (28.5, 35.2)	32.2 (30.7, 33.8)
Drink 6+ per session monthly or more often	0.6 (0.3, 1.1)	13.7 (11.8, 15.8)	11.9 (10.1, 14.0)	11.3 (9.4, 13.5)	30.5 (27.3, 33.8)	13.3 (9.8, 17.7)	16.6 (14.1, 19.4)	12.1 (10.8, 12.8)

[a]Higher score is more equitable; 88 participants did not complete the GEM, $n = 9038$; [b]242 participants did not answer the drinking questions. CI = confidence interval; NA = not available.

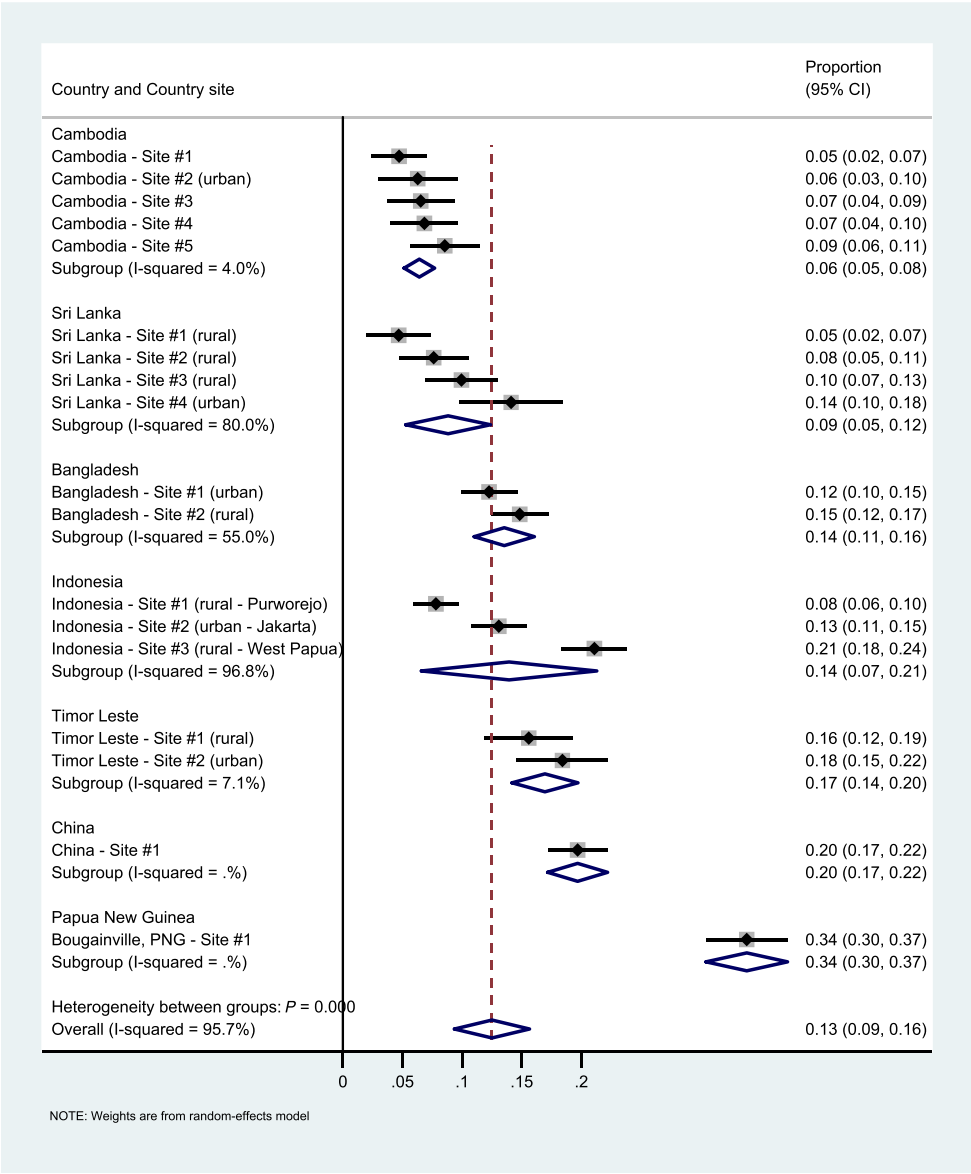

Figure 1 Prevalence of perpetration of intimate partner violence (IPV) by country and country site [Colour figure can be viewed at wileyonlinelibrary.com]

