

# Intimate partner violence before and during the COVID-19 lockdown: findings from a cross-sectional study in Singapore

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## ABSTRACT

**Background.** The coronavirus diseases 2019 (COVID-19) pandemic resulted in lockdowns worldwide, with reports suggesting a concomitant increase in the incidence of intimate partner violence (IPV). This study was part of the International Sexual and Reproductive Health (I-SHARE) Consortium, examining IPV and its correlates before and during lockdown in April 2020. **Methods.** This cross-sectional observational study, conducted online during August–September 2020, recruited 259 participants from Singapore who reported having a steady partner. Alongside socio-demographic data before and during COVID-19 lockdown, the respondents self-reported their encounters with partner violence. Partner violence was measured using an adapted six-item version of the WHO IPV scale. **Results.** Data revealed an incidence of 17.2%, 25.0%, 16.7%, 17.6%, 17.5% and 18.5% of restriction of contact with others, verbal abuse, restriction of access to finances, physical violence, pressured sex and forced sex, respectively, before COVID-19 lockdown. During lockdown, incidences of these forms of violence were 17.4%, 19.8%, 14.7%, 13.5%, 14.7% and 15.2%, respectively. Multivariable analyses showed that being younger, being non-heterosexual, and having more children and adolescents at home were significantly associated with partner violence both before and during lockdown. Analyses also revealed that being of Chinese ethnicity and having a monthly income above SGD3000 were not significantly correlated to partner violence before lockdown but emerged as significant during lockdown. **Conclusions.** Some sociodemographic factors were associated with violence regardless of lockdown, while other factors were exacerbated by lockdown. Interventions should consider these key correlates of partner-based violence, ensuring adequate and appropriate support for vulnerable populations both within and outside of lockdown contexts.

**Keywords:** Asia, COVID-19, domestic violence, intimate partner violence, lockdown, relationships, sexual violence, Singapore.

## Introduction

The coronavirus disease 2019 (COVID-19) pandemic has profoundly impacted health and wellbeing. With the World Health Organization declaring COVID-19 a pandemic in March 2020, countries worldwide implemented movement control measures to different degrees of stringency. In the wake of COVID-19, a 'shadow pandemic' remains – intimate partner violence (IPV), particularly affecting women and girls.<sup>1</sup> Most literature on IPV victimisation centres women since a greater proportion of women have long been reported to experience IPV; however, men and gender-diverse individuals also notably experience IPV.<sup>2</sup>

IPV refers to any behaviour in an intimate relationship causing physical, psychological, or sexual harm; it includes acts of physical or sexual violence, emotional or psychological abuse, and controlling behaviours.<sup>3</sup> IPV has long been recognised as a health problem of international concern<sup>4</sup> due to its detrimental consequences to physical and psychological health.<sup>5,6</sup> Additionally, IPV victimisation has been associated with increased prevalence of sexually transmitted infections in young women; IPV victimisation and being in reciprocally violent relationships have also been associated with not reporting condom use at last vaginal intercourse.<sup>7</sup>

Shortly into lockdowns in 2020, countries such as Brazil, India and Germany reported an increase in calls to domestic violence crisis helplines, suggesting an increase in IPV alongside COVID-19.<sup>8</sup> However, when examining data from 10 717 respondents in 16 countries during COVID-19 lockdown measures, the International Sexual Health And REproductive Health Consortium (I-SHARE) found a decrease in the incidence of IPV during the pandemic, although IPV remained nonetheless common.<sup>9</sup>

The pathways linking times of crisis and IPV are complex; they include increased economic insecurity and stress, increased social isolation, and altered living arrangements, which increase household stress, exposure to exploitative relationships, and the amount of power that an aggressor may hold over a victim.<sup>10–12</sup>

Singapore saw worrying trends regarding IPV in the wake of the pandemic, with the country's Association of Women for Action and Research (AWARE) noting a 33% increase in calls to its women's helpline in February 2020 compared to the previous year, plus a doubling of family violence-related referrals to social workers.<sup>13</sup> Singapore experienced a significant nationwide lockdown, termed a 'circuit breaker', from 7 April to 1 June 2020. The 'circuit breaker' entailed closure of all non-essential workplaces and strict movement controls; social gatherings were disallowed, with individuals only permitted to interact with members within their household.<sup>14</sup>

There lacks research on partner violence in Singapore, both generally and during the pandemic. The objectives of this study are thus twofold: (1) to characterise the levels of IPV in Singapore, before and during the 2020 'circuit breaker'; (2) to ascertain key correlates of IPV before and during the 'circuit breaker', characterising the factors that are associated with IPV regardless of lockdown measures, and the factors whose impacts on violence might be exacerbated by lockdown.

