More than individual factors; is there any contextual effect of unemployment, poverty and literacy on the domestic spousal violence against women? A multilevel analysis on Indian context

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ABSTRACT

Purpose: Despite successful enactment of Domestic Violence act, 2005 in India to protect Indian women from any kind of domestic violation offence, the decline trend of prevalence of spousal violence against women still remains low. The study aims to explain the factors associated with spousal violence against women through a multilevel modeling framework.

Method: We used multilevel logistic regression model, basically here we carried out two-level random intercept model where the data base is used from National Family Health survey 2015-16 data for the fulfillment of our study objectives. A total 34,921 women, who were selected for 2015-16 domestic violence modules by NFHS, were included in this present study.

Results: Result of multilevel logistic regression model showed that women who were belonged to poorest economic background, lived in rural areas, had low level of education or no education were at more risk in experiencing violence from their husband. Factors as large family size with more children in a household have a significant positive association with the prevalence of spousal violence against women. In case of higher level contextual variables unemployment, poverty has a crucial effect for upbringing spousal violence where higher literacy rate of a region has a strength that can reduce the probability of violence against women.

Conclusions: The Govt. promptness as a collective responsibility to enhance educational facilities for men and women, create employment opportunities and take policies for overall economic and societal development, these may change the individual perception of a person to cause the spousal violence against women.

1. Introduction

Domestic violence against women is a most serious social anarchy that happens in almost all countries of today's world with different magnitude and a key contributor of ill health of women. The perpetrators are often known as victims. As per the World Health Organization reports, globally every fifth women suffers from domestic violence throughout her life (WHO 2014). Domestic violence has different forms and patterns, among all of these spousal violence is most common (Raj et al., 2006; Naved & Persson 2005; Johnson, 2010) and remain a hidden and unwavering problem because of the supremacy and power of control held by the abusers. Spousal violence mainly occurs in romantic relationships where one partner plays a dominant role and exerts his/her power over the others. Like other developing countries, in India spousal violence is still prevalent and about 33% ever-married women have ever

experienced spousal physical, sexual or emotional violence from their current husband or most recent husband and 26% have experienced at least one in the 12 months preceding the survey (Ahmad et al., 2019; International Institute for Population Sciences [IIPS] & ICF, 2017). National Family Health Survey-4 (NFHS) also reported that 30% ever married women have experienced spousal physical violence where only 7% have experienced sexual violence and emotion violence only reported by 14% ever-married women in ever. It is widely accepted that spousal violence against women is a remarkable public health issue of developed and undeveloped countries, associated with a range of both short term and long term consequences affecting reproductive health (Ali et al., 2011; Haqqi et al., 2010; Nair et al., 2013). It is too much harmful for the duo mother and newborn baby if the mother is physically or mentally abused during pregnancy (Fikree et al., 2006). Some researcher has shown that mental illness, distress of women comes from

physiological or emotional violence which is more dangerous than physical illness (Friedman & &Loue, 2007; Fusco, 2010) and it can damage the self-esteem of the victims. Ali and his co-author also reported that suicidal tendency of women is higher among those who experienced spousal violence in any form (Ali et al., 2011; Devries et al., 2011) in her lifetime.

Among the several dominating factors responsible for spousal violence against women, economic condition of the victims is found to be a most important factor. Many researchers have shown that spousal violence against women is higher among economically weaker families compared to rich families (Ahmad et al., 2019; Antai, 2011; James et al., 2013) but it is amatter of controversy. Theoretically spousal violence is not confined within a particular economic class that's why more research is required for detail understanding in connection between poverty and spousal violence against women (WHO 2005). Some theorists argue that gender dominance is the main foundation of spousal violence (Ahmad et al., 2019; Roberts, 2002) while assailants of such violation are stand in safe position in community life without any blame because of their force to endure. Apart from these, the cruel incidence of spousal violence against women has also determined by several socio-economic, demographic and environmental factors in different context such as place of residence, level of education of both partner, affiliation to a particular religion and ethnic group, age at marriage, age gap between partner, household size, number of living children in a family, level of women autonomy, level of women empowerment, smoking habit and drug use of husband etc (Ahmad et al., 2019; Chan, 2011; Sambisa 2011; Hussain et al., 2017; Kavitha, 2012; Mamdouh et al., 2012).