when included in a model with alcohol consumption, indicating that GEM is associated with perpetration of IPV over and above its relationship with alcohol consumption. RHED and non-RHED drinking were also independently and significantly related to perpetration of IPV (compared to abstaining), with this evident for both RHED and non-RHED for Cambodia, Indonesia, Papua New Guinea and Timor Leste, and for RHED but not non-RHED for Sri Lanka. Overall and for Cambodia, Indonesia and Sri Lanka, the relationship was stronger for RHED than for non-RHED but both were significant overall, indicating that any drinking as well as RHED increased the risk of perpetration of IPV. Adjusting for age and education (results in Supporting information, Table S2) made no significant difference to the results in the model in Table 2.

Figure 4 presents the interaction between GEM and RHED using a meta-analysis which controls for nesting in sites and countries. The relationship was slightly above 1.00, and similar in all countries. The interaction was significant overall (OR = 1.08, CI = 1.02, 1.14, $P = 0.007$), and suggests that RHED increased the positive relationship between lower gender-equitable attitudes and perpetration of IPV over and above the individual relationships of RHED and GEM with perpetration of IPV. After adjusting for country and country site differences, the non-RHED and GEM interaction was no longer significant (OR = 1.02, CI = 0.97, 1.06, $P = 0.506$).

Table 2 Odds of intimate partner violence associated with reversed gender-equitable men (GEM) score and drinking pattern: multivariable logistic regression analysis.

Main effects model	*Cambodia*	*China*	*Indonesia*	*PNG*	*Sri Lanka*	*Timor Leste*	*Total*
n	1435	938	2390	725	1048	731	7267
Odds ratio for mean (reversed GEM score)	1.07* (1.02, 1.12)	1.06* (1.02, 1.11)	1.09** (1.05, 1.14)	1.03 (0.99, 1.07)	1.08** (1.04, 1.12)	1.01 (0.95, 1.07)	1.04** (1.03, 1.06)
Alcohol consumption (abstainer ref.)	1	1	1	1	1	1	1
Non-RHED (drinks but not 6+ monthly or more often)	2.35* (1.27, 4.33)	1.06 (0.74, 1.52)	3.28** (2.48, 4.34)	2.67** (1.73, 4.11)	1.37 (0.83, 2.27)	3.71** (2.31, 5.96)	1.82** (1.59, 2.07)
RHED (drinks 6+ monthly or more often)	4.24** (2.11, 8.54)	1.38 (0.82, 2.31)	4.49** (3.30, 6.12)	2.57** (1.62, 4.06)	3.47** (1.97, 6.10)	3.78** (2.18, 6.55)	3.02** (2.57, 3.56)

Model includes GEM score and alcohol consumption only. Logistic regressions are unadjusted for age, education or site. Missing cases = 309. RHED = regular heavy episodic drinking. $^{*}P < 0.01$; $^{**}P < 0.001$.

To more clearly understand the nature of the GEM–RHED interaction, we analysed the relationship between the odds of perpetration of IPV by GEM score separately among RHED drinkers, non-RHED drinkers and abstainers. There was a stronger relationship between lower gender-equitable attitudes and perpetration of IPV among men who were RHED (OR = 1.07, CI = 1.04, 1.11, $P < 0.001$), which was greater than the relationship among men who were non-RHED (OR = 1.04, CI = 1.02, 1.06, $P < 0.001$) and, in turn, larger than the effect found among men who were abstainers (OR = 1.01, CI = 0.98, 1.03, $P = 0.68$).