## Materials and methods

### Study design and participants

This was an observational, cross-sectional study, conducted via an online survey from August to September 2020. This study is part of a global consortium of online surveys concerning the impact of COVID-19 on sexual-reproductive health: I-SHARE.<sup>15</sup> Participants of this study were required to report being at least 18 years old, living in Singapore, and being a Singapore citizen or permanent resident at the point of participation.

### Data collection

Ethics approval was obtained from the National University of Singapore Institutional Review Board (NUS-IRB Reference Code: NUS-IRB-2020–58). To recruit participants, an online

poster in English was disseminated via advertisements on Facebook and Instagram. The advertisements ran from 20 August to 25 September 2020 and were targeted at all individuals aged 18 years and above residing in Singapore. The headline of the poster read: 'Survey on sexual and reproductive health in times of COVID-19 – Get a SGD10.00 GrabRide [transportation] Voucher for your participation'.

Upon clicking the enrolment link attached with the advertisements, participants were led to a page that displayed a participant information sheet, downloadable for future reference. Informed consent was provided by participants clicking on a button to acknowledge reading the participant information sheet and agreeing to participate in the survey. Participants were assured of anonymity and that they could withdraw anytime from the study without penalty.

On completing the survey, participants could provide an optional email address, to which an SGD10.00 (approximately USD7.50) transport voucher would have been sent as reimbursement. Each survey took an average of 15 min to complete.

### Variable measures

In this section, we report how variables were originally collected, and how they were recoded for multivariable analysis considering small subgroup sizes when stratifying responses by participants' encounters with different forms of IPV. Broadly, the variables analysed included both demographics and the variables of interest; i.e. the IPV variables.

With regards to socio-demographic variables, age was collected and analysed as a continuous variable; sex assigned at birth was collected and analysed as categorical ('male' vs 'female'). Sexual orientation was collected as a categorical variable, which allowed participants to select from 'asexual', 'bisexual', 'gay', 'heterosexual', 'lesbian', 'pansexual', 'queer', 'questioning or unsure' or 'other'. For analysis, sexual orientation was recoded as 'heterosexual' and 'non-heterosexual' as most participants were heterosexual. Ethnicity was collected open-ended based on participants' listed race on their state-issued identity cards, then recoded into 'Chinese' and 'non-Chinese' as Chinese individuals make up most of the national population and that of our sample. Religion was collected categorically, with participants choosing from the options: 'no religion', 'Buddhism', 'Islam', 'Hinduism', 'Christianity', 'Taoism', 'Sikhism', 'Atheist', or 'other'. This variable was subsequently recoded as '(with) religion' and 'no religion'.

Educational attainment was collected categorically based on various qualifications in the Singapore education system. Subsequently, educational attainment was recoded into 'above degree' attainment and 'below degree' attainment. Gross personal monthly income was declared by participants through options in increments of SGD1000, then recoded as 'above SGD3000' and 'below SGD3000' given that in 2020, the median monthly household income from work per household member in Singapore was SGD2886.<sup>16</sup>

Regarding employment, respondents could choose from the options 'full time employee (>30 h/week)', 'part time employee (<30 h/week)', 'self-employed/business owner', 'unemployed', 'informal/piecemeal work', 'retired/pensioned', 'student', or 'other'; this variable was recoded into 'full time employment' and 'part-time or no employment'. The impact of the 'circuit breaker' on employment was also assessed, with respondents being able to declare changes in their working arrangements. This was recoded into a binary yes or no variable, depending on whether participants did 'work from home'. Housing data was collected based on the Singapore Housing Development Board (HDB) public housing flat size categories, then recoded into 'public housing' vs 'private housing'. Living arrangements before and during the 'circuit breaker' were also asked, with participants reporting the number of people living in their household who were aged 0–9 years, aged 9–18 years, or above 18 years. This age information was recoded into a continuous variable, which aggregated the number of young people (i.e. individuals aged 18 years and under) living with participants.