As per the report of India's National Crime Records Bureau (NCRB), crime rate against women by their husband or relatives has increased in an alarming rate from 2010 to 2016. It was 8% in 2010 and 18% in 2016 per 100,000 populations (NCRB 2010; NCRB 2016). Now, one question may arise in our mind that what are the actual reasons for such increasing trend of crime rate against women in India? Literature suggest that, gradual rise of women empowerment status susceptible them for reporting their violence issues to the particular authority for seeking help and protect themselves (Weitzman, 2014; Rocca et al., 2009). It is therefore highly important to identify the actual fact and factors that influence persistently for the occurrence of such violence. In this regard, our main objective of this study is that what the major factors are affecting on spousal violence against women in India. Truly said spousal violence is not a single level phenomena rather than it is deep routed multilevel aspect. Most of the previous studies have been conducted by considering only individual factors through logistic regression approach. For the clear and unbiased understanding here we applied two-level logistic regression method by considering some individual level and regional level determinants of the samples that are selected from the domestic violence module in NFHS-4 & handbook of statistics of Indian states. Multilevel logistic method showed that the socio-economic, demographic characteristics of women and some regional characteristics play a significant role for such violation. Here we consider total 20 states and union territories as the representative of our whole country.

To keep safe our mothers and sisters from this cruelty it is the need of hour to change our perception first, thinking like power of physical dominance, power of economic supremacy, gender dominance etc. with this govt. also have to work at ground level for poverty eradication, overall economic development of our country by creating more employment opportunity for boys and girls. Grass route level awareness campaign is needed to aware peoples about women's role in our everyday life as well as govt. Easier education policies for women and all other different facilities for women etc. All of this collective activity may change the societal viewpoint and protect women from this severity.

2. Objectives

The aim of the study attempt to prove that either there is any effect of individual level (Women level) characteristics nested with state level characteristics (variables) on domestic spousal violence against women in 20 high and less domestic violence prevalence states and union territories of India. The study also highlights the issue like states or union territories with higher literacy rate has lesser chance of experiencing spousal violence against women and the states and territories with higher unemployment & poverty rate have more chance ofexperiencing the violence even after controlling the socio-demographic variable.

While apart from the above mentioned objective the study attempts to focus on the association of individual level characteristics of women and spousal violence incident against women. At the individual level the analysis expects to notice that the women living in rural areas, have low level of educational qualification, aged more than 25 and if currently working have higher chance of getting experienced of spousal violence. In addition, the respondent belongs to poorest wealth quintile, household having more than 6 family members and more than 3 children are at more risk to experience domestic spousal violence.

3. Study area

This present study includes total 16 states and 4 union territories of India. Out of which 8 states and 2 territories (Manipur [55 per cent], Telangana [46 per cent], Andhra Pradesh [45 per cent], Bihar [45 per cent], Tamil Nadu [45 per cent], Puducheery [40 per cent], Chhattisgarh [38 per cent], Uttar Pradesh [38 per cent], Dadra and Nagar Haveli [36 per cent] and Orissa [36 per cent]) leveled as more domestic violence prevalence states and rest (Sikkim [3.5 per cent], Himachal Pradesh [7 per cent], Lakshadweep [8.9 per cent], Uttarakhand [14 per cent], Jammu and Kashmir [14 per cent], Goa [15 per cent], Kerala [16 per cent], Nagaland [17 per cent], Mizoram [18 per cent] and Andaman & Nicobar Islands [20 per cent]) are the less domestic violence prevalence states of India as per National Family Health Survey Report, 2015–2016.