DISCUSSION

We used data from the UNCMS and Nabilan studies in Asia and the Pacific [34,43] to explore the inter-relationships between men's self-reports of alcohol use, gender-equitable attitudes and perpetration of IPV. Using meta-analysis enabled us to extend previous analyses of these data [18] by estimating the prevalence of perpetration of IPV in the previous 12 months and its relationships, with RHED and GEM adjusting for country and sites within country. This method produced a point estimate showing that, overall, 13% of men from sites across the Asia and Pacific regions perpetrated physical or sexual intimate partner violence in the previous 12 months.

Using meta-analysis, we found a significant relationship between less gender-equitable attitudes and perpetration of IPV by men—every point decrease in gender equitability attitude on the GEM scale was associated with an increased odds of perpetration of IPV of 7%. Findings from the meta-analysis also showed clearly that, in all country sites, the odds of perpetration of IPV was higher for RHED compared to abstainers, and significantly so in the majority of sites, with an overall pooled relationship of threefold more perpetration of IPV for RHED compared to abstainers. This was also significant for other non-RHED drinkers in the analysis—although the relationship was weaker, drinkers who had drunk only a few drinks or seldom drank six drinks on one occasion (less than monthly) were also more likely to report perpetration of IPV. Moreover, when both GEM and RHED were included in the same regression models, both remained significant overall and in most countries. In this way, our analysis confirmed the critical importance of both these factors in the perpetration of IPV, as noted previously in other research [18,21,32].

The inclusion of the interaction term in the model identified an important new contribution of the present analysis; namely, that the combination of less gender-equitable attitudes and RHED is associated with perpetration of IPV, over and above the relationship of the two factors separately. The fact that the interaction was in the same