Participants described their relationship status by choosing from 10 options, with data regarding relationship status being recoded into being single vs in a relationship with a steady partner. Only individuals with a steady partner were prompted by the survey algorithm to declare if they were cohabiting with their steady partner (recoded as a yes/no variable, 'cohabit'), and to respond to the questions regarding IPV.

Six areas of IPV were examined in this survey, in accordance with an adapted six-item version of the WHO IPV scale.<sup>17</sup> Participants responded whether, before and during the 'circuit breaker', they had experienced each form of violence once, multiple times, or not at all. Specifically, they were asked: '[in the 3 months before 'circuit breaker'/during 'circuit breaker'], has your partner...', '... tried to restrict (online or phone) contact with your family?', '... insulted you or made you feel bad about yourself?', '... not provided money to run the house or look after children, but has money for other things?', '... slapped, pushed, hit, kicked or choked you or thrown something at you that could hurt you?', '... physically forced you to have sexual intercourse when you did not want to?' and '... made you have sexual intercourse when you did not want to?' Responses were recoded into 'yes' and 'no', for each form of violence, before and during 'circuit breaker' measures. In addition to encounters with IPV, participants were also asked about whether they had confided in anyone regarding their IPV encounters, or officially reported them to authorities.

### Statistical analysis

Statistical analysis was performed on STATA ver. 17 (College Station, TX). Descriptive statistics were utilised to examine

trends in socio-demographics, which were of epidemiological significance and/or associated with changes brought about by the 'circuit breaker'. Multivariable Poisson regression models with robust sandwich variances were used to examine the adjusted prevalence ratios (aPR) of different socio-demographic factors with respect to each IPV variable, 3 months before and during the 'circuit breaker'. Multivariate analysis for the incidence of IPV 3 months before 'circuit breaker' included age, sex assigned at birth, sexual orientation, ethnicity, religion, housing type, income level, type of employment, educational attainment, number of young people in the household, and whether the participant was cohabiting with their steady partner. Multivariate analysis for the incidence of IPV during the 'circuit breaker' included these same demographic variables, except for the type of employment whereby instead of examining whether the participant was working full-time, the variable in question ('work from home') examined whether the participant was in a work-from-home arrangement. Statistical significance was set to  $P < 0.05$ .

## Results

### Survey participation metrics

A total of 14 026 impressions and 427 clicks were obtained through the survey advertising campaign, indicating a 3.04% click-through rate. Clicks obtained via word-of-mouth and sharing of posts could not be determined. Of the 262 participants eligible to answer questions about IPV, 259 completed the survey; suggesting a 99.8% survey completion rate.

### Socio-demographics of the sample

A total of 259 respondents were in a relationship with a steady partner and thus eligible to answer questions regarding IPV. Of these partnered respondents, the median age was 29 years. Participants were largely heterosexual ( $n = 151$ , 59.2%), Chinese ( $n = 219$ , 86.6%), religious ( $n = 181$ , 71.5%), living in public housing ( $n = 188$ , 73.4%), with degree-and-above educational attainment ( $n = 148$ , 57.6%), working full-time ( $n = 173$ , 66.8%) and not working from home during the 'circuit breaker' ( $n = 151$ , 58.3%). The median number of young people residing with these respondents before lockdown was 0 (interquartile range (IQR): 0, 2), and that during lockdown was 0 (IQR: 0, 2).

The sample revealed that 17.2% ( $n = 44/256$ ), 25.0% ( $n = 64/256$ ), 16.7% ( $n = 43/257$ ), 17.6% ( $n = 45/256$ ), 17.5% ( $n = 45/257$ ) and 18.5% ( $n = 47/254$ ) of respondents reported restriction of contact with others, verbal abuse, restriction of access to finances, physical violence, pressured sex and forced sex, respectively, before COVID-19 lockdown. During lockdown, self-reports of

