

The prevalence and factors associated with ever perpetrating intimate partner violence by men receiving substance use treatment in Brazil and England: A cross-cultural comparison

GAIL GILCHRIST^{1,4}, POLLY RADCLIFFE¹, ANA REGINA NOTO² & ANA FLÁVIA PIRES LUCAS D'OLIVEIRA³

¹National Addiction Centre, Institute of Psychiatry, Psychology and Neuroscience, King's College London, London, UK,

²Department of Psychobiology, Centre Brasileiro of Information on Drugs, Universidade Federal de São Paulo, São Paulo, Brazil,

³Gender Violence and Health Research Group, Department of Preventive Medicine, University of São Paulo, São Paulo, Brazil, and

⁴Department of General Practice, University of Melbourne, Victoria 3010, Australia

Abstract

Introduction and Aims. Intimate partner violence (IPV) perpetration is common among men who use substances. Substance use is a contributing factor for IPV perpetration. This cross-sectional study determined lifetime prevalence and factors associated with ever perpetrating IPV by men receiving substance use treatment in Brazil ($n = 281$) and England ($n = 223$). **Design and Methods.** IPV, adverse childhood experiences, attitudes towards gender relations and roles, current health state, substance use, depressive symptoms and anger expression were assessed. Logistic regression determined factors associated with ever perpetrating any (emotional, physical and/or sexual) IPV. Multinomial logistic regression determined factors associated with ever perpetrating different types of IPV. **Results.** 74.6% (373/500) reported ever perpetrating IPV: 16.5% (82/498) emotional IPV only, 46.4% (231/498) physical IPV (with/without emotional IPV) and 11.6% (58/498) sexual IPV (with/without emotional and/or physical IPV). Higher anger expression, higher depressive symptoms, fighting physically with another man in the past year (Brazil only), experiencing a greater number of adverse childhood experiences and a higher hazardous drinking score (England only) predicted ever perpetrating IPV. Compared to never perpetrating any IPV, anger expression was associated with emotional and physical IPV perpetration; fighting physically with another man in the past year was associated with physical IPV perpetration and experiencing a greater number of adverse childhood experiences and a higher hazardous drinking score were associated with both physical and sexual IPV perpetration. **Discussion and Conclusions.** Integrated interventions that address IPV and substance use delivered in substance use treatment could improve outcomes for perpetrators and victims. [Gilchrist G, Radcliffe P, Noto AR, d'Oliveira AFPL. The prevalence and factors associated with ever perpetrating intimate partner violence by men receiving substance use treatment in Brazil and England: A cross-cultural comparison. *Drug Alcohol Rev* 2017;36:34–51]

Key words: cross-sectional study, substance use, intimate partner violence, risk factors, men.

Introduction

Intimate partner violence (IPV), that is, controlling, coercive or threatening behaviour, violence or abuse between ex/current-partners, is a leading contributor to disease burden [1], impacting negatively on victims' mental, physical and reproductive health [2–5], and resulting in high societal costs [6]. No single factor explains IPV [7]. Lower socio-economic status, adverse childhood

experiences (ACE), substance (alcohol and/or drug) use, psychological problems, anger expression, perpetrating other forms of violence, having inequitable gender attitudes, support of gender-specific roles and permissive attitudes towards violence against women are associated with IPV perpetration [8–15]. Men receiving treatment for substance use [16–18] report higher rates of IPV perpetration (34–60% in past year) than men in the general population [15]. Around half of men in

Gail Gilchrist PhD, Senior Lecturer, Polly Radcliffe PhD, Research Fellow, Ana Regina Noto PhD, MD, Professor, Ana Flávia Pires Lucas d'Oliveira PhD, MD, Professor. Correspondence to Dr Gail Gilchrist, Senior Lecturer in Addictions, National Addiction Centre, Institute of Psychiatry, Psychology and Neuroscience, King's College London, 4 Windsor Walk, London SE5 8BB, UK. Tel: +44 (0)20 7848 0646; E-mail: gail.gilchrist@kcl.ac.uk

Received 10 February 2016; accepted for publication 5 May 2016.

perpetrator programs have substance use problems [19]. Alcohol, cocaine and methamphetamine use are associated with IPV perpetration [20–25]. There are several explanations for the correlation between substance use and IPV [14,22,23]. Impaired cognitive processing as a result of the pharmacological properties of substances could result in IPV perpetration [26], substance use causes marital conflict that could lead to IPV perpetration [27] or that the relationship is because of risk factors common to both substance use and violence [28]. Alternatively, substance use may be the mechanism for reducing the threshold at which a perceived provocation results in IPV for people who do not usually behave aggressively, but not for those who are aggressive regardless of whether they are under the influence of substances [29].

While IPV is common in all cultures and countries [15,30], research from general practice populations suggests that men in Brazil may be more likely to perpetrate IPV (52%) [31] than men in England (16%) [32]. Brazil has higher gender inequality (Gender Inequality Index in Brazil was 0.457 compared to 0.177 in UK) [33] and higher rates of general violence (intentional homicide rate 23.4/per 100 000 population in Brazil compared to 1.0 in UK) [34], which may contribute to this higher prevalence [15].

This study determined: (i) the prevalence of ever perpetrating IPV by men receiving substance use treatment; (ii) the risk factors for IPV perpetration in Brazil and England, countries with different cultures and drug use profiles (e.g. men in England predominantly attend substance use treatment facilities for alcohol, heroin and/or crack use [35], while in Brazil alcohol, cocaine and crack cocaine are most commonly used [36,37]); and (iii) the factors associated with ever perpetrating different types of IPV (emotional, physical and sexual) compared to never perpetrating IPV.

Method

Procedure

A convenience sample of 519 participants were recruited during November 2014 to June 2015 by researchers in six public health system funded outpatient community substance use services in São Paulo, Brazil (one provided by direct government administration and five provided by a social organisation), three in London (two provided by the National Health Service and one provided by a third sector organisation) and three in South East England (provided by a third sector organisation). Services were representative of available substance use treatment provision in both countries and provided free

of charge. Researchers verbally explained the study to potential participants and gave them a study information sheet prior to gaining informed consent. Participants received a £10 gift voucher or monetary equivalent for their time in England only, as this was not usual research practice in Brazil. As previous studies reported a high proportion of incomplete questionnaires among this client group [18] and similar disclosure rates of sensitive or stigmatising information (including IPV and substance use) have been reported across face-to-face interview and paper-and-pencil questionnaire [38], 17 (five females in England, and six females and six males in Brazil) experienced interviewers (all received 8 h training on interview administration and study protocol) administered the interviews in a private room to enhance completion rates. Men aged 18 or older, who were engaged in outpatient substance use treatment and were able to give informed consent, were eligible to participate. Researchers approached all men during the treatment opening hours. However, when researchers were interviewing, potential participants may have been missed. Six hundred and thirty-seven eligible men were invited to participate; 86.7% (288/332) in Brazil and 75.7% (231/305) in England agreed to participate. The majority ($n = 504$) completed the interview (97.6% (281/288) in Brazil and 96.5% (223/231) in England).

Ethical approval was granted by the Comitê de Ética em Pesquisa da Secretaria de Saúde da Prefeitura de São Paulo (Ref 715.462), and the East Midlands-Northampton National Research Ethics Service (REC ref: 14/EM/0088). Any participant disclosure of current or future intention to harm themselves/others was shared with treatment staff who conducted a risk assessment.

Assessments

Table 1 details all instruments used. Interviews lasted 66 min (SD 24 min) on average. Lifetime victimisation and perpetration of emotional, physical or sexual IPV were assessed [30]. Questions on participants' perception of theirs and their partners' IPV perpetration (e.g. it was wrong but it was not a crime, why they/their partner behaved that way) were recorded [39,40]. Age, relationship status, living arrangements, highest level of education attained (no schooling/primary education (i.e. attended primary school or left high school without qualifications) and secondary education (i.e. left high school with qualifications and/or completed further education/university)), current employment status, how the participant managed on their available income [41] and self-reported Hepatitis C and HIV seroprevalence were collected.

