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Preprint · November 2020

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## Research article

## Prevalence and associated factors of intimate partner violence (IPV) against women in Bangladesh amid COVID-19 pandemic

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## ARTICLE INFO

## Keywords:

COVID-19  
Economic downturns  
Emotional violence  
Physical violence  
Sexual violence  
Bangladesh

## ABSTRACT

**Background:** Intimate Partner Violence (IPV) is a serious violation of women's human rights and a dominant chronic global public health problem. Although it is suspected that epidemic-induced economic downturns have fueled the IPV, enough empirical literature are not available to make a consensus. Against this backdrop, the present study has attempted to explore the prevalence and associated factors of IPV amid the COVID-19 pandemic.

**Methods:** The study has included Bangladesh as the study area and collected data from married women who lived with her intimate partner. Total of 605 women were reached and 84.30% (510) women, aged 16–45 with mean age 30.12 ( $\pm 6.27$ ) years, provided their consent and required information. The study has employed the translated version of WHO multi-country study tools to screen the IPV.

**Results:** This cross-sectional study has found the prevalence of IPV about 45.29%, where 44.12% are emotionally abused, 15.29% physically, 10.59% sexually, and 19.22% are abused either physically or sexually. The study has found that types of marriage, area of residence, women's employment status, husband's age and level of education, family income status, and pandemic induced economic downturns were the associated factors of intimate partner violence amid the pandemic.

**Limitations:** Self-reported cross-sectional study has some methodological limitations, and the present study is not free from them.

**Conclusions:** The study contributes to the existing literature by highlighting the associated factors of IPV amid the pandemic, which will help to make preventive policy.

## 1. Introduction

The global crisis COVID-19 pandemic has drastically altered the people's life all over the world by affecting physically, mentally, financially, and socially. At the beginning, it offered two choices to the people; (i) either stay at home, and maintain physical distance with safety guidelines to stay safe or (ii) being infected. As maintaining physical distance with staying at home was an effective policy to prevent the spread of the virus, initially most of the governments imposed restrictions on the mobility of the people. But, it's an irony of fate that the prevention strategy of one pandemic bring off another shadow pandemic, violence against women (VAW).

VAW is a serious violation of women's human rights and a dominant chronic global public health, sociological, and criminological problem. According to the World Health Organization (WHO), worldwide 1 of every 3 women had experienced violence either physically or sexually in

their life time (WHO, 2017). Besides, WHO multi-country study on domestic violence, where data of 24,097 women (aged 15–49 years) from 15 sites of 10 countries were analyzed, reported that the prevalence of lifetime physical or sexual violence ranged from 15 to 71% (Garcia-Moreno et al., 2006). Moreover, the study also reported that the prevalence of past year physical or sexual violence was raging from 4 to 54% (Garcia-Moreno et al., 2006). Intimate partner violence against women is a dominant predictor of women's ill-health (both psychological and physical health) around the world, and a significant contributor of declining quality of life.

The COVID-19 pandemic has fueled up this social crime (Mahdawi, 2020; United Nations Population Fund, 2020; WHO, 2020). According to WHO, domestic violence (DV) related hotline help calls increased up to 10–50% in some countries amid the pandemic (WHO, 2020). More specifically, DV related hotline help calls were increased 40–50% in Brazil, 48% in Peru, 25% in UK, 30% in Cyprus, 30% in France, 30–50%

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in Alberta (Canada), and 3 times in Hubei province (China) (WHO, 2020; Bradbury-Jones and Isham, 2020; Gebrewahd et al., 2020; Buttell and Ferreira, 2020; Campbell, 2020; Agüero, 2021). Study of Gebrewahd et al. (2020) included that reports of DV increased up to 75% in Australia, 21–35% in the USA, and 32–36% in France. Economic downturns, passing more time together at home, and pandemic induced fear, anxiety, depression, and stress played the contributing role to intensify the intimate partner violence.

COVID-19 pandemic causes serious psychological problems to the Bangladeshi people (e.g., see Sakib et al., 2020; Mamun, Sakib, et al., 2020; Ahmed et al., 2020), and IPV is a byproduct of these psychological disorders. Like other countries, people of Bangladesh also experienced a restrictive policy. Restriction on mobility was continued from March 26 to May 30, 2020 (public and private office had closed), while educational institutions remain closed till now (from March 18 to October 25, 2020). As a consequence, financial uncertainty, anxiousness about job/income loss, depression about the pandemic were built up, which in turn accelerated violent behaviors. A recent study of Sifat (2020a) cited that a Bangladeshi organization, named Manusher Jonno Foundation (MJF), reported 4249 victims of domestic violence in Bangladesh during April 2020, and it's alarming that among these victims, 1672 (39.35%) experienced DV for the first time in their life (MJF, 2020; Sifat, 2020a). Moreover, 107 women in Bangladesh were murdered by their husbands or intimate partners, and total 397 women were died because of domestic violence and sexual violence from January to September (Sifat, 2020a, 2020b), which expressed the severity of violence against women in Bangladesh. Study of Hamadani et al. (2020) also highlighted that among the physically or sexually affected women, more than 50% reported that physical or sexual violence increased during the lockdown.