**Table 1.** Socio-demographic attributes and IPV victimisation among individuals with a steady partner.

Demographic variables (n = 259)	n	%	Housing type (n = 256)	n	%
Age (years) <sup>A</sup> (n = 259)	29	23, 39			
Sex assigned at birth (n = 259)			Hostel	1	0.4
Male	148	57.1	HDB <sup>C</sup> Housing 2-Room	4	1.6
Female	111	42.9	HDB Housing 3-Room	31	12.1
Sexual orientation (n = 255)			HDB Housing 4-Room	77	30.1
Heterosexual	151	59.2	HDB Housing 5-Room	57	22.3
Asexual	37	14.5	Executive HDB flat	18	7.0
Bisexual	23	9.0	Condominium	51	19.9
Queer/questioning	14	5.5	Terrace	17	6.6
Gay/lesbian	16	6.3	Income (n = 256)		
Pansexual	14	5.5	No income	39	15.2
Race (n = 253)			Less than 1000	12	4.7
Chinese	219	86.6	1000 to 1999	17	6.6
Malay	15	5.9	2000 to 2999	33	12.9
Indian	13	5.1	3000 to 3999	43	16.8
Others <sup>B</sup>	6	2.4	4000 to 4999	26	10.2
Religion (n = 253)			5000 to 5999	40	15.6
No religion	72	28.5	6000 to 6999	15	5.9
Buddhism	51	20.2	7000 to 7999	7	2.7
Christianity	61	24.1	8000 to 8999	7	2.7
Taoism	24	9.5	9000 to 9999	2	0.8
Islam	10	4.0	10 000 and over	15	5.9
Atheism	13	5.1			
Hinduism	7	2.8			
Sikhism	6	2.4			
Others (e.g. Agnostic, Baha'i faith)	9	3.6			
Educational attainment (n = 257)					
Secondary school and below	37	14.4			
Tertiary level	72	28.0			
Degree and above	148	57.6			
Working arrangements (n = 259)					
Not working from home	151	58.3			
Working from home	108	41.7			
Type of employment (n = 259)					
Full-time employment	173	66.8			
Part-time employment and piecemeal work	37	14.3			
Students, retired and unemployed	49	18.9			
Number of young people in the household <sup>D</sup> (n = 259)					
Three months before 'circuit breaker'	0	0, 2			
During 'circuit breaker'	0	0, 2			
Self-reported intimate partner violence victimisation					
Restricted contact before circuit breaker (n = 256)			Physical violence before circuit breaker (n = 256)		
No	212	82.8	No	211	82.4
Yes	44	17.2	Yes	45	17.6

(Continued on next page)

**Table 1.** (Continued).

Demographic variables ( <i>n</i> = 259)	<i>n</i>	%	Housing type ( <i>n</i> = 256)	<i>n</i>	%
Restricted contact after circuit breaker ( <i>n</i> = 230)			Physical violence after circuit breaker ( <i>n</i> = 230)		
No	190	82.6	No	199	86.5
Yes	44	17.4	Yes	31	13.5
Insulted before circuit breaker ( <i>n</i> = 256)			Pressured intercourse before circuit breaker ( <i>n</i> = 257)		
No	192	75.0	No	212	82.5
Yes	64	25.0	Yes	45	17.5
Insulted after circuit breaker ( <i>n</i> = 232)			Pressured intercourse after circuit breaker ( <i>n</i> = 232)		
No	186	80.2	No	198	85.3
Yes	46	19.8	Yes	34	14.7
Finances withheld before circuit breaker ( <i>n</i> = 257)			Forced intercourse before circuit breaker ( <i>n</i> = 254)		
No	214	83.3	No	207	81.5
Yes	43	16.7	Yes	47	18.5
Finances withheld after circuit breaker ( <i>n</i> = 232)			Forced intercourse after circuit breaker ( <i>n</i> = 230)		
No	198	85.3	No	195	84.8
Yes	34	14.7	Yes	35	15.2

<sup>A</sup>Median with lower and upper quartiles.

<sup>B</sup>Singapore identity cards reflect 'Others' for individuals whose race do not fall under 'Chinese', 'Malay', or 'Indian'.

<sup>C</sup>HDB flats are Singapore government-owned, public housing flats.

<sup>D</sup>Median with lower and upper quartiles.

HDB, housing development board; SGD, Singapore Dollar.

these forms of violence were 17.4% (*n* = 44/234), 19.8% (*n* = 46/232), 14.7% (*n* = 34/232), 13.5% (*n* = 31/230), 14.7% (*n* = 34/232) and 15.2% (*n* = 35/230), respectively (Table 1).