Table 1. Description of questionnaires included in the interviews

Domain	Questionnaire	Purpose	Number of items	Psychometric properties	Timeframe	Available in English	Available in Portuguese
IPV perpetration and victimisation	WHO multi-country study on women's health and domestic violence [30]	To assess IPV victimisation and perpetration	4 items assessed emotional IPV; 10 items assessed physical IPV and 3 items assessed sexual IPV	n/a	Whether occurred once, a few times or many times during lifetime and during past 12 months	Yes	Yes
			7 items assessed childhood physical abuse and 4 assessed childhood sexual abuse. Any childhood abuse includes sexual and physical childhood abuse. Severe childhood physical abuse includes being kicked bit or punched (often), (often), choked, burned or scalded or being physically attacked in some other way, by an adult. Severe childhood sexual abuse includes an adult threatening to have sex with you, touching the private parts of your body, trying to have sex with you or sexually attacking you.	n/a	Whether occurred never, rarely, sometimes or often whether they were growing up (before the age of 16)	Yes	No
Adverse childhood experiences	Childhood physical and sexual abuse [42]	To assess childhood physical and sexual abuse by an adult	8 items	n/a	Whether occurred never, rarely, sometimes or often whether they	Yes	No
			To assess extent of interparental (father to mother and mother to	8 items	n/a	Whether occurred never, rarely, sometimes or often whether they	Yes
Witnessing inter-parental violence [43]	Witnessing inter-parental violence [43]	To assess extent of interparental (father to mother and mother to	8 items	n/a	Whether occurred never, rarely, sometimes or often whether they	Yes	No

(Continues)

Table 1. (Continued)

Domain	Questionnaire	Purpose	Number of items	Psychometric properties	Timeframe	Available in English	Available in Portuguese
Hazardous drinking		father) violence in childhood			were growing up (before the age of 16)		
	Alcohol Use Disorders Identification Test [45]	To identify hazardous and harmful patterns of alcohol consumption	10 items; items 1–3 assessed hazardous alcohol use, items 4–6 assessed alcohol dependence symptoms and items 7–10 assessed harmful alcohol use	Sensitivities in the mid 0.90's and specificities in the 0.80's for cut-off score of ≥ 8 for various indices of problematic drinking	Past 12 months. Items 1 assessed the frequency of having an alcoholic drink ranging from never (0) to 4 or more times a week (4). Item 2 asked about the number of drinks consumed on a typical drinking day from 1 or 2 (0) to 10 or more (4). The frequency of occurrence for items 4–8 were assessed as never (0) to almost daily (4); items 9–10 assessed frequency as never (0), yes, but not in the last year (1) and yes, during the last year (2). Past two weeks. The PHQ-9 scores the presence of each of the 9 DSM-IV criteria for depression as '0' (not at all) to '3' (nearly every day). 4-point rating scale to assess both the intensity	Yes	Yes
Depressive symptoms		To assess the severity of depression	9 items	PHQ-9 score ≥ 10 had a sensitivity of 88% and a specificity of 88% for major depression.		Yes	Yes
	Primary Care Evaluation of Mental Disorders PHQ-9 [46]						
Anger		STAXI-2 includes six scales plus an Anger Expression	57 items. Six scales: The State Anger Scale; The	Internal consistency using the Cronbach's		Yes	Yes
	State-Trait Anger Expression Inventory [48]						

(Continues)

Table 1. (Continued)

Domain	Questionnaire	Purpose	Number of items	Psychometric properties	Timeframe	Available in English	Available in Portuguese
		Index (an overall measure of total anger expression).	Trait Anger Scale; anger expression-out (expression of anger towards other persons or objects in the environment); anger expression-in (holding in or suppressing angry feelings); anger control-out (controlling angry feelings by preventing the expression of anger towards other persons or objects in the environment); and anger control-in (controlling suppressed angry feelings by calming down or cooling off). One item.	alpha coefficient was of 0.84	of anger at a particular time and the frequency with which anger is experienced, expressed and controlled		
Current health state	Visual analogue scale from the EQ-5D assessed current health state [49]	To measure current health state.		n/a	A vertical 20 cm visual analogue scale with the end points labelled best imaginable health state at the top and worst imaginable health state for today at the bottom having numeric values of 100 and 0 respectively n/a	Yes	Yes
Attitudes about relations between men and women	Attitudes about relations between	Scores ranged from 17 to 69 with	Asked to strongly agree, agree,	n/a		Yes	Yes

(Continues)

Table 1. (Continued)

Domain	Questionnaire	Purpose	Number of items	Psychometric properties	Timeframe	Available in English	Available in Portuguese
	men and women [44]	higher scores representing higher support for gender equitable norms.	disagree or strongly disagree with 17 statements about views on relations between men and women in society (2 items reverse scored).				
Attitudes towards gender roles	Attitudes towards Gender Roles questionnaire [30]	Scores ranged from 16 to 32, with lower scores representing more stereotyped attitudes towards gender roles	Asked to agree or disagree with 16 statements about families and what is acceptable behaviour for men and women in the home (5 items reverse scored).	n/a	n/a	Yes	Yes

DSM-IV, Diagnostic and Statistical Manual of Mental Disorders; EQ-5D, EuroQol five dimensions questionnaire; IPV, intimate partner violence; STAXI-2, State Trait Anger Expression Inventory—2nd Edition; PHQ-9, Patient Health Questionnaire; WHO, World Health Organization.

Adverse childhood experiences. Ten ACE were summed to calculate a mean score (childhood sexual and physical abuse [42], witnessing inter-parental violence [43], father never/rarely at home, mother never/rarely at home [44], being looked after or adopted, neglect, parental death, separation/divorce and being told you were weak or lazy). Total ACE score was calculated only for participants that responded to all 10 ACE (470/504; 93.3%).

Substance use. Hazardous drinking in the previous 12 months was assessed [45]. Participants were asked how many days in the past 30 they had used a list of illicit drugs, whether they thought their current/most recent partner had a problem with alcohol and/or drug use, what substances they had sought treatment for and the length of time they had been receiving treatment.

Mental health, anger and health state. Depressive symptoms were assessed [46]. Participants were also asked whether they had ever been told by a health professional that they had manic depressive illness or bipolar disorder [47]. Anger expression and control were measured [48]. Current health state was assessed using a Visual Analogue Scale [49].

Criminality. Questions on arrests and imprisonment for the following crimes were recorded: crimes against property or fraud (burglary, larceny, shoplifting, fraud, forgery, extortion, receiving stolen goods); possession or dealing drugs; domestic violence; crimes of violence other than domestic violence (robbery, assault, arson, rape, homicide, manslaughter) and possession of a weapon [50]. Participants were also asked about physical violence towards other men outside of their intimate relationship.

Culture. Participants were asked whether they practised religion and what religion they practiced. Attitudes about relations between men and women [44] and attitudes towards gender roles were assessed [30].

Instrument translation

Many instruments had been validated in Portuguese [30,45,46,48–50]. Other instruments/questions [39–44,47] were translated from English to Portuguese by a professional translator. Instruments/questions were then back-translated into English by native Portuguese researchers with proficiency in English.

Analysis

Descriptive statistics were calculated using frequencies and percentages for categorical data and means and

standard deviations (SD) for continuous data. Odds ratios (OR) and 95% confidence intervals (CI) were calculated using logistic regression. Differences in sample characteristics are presented in Table 2. Table 3 describes variables associated with any IPV perpetration by country. Variables with cell counts of ≥ 10 and $P \leq 0.2$ in the univariate analyses were entered into backward stepwise multivariate logistic regression analyses to ascertain variables associated with any IPV perpetration for each country (Table 4). There was no evidence of multicollinearity among the independent variables included in the multiple logistic regression analyses [51]. Using backward stepwise multinomial logistic regression and a reference group consisting of participants who reported never perpetrating any IPV (no IPV), factors associated with the following outcomes were examined: perpetrated emotional IPV only [emotional IPV], perpetrated physical IPV (with/without emotional IPV) [physical IPV] or perpetrated sexual IPV (with/without emotional and/or physical IPV) [sexual IPV] (Table 5). Main effects and interactions between main effects and country were considered.

Results

The mean age of participants was 43 years (SD 10.6, range 19–73 years), the majority were heterosexual (96.6%) and lived in their country of birth (93.3%). Only 37.5% of participants were currently married/had an intimate partner. Participants from England were more likely to be homeless or be unemployed/receiving benefits, and less likely to have no/primary schooling only, live in their country of birth, practice a religion or to have been unfaithful in their current/most recent relationship than participants from Brazil (Table 2).

Substance use

Participants were more likely to be receiving treatment for drugs and less likely to be receiving treatment for alcohol in England, with 65.3% of men in England compared to 74.0% of men in Brazil meeting criteria for hazardous drinking in the past 12 months. The most commonly used drugs in the past 30 days in Brazil were cocaine, cannabis and crack; and heroin, crack and cannabis in England. Participants in England were more likely to be poly drug users and to report that their current/most recent partner has/had a problem with alcohol and/or drug use (Table 2).

Health

Almost half the sample (48.7%) met criteria for probable depression and 17.4% had ever been told by a health