In this backdrop, the present study aimed to explore the prevalence and factors associated with Intimate Partner Violence (IPV) in Bangladesh amid COVID-19 pandemic. The term IPV (many studies used DV as a synonymous of IPV) represents a particular type of VAW that shows how women experience any type of violence (psychological, physical or sexual) from their intimate partners.

## 2. Methods and materials

### 2.1. Participants and procedure

The target population of this cross-sectional study was Bangladeshi married women, aged between 16 to 49 years, and lived with intimate partner. Although WHO multi-country study collected the data of married women aged from 15 to 49 years, instead of 15, the present study has started the age range from 16. The underlying reason behind that the marital age of girls is 16 with parental consent in Bangladesh, therefore, many women have got married at age 16. The study excluded the married women whose age was below 16 or more than 49. Besides, the study also excluded the married women who did not live with their intimate partner. The minimum required sample size was 400 at the 5% precession level on the basis of Taro Yamane Table (Yamane, 1967). The study has included the translated version of WHO multi-country study tools to screen the IPV, besides other socio-demographic and COVID-19 pandemic related questions. The final questionnaire was in local language (Bangla), translated by using the forward-backward translation method with the help of an English Professor (Assistant Professor), where total 25 questions were included. Although the questionnaire could be filled-up by 10 min, the surveyors had spent more than 30 min to collect information from each participant. Fifteen well-trained female surveyors were conducted the face-to-face survey from August 30 to September 30, 2020, and COVID-19 safety guidelines were strictly followed at the time of data collection. By using the convenience sampling method, data were collected from Dhaka city with eight other districts of Bangladesh-Kurigram, Pabna, Gazipur, Sunamgonj, Khulna, Narsingdi, Nilphamari, and Kishoreganj-that also covered 5 divisions out of 7. Total 605 women were reached and among them 510 (response rate 84.30%), aged 16–45

with mean age 30.12 ( $\pm 6.27$ ) years, provided their consent and full information. Participants were interviewed at their house in the absence of their husbands to ensure the quality of data.

### 2.2. Measures of intimate partner violence

Translated version of WHO multi-country survey tool was used in the questionnaire to assess the prevalence of intimate partner violence. Although lockdown and restrictive policies were prevailed up to 30 May 2020, participants were requested to share their experience of violence from 26 March (the time of the official closure of both government and private offices with restriction on mobility) to 26 August, on the basis of these 5 months. The emotional violence (EV) was screened by asking the participant whether current partner “(i) insulted you or made you feel bad about yourself? (ii) belittled or humiliated you in front of other people? (iii) did things to scare or intimidate you on purpose (e.g. by the way he looked at you, by yelling and smashing things?) (iv) threatened to hurt you or someone you care about?” (Garcia-Moreno et al., 2006). The reply of “yes” to any one of these questions constituted the prevalence of EV. The prevalence of physical violence (PV) required the “yes” answer to any of the questions that current partner “(a) slapped you or thrown something at you that could hurt you? (b) pushed you or shoved you? (c) hit you with his fist or with something else that could hurt you? (d) kicked you, dragged you or beaten you up? (e) choked you or burnt you on purpose? (f) threatened to use or actually used a gun, knife, or other weapon against you?” (Garcia-Moreno et al., 2006). The prevalence of sexual violence required the “yes” answer to any of the questions that the current partner “(i) physically forced you to have sexual intercourse even you did not want to, (ii) forced you to have sexual intercourse when you were afraid of saying no, and (iii) forced you to do something sexual that you found degrading or humiliating”. Instead of these three questions, the present study detected sexual violence by including one combined question that the current partner “forced you (physically or any type) to have sexual intercourse or to do something sexual that you found degrading or humiliating”. The “yes” answer to the question constituted the prevalence of SV. This tool of screening IPV has been validated and previously used in Bangladesh (Hamadani et al., 2020). The Cronbach's alpha for the present study is 0.83, which provides the evidence of excellent internal consistency or reliability.

### 2.3. Socio-demographic and COVID-19 related information

The questionnaire included some socio-demographic questions regarding the participating women like age, residence, educational status, and employment status; two regarding intimate partner-age, and the level of education; two were marriage related-duration of marriage, and types of marriage; and two for family related-number of children, and monthly family income. The study categorized the ‘age’ variable into six groups: 16–20, 21–25, 26–30, 31–35, 36–40, and 41–45 years; residence into rural and urban; marital duration: less than 3 years, 3 to 6, 7 to 10, and more than 10 years; types of marriage into arranged marriage and loved marriage; level of educational into completed secondary or more, and not completed secondary; employment status into employed, and unemployed or housewife; number of children: no children, 1 to 3 children, and more than 3 children; and income status into lower income (income less than 15, 000 in Bangladeshi currency (BDT) based on Mamun et al. (2020)), middle income (15,000–40,000 BDT), and upper income (more than 40,000 BDT based on Banna et al. (2020)). Besides, to explore the impact of COVID-19 pandemic on IPV one pandemic related question has included in the study. As the existing literature found that violence against women by intimate partner increased with epidemic induced economic downturns in the low- and middle-income countries (Roesch et al., 2020; Buller et al., 2018; Cools and Kotsadam 2017), the present study included COVID-19 pandemic-induced economic downturn variable by asking the participants whether their monthly family-income reduced during the pandemic with a dichotomous answer of 0 = not at all or slightly and 1 = moderate to a lot.