### Correlates of IPV before and during lockdown

Both before and during lockdown, being non-heterosexual and having more children in the household emerged as statistically significant predictors of IPV victimisation across all measured IPV outcomes. Being of younger age was a statistically significant predictor of IPV victimisation in terms of restriction of contact with others, restriction of access to finances, physical violence, pressured sex and forced sex (Tables 2 and 3).

In contrast, certain factors, which were not statistically significant before 'circuit breaker', emerged as statistically significant during the 'circuit breaker': these factors being Chinese (associated with experiencing restriction of contact, withholding of finances and physical violence) and earning an income above SGD3000 (associated with experiencing insults and physical violence).

Being religious was significantly associated with experiencing physical violence and pressured sexual intercourse in the 3 months before 'circuit breaker' ( $P < 0.05$ ), and with experiencing restriction of contact both in the 3 months before and during 'circuit breaker' ( $P < 0.05$ ).

In terms of help-seeking, 34.2% of participants (*n* = 25) who had experienced IPV in the 3 months before 'circuit

breaker' did not tell anyone about it, compared with 42.0% (*n* = 34) of participants during 'circuit breaker' (Fig. 1). Concerning IPV before 'circuit breaker', 24.7% (*n* = 18) of participants confided in a friend, and 26.0% (*n* = 19) in a relative. As for IPV during 'circuit breaker', 23.5% (*n* = 19) of participants confided in a friend and 21.0% (*n* = 17) in a relative. Compared to the 31.08% of participants (*n* = 23) who reported their encounters of IPV in the 3 months before 'circuit breaker' to authorities, 41.7% (*n* = 35) of participants did so during 'circuit breaker'.

### Discussion

Our findings suggest that there are factors associated with various forms of IPV regardless of lockdown measures, and factors associated with IPV during lockdown specifically. The former factors consist of being younger, being non-heterosexual and having more children in the household. The latter factors consist of being of Chinese ethnicity and earning a monthly income above SGD3000.

These findings largely correspond with literature surrounding IPV, which has highlighted younger age,<sup>18</sup> being LGBTQ+,<sup>19</sup> prevailing situational stressors<sup>20</sup> and young children in the home<sup>2</sup> as risk factors for IPV victimisation. The stresses brought about by the pandemic only serve to exacerbate these existing vulnerabilities, whether they operate at the individual level or are externally inflicted.<sup>21</sup>

**Table 2.** Socio-demographic correlates of IPV before and during lockdown: restriction of contact, insulting, withholding of finances.