Table 2. Sample characteristics

	Brazil (<i>n</i> = 281) ^a <i>n</i> (%)	England (<i>n</i> = 223) ^a <i>n</i> (%)	OR (95% CI)
Demographics			
Age, mean (SD)	43.49 (11.37)	42.50 (9.59)	0.99 (0.98, 1.01)
Heterosexual	272 (96.8%)	214 (96.4%)	0.89 (0.34, 2.33)
Live in country of birth	278 (98.9%)	192 (86.1%)	0.07 (0.02, 0.22)
Practices a religion	173 (61.8%)	71 (31.8%)	0.29 (0.20, 0.42)
Homeless	12 (4.3%)	59 (26.5%)	8.04 (4.19, 15.40)
No schooling/primary school education/ left high school without any qualifications	179 (63.9%)	76 (34.1%)	0.29 (0.20, 0.42)
Unemployed/receiving benefits	125 (44.5%)	193 (86.5%)	8.03 (5.12, 12.60)
Difficult all the time/impossible to manage on available income	113 (40.2 %)	91 (40.8%)	1.03 (0.72, 1.47)
Number of children, mean (SD)	1.60 (1.50)	1.92 (2.09)	1.11 (1.00, 1.22)
Intimate relationship			
Married/partner	104 (37.0%)	85 (38.1%)	1.05 (0.73, 1.51)
Had sex with another person during current/ most recent relationship	134 (48.6%)	50 (22.7%)	0.31 (0.21, 0.46)
Believed that current/most recent partner has/ had a problem with alcohol or drug use	64 (22.8%)	103 (46.2%)	2.91 (1.98, 4.27)
Substance use			
In treatment for alcohol	241 (86.1%)	78 (35.1%)	0.09 (0.06, 0.14)
Hazardous drinking (AUDIT) in past 12 months	208 (74.0%)	145 (65.3%)	0.66 (0.45, 0.97)
In treatment for drugs	159 (56.6%)	169 (75.8%)	2.40 (1.63, 3.54)
<i>Illicit drug use past 30 days</i>			
Heroin	1.0 (0.4%)	100 (44.8%)	—
Methadone	0	10 (4.5%)	—
Cocaine	86 (30.6%)	22 (9.9%)	0.25 (0.15, 0.42)
Crack	53 (18.9%)	91 (40.8%)	2.97 (1.99, 4.43)
Amphetamine	3 (1.1%)	13 (5.8%)	5.79 (1.61, 20.39)
Methamphetamine	1 (0.4%)	3 (1.4%)	3.84 (0.40, 37.13)
Hallucinogens	3 (1.1%)	6 (2.7%)	2.56 (0.63, 10.36)
Novel psychoactive substances	0	13 (5.8%)	—
Benzodiazepines	5 (1.8%)	40 (17.9%)	12.07 (4.67, 31.15)
Cannabis	71 (25.4%)	99 (44.6%)	2.37 (1.62, 3.46)
Poly drug use	64 (22.8%)	115 (51.6%)	3.61 (2.46, 5.30)
Mental health			
Probable depressive disorder (PHQ-9)	134 (47.9%)	111 (49.8%)	1.08 (0.76, 1.54)
Ever told by health professional had manic- depressive illness or bipolar	50 (18.2%)	36 (16.3%)	0.87 (0.55, 1.40)
Anger, mean (SD)			
Anger Expression out score	43.39 (11.37)	42.50 (9.59)	
Anger Expression in score	16.06 (5.68)	15.33 (4.18)	0.97 (0.94, 1.01)
Anger Control out score	21.38 (5.15)	18.08 (4.72)	0.88 (0.84, 0.91)
Anger Control in score	22.93 (6.67)	22.88 (5.80)	1.00 (0.97, 1.03)
Anger Expression Index score	23.66 (6.15)	22.39 (5.73)	0.97 (0.94, 0.99)
Anger Expression Index score	38.85 (16.77)	36.11 (14.52)	0.99 (0.98, 1.00)
Quality of life, mean (SD)			
Current health state (Visual Analogue Scale) (EQ-5D)	64.86 (22.72)	50.45 (21.41)	0.97 (0.96, 0.98)
HIV seropositive	10 (3.6%)	6 (2.7%)	0.75 (0.27, 2.10)
Childhood adverse experiences			
Any childhood abuse ^b	171 (61.3%)	154 (71.0%)	1.54 (1.06, 2.26)
Childhood physical abuse	160 (57.3%)	145 (66.5%)	1.48 (1.02, 2.13)
Severe childhood physical abuse ^c	92 (33.1%)	98 (45.0%)	1.65 (1.15, 2.38)
Childhood sexual abuse	76 (27.1%)	56 (25.8%)	0.93 (0.62, 1.40)
Severe childhood sexual abuse ^c	63 (22.5%)	53 (24.4%)	1.11 (0.73, 1.69)
Witnessing parental violence	182 (65.5%)	164 (75.9%)	1.66 (1.12, 2.48)
Looked after (in care) as a child	41 (14.6%)	82 (37.1%)	3.44 (2.24, 5.28)
Parents separated/divorced	95 (34.5%)	110 (50.7%)	1.95 (1.35, 2.80)
Neglected (e.g. going without food, clothes) or having to take care of yourself when you considered you were too young to do so	63 (22.5%)	57 (25.7%)	1.19 (0.79, 1.80)

(Continues)

Table 2. (Continued)

	Brazil (<i>n</i> = 281) ^a <i>n</i> (%)	England (<i>n</i> = 223) ^a <i>n</i> (%)	OR (95% CI)
Parent died	73 (26.2%)	26 (11.9%)	0.38 (0.23, 0.62)
Told by someone in family that you were lazy or stupid or weak	141 (50.4%)	124 (56.4%)	1.27 (0.89, 1.82)
Father at home never/rarely	154 (55.0%)	120 (56.3%)	1.06 (0.74, 1.51)
Mother at home never/rarely	75 (15.1%)	58 (11.7%)	1.00 (0.67, 1.50)
Number of adverse childhood experiences, mean (SD) ^d	3.79 (2.11)	4.21 (2.24)	1.09 (1.01, 1.19)
Criminality			
Crimes against property/fraud—arrested	40 (14.2%)	104 (46.8%)	5.31 (3.47, 8.13)
Crimes against property/fraud—imprisoned	14 (5.0%)	54 (24.8%)	6.28 (3.38, 11.66)
Possession or dealing drugs—arrested	65 (23.1%)	151 (68.0%)	7.07 (4.76, 10.50)
Possession or dealing drugs—imprisoned	46 (16.5%)	117 (52.7%)	5.62 (3.72, 8.48)
Intimate partner violence—arrested	14 (5.0%)	44 (19.7%)	4.67 (2.49, 8.77)
Intimate partner violence—imprisoned	0	21 (9.6%)	—
Crimes of violence (other)—arrested	42 (14.9%)	111 (49.8%)	5.64 (3.71, 8.58)
Crimes of violence (other)—imprisoned	33 (11.8%)	77 (35.5%)	4.12 (2.61, 6.51)
Possession of a weapon—arrested	14 (5.0%)	89 (39.9%)	12.67 (6.95, 23.09)
Possession of a weapon—imprisoned	10 (3.6%)	49 (22.4%)	7.81 (3.85, 15.83)
Ever physical fight with another man	217 (78.3%)	202 (91.0%)	2.79 (1.63, 4.80)
Physical fight with another man in past 12 months	97 (35.0%)	83 (39.3%)	1.20 (0.83, 1.74)
Intimate partner violence			
Any perpetration	203 (72.5%)	170 (77.3%)	1.29 (0.86, 1.94)
Emotional perpetration	175 (62.5%)	139 (62.6%)	1.01 (0.70, 1.45)
Physical perpetration	142 (50.7%)	134 (60.4%)	1.48 (1.04, 2.11)
Sexual perpetration	44 (15.7%)	14 (6.4%)	0.37 (0.20, 0.69)
Any victimisation	233 (83.2%)	192 (86.9%)	1.34 (0.81, 2.20)
Emotional victimisation	204 (72.9%)	162 (73.0%)	1.01 (0.68, 1.50)
Physical victimisation	171 (61.1%)	166 (74.4%)	1.86 (1.26, 2.73)
Sexual victimisation	65 (23.2%)	27 (12.2%)	0.46 (0.28, 0.75)
Attitudes to gender relations/norms, mean (SD)			
Attitudes to gender relations score	45.20 (7.25)	48.68 (5.57)	1.08 (1.05, 1.12)
Attitudes roles score	27.92 (2.38)	29.05 (2.28)	1.26 (1.15, 1.38)

^aDiscrepancies in totals because of missing data.

^bAny childhood abuse includes physical and sexual abuse.

^cSevere childhood physical abuse includes being kicked bit or punched (often), hit with something (often), choked, burned or scalded or being physically attacked in some other way, by an adult. Severe childhood sexual abuse includes an adult threatening to have sex with you, touching the private parts of your body, trying to have sex with you or sexually attacking you.

^dCalculated only for participants responding to all 10 adverse childhood experiences.

AUDIT, Alcohol Use Disorders Identification Test; CI, confidence interval; EQ-5D, EuroQol five dimensions questionnaire; OR, odds ratio; PHQ-9, Patient Health Questionnaire.

professional that they had manic-depressive illness or bipolar disorder. Participants from England reported poorer current health state and were more likely to self-report being Hepatitis C seropositive (Table 3), potentially because of having greater numbers of current injectors in England (*n* = 61) than Brazil (*n* = 0).

Adverse childhood experiences

ACE were common, 65.5% reported any (physical or sexual) childhood abuse and 70.0% had witnessed inter-parental violence. Participants from England had experienced a greater number of ACE (Table 2).

Attitudes towards gender relations/roles

Participants from England were more likely to support gender equitable relations and less gender stereotyped attitudes towards gender roles (Table 3).