## 2.4. Ethics

The study strictly followed the Helsinki Declaration-1975, all the participants were informed about the purpose and nature of the study at the beginning, and data were collected anonymously. They were assured that their information would be kept strictly confidential, won't have their name on it, and they were free to drop out from the study at any time. The questionnaire was started with the consent question whether they were agreed to provide the required information or not. After confirming the 'yes' answer, they went for the next questions. As 95 participants (among 605) were not provided consent or felt hesitated to answer some questions, no further question was asked to them. Further ethical support of the study was approved by the Department of Economics of Bangabandhu Sheikh Mujibur Rahman Science and Technology University, Gopalganj-8100, Bangladesh.

## 2.5. Analysis strategy

Statistical software STATA 15.0 version was used for bivariate and multivariate analysis, and Microsoft Excel 13.0 version was used for graphical presentation of the items. At first, the study used bivariate analysis to estimate the crude relationship between IPV and exposure variable. The significant variables (at 5% precision level) from the univariate analysis then include into the multivariate logistic regression analysis to find out the significant predictors of IPV.

## 3. Results

### 3.1. Descriptive statistics

Majority of the participants were from rural area (69.80%) and lower income family (43.33%), while aged 26–30 (36.47%) years, completed up to secondary education (71.18%), unemployed or housewife (71.96%), had arranged marriage (90.59%), marital duration between 3–6 years (27.84%) and greater than 10 years (28.37%), and had 1 to 3 children (72.16%). About 50.59% of their husbands aged between 30 to 40 years, and only 31.37% had more than secondary level education. Besides, 31.37% of the participants reported that their monthly income had reduced moderately to a lot from March 26 to August 26, 2020.

### 3.2. Prevalence of IPV

The present study found the prevalence of IPV about 45.29%, while 44.12% women were experienced emotional violence, 19.22% physical

or sexual violence, 15.29% physical violence, and 10.59% were experienced sexual violence in Bangladesh during the first 5 months of COVID-19 pandemic (Figure 1). The prevalence of IPV was high on women aged 21–30 years, had arranged marriage, marital duration 3–6 years, lived in rural area, low level of education, unemployed or housewife, low family income, husband aged 30–40 years, husband's low level of education, and family income reduced moderately to a lot (Table 1). Figure 2 illustrates the item-wise prevalence of IPV.

Figure 3 has illustrated the prevalence of IPV in different cohorts. In the rural area, the prevalence of IPV is found 52.81%, while in the urban area the prevalence is 27.92%. Among the unemployed or housewives, the prevalence of IPV is found 50.95%, while among the employed women the prevalence is 30.77%. Finally, among the lower educated women, the prevalence of IPV is found 56.75%, while among the higher educated women the prevalence is 17.01%.

### 3.3. Associated factors of IPV

The women with IPV were significantly more likely than the women without IPV to be aged between 21–25 and 26–30 years ( $\chi^2(5) = 69.3354, p < 0.001$ ), had marital duration 3–6 years ( $\chi^2(3) = 22.73, p < 0.001$ ), arranged marriage ( $\chi^2(1) = 7.09, p = 0.008$ ), in rural area ( $\chi^2(1) = 26.87, p < 0.001$ ), lower level of education ( $\chi^2(1) = 66.69, p < 0.001$ ), unemployed or housewife ( $\chi^2(1) = 16.92, p < 0.001$ ), husband aged 30–40 years ( $\chi^2(2) = 87.53, p < 0.001$ ), husband's lower level of education ( $\chi^2(1) = 79.37, p < 0.001$ ), lower income ( $\chi^2(2) = 63.03, p < 0.001$ ), and monthly income reduced moderate to a lot amid the pandemic ( $\chi^2(1) = 134.66, p < 0.001$ ) (Table 1).

Multivariate logistic regression results are presented in Table 2 (with bivariate results). The results reveal that women with arranged marriage were 3.58 times more likely to experience IPV compared to the reference category women with loved marriage (AOR = 3.58, CI = 1.46–8.74,  $p = 0.005$ ), and rural women were 1.75 times more likely to experience IPV compared to the reference category urban women (AOR = 1.75, CI = 0.90–3.42,  $p = 0.098$ ). The unemployed women or housewives were 1.70 times more likely to experience IPV compared to the reference category employed women (AOR = 1.70, CI = 0.93–3.08,  $p = 0.080$ ), while women with educated husband were 0.69 times less likely to experience IPV compared to the reference category women with uneducated husband (AOR = 0.69, CI = 0.01–0.38,  $p = 0.002$ ). Besides, husband aged between 30 to 40 years were committed IPV 0.20 times less likely (AOR = 0.20, CI = 0.08–0.49,  $p = 0.001$ ) and husband aged more than 40 years committed 0.025 times less likely (AOR = 0.025, CI = 0.004–0.149,  $p < 0.001$ ) compared to the reference category of husband aged less than 30