4. Data and method

4.1. Data source

The present study is based on the secondary data collected from two different sources–viz. (a) NFSH-4 and (b) Hand book of statistics on Indian states. At first the data has been extracted about the women (aged 15–49) individual level data of the latest round of National Family Health Survey- 4 (NFHS-4) from Demography and Health survey database. NFHS-4 is India's nationally representative cross-sectional sample survey conducted in 2015-2016, which gather information for men (aged 15–54), women (aged 15–49) and children (below 5years) on several issues like fertility, child & maternal mortality, child nutrition, HIV, employment & unemployment, domestic violence and so on, using multistage stratified sampling technique. The detail information of NFHS such as study design, sampling procedure etc. can be found in the national report published by International Institute of Population Science (IIPS & ICF International 2017). In NFHS-4 a total 83,397 women were selected for the domestic violence survey, and 79,729 women were completed the survey schedule. Out of 79,729 women 42,886 women were the representative sample of our selected study area. The study-have excluded all the missing cases from this study and the study finally completed by considering 34,921 ever-married women of reproductive age group who expressed the experience of any one form of domestic violence by her husband ever or in 12 month preceding the survey. All the estimates in this study are based on the weighted sample and the numbers are un-weighted. The study have used domestic violence's specific weight variable for weighting the sample.

The state level data have been incorporated in the study and the same have been procured from 'Hand book of statistics on Indian states'

which has been published by Reserve Bank of India in 2018-2019 based on India's National Sample Survey (NSS) data and Census data. The details of state level data and individual level data has been given bellow.

4.2. Statistical analysis

The univariate analysis is used to show a glimpse of the percentage distribution of prevalence of each type of spousal violence in 12 month preceding the survey or ever by her husband or former husband. After that to assess the association between selected level-1 predictors and the status of women's spousal violence chi-square test of independence in bivariate setup is used. Finally, a two level multilevel logistic model has been framed to find out the contextual effect between level-1variables (individual) women characteristic, nested in level-2 (states) regional characteristics or vice versa in women's experience of spousal violence.

Data was analyzed using multilevel logistic regression model in STATA version 15. It is a nested model where women's characteristics nested upon state's characteristics (Level-1 nested upon level-2). We calculated total two (Model 1 by including level-1 predictors and Model 2 by including both level-1 & level-2 predictors) logistic regression models in multilevel setup where women's experience of spousal violence was the dependent variable in all two levels. Model-1 explored the links between individual variables (women characteristics) and experience of spousal violence for women "i" in state "j". Model-2 estimates the influence of selected state's characteristics with adjusting women's characteristics randomly on experiencing of women spousal violence. No cross level interactions were analyzed in this present study and that's why no individual variables were centered while state level variables were grand mean centered. Before applying multilevel model we also calculated inter-class correlation coefficient (ICC) by using the following formula:

$$ICC = \frac{var(U_{0j})}{var(U_{0j}) + \left(\pi^2/3\right)}$$

where, $var(U_{0j})$ is the random intercept variance, i.e., the level-2 variance (here state). The ICC ranges from 0 to 1. We can apply multilevel logistic regression model if the ICC is greater than 0 (Park & Lake, 2005). The random intercept variance component can be obtained from multilevel unconditional model or empty model. Following are the mathematical form of multilevel empty model

$$logit(\pi_{ij}) = \beta_{00} + U_{0j}$$

where, $logit(\pi_{ij}) = P(Y_{ij} = 1)$, β_{00} is the fixed intercept and U_{0j} is the deviation of the region specific intercept from the fixed intercept. In Multilevel setup empty model is established to calculate ICC, and two level random (final model) intercept model is applied to access the association between selected level-1 and level-2 predictors and women's spousal violence status in selected study area. The mathematical formula of two-level random intercept model isgiven bellow:

$$logit(\pi_{ij}) = \beta_{00} + \beta_{10}x_{ij} + \beta_{01}x_j + U_{0j}$$

where, x_{ij} and x_j refers to level-1 and level-2 respectively, while β_{10} and β_{01} indicating the fixed effect of level-1 and level-2 variables respectively.

4.2.1. Dependent variable

Experience of any form (physical violence, emotional violence or sexual violence) of domestic spousal violence in 12 months preceding the survey or ever by the most current husband of married women and former husband of widowed, divorced, separated or deserted women of ever-married women, aged 15–49 was taken as the dependent variable

for this present analysis. In NFHS-4 surveys related to domestic violence were done by taking into consideration of those women who were selected for the domestic violence module and agreed to share her experience about seven types of physical violence, three types of emotional violence and three kind of sexual violence. For the convenience of the studyat first all three kinds of domestic spousal violence variables into three separate binary response variables, are coded as "1" for those respondent whose experience of physical, emotional and sexual violence is affirmative otherwise we coded as "0". Finally we created a single binary response variable to represent the status of experience of any form of domestic spousal violence with the combination of above three separate domestic violence variables. In this single variable we coded "1" for those respondents who have experienced at least any one form of domestic violence by her husband or former husband among those three and coded "0" for otherwise.