Criminality

Participants from England were more likely to have committed and been arrested for crimes against property/fraud, possession or dealing drugs, IPV, other violent crimes, possession of a weapon and were almost

Table 3. Univariate factors associated with any (emotional, physical or sexual) IPV by country

	Brazil (n = 280)				England (n = 220)			
	Any IPV perpetrated		Any IPV perpetrated		Any IPV perpetrated		Any IPV perpetrated	
	No (n = 77) n (%)	Yes (n = 203) n (%)	P	OR (95% CI)	No (n = 50) n (%)	Yes (n = 170) n (%)	P	OR (95% CI)
Demographics								
Age, mean (SD)	44.51 (12.61)	42.91 (10.86)	0.294	0.99 (0.97, 1.01)	43.12 (11.37)	42.24 (9.01)	0.570	0.99 (0.96, 1.02)
Heterosexual	75 (97.4%)	196 (96.6%)	1.000	0.75 (0.15, 3.68)	49 (100%)	162 (95.3%)	0.204	—
Live in country of birth	77 (100%)	200 (98.5%)	0.564	—	44 (88.0%)	145 (85.3%)	0.629	0.79 (0.31, 2.05)
Practices a religion	51 (66.2%)	121 (59.9%)	0.331	0.76 (0.44, 1.32)	11 (22.0%)	58 (34.1%)	0.105	1.84 (0.88, 3.85)
Homeless	3 (3.9%)	9 (4.5%)	1.000	1.15 (0.30, 4.37)	12 (24.0%)	46 (27.1%)	0.666	1.18 (0.57, 2.44)
No schooling/primary school education/left high school without any qualifications	52 (67.5%)	126 (62.4%)	0.423	0.80 (0.46, 1.39)	21 (42.0%)	53 (31.2%)	0.154	0.63 (0.33, 1.20)
Unemployed/receiving benefits	32 (41.6%)	93 (45.8%)	0.523	1.19 (0.70, 2.02)	42 (84.0%)	148 (87.1%)	0.580	1.28 (0.53, 3.09)
Difficult all the time/ impossible to manage on available income	26 (33.8%)	87 (42.9%)	0.166	1.47 (0.85, 2.55)	20 (40.0%)	69 (40.6%)	0.941	1.03 (0.54, 1.95)
Number of children, mean (SD)	1.40 (1.55)	1.67 (1.47)	0.183	1.13 (0.94, 1.36)	2.32 (2.48)	1.79 (1.96)	0.119	0.90 (0.78, 1.03)
At least one child lives with participant	23 (29.9%)	40 (19.7%)	0.069	0.58 (0.32, 1.05)	5 (10.0%)	12 (7.1%)	0.547	0.68 (0.23, 2.04)
Intimate relationship								
Had sex with another person during current/ most recent relationship	26 (35.1%)	108 (53.5%)	0.007	2.12 (1.22, 3.68)	6 (12.0%)	44 (26.3%)	0.035	2.62 (1.05, 6.58)
Believed that current/ most recent partner has had a problem with alcohol or drug use	13 (16.9%)	51 (25.1%)	0.143	1.65 (0.84, 3.25)	20 (40.0%)	82 (48.2%)	0.305	1.40 (0.74, 2.65)
Substance use								
In treatment for alcohol	68 (88.3%)	172 (85.1%)	0.496	0.76 (0.34, 1.68)	13 (26.0%)	65 (38.5%)	0.106	1.78 (0.88, 3.60)
Hazardous drinking (AUDIT) in past 12 months	50 (64.9%)	158 (77.8%)	0.027	1.90 (1.07, 3.36)	27 (54.0%)	117 (69.2%)	0.046	1.92 (1.01, 3.65)
AUDIT total score	16.06 (11.72)	20.03 (12.15)	0.014	1.03 (1.01, 1.05)	12.88 (12.29)	18.93 (13.73)	0.006	1.04 (1.01, 1.06)
In treatment for drugs	33 (42.9%)	125 (61.6%)	0.005	2.14 (1.25, 3.64)	40 (80.0%)	126 (74.1%)	0.396	0.72 (0.33, 1.55)
Illicit drug use past 30 days								
Heroin	1 (1.3%)	0	0.275	—	22 (44.0%)	76 (44.7%)	0.930	1.03 (0.55, 1.94)
Cocaine	17 (22.1%)	69 (34.0%)	0.054	1.82 (0.99, 3.35)	5 (10.0%)	17 (10.1%)	0.990	1.01 (0.35, 2.88)

(Continues)

Table 3. (Continued)

	Brazil (n = 280)				England (n = 220)			
	Any IPV perpetrated				Any IPV perpetrated			
	No (n = 77) (%)	Yes (n = 203) (%)	P	OR (95% CI)	No (n = 50) (%)	Yes (n = 170) (%)	P	OR (95% CI)
Crack	10 (13.0%)	43 (21.2%)	0.118	1.80 (0.86, 3.79)	21 (42.0%)	69 (40.6%)	0.858	0.94 (0.50, 1.79)
Benzodiazepines	0	5 (2.5%)	0.327	—	12 (24.0%)	28 (16.5%)	0.225	0.62 (0.29, 1.34)
Cannabis	18 (23.4%)	52 (25.7%)	0.684	1.14 (0.61, 2.10)	19 (38.0%)	78 (46.2%)	0.308	1.40 (0.73, 2.67)
Poly drug use	14 (18.2%)	50 (24.6%)	0.251	1.47 (0.76, 2.85)	23 (46.0%)	90 (52.9%)	0.388	1.32 (0.70, 2.49)
Number of drugs used	0.60 (0.98)	0.87 (1.17)	0.073	1.27 (0.98, 1.65)	1.74 (1.59)	1.79 (1.55)	0.848	1.02 (0.83, 1.25)
Mental health								
Probable depressive disorder (PHQ-9 case)	22 (28.6%)	112 (55.2%)	<0.001	3.08 (1.75, 5.42)	25 (50.0%)	85 (50.0%)	1.000	1.00 (0.53, 1.88)
PHQ-9 total score [mean (SD)]	6.94 (6.41)	11.89 (7.55)	<0.001	1.11 (1.06, 1.16)	11.16 (7.83)	11.12 (6.53)	0.974	1.00 (0.95, 1.05)
Ever told by health professional had manic-depressive illness or bipolar	4 (5.4%)	46 (23.0%)	0.001	5.23 (1.81, 15.09)	7 (14.0%)	27 (16.1%)	0.723	1.18 (0.48, 2.89)
Anger, mean (SD)								
State Anger Scale score	16.99 (4.94)	19.47 (7.21)	0.006	1.09 (1.02, 1.16)	18.10 (6.22)	17.82 (5.19)	0.742	0.99 (0.94, 1.05)
Trait Anger Scale score	19.44 (7.01)	23.86 (7.91)	<0.001	1.08 (1.04, 1.13)	16.60 (5.23)	17.92 (5.84)	0.152	1.05 (0.98, 1.11)
Anger Expression out score	13.45 (4.57)	17.05 (5.75)	<0.001	1.14 (1.08, 1.21)	13.70 (4.05)	15.84 (4.14)	0.001	1.15 (1.05, 1.26)
Anger Expression in score	20.21 (5.12)	21.83 (5.10)	0.019	1.07 (1.01, 1.12)	17.16 (4.42)	18.39 (4.81)	0.107	1.06 (0.99, 1.13)
Anger Control out score	26.17 (5.00)	21.70 (6.83)	<0.001	0.89 (0.85, 0.93)	24.18 (5.75)	22.44 (5.74)	0.062	0.95 (0.89, 1.00)
Anger Control in score	25.55 (5.33)	22.95 (6.30)	0.002	0.93 (0.89, 0.97)	22.38 (5.67)	22.30 (5.74)	0.929	1.00 (0.94, 1.05)
Anger Expression Index score	29.93 (12.42)	42.24 (16.99)	<0.001	1.06 (1.03, 1.08)	32.30 (14.52)	37.45 (14.29)	0.027	1.03 (1.00, 1.05)
Quality of life, mean (SD)								
Current health state (Visual Analogue Scale) (EQ-5D)	66.04 (25.76)	64.41 (21.51)	0.593	1.00 (0.99, 1.01)	49.72 (21.01)	50.50 (21.71)	0.822	1.00 (0.99, 1.02)
Childhood adverse experiences								
Any childhood abuse ^a	26 (34.2%)	144 (71.3%)	<0.001	4.78 (2.72, 8.39)	34 (70.8%)	117 (70.5%)	0.962	0.98 (0.49, 1.99)
Childhood physical abuse	24 (31.6%)	135 (66.8%)	<0.001	4.37 (2.48, 7.69)	29 (60.4%)	114 (68.3%)	0.310	1.41 (0.73, 2.74)
Severe childhood physical abuse ^b	10 (13.3%)	81 (40.1%)	<0.001	4.35 (2.11, 8.96)	17 (35.4%)	80 (47.9%)	0.125	1.68 (0.86, 3.26)
Childhood sexual abuse	10 (13.2%)	65 (32.0%)	0.002	3.11 (1.50, 6.44)	13 (26.5%)	42 (25.5%)	0.880	0.95 (0.46, 1.95)
Severe childhood sexual abuse ^b	7 (9.2%)	55 (27.1%)	0.001	3.66 (1.59, 8.46)	13 (26.5%)	39 (23.6%)	0.678	0.86 (0.41, 1.78)
	37 (48.7%)	144 (71.6%)	<0.001	2.66 (1.55, 4.59)	30 (62.5%)	133 (80.6%)	0.009	2.49 (1.24, 5.02)

(Continues)

Table 3. (Continued)