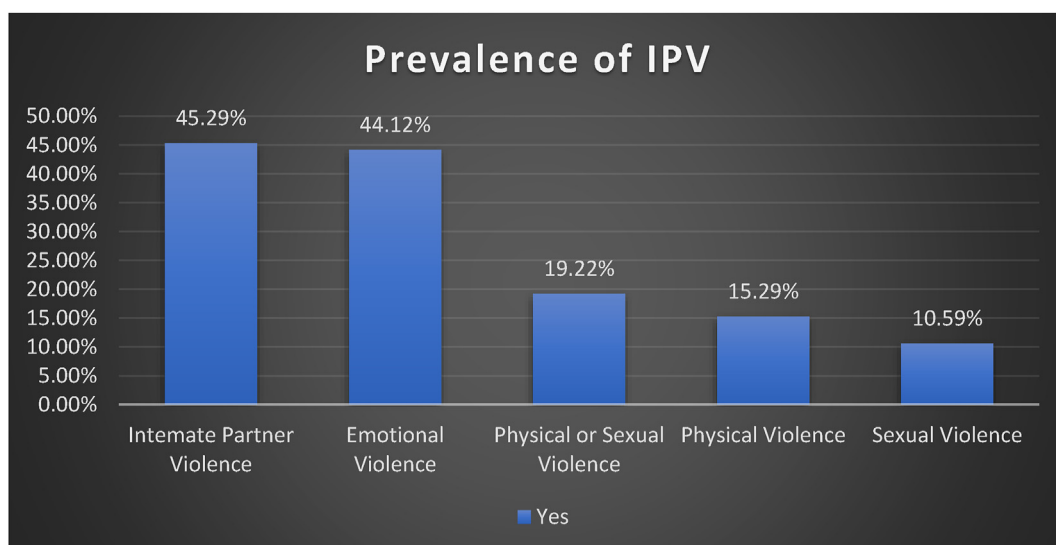


Figure 1. Prevalence of intimate partner violence in Bangladesh.

**Table 1.** Characteristics of Participating Women and Distribution of variables with Intimate Partner Violence.

Variables	Total; n (%)	Intimate Partner Violence; Yes (%)	$\chi^2$ value	df	p-value
<b>Women's Age (Years)</b>					
16–20	18 (3.53%)	12 (2.35%)	69.3354	5	<0.001
21–25	117 (22.94%)	79 (15.49%)			
26–30	186 (36.47%)	79 (15.49%)			
31–35	86 (16.86%)	46 (9.02%)			
36–40	71 (13.92%)	12 (2.35%)			
41–45	32 (6.27%)	3 (0.59)			
<b>Marital Duration (Years)</b>					
<3 years	115 (22.25%)	60 (11.76%)	22.73	3	<0.001
3–6	142 (27.84%)	78 (15.29%)			
7–10	109 (21.37%)	51 (10.00%)			
>10	144 (28.37%)	42 (8.24%)			
<b>Types of Marriage</b>					
Arranged marriage	462 (90.59%)	218 (42.75%)	7.0917	1	0.008
Love marriage	48 (9.41%)	13 (2.55%)			
<b>Residence</b>					
Rural	356 (69.80%)	188 (36.86%)	26.8699	1	<0.001
Urban	154 (30.20%)	43 (8.43%)			
<b>Number of Children</b>					
No children	88 (17.25%)	44 (8.63%)	1.2694	1	0.530
1 to 3	368 (72.16%)	165 (32.35%)			
3+	54 (10.59%)	22 (4.31%)			
<b>Women's level of education</b>					
≤secondary school	363 (71.18%)	206 (40.39%)	66.6943	1	<0.001
>secondary school	147 (28.82%)	25 (4.90%)			
<b>Women's Employment Status</b>					
Employed	143 (28.04%)	44 (8.63%)	16.9196	1	<0.001
Unemployed/Housewife	367 (71.96%)	187 (36.67%)			
<b>Husband's age</b>					
<30 years	132 (25.88%)	95 (18.63%)	87.5317	2	<0.001
30–40 years	258 (50.59%)	120 (23.53%)			
>40 years	120 (23.53%)	16 (3.14%)			
<b>Husband's level of education</b>					
≤secondary school	350 (68.63%)	205 (40.20%)	79.3711	1	<0.001
>secondary school	160 (31.37%)	26 (5.10%)			
<b>Family monthly income</b>					
Lower income	221 (43.33%)	142 (27.84%)	63.0333	2	<0.001
Middle income	191 (37.45%)	69 (13.53%)			
Upper income	98 (19.22%)	20 (3.92%)			
<b>Family income reduced during COVID-19 pandemic</b>					
Not at all/slightly	350 (68.63%)	98 (19.22%)	134.6602	1	<0.001
Moderately/A lot	160 (31.37%)	133 (26.08%)			

years. Again, women belongs to middle income family were experienced IPV 0.55 times less likely compared to the reference category of women belongs to lower income family (AOR = 0.55, CI = 0.32–0.94, p = 0.029). Finally, moderate to a lot family-income reduction caused to commit IPV 9.16 times more likely compared to the reference category of no or slight income reduction (AOR = 9.16, CI = 4.88–17.20, p < 0.001).