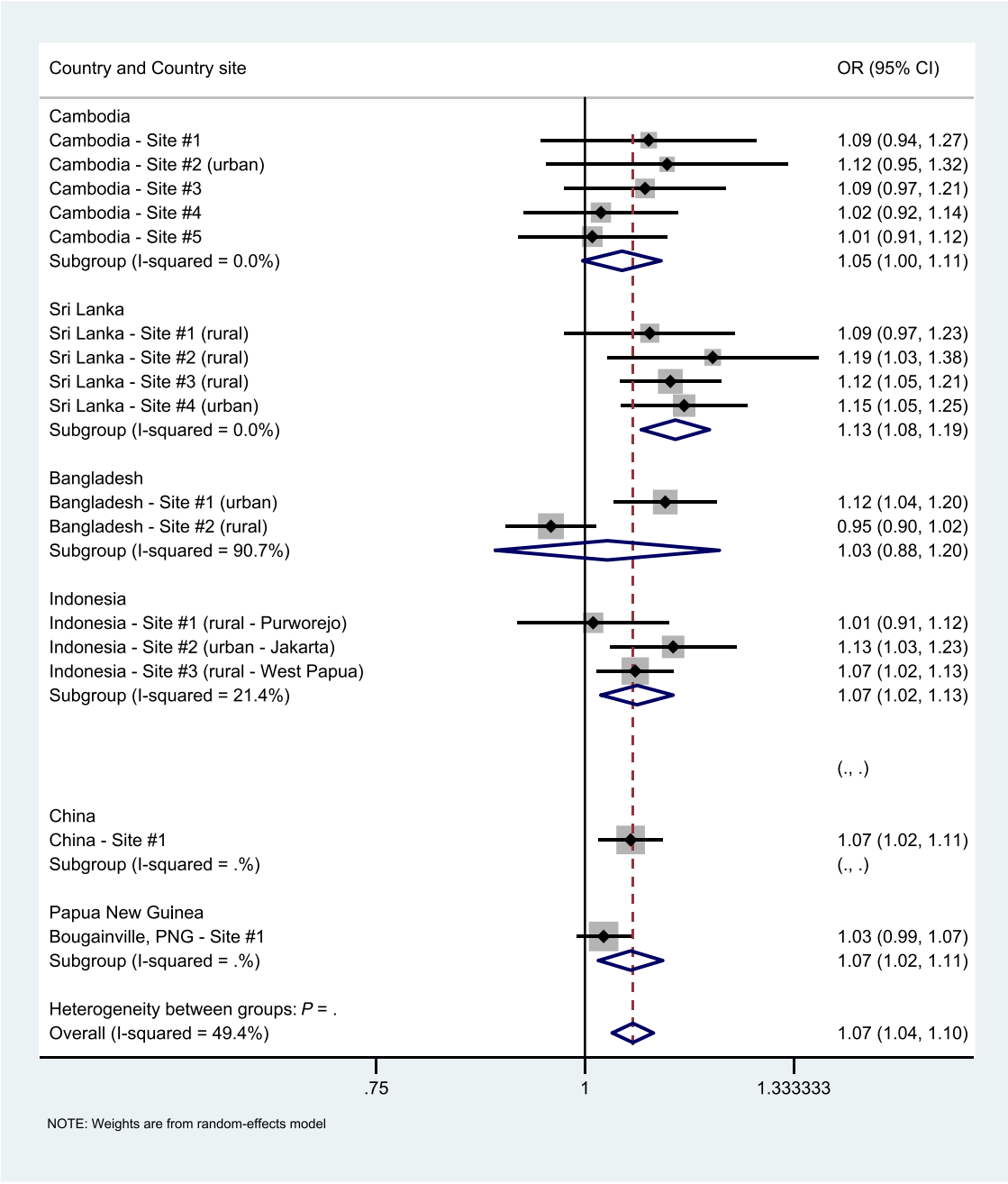

Figure 2 The relationship (odds ratios) between lower gender-equitable attitudes and perpetration of intimate partner violence [perpetration of intimate partner violence (IPV)] in each country [Colour figure can be viewed at wileyonlinelibrary.com]

direction but not significant for any individual country (also found for similar interactional analyses of data from India [20] highlights the importance of aggregating samples across countries. This interaction suggests that conservative gender norms, which have been found to increase the risk of IPV victimization in previous research [20,44], may be particularly risky if combined with the effects of alcohol use by the perpetrator. While these data are cross-sectional, the data agree with those of Lisco *et al.* [32], showing that respondents with gender inequitable attitudes may be more likely to perpetrate IPV if they are heavy drinkers. Additionally, our results showing perpetration of IPV is more likely among RHED and other drinkers (including drinkers who seldom drank in a heavy episodic way) are consistent with other studies showing that it is not only the heaviest drinkers who place themselves and others at risk [45].

The importance of the combined role of heavy drinking and masculinity concerns or gender role expectations is being increasingly recognized. Maclean, Demant & Room