	Brazil (<i>n</i> = 280)				England (<i>n</i> = 220)			
	Any IPV perpetrated		<i>P</i>	OR (95% CI)	Any IPV perpetrated		<i>P</i>	OR (95% CI)
	No (<i>n</i> = 77) (%)	Yes (<i>n</i> = 203) (%)			No (<i>n</i> = 50) (%)	Yes (<i>n</i> = 170) (%)		
Witnessing parental violence	2.77 (1.78)	4.16 (2.11)	<0.001	1.43 (1.23, 1.66)	3.70 (2.39)	4.36 (2.19)	0.079	1.14 (0.98, 1.33)
Number of adverse childhood experiences, mean (SD) ^c	8 (10.4%)	32 (15.8%)	0.251	1.61 (0.71, 3.68)	24 (48.0%)	79 (46.7%)	0.876	0.95 (0.51, 1.79)
Criminality (arrested for)								
Crimes against property/fraud	14 (18.2%)	51 (25.1%)	0.219	1.51 (0.78, 2.92)	35 (70.0%)	114 (67.5%)	0.735	0.89 (0.45, 1.76)
Possession or dealing drugs	8 (10.4%)	34 (16.7%)	0.183	1.74 (0.77, 3.94)	20 (40.0%)	89 (52.4%)	0.125	1.65 (0.87, 3.13)
Crimes of violence (other than IPV)	1 (1.3%)	13 (6.4%)	0.122	5.20 (0.67, 40.45)	17 (34.0%)	69 (40.6%)	0.401	1.33 (0.69, 2.57)
Possession of a weapon	52 (68.4%)	165 (82.1%)	0.014	2.12 (1.16, 3.87)	45 (90.0%)	154 (91.1%)	0.784	1.14 (0.39, 3.31)
Ever physical fight with another man	12 (15.8%)	85 (42.3%)	<0.001	3.91 (1.99, 7.69)	12 (25.5%)	71 (44.1%)	0.022	2.30 (1.11, 4.75)
Physical fight with another man in past 12 months								
Intimate partner violence								
Any victimisation	42 (54.5%)	191 (94.1%)	<0.001	13.26 (6.36, 27.69)	30 (62.5%)	162 (95.3%)	<0.001	12.15 (4.85, 30.47)
Emotional victimisation	29 (37.7%)	175 (86.2%)	<0.001	10.35 (5.62, 19.03)	22 (44.9%)	140 (82.4%)	<0.001	5.73 (2.88, 11.39)
Physical victimisation	17 (22.1%)	154 (75.9%)	<0.001	11.09 (5.93, 20.77)	23 (46.0%)	143 (84.1%)	<0.001	6.22 (3.11, 12.42)
Sexual victimisation	9 (11.7%)	56 (27.6%)	0.005	2.88 (1.35, 6.16)	2 (4.1%)	25 (14.8%)	0.045	4.08 (0.93, 17.88)
Attitudes to gender relations/norms, mean (SD)								
Attitudes to gender relations score	46.14 (7.34)	44.84 (7.21)	0.181	0.98 (0.94, 1.01)	47.54 (5.37)	49.00 (5.60)	0.104	1.05 (0.99, 1.12)
Attitudes to gender -norms score	28.18 (2.22)	27.82 (2.43)	0.260	0.94 (0.83, 1.05)	28.66 (2.09)	29.21 (2.31)	0.135	1.10 (0.97, 1.25)

Differences in totals because of missing data

SD = standard deviation

^aAny childhood abuse includes physical and sexual abuse^bSevere childhood physical abuse includes being kicked bit or punched (often), hit with something (often), choked, burned or scalded or being physically attacked in some other way, by an adult. Severe childhood sexual abuse includes an adult threatening to have sex with you, touching the private parts of your body, trying to have sex with you or sexually attacking you.^cCalculated only for participants responding to all 10 adverse childhood experiences

AUDIT, Alcohol Use Disorders Identification Test; CI, confidence interval; EQ-5D, EuroQol five dimensions questionnaire; IPV, intimate partner violence; OR, odds ratio; PHQ-9, Patient Health Questionnaire.

Table 4. Multivariate factors associated with any (emotional, physical or sexual) IPV perpetration by country

	Brazil (<i>n</i> = 263) ^b OR (95% CI)	England (<i>n</i> = 182) ^c OR (95% CI)
Anger Expression Index	1.03 (1.00, 1.05)	—
PHQ-9 total score	1.05 (1.00, 1.10)	—
Physical fight with another man in past 12 months	2.24 (1.07, 4.70)	—
Number of adverse childhood experiences	1.23 (1.04, 1.46)	1.25 (1.05, 1.48)
AUDIT total score	—	1.05 (1.02, 1.08)
Hosmer and Lemeshow Test	0.458 ^a	0.279 ^a
Classification of model	74.5%	78.0%

^aPearson chi-square goodness of fit test.

^bVariable(s) entered on step 1: manage on available income, at least one child living with participant, current/most recent partner was a substance user, been in physical fight with another man in past 12 months, number of adverse childhood experiences, anger expression index, AUDIT total score, PHQ-9 total score, cocaine use in past 30 days, crack use in past 30 days, GEM score, had sex with someone else during current/most recent relationship^a.

^cVariable(s) entered on step 1: education, practiced a religion, been in physical fight with another man in past 12 months, number of adverse childhood experiences, anger expression index, AUDIT total score, ever arrested for violent crime, GEM score to Attitudes to gender relations score, Gender roles score to Attitudes to gender roles score.

AUDIT, Alcohol Use Disorders Identification Test; CI, confidence interval; IPV, intimate partner violence; OR, odds ratio; PHQ-9, Patient Health Questionnaire.

Table 5. Multinomial logistic regression for type of intimate partner violence perpetrated (*N* = 446)

	Multinomial (reference category—no IPV) <i>n</i> = 114		
	Emotional IPV ^a <i>n</i> = 73	Physical IPV ^b <i>n</i> = 209	Sexual IPV ^c <i>n</i> = 50
	OR (95% CI)	OR (95% CI)	OR (95% CI)
<i>Main effects</i>			
England	2.82 (0.90, 8.87)	2.28 (0.94, 5.52)	2.18 (0.48, 9.90)
Physical fight with another man in past 12 months	1.19 (0.58, 2.46)	2.26 (1.27, 3.99)	2.09 (0.95, 4.59)
Anger expression index	1.04 (1.02, 1.07)	1.02 (1.00, 1.04)	1.02 (0.99, 1.05)
Number adverse childhood experiences	1.16 (0.99, 1.36)	1.22 (1.08, 1.39)	1.35 (1.13, 1.62)
PHQ-9 total score	1.04 (0.98, 1.10)	1.03 (0.97, 1.08)	1.06 (0.997, 1.13)
AUDIT total score	1.01 (0.99, 1.04)	1.03 (1.01, 1.05)	1.03 (1.00, 1.07)
<i>Interactions</i>			
England x PHQ-9 total score (interaction)	0.90 (0.81, 0.98)	0.95 (0.89, 1.03)	0.83 (0.72, 0.95)
Pearson chi-square statistic <i>P</i> = 0.722			
Classification of model 50.9%			

^aPerpetrated emotional IPV only.

^bPerpetrated physical IPV (with or without emotional IPV, but sexual IPV not perpetrated).

^cPerpetrated sexual IPV (with or without emotional and/or physical IPV).

^dVariable(s) entered on step 1: country (forced), been in physical fight with another man in past 12 months, number of adverse childhood events, anger expression index, AUDIT total score, PHQ-9 total score, and interaction between country and each of these variables.

AUDIT, Alcohol Use Disorders Identification Test; CI, confidence interval; OR, odds ratio; PHQ-9, Patient Health Questionnaire.

three times as likely to have fought physically with another man than participants from Brazil (Table 2).

Intimate partner violence

Three quarters reported ever perpetrating any (emotional, physical and/or sexual) IPV (373/500). Participants from England were more likely to have

perpetrated physical IPV and less likely to have perpetrated sexual IPV than participants from Brazil (Table 2). A quarter of the sample had never perpetrated IPV (127/498, 25.5%), 16.5% (82/498) had perpetrated emotional IPV only, 46.4% (231/498) had perpetrated physical IPV (with/without emotional IPV) and 11.6% (58/498) had perpetrated sexual IPV (with/without emotional and/or physical IPV).

Only 6.9% (14/202) of participants in Brazil who reported perpetrating IPV had ever been arrested for this, and none had ever been imprisoned. In England, 24.7% (42/170) of those who reported perpetrating IPV had ever been arrested for it and 12.1% (20/165) had been imprisoned as a result. Despite similar proportions of men meeting criteria for ever perpetrating IPV only 15.7% (44/280) of participants in Brazil and 27.5% (60/218) considered they had ever been in a relationship where they could be described as 'domestically violent or abusive' towards their partner (OR 2.04, 95% CI 1.31, 3.16). When those who had perpetrated IPV were asked to reflect on their behaviour: only 31.8% (87/274) of those who perpetrated physical IPV and 18.5% (10/54) of those who perpetrated sexual IPV considered their behaviour was 'a crime'. The majority believed they had been using alcohol and/or drugs at the time they last perpetrated emotional (221/306, 72.2%), physical (204/275, 74.2%) or sexual (42/54, 77.8%) IPV. Participants also reported high levels of lifetime IPV victimisation (425/501, 84.8%).

Factors associated with ever perpetrating any IPV by country

Variables associated with ever perpetrating any IPV in bivariate analysis by country are reported in Table 3. The following variables remained significant in the multiple logistic regression model predicting any IPV perpetration for participants from Brazil: had a physical fight with another man in the past 12 months, experiencing a greater number of ACE, higher depressive symptomatology and higher anger expression. The following variables remained significant in the model predicting any IPV perpetration for participants from England: higher anger expression and a higher Alcohol Use Disorders Identification Test (AUDIT) score (Table 4).