#### 4. Discussions

The findings of the study reveal that about 45.29% of women experienced any type of violence by their intimate partner during the first five months of the pandemic in Bangladesh, where 44.12% were emotionally, 19.22% physically or sexually, 15.29% physically, and 10.59% sexually abused. Besides, the prevalence of IPV among women in rural area is found 52.81%, in urban area 27.92%, unemployed or housewives 50.95%, employed 30.77%, lower educated 56.75%, and among the higher educated women is 17.01%. Therefore, the prevalence of IPV was

high in the rural area, and among the lower educated and unemployed or housewives.

Although high prevalence of IPV was reported in some previous studies, these were conducted for a specific region or for a specific population or for lifetime experience. For instance, [Esie et al. \(2019\)](#) reported 82.7% prevalence rate by analyzing the data of young married women aged 16–37 years from rural area of Bangladesh, and [Ziaei et al. \(2016\)](#) reported 57.4% among the rural pregnant women. The overall prevalence rate of IPV in the present study is high compared to the just before pandemic study of [Haque \(2020\)](#) regarding Bangladesh that reported the prevalence rate 35%. This indicated the increase of IPV during the pandemic. High prevalence of IPV was also reported in some other countries in similar recent studies, for instance, 42% in Malawi ([Chikhungu et al., 2019](#)), 56.7% in Southern India ([George et al., 2016](#)), 40% in Gambia ([Jabbi et al., 2020](#)), 42.7% in Zimbabwe ([Lasong et al., 2020](#)), and 32.5% in Haiti ([Occean et al., 2020](#)). A recent study of [Hamadani et al. \(2020\)](#) reported the item-specific

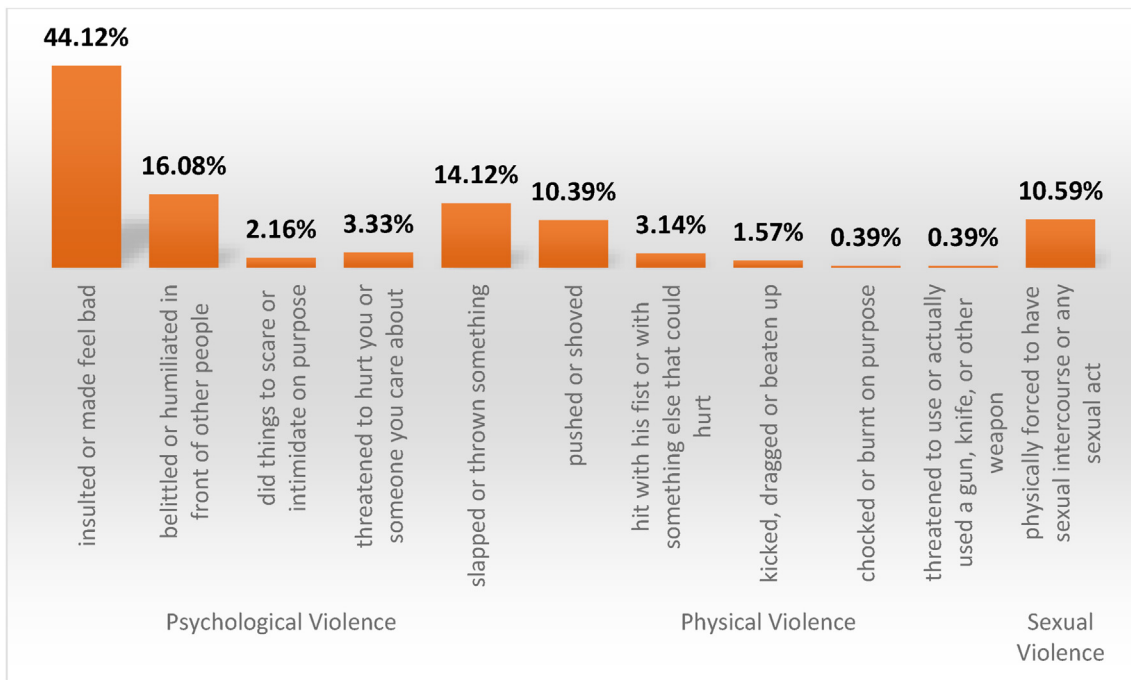


Figure 2. Items of Intimate Partner Violence with respective response.