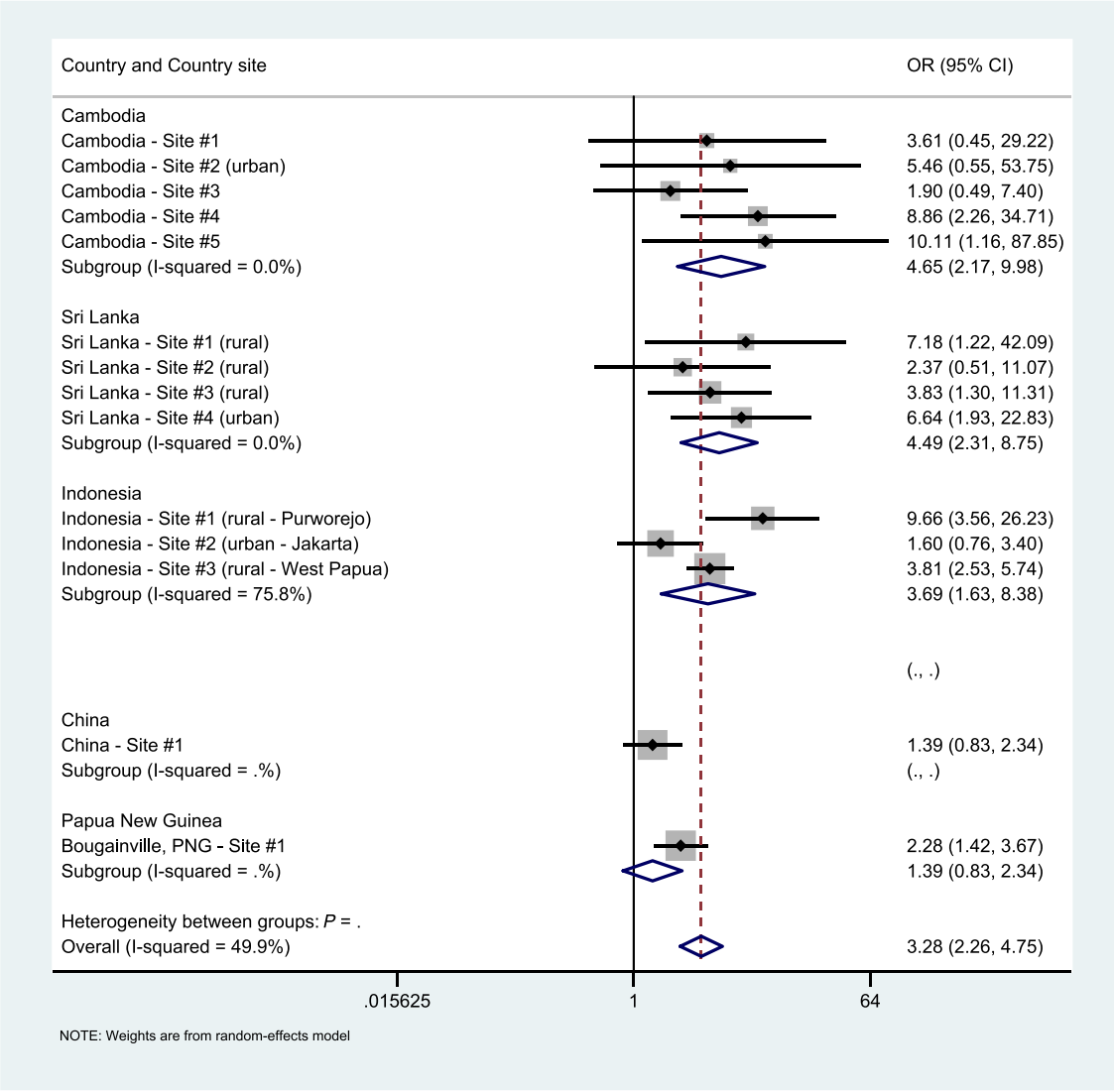

Figure 3 The relationship (odds ratios) between heavy episodic drinking (monthly or more) and perpetration of intimate partner violence (IPV) in each country [Colour figure can be viewed at wileyonlinelibrary.com]

[29] described how both alcohol and some forms of expressed masculinity, together with expectations about male behaviour/action in certain social contexts, all influence whether violence results. They argue that heavy drinking can be used as a way of demonstrating manhood and that violence, by expressing power and control over others (including both men and women) is also used to express a harmful form of masculinity. Similarly, a recent South African study explored the inter-relationship of HIV risk behaviour with men's use of violence, problem drinking and inequitable gender views [46]. They concluded: 'Future programs should target syndemic conditions of gender beliefs, alcohol misuse, and IPV perpetration alongside sexual health. Targeting the intersection of these topics, rather than a single topic in a 'programmatic silo', will have the most impact on the harmful synergy of HIV risk, alcohol, violence, and gender' ([46], p. 8).