	Restriction of contact				Insulting				Withholding of finances			
	Before		During		Before		During		Before		During	
	aPR	95% CI	aPR	95% CI	aPR	95% CI	aPR	95% CI	aPR	95% CI	aPR	95% CI
Female sex (ref = male sex assigned at birth)	1.96	(0.79, 4.86)	0.79	(0.37, 1.70)	1.16	(0.64, 2.10)	1.03	(0.58, 1.83)	1.04	(0.41, 2.65)	1.08	(0.51, 2.26)
Age	<b>0.95*</b>	(0.91, 0.99)	<b>0.93**</b>	(0.89, 0.97)	0.98	(0.95, 1.00)	0.96	(0.92, 1.00)	<b>0.96*</b>	(0.92, 1.00)	<b>0.93**</b>	(0.89, 0.98)
Non-Chinese (ref = Chinese ethnicity)	0.65	(0.30, 1.37)	<b>0.00***</b>	(0.00, 0.00)	0.66	(0.36, 1.22)	0.55	(0.24, 1.25)	0.66	(0.27, 1.59)	<b>0.00***</b>	(0.00, 0.00)
Non-heterosexual (ref = Heterosexual)	<b>29.12**</b>	(4.26, 198.98)	<b>5.36**</b>	(1.81, 15.88)	<b>2.18*</b>	(1.14, 4.19)	<b>3.01**</b>	(1.55, 5.85)	<b>11.12**</b>	(2.34, 52.80)	<b>5.83e<sup>7</sup>***</b>	(3.49e <sup>7</sup> , 9.75e <sup>7</sup> )
No religion (ref = Having a religion)	<b>0.39*</b>	(0.16, 0.96)	<b>0.42*</b>	(0.18, 0.96)	0.52	(0.26, 1.04)	0.64	(0.31, 1.35)	0.40	(0.13, 1.22)	0.61	(0.23, 1.62)
Degree (ref = below degree education)	1.36	(0.69, 2.68)	0.62	(0.30, 1.25)	0.66	(0.39, 1.13)	0.62	(0.34, 1.12)	0.58	(0.23, 1.44)	0.78	(0.36, 1.67)
Above 3000 (ref = income below SGD3000)	1.08	(0.59, 1.97)	1.38	(0.62, 3.09)	1.02	(0.62, 1.68)	<b>2.67**</b>	(1.52, 4.68)	1.27	(0.66, 2.45)	1.56	(0.66, 3.72)
Private housing (ref = public housing)	0.41	(0.15, 1.12)	0.88	(0.31, 2.48)	0.93	(0.47, 1.83)	0.85	(0.42, 1.74)	0.88	(0.34, 2.22)	1.16	(0.42, 3.26)
Non-full time employment (ref = full-time employment)	1.46	(0.67, 3.18)			0.93	(0.52, 1.67)			0.87	(0.32, 2.21)		
Work from home (ref = working on-site)			0.68	(0.32, 1.43)			0.54	(0.28, 1.05)			0.60	(0.26, 1.38)
Number of youths aged under 18 years in the home before lockdown	<b>1.32***</b>	(1.19, 1.47)			<b>1.25***</b>	(1.13, 1.39)			<b>1.29***</b>	(1.15, 1.45)		
Number of youths aged under 18 years in the home before lockdown			<b>1.35***</b>	(1.22, 1.50)			<b>1.32***</b>	(1.20, 1.45)			<b>1.35***</b>	(1.21, 1.50)
Cohabiting	1.10	(0.51, 2.38)	1.10	(0.50, 2.42)	0.74	(0.42, 1.31)	0.92	(0.48, 1.78)	0.90	(0.38, 2.09)	0.65	(0.21, 1.97)

Statistically significant results are bolded; \* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ .

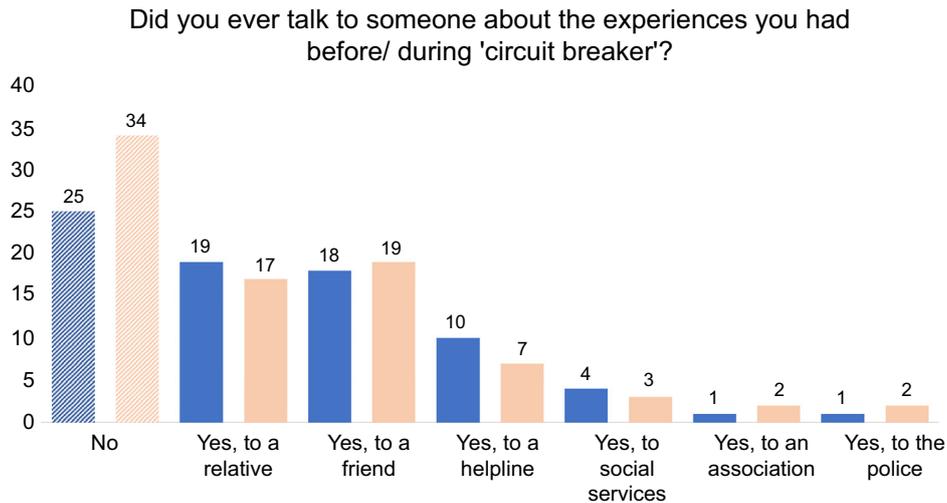
CI, confidence interval; PR, prevalence ratio, aPR, adjusted prevalence ratio; SGD, Singapore Dollar.

**Table 3.** Socio-demographic correlates of IPV before and during lockdown: physical violence, pressured sexual intercourse, forced sexual intercourse.