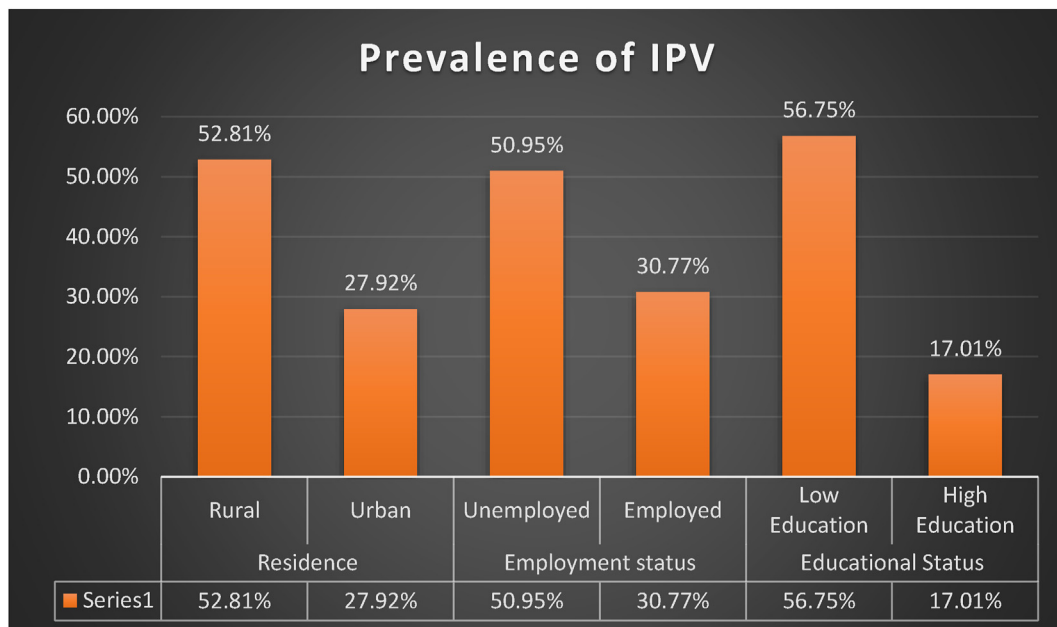


Figure 3. Prevalence of IPV into different cohorts.

prevalence of IPV in Bangladesh, where the prevalence of insults was 19.9% (44.12% in this study), humiliation 8.9% (16.08%), intimidation 13.5% (2.16%), threatened 4.8% (3.33%), slapped/thrown something 6.5% (14.12%), pushed or shoved 2.5% (10.39%), hit with fist/something 2.6% (3.14%), kicked/dragged/beaten/choked/burnt 1.5% (1.57%), threatened with or actually used any type of weapon 0.6% (0.39%), and physically forced to sexual intercourse or sexual act 3.0% (10.59%). This study reported significantly high prevalence of some specific violent behavior compare to the study of Hamadani et al. (2020). Sample size and sample area might be the underlying reasons of these differences, for instance, the study of Hamandani et al. (2020)

was based on the data from one rural area of one sub district of Bangladesh, and this study covered data of 8 districts of Bangladesh.

The study found that types of marriage, area of residence, women's employment status, husband's age and level of education, family income status, and family-income reduction were the associated factors of intimate partner violence amid the pandemic. The study revealed that arranged marriage of women was more likely to commit IPV contrary to loved marriage. Similar finding was found on Gebrewahd et al. (2020), where it was reported that women with arranged marriage were 2.535 times more likely to experience violence compared to women with loved marriage. In the loved marriage, as both husband and wife are the loved

**Table 2.** Regression analysis of factors associated with Intimate Partner Violence.

Variables	Unadjusted model			Adjusted model		
	Odds ratio (OR)	95% confidence interval (CI)	p-value	Adjusted odds ratio (AOR)	95% confidence interval (CI)	p-value
<b>Women's age (years)</b>						
16–20	Reference			Reference		
21–25	1.0395	0.3624–2.9812	0.943	1.6176	0.3757–6.9637	0.518
26–30	0.3692*	0.1328–1.0260	0.056	3.3989	0.6962–16.5931	0.130
31–35	0.575	0.1977–1.6724	0.310	4.1229	0.7323–23.2104	0.108
36–40	0.1017***	0.0319–0.3244	0.000	5.9251	0.5205–67.4448	0.152
41–45	0.0517***	0.0111–0.2414	0.000	1.4643	0.1128–19.0102	0.771
<b>Marital Duration (years)</b>						
<3	Reference			Reference		
3–6	1.1172	0.6823–1.8293	0.660	0.7243	0.3271–1.6039	0.426
7–10	0.8060	0.4769–1.3623	0.421	0.5800	0.2229–1.5092	0.264
>10	0.3774***	0.2260–0.6303	0.000	0.5366	0.1668–1.7263	0.296
<b>Types of marriage</b>						
Love	Reference			Reference		
Arranged	2.4054***	1.2404–4.6646	0.009	3.5762***	1.4639–8.7361	0.005
<b>Residence</b>						
Urban	Reference			Reference		
Rural	2.8887***	1.9190–4.3482	0.000	1.7542*	0.9007–3.4165	0.098
<b>Women's level of education</b>						
≤secondary school	Reference			Reference		
>secondary school	0.1562***	0.0969–0.2518	0.000	2.9153	0.5352–15.8795	0.216
<b>Women's employment status</b>						
Employed	Reference			Reference		
Unemployed/Housewife	2.3375***	1.5515–3.5217	0.000	1.6951*	0.9315–3.0849	0.080
<b>Husband's age</b>						
<30	Reference			Reference		
30–40	0.3387***	0.2156–0.5321	0.000	0.1990***	0.0801–0.4941	0.001
>40	0.0599***	0.0313–0.1147	0.000	0.0247***	0.0041–0.1494	0.000
<b>Husband's level of education</b>						
≤secondary school	Reference			Reference		
>secondary school	0.1372***	0.0857–0.2198	0.000	0.6872***	0.0125–0.3765	0.002
<b>Monthly Family Income</b>						
Lower income	Reference			Reference		
Middle income	0.3147***	0.2102–0.4711	0.000	0.5456**	0.3164–0.9409	0.029
Upper income	0.1427***	0.0812–0.2505	0.000	0.5715	0.2594–1.2595	0.165
<b>Family income reduced during COVID-19 pandemic</b>						
Not at all/slightly	Reference			Reference		
Moderately/A lot	12.6667***	7.8774–20.3677	0.000	9.1605***	4.8796–17.1974	0.000