Factors associated with type of IPV ever perpetrated

In the multinomial logistic regression analysis, compared to participants who had never perpetrated any IPV: the perpetration of emotional IPV was associated with having higher anger expression; the perpetration of physical IPV was associated with having a physical fight with another man in the past 12 months, higher anger expression, experiencing a greater number of ACE and a higher AUDIT score; and the perpetration of sexual IPV was associated with a greater number of ACE and a higher AUDIT score.

Discussion

The prevalence of IPV perpetration is high among men receiving treatment for substance use, far higher than

among general population or general practice samples from the same countries [15,31,32]. Our findings are comparable to lifetime rates of psychological (77%) and physical IPV (49%–54%) perpetration reported in other studies of men receiving substance use treatment [17,52]. We found a lower rate of sexual IPV perpetration than other studies (32%) [17], perhaps because of different methodologies used. Participants from England were more likely to have perpetrated physical IPV and less likely to have perpetrated sexual IPV than those from Brazil. That participants from England were more likely to perpetrate physical IPV contrasts with general violence levels reported in each country [34]; therefore, the differences reported in our study are more likely to be a result of the differences in the treatment samples recruited and the profile of clients (e.g. different drugs used and methods of drug administration) attending these substance use treatment services in each country (e.g. 86% and 57% of participants in Brazil were receiving treatment for alcohol and drugs respectively compared to 35% and 76% in England; and 23% of participants in Brazil compared to 52% in England were poly drug users), rather than country or cultural differences *per se*. Participants from England reported greater deprivation (homelessness, unemployment/receiving benefits) and complex needs (greater number of ACE, poly drug use/injecting, higher criminality/violence outside their relationships) that may have contributed to the higher prevalence of physical IPV perpetration [9,11,14,15]. Participants from Brazil reported greater infidelity, were less likely to support gender equitable relations and more likely to hold gender stereotyped attitudes towards gender roles [15,33,34]. For example in our study, a greater proportion of participants from Brazil than England agreed or strongly agreed with the statements 'if a woman doesn't physically fight back its not rape' (18% vs. 4%) and 'that a woman cannot refuse to have sex with her husband' (29% vs. 4%) which may account for the higher lifetime prevalence of sexual IPV perpetration reported.

Similar risk factors for IPV perpetration found in our study have been reported in studies among males receiving substance use treatment: higher anger expression, higher depression symptomatology, physical fight with another man (Brazil only), greater number of ACE (Brazil and England) and a higher AUDIT score (England only) [17,53–55]. Compared to never perpetrating any IPV, anger expression was associated with emotional and physical IPV perpetration; fighting physically with another man in the past 12 months, experiencing a greater number of ACE and a higher hazardous drinking score were associated with physical IPV perpetration; and experiencing a greater number of ACE and a higher hazardous drinking score were associated with sexual IPV perpetration.

Similar to other studies [18], lifetime IPV victimisation reported by participants was also high. This may be because of participants' partners responding in self-defence, conflicts around substance use [56] or it may also be influenced by reporting bias.

Adverse childhood experiences

We found a significant association between ACE and IPV perpetration in both countries and also for physical and sexual IPV perpetration [18,53–55]. Experiencing ACE influences IPV perpetration partially through psychosocial characteristics including depression, anxiety, and impulsivity [57]. This relationship could be mediated through substance use, with more severe dependence reported by substance users who have experienced childhood abuse [58]. Forty percent of male IPV perpetrators are also violent towards their children [59] which is a significant risk factor for IPV perpetration, mental health and substance use problems in adulthood [11,60,61]. As many men in substance use treatment are fathers, and may still have access rights to their children or co-parent; it is important that they are offered interventions that address the father–child relationship [62] or family-based interventions that address both partner and parent–child aggression [63], to reduce the 'intergenerational' transfer of IPV as a result of learned behaviours or acceptance of such behaviours in adult relationships [64]. Such interventions have shown promising results in reducing IPV perpetration, substance use and improving parent–child relationships [62,63].

Alcohol

Similar to other studies, we found that hazardous drinking predicted any IPV perpetration and physical and sexual IPV perpetration [10,13,14,18,22]. Alcohol expectancies or beliefs about the cognitive and behavioural effects of alcohol contribute to IPV perpetration in addition to alcohol use [65].

Anger

Anger expression was associated with both emotional and physical IPV perpetration. A recent meta-analysis found that IPV perpetration was associated with anger, hostility, and internalising negative emotions [66]. Similar to other studies we found that a history of IPV victimisation was a strong predictor of IPV perpetration [67], and that the majority of participants reported a history of being both perpetrators and victims of IPV [68]. ACE and anger remained significant (or marginally significant) in the models predicting emotional, physical and sexual IPV perpetration. Emotion dysregulation resulting from

ACE include problems with understanding, responding to, expressing and managing emotional responses and is associated with IPV perpetration [69]. ACE have been associated with anger-related dysregulation, which has been found to mediate the relationship with IPV perpetration [70]. There is also evidence of altered brain functioning as a result of ACE to parts of the brain responsible for emotion and anger, and those that have a role in functions that relate to adult behaviours including attention, inhibition, emotion, expression of personality and moderation of learned social behaviour [71], that could contribute to IPV perpetration.

Masculinity

Societies and individuals that support stronger ideologies of male dominance have elevated rates of IPV perpetration [72]. Few participants acknowledged their IPV perpetration as a crime. While gender equitable relations and attitudes towards gender roles were not predictive of IPV perpetration in this study, masculine roles (including physical fight with another man, infidelity and violent crime) were [15,72–74]. It has been argued that holding traditional ideas about masculinity that support dominance over women often result in 'exaggerated displays of male heterosexuality' [73]. Moreover, it has been suggested that 'masculinity is embodied via alcohol-related violence that is perpetrated against intimates, acquaintances, and strangers alike' [75] (pp. 404).

Mental health

Depression is associated with IPV perpetration [13,32,44]. However, in our study higher depression symptomatology was associated with any IPV perpetration only for participants in Brazil. It is not clear why this finding was not reported in the English sample, as approximately half the sample in each country met criteria for probable major depressive disorder. The higher prevalence of hazardous drinking in Brazil may explain the association between depression and any IPV perpetration [76].

Treatment implications

Participants reported a high prevalence of ACE and IPV victimisation, suggesting that trauma-informed substance use treatment where 'service delivery is influenced by an understanding of the impact of interpersonal violence and victimization on an individual's life and development' [77] (pp. 462) may be beneficial to men.

Several studies have found that reductions in substance use results in reductions in emotional and physical IPV perpetration [78]. People in relationships where mutual

violence is common may 'face frequent and intense provocation toward aggressive behaviour, with other impelling, inhibiting and disinhibiting factors [alcohol] moderating the likelihood that aggressive urges result in IPV perpetration' [67] (pp. 274).

Few perpetrator intervention studies have been conducted among men receiving substance use treatment. Integrated interventions, that address both substance use and IPV, appear promising [79–82].

Men receiving substance use treatment who perpetrate IPV are rarely referred to perpetrator programs [29,83]. Moreover, when they are, treatment completion is low and uptake is poor [29,84]. Perpetrator programs are traditionally offered through criminal justice settings; however, only 15% of IPV perpetrators in our study (7% in Brazil and 25% in England) had ever been arrested for IPV. While the Maria de Penha law introduced in Brazil in 2006 has increased penalties for perpetrators and support for victims, research suggests that there are still inefficiencies in the implementation of the law which may account for lower arrest rates in Brazil [85]. Community perpetrator programs out with the criminal justice system are estimated to meet around 10% of existing demand from referring agencies [86]. Substance users may be less likely to attend treatment in parallel systems in general [87] and for IPV perpetration more specifically [84]. Integrated interventions, that address both IPV and substance use, delivered in substance use treatment could ensure more perpetrators are reached and better outcomes achieved for perpetrators and victims [88] and their children.

Strengths and weaknesses

As this cross-sectional study recruited a convenience sample from outpatient services, findings may not be generalisable to men from other substance use treatment services and causal associations cannot be implied. Conflicting evidence surrounds the impact of interviewer gender (12/18 interviewers in our study were female) on disclosing sensitive issues [89]. Participants may be more likely to respond in a socially desirable way to questions about gender attitudes. Therefore, the prevalence of IPV reported and the support for gender norms/attitudes may be under-reported.

Conclusions

The prevalence of IPV perpetration is high among men receiving substance use treatment, far higher than among general population or general practice samples from the same countries [15,31,32,90]. Findings highlight the multiple and complex risk factors for IPV perpetration

across both cultures. Similar to the ecological model of IPV [3,30], we have identified risk factors for IPV perpetration at the individual, relationship, community and societal levels that could inform population health prevention of IPV and integrated treatment approaches for perpetrators receiving substance use treatment.

Acknowledgements

This research was funded by the Economic and Social Research Council (ES/K002589/1) and Fundação de Amparo à Pesquisa do Estado de São Paulo (2012/50460-5). We would like to thank the staff and patients from the substance use treatment services for their participation in the research. We are especially grateful to the interviewers: Paulina Romani Lopez, Kideshini Widyaratna, Jill Fowler, Bruno Logan, Gina Ardila, Stephanie Pereira, Camila Zancheta, Jan Billand, Pedro Checchetto, Regina Tuon, Renato Leonetti, Rute Alonso, Sérgio Barbosa, Tales Mistura and Tereza de Cala.