4.2.2. Explanatory variables

In accordance with the multilevel modeling framework of domestic spousal violence described above, our analysis includes 10 explanatory variables under 2 levels. Respondent's individual level characteristics were taken as individual level variables where, the gross of individual level characteristics of states were taken as state level characteristic. Here all the individual level variables nested upon state level variable. The variables used for this analysis are the following:

4.2.3. Individual-level variables

A total 7 individual level variables were selected, which are (a) Wealth quintile: NFHS provides 5 types [Poorest, Poorer, Middle, Richer, and Richest] of wealth quintile category based on principal component analysis score. Household wealth quintile has been measured from the ownership of different household assets including consumer items and dwelling characteristics; (b) Place of residence: rural/urban; (c) Age group: ever-married women aged 15–49 were included in this present study. We categorized the women under 3 separate age-groups (15–24, 25–35 and 36–49), to get a clear vision of spousal violence with age group differentiation; (d) Level of education: no education/primary/secondary/Higher; (e) Working status: currently working/currently not working. Here currently working indicates respondent engaged in any working activity other than household domestic work and vice versa; (f) Household's member: less than 4, 4 to 6 and more than 6; (g) No. of living children: We categorized total no. of living children of a household into three category which are -no child/ only 1 child/2 child/3 or more.

In this study we select some individual-level variables (Wealth quintile, no. of household member and no. of living children) which are actually household level variables that varies with household but as per domestic violence survey norms only one respondent were surveyed from each household that's why one household's information actually represents the information of one single women of that particular household. Therefore there was no chance of coincide of one household's information between two women.

4.2.4. State-level variables

(a) Unemployment rate (per thousand): ratio of the unemployed population to the total working age population of each state; (b) Poverty rate (per cent): the proportion of population stands below the poverty line of each state (b) Literacy rate (per cent): ratio between literate [person aged 7years and above who can both read and write with understanding in any language] population and total population of a corresponding state.

5. Results

5.1. Characteristics of the sample

Table 1 estimated the background characteristics of ever married women aged 15 to 49 years who participated in NFHS-4 domestic violence survey module. A total 34,921 women were included in this present study that was the representative population of selected 16 states and 4 union territories of India. All the selected participants near about evenly distributed (Poorest 19.7%, Poorer 18.66%, Middle 21.31%, Richer 21.81% and Richest 19.15%) in different wealth quintile category. Most of them lived in rural (67.91%) areas. The respondents were mostly above 35 years old (35.05%), had a secondary and above level of education (60%) and had no engagement with any working activity (77.14%) other than household domestic work. About 56% women belonged to those families where the total family member ranges from four to six and a substantial proportion (41.27%) of women had 2 children in 12 month preceding the survey or ever.

Descriptive statistics for the remaining state level variables are shown in Table 1.1, indicating that the mean unemployment rate is 7.42 (SD 3.41) per thousand and the mean poverty rate 22.01% (SD 11.59) while the mean literacy rate for the selected study area is 73.37% (SD 8.71).

5.2. Prevalence of spousal violence against women by husband

Table 2 showed the prevalence of different types (physical, emotional and sexual) of spousal violence against women by their husband on ever or 12 month preceding the survey for the selected study area. It was reported that 30% ever married women have experienced any one form of domestic spousal violence in their lifetime while 23% of ever married women experienced their violence from 12 month preceding the survey. A usual or most common form of spousal violence is physical violence where more than one fourth of ever-married women reported their any form of physical violence ever followed by 18.27%

Table 1
Background characteristics of ever-married women who were participated in domestic violence module of women survey, NFHS 2015–2016 (N = 34,921).