(\* \*\* \*\* \*\* implies significant at 1%, 5%, and 10% level respectively).

one to each other, greater compromising and caring behavior prevail among them compared to arranged marriage which is a vital factor to reduce the likelihood of committing violence in the pandemic time. The study found that rural women were more likely to experience IPV compared to urban women. The reason behind that domestic violence shelters are less available in the rural area compared to urban sites. Besides, rural women have less access to law enforcement and judicial personnel, therefore, husbands in rural area were less feared of constituting this social crime.

The study also found that unemployed women or housewives were more likely to experience any form of IPV compared to employed women. The underlying reason is that employment empowered the women by providing a bargaining power within the family (Eswaran and Malhotra, 2011). Besides, the female labor force participation decision can eliminate some social curse like early marriage, dowry, and early child bearing (Heath, 2014; Jensen, 2012; Jensen and Thornton 2003). Therefore, empowering women by employing in earning activities can eliminate this hidden crime.

The study found that young husbands were committed violence against his intimate partner more likely compared to middle aged or older husbands, and educated husband less likely committed IPV compared to lower educated husband. Similar findings were found in Jabbi (2020) where it was reported that partner's lower education accelerate the likelihood of IPV. Education helps to develop the compromising and caring behavior, and aware about the adverse impact of violent behavior. Therefore, occurrences of IPV decline with the level of husband's education and age. The study also uncovered that COVID-19 pandemic-induced economic downturns, measured by moderate to a lot reduction in monthly family-income amid the pandemic, caused more likely to commit IPV compared to 'no reduction or slightly reduction of monthly family income'. This finding is consistent with the study of Roesch et al. (2020), Buller et al. (2018), and Cools and Kotsadam (2017), as these studies have predicted that epidemics and associated economic downturns increase the violence against women by intimate partner in the low- and middle-income countries.

Finally, for in-depth analysis, the study also explores the associated factors into different sub-groups. The multivariate logistic regressions results for rural area are tabulated in Table 3, for urban area in Table 4, for unemployed or housewives in Table 5, and for employed are tabulated in Table 6.

The study reveals that after controlling the impact of women's age, marital duration, women's level of education, employment status, and husband's level of education, the associated factors for committing IPV in the rural area are types of marriage, husband's age, monthly family income, and family-income reduction amid the pandemic. While in the urban area, women's employment status, husband's age, husband's level of education, monthly family income, and family-income reduction amid the pandemic are the associated factors after controlling the impact of types of marriage, and women's level of education. Therefore, husband's age, family income status, and family-income reduction amid the pandemic are the common factors of constituting IPV for both rural and urban area.

For unemployed women or housewife groups, the associated factors of constituting IPV are husband's age, husband's level of education, monthly family income, and family-income reduction amid the pandemic, after controlling the impact of types of marriage. While for employed women, the associated factors of IPV are types of marriage, husband's age, and moderate to a lot family-income reduction amid the pandemic. Therefore, across all groups, it was found that the pandemic induced economic downturns (family-income reduction amid the pandemic) was the dominant predictor of intimate partner violence.

### 5. Limitations

Self-reported cross-sectional study has some methodological limitations, and the present study is not free from them. Despite some limitations, the study tried heart and soul to ensure the quality of data, and get reliable estimates.

**Table 3.** Associated factors of IPV in rural area.

Variables	Unadjusted model			Adjusted model <sup>a</sup>		
	Odds ratio (OR)	95% confidence interval (CI)	p-value	Adjusted odds ratio (AOR)	95% confidence interval (CI)	p-value
<b>Types of marriage</b>						
Love	Reference			Reference		
Arranged	2.3264**	1.1191–4.8360	0.024	4.6758***	1.7087–12.7948	0.003
<b>Husband's age</b>						
<30	Reference			Reference		
30–40	0.2804***	0.1550–0.5072	0.000	0.2154***	0.0763–0.6078	0.004
>40	0.0411***	0.0188–0.0899	0.000	0.0340***	0.0051–0.2278	0.000
<b>Monthly Family Income</b>						
Lower income	Reference			Reference		
Middle income	0.3244***	0.2041–0.5157	0.000	0.3244***	0.2041–0.5157	0.000
Upper income	0.1711***	0.0800–0.3660	0.000	0.1711***	0.0800–0.3660	0.000
<b>Family income reduced during COVID-19 pandemic</b>						
Not at all/slightly	Reference			Reference		
Moderately/A lot	14.85***	7.9980–27.5722	0.000	7.6187***	3.5411–16.3917	0.000

\*\*\*, \*\*\*, \*\* implies significant at 1%, 5%, and 10% level respectively).