Similarly, the World Health Organization has published a public health strategy to prevent intimate partner and sexual violence against women in which they argue that 'the current paucity of evidence-based prevention approaches is partly due to the separate development and implementation of research and advocacy activities' in intimate partner violence prevention. They acknowledge 'the complex array of factors that increase the likelihood of such violence occurring in the first place… include[ing] gender inequality and social norms around masculinity, and other social determinants such as economic inequality; other problem behaviours (such as harmful use of alcohol); and other types of violence (such as child maltreatment)…'. They then assert that 'different forms of violence have common underlying risk factors, which include certain social and cultural norms, social isolation, the harmful use of alcohol and income inequality.

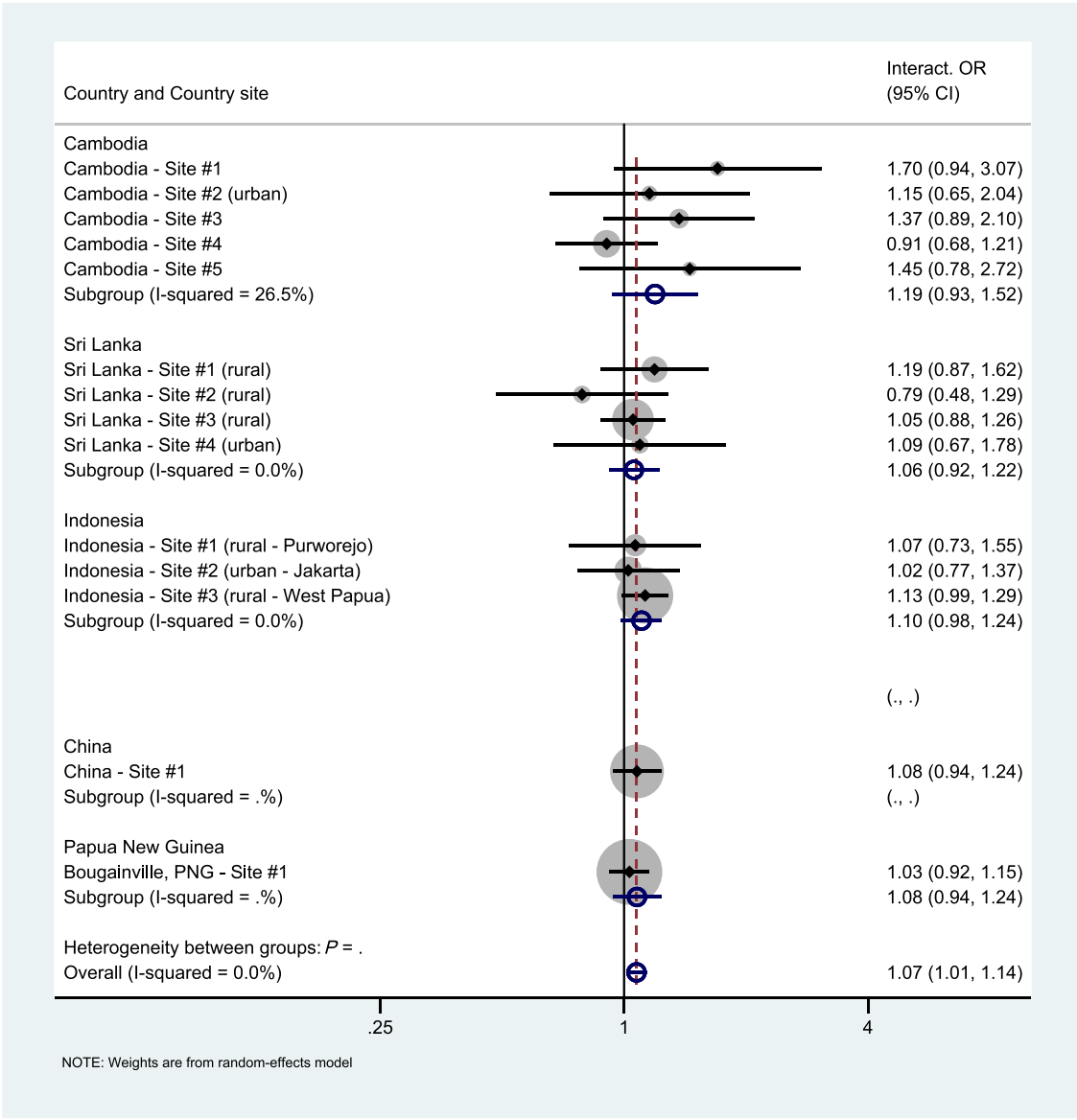

Figure 4 The interaction of RHED on GEM for perpetration of IPV in each country site, country and overall from meta-analysis [Colour figure can be viewed at wileyonlinelibrary.com]

Prevention efforts that address these common factors thus have the potential to decrease the occurrence of multiple forms of violence' ([47], p. 10).

We argue that strategies to reduce violence against women and their children should include policies and interventions that will reduce RHED; for example, control of alcohol availability and price increases that will reduce consumption at the individual and community level. These strategies need to be combined with action plans that address gender inequity and gender inequality and specific strategies that assess both factors simultaneously; for example, regulation of alcohol advertising that supports gendered stereotypes, gender inequity and occasions of heavy drinking.

LIMITATIONS

This study employs secondary data analysis, and hypotheses were not pre-registered. The study samples were representative of the areas throughout which we collected data but should not be considered representative of any countries in the study. Consequently, the results should be considered exploratory. Respondents completed the first three standard questions from the AUDIT scale, which does not specify the time-period about which the questions are asked [48]. The concept of a standard drink is difficult to understand within one country and even more so across countries. Respondents were not handed drink cards specifying what a standard drink would be in their country, but