References

- [1] Vos T, Astbury J, Piers LS, *et al*. Measuring the impact of intimate partner violence on the health of women in Victoria, Australia. *Bull World Health Organ* 2006;84:739–44.
- [2] Campbell J. Health consequences of intimate partner violence. *Lancet* 2002;359:1331–6.
- [3] Krug E, Dahlberg L, Mercy J, *et al*. *World Report on Violence and Health*. Geneva: World Health Organisation, 2002.
- [4] Sarkar N. The impact of intimate partner violence on women's reproductive health and pregnancy outcome. *J Obstet Gynaecol* 2008;28:266–71.
- [5] Trevillion K, Oram S, Feder G, Howard LM. Experiences of domestic violence and mental disorders: a systematic review and meta-analysis. *PLoS One* 2012;7:e51740.
- [6] Rivara FP, Anderson ML, Fishman P, *et al*. Healthcare utilization and costs for women with a history of intimate partner violence. *Am J Prev Med* 2007;32:89–96.
- [7] Dixon L, Graham-Kevan N. Understanding the nature and etiology of intimate partner violence and implications for practice and policy. *Clin Psychol Rev* 2011;31:1145–55.
- [8] Dutton D. *The abusive personality: violence and control in intimate relationships*. New York: Guilford, 1996.
- [9] Cunradi CB, Caetano R, Schafer J. Socioeconomic predictors of intimate partner violence among White, Black, and Hispanic couples in the United States. *J Fam Violence* 2002;17:377–89.
- [10] Stith SM, Smith DB, Penn CE, *et al*. Intimate partner physical abuse perpetration and victimization risk factors: a meta-analytic review. *Aggress Violence Behav* 2004;10:65–98.
- [11] Gil-González D, Vives-Cases C, Ruiz MT, Carrasco-Portiño M, Alvarez-Dardet C. Childhood experiences of violence in perpetrators as a risk factor of intimate partner violence: a systematic review. *J Public Health (Oxf)* 2004;30:14–22.
- [12] Abramsky T, Watts CH, Garcia-Moreno C, *et al*. What factors are associated with recent intimate partner violence? Findings from the WHO multi-country study on women's health and domestic violence. *BMC Public Health* 2011;11:109.
- [13] Oram S, Trevillion K, Khalifeh H, Feder G, Howard LM. Systematic review and meta-analysis of psychiatric disorder and the perpetration of partner violence. *Epidemiol Psychiatr Sci* 2014;23:361–76.
- [14] Ten Have M, de Graaf R, van Weeghel J, van Dorsselaer S. The association between common mental disorders and violence: to what extent is it influenced by prior victimization, negative life events and low levels of social support? *Psychol Med* 2014;44:1485–98.

- [15] Fleming PJ, McCleary-Sills J, Morton M, Levto V, Heilman B, Barker G. Risk factors for Men's lifetime perpetration of physical violence against intimate partners: results from the International Men and Gender Equality Survey (IMAGES) in eight countries. *PLoS One* 2015;10:e0118639.
- [16] O'Farrell TJ, Murphy CM, Stephan SH, Fals-Stewart W, Murphy M. Partner violence before and after couples-based alcoholism treatment for male alcoholic patients: the role of treatment involvement and abstinence. *J Consult Clin Psychol* 2004;72:202–17.
- [17] El-Bassel N, Gilbert L, Wu E, Chang M, Fontdevila J. Perpetration of intimate partner violence among men in methadone treatment programs in New York City. *Am J Public Health* 2007;97:1230–2.
- [18] Gilchrist G, Blazquez A, Segura L, et al. Factors associated with physical or sexual intimate partner violence perpetration by males in substance misuse treatment in Catalunya: a mixed methods study. *Crim Behav Ment Health* 2015;25:239–57.
- [19] Bennett LW. Substance abuse by men in partner abuse intervention programs: current issues and promising trends. *Violence Vict* 2008;23:236–48.
- [20] Baskin-Sommers A, Sommers I. The co-occurrence of substance use and high-risk behaviors. *J Adolesc Health* 2006;38:609–11.
- [21] Sommers I, Baskin D, Baskin-Sommers A. Methamphetamine use among young adults: health and social consequences. *Addict Behav* 2006;31:1469–76.
- [22] Foran HM, O'Leary KD. Alcohol and intimate partner violence: a meta-analytic review. *Clin Psychol Rev* 2008;28:1222–34.
- [23] Moore TM, Stuart GL, Meehan JC, Rhatigan DL, Hellmuth JC, Keen SM. Drug abuse and aggression between intimate partners: a meta-analytic review. *Clin Psychol Rev* 2008;28:247–74.
- [24] Smith PH, Homish GG, Leonard KE, Cornelius JR. Intimate partner violence and specific substance use disorders: findings from the National Epidemiologic Survey on Alcohol and Related Conditions. *Psychol Addict Behav* 2012;26:236–45.
- [25] Choenni V, Hammink A, van de Mheen D. Association between substance use and the perpetration of family violence in industrialized countries: a systematic review. *Trauma Violence Abuse* 2015 doi: 10.1177/1524838015589253 [Epub ahead of print].
- [26] Leonard K, Jacob T. Alcohol, alcoholism, and family violence. New York, New York: Plenum Press, 1998.
- [27] Murphy CM, O'Farrell TJ, Fals-Stewart W, Feehan M. Correlates of intimate partner violence among male alcoholic patients. *J Consult Clin Psychol* 2001;69:528–40.
- [28] Kuhns JB. The dynamic nature of the drug use/serious violence relationship: a multi-causal approach. *Violence Vict* 2005;20:433–54.
- [29] Klostermann KC, Fals-Stewart W. Intimate partner violence and alcohol use: exploring the role of drinking in partner violence and its implications for intervention. *Aggress Violence Behav* 2006;11:587–97.
- [30] Garcia-Moreno C, Jansen HA, Ellsberg M, et al. Prevalence of intimate partner violence: findings from the WHO multi-country study on women's health and domestic violence. *Lancet* 2006;368:1260–9.
- [31] Schraiber L, Barros C, Couto M, et al. Homens, masculinidade e violência: estudo em serviços de atenção primária à saúde. *Rev Bras Epidemiol* 2012;15:790–803.
- [32] Hester M, Ferrari G, Jones S, et al. Occurrence and impact of negative behaviour, including domestic violence and abuse, in men attending UK primary care health clinics: a cross-sectional survey. *BMJ Open* 2015;19:e007141.
- [33] United Nations Development Programme. Human Development Report 2015 Work for Human Development. Available at: http://hdr.undp.org/sites/default/files/2015_human_development_report.pdf (accessed 17 June 2016)
- [34] UNODC Global Study on Homicide. United Nations publication, Sales No. 14.IV.1, 2013.
- [35] Public Health England Adult substance misuse statistics from the National Drug Treatment Monitoring System (NDTMS) 1 April 2014 to 31 March 2015, 2015. Available at: <http://www.nta.nhs.uk/uploads/adult-statistics-from-the-national-drug-treatment-monitoring-system-2014-2015.pdf> (accessed 17 June 2016)
- [36] Ribiero M, Duailibi S, Frajzinger R, et al. The Brazilian 'Cracolândia' open drug scene and the challenge of implementing a comprehensive and effective drug policy. *Addiction* 2016;111:571–3.
- [37] Abdalla RR, Madruga CS, Ribeiro M, Pinsky I, Caetano R, Laranjeira R. Prevalence of cocaine use in Brazil: data from the II Brazilian National Alcohol and Drugs Survey (BNADS). *Addict Behav* 2014;39:297–301.
- [38] Rosenbaum A, Rabenhorst M, Reddy M, et al. A comparison of methods for collecting self-report data on sensitive topics. *Violence Vict* 2006;21:461–71.
- [39] Hester M, Donovan C, Fahmy E. Feminist epistemology and the politics of method—surveying same sex domestic violence. *Int J Soc Res Meth* 2010;13:251–63.
- [40] Donovan C, Hester M. Domestic violence and sexuality—what's love got to do with it? Bristol: Policy Press, 2010.
- [41] Southern D. The voice of consumer's experience in primary health care: development and validation of a measure of informational continuity. Ph.D. Thesis. The University of Melbourne, 2010.
- [42] MacMillan H, Fleming J, Trocme N, et al. Prevalence of child physical and sexual abuse in a community sample: results from the Ontario health supplement. *J Am Acad Med* 1997;278:131–5.
- [43] Fergusson DM, Horwood LJ. Exposure to interparental violence in childhood and psychosocial adjustment in young adulthood. *Child Abuse Negl* 1998;22:339–57.
- [44] Fulu E, Jewkes R, Roselli T, Garcia-Moreno C, UN Multi-country Cross-sectional Study on Men and Violence research team. Prevalence of and factors associated with male perpetration of intimate partner violence: findings from the UN Multi-country Cross-sectional Study on Men and Violence in Asia and the Pacific. *Lancet Glob Health* 2013;1:e187–207.
- [45] Babor TF, Biddle-Higgins JC, Saunders JB, et al. AUDIT: the alcohol use disorders identification test: guidelines for use in primary health care. Geneva, Switzerland: World Health Organization, 2001.
- [46] Spitzer R, Kroenke K, Williams J. Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. Primary care evaluation of mental disorders. Patient health questionnaire. *JAMA* 1999;282:1737–44.
- [47] Hirschfeld R, Williams J, Spitzer R, et al. Development and validation of a screening instrument for bipolar spectrum disorder: the Mood Disorder Questionnaire. *Am J Psychiatry* 2000;157:1873–5.
- [48] Spielberger C. Manual for the State-Trait Anger Expression Inventory-2. Odessa, Florida: US, Psychological Assessment Resources, 1999.
- [49] Rabin R, de Charro F. EQ-5D: a measure of health status from the EuroQol Group. *Ann Med* 2001;33:337–43.
- [50] Blanken P, Hendriks V, Pozzi G, et al. European Addiction Severity Index EuropASI. Guide for training and administering the EuropASI interview. European Commission: COSTA6 Working Group 4, 1994 accessed 17 June 2016 http://www.emcdda.europa.eu/attachements.cfm/att_32557_EN_teuropASI-manual.pdf.
- [51] Pan Y, Jackson R. Ethnic difference in the relationship between acute inflammation and serum ferritin in US adult males. *Epidemiol Infect* 2008;136:421–31.
- [52] Chermack ST, Murray RL, Walton MA, Booth BA, Wryobeck J, Blow FC. Partner aggression among men and women in substance use disorder treatment: correlates of psychological and physical aggression and injury. *Drug Alcohol Depend* 2008;98:35–44.
- [53] Fergusson D, Boden J, Horwood L. Developmental antecedents of interpartner violence in a New Zealand birth cohort. *J Fam Violence* 2008;23:737–57.
- [54] Roberts AL, McLaughlin KA, Conron KJ, Koenen KC. Adulthood stressors, history of childhood adversity, and risk of perpetration of intimate partner violence. *Am J Prev Med* 2011;40:128–38.
- [55] Whitfield CL, Anda RF, Dube SR, Felitti VJ. Violent childhood experiences and the risk of intimate partner violence in adults: assessment in a large health maintenance organization. *J Interpers Violence* 2003;18:166–85.
- [56] Radcliffe P, Flávia Pires Lucas d'Oliveira A, Lea S, et al. Accounting for Intimate Partner Violence perpetration. A cross-cultural comparison of English and Brazilian male substance users' explanations. *Drug Alcohol Rev* (accepted)
- [57] Mair C, Cunradi C, Todd M. ACE and intimate partner violence: testing psychosocial mediational pathways among couples. *Ann Epidemiol* 2012;22:832–9.
- [58] Schwandt ML, Heilig M, Hommer DW, George DT, Ramchandani VA. Childhood trauma exposure and alcohol dependence severity in adulthood: mediation by emotional abuse severity and neuroticism. *Alcohol Clin Exp Res* 2013;37:984–92.
- [59] Slep A, O'Leary S. Parent and partner violence in families with young children: rates, patterns, and connections. *J Consult Clin Psychol* 2005;73:435–44.
- [60] Wolfe DA, Crooks CV, Lee V, McIntyre-Smith A, Jaffe PG. The effects of children's exposure to domestic violence: a meta-analysis and critique. *Clin Child Fam Psychol Rev* 2006;6:171–87.
- [61] Falb KL, McCauley HL, Decker MR, Gupta J, Raj A, Silverman JG. School bullying perpetration and other childhood risk factors as predictors of adult intimate partner violence perpetration. *Arch Pediatr Adolesc Med* 2011;165:890–4.