<sup>a</sup> Controlling Age, marital duration, women's level of education, women's employment status, and husband's level of education.

**Table 4.** Associated factors of IPV in urban area.

Variables	Unadjusted model			Adjusted model <sup>b</sup>		
	Odds ratio (OR)	95% confidence interval (CI)	p-value	Adjusted odds ratio (AOR)	95% confidence interval (CI)	p-value
<b>Women's employment status</b>						
Employed	Reference			Reference		
Unemployed/Housewife	8.5932***	2.8763–25.6729	0.000	5.8906***	1.5669–22.1448	0.009
<b>Husband's age</b>						
<30	Reference			Reference		
30–40	0.475*	0.2099–1.0745	0.074	0.5505	0.1859–1.6302	0.281
>40	0.113***	0.0286–0.4327	0.002	0.0761***	0.0135–0.4277	0.003
<b>Husband's level of education</b>						
<secondary school	Reference			Reference		
>secondary school	0.1780***	0.0828–0.3823	0.000	0.1569*	0.0231–1.0621	0.058
<b>Monthly Family Income</b>						
Lower income	Reference			Reference		
Middle income	0.3136***	0.1313–0.7490	0.009	0.3094**	0.0965–0.9916	0.048
Upper income	0.1960***	0.0780–0.4924	0.001	1.1013	0.3095–3.9195	0.882
<b>Family income reduced during COVID-19 pandemic</b>						
Not at all/slightly	Reference			Reference		
Moderately/A lot	10.4701***	4.5303–24.1972	0.000	9.8345***	3.1077–31.1223	0.000

\*\*\*, \*\*\*, \*\* implies significant at 1%, 5%, and 10% level respectively.

<sup>b</sup> Controlling types of marriage and women's level of education.



**Table 5.** Associated factors of IPV among unemployed women.

Variables	Unadjusted model			Adjusted model <sup>c</sup>		
	Odds ratio (OR)	95% confidence interval (CI)	p-value	Adjusted odds ratio (AOR)	95% confidence interval (CI)	p-value
<b>Husband's age</b>						
<30	Reference			Reference		
30–40	0.4534	0.2678–0.7674	0.003	0.3516	0.1169–1.0581	0.063
>40	0.0679	0.0332–0.1389	0.000	0.0363	0.0038–0.3523	0.004
<b>Husband's level of education</b>						
≤secondary school	Reference			Reference		
>secondary school	0.2249	0.1313–0.3850	0.000	0.0881	0.0155–0.5013	0.006
<b>Monthly Family Income</b>						
Lower income	Reference			Reference		
Middle income	0.2079	0.1291–0.3346	0.000	0.3529	0.1868–0.6667	0.000
Upper income	0.2328	0.1159–0.4665	0.000	0.5698	0.2338–1.3886	0.216
<b>Family income reduced during COVID-19 pandemic</b>						
Not at all/slightly	Reference			Reference		
Moderately/A lot	14.0548	7.9585–24.8209	0.000	12.0791	5.7736–25.271	0.000

\*, \*\*, \*\*\* implies significant at 1%, 5%, and 10% level respectively.

<sup>c</sup> Controlling types of marriage.

**Table 6.** Associated factors of IPV among employed women.

Variables	Unadjusted model			Adjusted model <sup>d</sup>		
	Odds ratio (OR)	95% confidence interval (CI)	p-value	Adjusted odds ratio (AOR)	95% confidence interval (CI)	p-value
<b>Types of marriage</b>						
Love	Reference			Reference		
Arranged	4.3537	0.9602–19.7399	0.056	6.0969	0.9539–38.9651	0.056
<b>Husband's age</b>						
<30	Reference			Reference		
30–40	0.1967	0.0778–0.4982	0.001	0.1232	0.0199–0.7629	0.024
>40	0.0344	0.0067–0.1780	0.000	0.0222	0.0010–0.5164	0.018
<b>Family income reduced during COVID-19 pandemic</b>						
Not at all/slightly	Reference			Reference		
Moderately/A lot	7.6	3.0638–18.8523	0.000	6.3091	1.6363–24.3253	0.007

\*, \*\*, \*\*\* implies significant at 1%, 5%, and 10% level respectively.

<sup>d</sup> Controlling marital duration.

## 6. Conclusion

As economic downturns (monthly family income reduction) is the most risky factors amid the pandemic to increase violence against women, special preventive measures need to be taken. Special social security program should in act to avoid food insecurity and financial uncertainty. Besides, counseling's and related education should be increased; especially for lower educated young husbands. Twenty four hours hotline services for reporting violence and public awareness program should ensure with integrity, besides ensuring proper implementation of the existing law on domestic violence against women.

## Declarations

### Author contribution statement

Istihak Rayhan: Conceived and designed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Khaleda Akter: Performed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper.

## Funding statement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## Data availability statement

Data will be made available on request.

## Declaration of interests statement

The authors declare no conflict of interest.

## Additional information

No additional information is available for this paper.

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