were verbally advised of what a standard drink comprised if they asked. There may be stigma associated with reporting of heavy consumption of alcohol, particularly within cultures where drinking is disapproved of. It is commonly assumed that respondents under-report consumption by 40–50% [49], and this is acknowledged as a limitation of this study. While under-reporting of IPV by men and women is recognized as a potential limitation, in 2017 a paper published from this data set [19] found that men and women reported a very similar prevalence of past-year physical and sexual IPV and men reported slightly higher life-time perpetration. Given that the prevalence in each country was fairly high, and we have consistency between men's and women's reports, we do not consider that this concern is a major limitation. This paper cannot describe all the country-specific and individual factors that contribute to IPV. For instance, in four of the six countries in this study rape in marriage is not criminalized [43]. The State religion of Islam (in Bangladesh and Indonesia) prohibits the consumption of alcohol and Buddhism (in Sri Lanka and Cambodia) preaches abstinence as one of its tenets for improving mindfulness. Papua New Guinea and Timor Leste are largely Catholic, while China is secular. More detailed studies of the individual and country-level aspects of culture, religion, policy, law, drinking pattern and disadvantage that contribute to variation in IPV should be explored using larger surveys, in-depth interviews and ethnographic studies.

CONCLUSION

Both gender-inequitable attitudes and regular heavy episodic drinking are important contributors to the perpetration of intimate partner violence by men, with regular heavy episodic drinking increasing the likelihood of perpetration of intimate partner violence among men with less equitable gender attitudes. Interventions to reduce perpetration of intimate partner violence should address both factors.

Declaration of interests

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Author contributions

Anne-Marie Laslett: Conceptualization; formal analysis; funding acquisition; investigation; methodology; project administration. **Kathryn M. Graham:** Conceptualization; investigation; methodology; supervision. **Ingrid M. Wilson:** Conceptualization. **Sandra Kuntsche:** Conceptualization; methodology. **Emma Fulu:** Conceptualization; data curation; formal analysis; funding acquisition; investigation; methodology; project administration. **Rachel Jewkes:** Conceptualization; data curation; methodology; project administration; supervision. **Angela Taft:** Conceptualization; methodology; project administration.

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Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Table S2 Odds of intimate partner violence associated with reversed gender-equitable men (GEM) score and drinking pattern: multivariable logistic regression analysis adjusted for age and education.