	Physical violence				Pressured sexual intercourse				Forced sexual intercourse			
	Before		After		Before		After		Before		After	
	aPR	95% CI	aPR	95% CI	aPR	95% CI	aPR	95% CI	aPR	95% CI	aPR	95% CI
Female sex (ref = male sex assigned at birth)	0.78	(0.34, 1.79)	1.27	(0.53, 3.03)	1.01	(0.40, 2.52)	1.01	(0.46, 2.23)	0.66	(0.30, 1.50)	0.63	(0.26, 1.49)
Age	<b>0.96*</b>	(0.93, 0.99)	<b>0.90**</b>	(0.84, 0.97)	<b>0.93***</b>	(0.90, 0.97)	<b>0.92**</b>	(0.87, 0.97)	<b>0.94*</b>	(0.90, 0.99)	<b>0.91*</b>	(0.85, 0.98)
Non-Chinese (ref = Chinese ethnicity)	0.66	(0.34, 1.29)	<b>0.21***</b>	(0.09, 0.46)	0.89	(0.48, 1.66)	0.49	(0.18, 1.36)	0.64	(0.28, 1.46)	0.27	(0.03, 2.14)
Non-heterosexual (ref = Heterosexual)	<b>22.97**</b>	(3.02, 174.93)	<b>1.32e<sup>b</sup>***</b>	(7.62e <sup>7</sup> , 2.30e <sup>8</sup> )	<b>10.11**</b>	(2.35, 43.48)	<b>15.04**</b>	(2.11, 107.35)	<b>7.00**</b>	(2.02, 24.28)	<b>7.40*</b>	(1.63, 33.67)
No religion (ref = Having a religion)	<b>0.29*</b>	(0.10, 0.86)	0.66	(0.30, 1.47)	<b>0.31*</b>	(0.12, 0.80)	0.61	(0.25, 1.49)	0.47	(0.18, 1.19)	0.53	(0.17, 1.67)
Degree (ref = below degree education)	0.55	(0.23, 1.30)	0.51	(0.24, 1.08)	0.71	(0.31, 1.63)	0.52	(0.26, 1.06)	0.60	(0.28, 1.29)	0.56	(0.25, 1.26)
Above 3000 (ref = income below SGD3000)	0.84	(0.48, 1.49)	<b>2.77*</b>	(1.21, 6.32)	0.83	(0.47, 1.45)	1.35	(0.72, 2.52)	0.96	(0.53, 1.76)	1.87	(0.73, 4.79)
Private housing (ref = public housing)	0.46	(0.14, 1.48)	0.61	(0.14, 2.60)	1.04	(0.40, 2.75)	1.11	(0.36, 3.38)	0.41	(0.11, 1.52)	0.79	(0.22, 2.81)
Non-full time employment (ref = full-time employment)	0.90	(0.38, 2.13)			0.73	(0.31, 1.69)			0.85	(0.38, 1.86)		
Work from home (ref = working on-site)			0.38	(0.13, 1.07)			0.66	(0.32, 1.36)			0.60	(0.25, 1.49)
Number of youths aged under 18 years in the home before lockdown	<b>1.32***</b>	(1.18, 1.49)			<b>1.42***</b>	(1.27, 1.58)			<b>1.40***</b>	(1.24, 1.59)		
Number of youths aged under 18 years in the home before lockdown			<b>1.44***</b>	(1.24, 1.68)			<b>1.47***</b>	(1.30, 1.66)			<b>1.46***</b>	(1.23, 1.74)
Cohabiting	0.99	(0.44, 2.24)	1.07	(0.32, 3.64)	0.71	(0.28, 1.81)	0.40	(0.10, 1.68)	1.00	(0.42, 2.35)	0.90	(0.30, 2.69)

Statistically significant results are bolded; \* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ .

CI, confidence interval; PR, prevalence ratio, aPR, adjusted prevalence ratio; SGD, Singapore Dollar.



**Fig. 1.** Help-seeking behaviour of participants who had experienced IPV in the 3 months before the 'circuit breaker', as well as the help-seeking behaviour of participants who experienced IPV during the 'circuit breaker'. Among participants who had experienced IPV in the 3 months before the 'circuit breaker', 34.2% ( $n = 25$ ) did not tell anyone about it. Among participants who had experienced IPV during the 'circuit breaker', 42.0% ( $n = 34$ ) of participants did not tell anyone about it.