- [62] Stover C. Fathers for change for substance use and intimate partner violence: initial community pilot. *Fam Process* 2015;54:600–9.
- [63] Kan M, Feinberg M. Can a family-focused, transition-to-parenthood program prevent parent and partner aggression among couples with young children? *Violence Vict* 2014;29:967–80.
- [64] Stith SM, Rosen K, Middleton K, *et al.* The intergenerational transmission of spouse abuse: a meta-analysis. *J Marriage Fam* 2000;62:640–54.
- [65] Brasfield H, Morean M, Febres J, *et al.* Alcohol use, alcohol-related outcome expectancies, and partner aggression among males court-mandated to batterer intervention programs: a brief report. *J Interpers Violence* 2016;31:245–56.
- [66] Birkley E, Eckhardt C. Anger, hostility, internalizing negative emotions, and intimate partner violence perpetration: a meta-analytic review. *Clin Psychol Rev* 2015;37:40–56.
- [67] Sprunger J, Eckhardt C, Parrott D. Anger, problematic alcohol use, and intimate partner violence victimisation and perpetration. *Crim Behav Ment Health* 2015;25:273–86.
- [68] Crane CA, Hawes SW, Mandel DL, Easton CJ. The occurrence of female-to-male partner violence among male intimate partner violence offenders mandated to treatment: a brief research report. *Violence Vict* 2014;6:940–51.
- [69] Bliton C, Wolford-Clevenger C, Zapor H, *et al.* Emotion dysregulation, gender, and intimate partner violence perpetration: an exploratory study in college students. *J Fam Violence* 2015. DOI: 10.1007/s10896-015-9772-0.
- [70] Iverson KM, McLaughlin KA, Adair KC, Monson CM. Anger-related dysregulation as a factor linking childhood physical abuse and interparental violence to intimate partner violence experiences. *Violence Vict* 2014;29:564–78.
- [71] Tsavoussis A, Stawicki SP, Stoicea N, Papadimos TJ. Child-witnessed domestic violence and its adverse effects on brain development: a call for societal self-examination and awareness. *Front Public Health* 2014;2:178.
- [72] Jewkes R. Intimate partner violence: causes and prevention. *Lancet* 2002;359:1423–9.
- [73] Jewkes R, Sikweyiya Y, Morrell R, Dunkle K. The relationship between IPV, rape and HIV amongst South African men: a cross-sectional study. *PLoS One* 2011;6:e24256.
- [74] Townsend L, Jewkes R, Mathews C, *et al.* HIV risk behaviours and their relationship to intimate partner violence (IPV) among men who have multiple female sexual partners in Cape Town, South Africa. *AIDS Behav* 2011;15:132–41.
- [75] Peralta R, Tuttle L, Steele J. At the intersection of interpersonal violence, masculinity, and alcohol use: the experiences of heterosexual male perpetrators of intimate partner violence. *Violence Against Women* 2010;16:387–409.
- [76] Lipsky S, Caetano R, Field CA, Bazargan S. The role of alcohol use and depression in intimate partner violence among black and Hispanic patients in an urban emergency department. *Am J Drug Alcohol Abuse* 2005;31:225–42.
- [77] Elliott D, Bjelajac P, Fallot R, *et al.* Trauma-informed or trauma-denied: principles and implementation of trauma-informed services for women. *J Community Psychol* 2005;33:461–77.
- [78] Stuart G, O'Farrell T, Temple J. Review of the association between treatment for substance misuse and reductions in intimate partner violence. *Subst Use Misuse* 2009;44:1298–317.
- [79] Easton CJ, Mandel DL, Hunkele KA, Nich C, Rounsaville BJ, Carroll KM. A cognitive behavioral therapy for alcohol-dependent domestic violence offenders: an integrated substance abuse-domestic violence treatment approach (SADV). *Am J Addict* 2007;16:24–31.
- [80] Kraanen F, Vedel E, Scholing A, *et al.* The comparative effectiveness of Integrated treatment for Substance abuse and Partner violence (IStoP) and substance abuse treatment alone: a randomised control trial. *BMC Psychiatry* 2013;13:189.
- [81] Stuart G, Shorey R, Moore T, *et al.* Randomized clinical trial examining the incremental efficacy of a 90-minute motivational alcohol intervention as an adjunct to standard batterer intervention for men. *Addiction* 2012;108:1376–84.
- [82] Chermack S, Bonar E, Ilgen M, *et al.* Developing an integrated violence prevention for men and women in treatment for substance use disorders. *J Interpers Violence* 2015 doi: 10.1177/0886260515586369 [Epub ahead of print].
- [83] Timko C, Valenstein H, Lin PY, Moos RH, Stuart GL, Cronkite RC. Addressing substance abuse and violence in substance use disorder treatment and batterer intervention programs. *Subst Abuse Treat Prev Policy* 2012;7:37.
- [84] Eckhardt C, Samper R, Murphy C. Anger disturbances among perpetrators of intimate partner violence: clinical characteristics and outcomes of court-mandated treatment. *J Interpers Violence* 2008;23:1600–17.
- [85] Meneghel SN, Bairros F, Mueller B, Monteiro D, Oliveira LP, Collaziol ME. Critical trajectories of female victims of gender violence: discourse analysis of women and staff professionals in Porto Alegre, Rio Grande do Sul State, Brazil. *Cad Saude Publica* 2011;27:743–52.
- [86] Respect Commissioning Guidance. 2013. Available at: <http://www.senedd.assembly.wales/documents/s30732/GBV%2090b%20-%20Respect.pdf> (accessed 17 June 2016)
- [87] Torrens M, Rossi P, Martinez-Riera R, *et al.* Psychiatric comorbidity and substance use disorders treatment in parallel systems or in one integrated system? *Subst Use Misuse* 2012;47:1005–14.
- [88] Gilchrist G, Radcliffe P, McMurrin M, Gilchrist L. The need for evidence-based responses to address intimate partner violence perpetration among male substance misusers. *Crim Behav Ment Health* 2015;25:233–8.
- [89] Davis RE, Couper MP, Janz NK, Caldwell CH, Resnicow K. Interviewer effects in public health surveys. *Health Educ Res* 2010;25:14–26.
- [90] Crime Survey for England and Wales. Focus on: violent crime and sexual offences, 2013/14. Office for National Statistics, 2014.