Interestingly, sex assigned at birth was not a significant predictor of any forms of IPV, neither before nor during lockdown. Women are understandably well-recognised to be more vulnerable to IPV, but our data highlights that others also experience forms of IPV, as is being increasingly studied.<sup>22</sup> That Chinese ethnicity (the majority ethnicity in Singapore) and a monthly income of >SGD3000 emerged as risk factors for IPV victimisation during lockdown is surprising given that other minority groups (e.g. sexual and gender minorities) have faced greater victimisation in this pandemic. Data from Singapore show that individuals of Chinese race/ethnicity tend to have a higher socio-economic status compared to non-Chinese,<sup>23</sup> furthermore, those of higher socio-economic status tend to be involved in white-collar jobs that have largely shifted to remote working arrangements.<sup>24</sup> Other studies have found that remote working arrangements have been associated with IPV;<sup>25</sup> this relationship could have accounted for this association. Further research is thus warranted on the link between socio-economic status and IPV.

Beyond consistency with the literature, these findings are of epidemiological significance in shedding light on vulnerable groups that may need additional intervention, whether they be preventive or supportive, while bearing in mind the context of the pandemic.<sup>26</sup> The pandemic has indeed increased vulnerability to IPV through various potentially co-existing mechanisms; for instance, movement control orders increase the time together between victim and perpetrator, and can be abused as a reason restrict a victim's movements; financial pressures from the pandemic

not only increase perpetrator stress, but also victims' dependence and inability to leave an abusive partner.<sup>10</sup>

This study demonstrates an overall decrease in reported IPV during the 'circuit breaker' compared to the 3 months before, in keeping with other reports suggesting a global decrease in IPV during COVID-19 lockdowns.<sup>9</sup> Despite this decrease, the rates of IPV both before and during lockdown measures cannot be ignored. Prevention and amelioration of IPV are especially important considering the health associations of IPV victimisation such as sexual risk-taking and sexually transmitted infections,<sup>7</sup> substance use<sup>27</sup> and mental and physical health sequelae.<sup>5</sup>

A key strength of this paper is that it complements the increasing attention to IPV in Singapore. In 2020, the Ministry of Social and Family Development launched a 24-h hotline for domestic violence,<sup>28</sup> being the first state-sanctioned hotline for IPV victims as other pre-existing hotlines were run by civil society organisations. Additionally, this study considers multiple key correlates of IPV victimisation simultaneously including individual factors (e.g. age, sexual orientation), interpersonal factors (e.g. number of young people in the household) as well as factors with external influences (e.g. working arrangements).

This study is not without limitations. Foremost, the demographic variables associated with IPV remain only correlates; this study has not ascertained directionality of the relationship between IPV and these demographics. Statistically, certain demographic correlates of IPV (e.g. sexual orientation) had very small-sized subgroups, resulting in exaggerated adjusted prevalence ratios in the multivariate Poisson analysis. These prevalence ratios should hence not be

taken at face value. That said, these findings are deliberately presented as they are because the epidemiological significance of these demographic correlates (e.g. sexual orientation) outweighs discounting them from the analysis in the name of statistical robustness. Another key limitation of this study is that the IPV measures are each analysed separately, without examining for co-occurrence of multiple forms of IPV within the same individuals. Lastly, it should be noted that IPV is explored in this study via self-reported data; actual incidences of IPV may not be accurately concluded from this study. This exploratory study, however, sets the groundwork for future efforts to investigate nuances and risk factors for multiple-IPV victimisation.

We conclude with several recommendations.

- (1) This study highlights some preliminary populations to whom IPV-related support can be tailored, both within and outside the context of lockdown. For instance, tailored outreach regarding IPV to LGBTQ+ youth may be warranted; support should also be extended to families with many young people in the home.
- (2) Support and protocols from authorities can be more trauma-informed and victim-centric. Indeed, as noted elsewhere internationally,<sup>29</sup> the proportion of individuals in our sample who reported IPV to the authorities was higher during than before lockdown. Still, seeing that more than half of IPV victims did not report to their authorities, avenues for reporting can be more approachable and accessible.
- (3) While enhancing support from authorities, other stakeholders, such as healthcare workers, can be equipped to support IPV victims too. The American College of Obstetricians and Gynecologists has long recommended universal routine IPV screening of women by physicians.<sup>30</sup> With this pandemic, calls have been made for healthcare practitioners to identify and support patients with IPV, especially given the availability of resources to develop competency in the healthcare workforce.<sup>31</sup> As health care remains an ever-essential service even amid the pandemic, healthcare providers can uniquely identify and support victims of IPV who may be otherwise poorly reached and they should be equipped to do so.

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**Data availability.** The data that support this study will be shared upon reasonable request to the corresponding author.

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