Background Characteristics	Weighted percentage (%)
Wealth Quintile	
Poorest	19.07
Poorer	18.66
Middle	21.31
Richer	21.81
Richest	19.15
Place of Residence	
Urban	32.09
Rural	67.91
Age Group (Year)	
15 - 24	34.55
25 - 35	30.40
36 - 49	35.05
Level of Education	
No education	28.87
Primary	11.18
Secondary	45.57
Higher	14.38
Working Status of Respondent	
Currently working	22.86
Currently not Working	77.14
Household member (Person)	
<4	17.34
4 - 6	56.04
>6	26.62
Number of living children	
No child	03.88
1 child	18.22
2 child	41.27
3 or more child	36.62

Table 1.1
Descriptive statistics for state level variables.

Variables	Mean	S.D.	Min	Max
Unemployment rate (thousand)	07.42	03.41	0.40	21.40
Poverty rate (%)	22.01	11.59	1.00	39.93
Literacy rate (%)	73.37	08.71	61.80	94.00

Note: Poverty rate and unemployment rate and literacy rate has been taken from handbook of statistics on Indian states published by Reserve Bank of India, 2018–2019.

Table 2
Percentage (Weighted) of ever-married women aged 15–49 years (N = 34,921) who have experienced various forms of violence from their husband ever or in 12 months preceding the survey, NFHS 2015–2016.

Type of violence	Ever	In the past 12 months
Physical Violence		
Any form of physical violence	26.28	18.27
Pushed her, shook her, or threw something at her	12.54	09.50
Twisted her arm or pulled her hair	10.70	08.19
Slapped her	23.22	17.43
Punched her with his fist or with something that could hurt her	08.03	06.15
Kicked her, dragged her, or beat her up	08.34	06.34
Tried to choke her or burn her on purpose	01.47	01.14
Threatened her or attacked her with a knife, gun, or any other weapon	00.75	00.56
Sexual Violence		
Any form of sexual violence	06.15	05.19
Physically forced her to have sexual intercourse with him even when she did not want to	04.96	04.10
Forced her to perform any sexual acts she did not want to	03.16	02.59
Forced her with threats or in any other way to perform any sexual acts she did not want to	02.3	01.89
Emotional violence		
Any form of emotional violence	12.46	10.74
Said or did something to humiliate her in front of others	08.76	07.22
Insulted her or made her feel bad about herself	05.29	04.31
Threatened to hurt or harm her or someone close to her Insulted her or made her feel bad about herself	07.17	05.81
Any form of emotional, physical, or sexual violence	29.27	23.47

Note: Husband refers to the most current husband for married women and most recent husband for widowed, divorced, separated or deserted women.

from 12 month preceding the survey. As per NFHS violence schedule there were total 7 types of physical violence, 3 types of emotional and 3 types of sexual violence. Among all types of physical violence most of the women (ever 23.22% & from past 12 months 17.43%) got slapped by their husband. Apart from physical violence sexual violence happened with 5.19% ever-married women from the past 12 months of the survey followed by 10.74% in case of emotional violence. Among all kind of sexual violence most of the women (4.10%) experienced forced sexual intercourse when humiliation in front of others was most (7.22%) occurring emotional violence. Notably, the prevalence of violence against women increased with their age.

5.3. Test of association between level-1 characteristics and prevalence of women spousal violence

Table 3 represented the bivariate association using chi-square test of independence between selected level-1 predictors and prevalence of women spousal violence for the selected study area. Result reveled that all the level-1 predictors (household wealth [Chi Square = 15000; P < 0.01], place of residence [Chi Square = 54.63; P < 0.01], age [Chi Square = 12.11; P < 0.01], level of education [Chi Square = 1100; P < 0.01], working status [Chi Square = 386.43; P < 0.01], number of living children [Chi Square = 79.81; P < 0.01] and household member [Chi Square = 37.54; P < 0.01]) are significantly associated with the

Table 3
Association between selected level -1 predictors and prevalence of domestic spousal violence among ever-married women aged 15–49, in some selected states of India, using Chi-square test, NFHS 2015-16.

Predictors	Domestic violence status		Chi-square (χ)	P -value
	Not Violated (N)	violated (N)		
Wealth Quintile				
Poorest	3592 (52.39%)	3264 (47.60%)	15000	0.000
Poorer	4315 (60.09%)	2865 (39.90%)		
Middle	5031 (66.41%)	2545 (33.59%)		
Richer	5313 (72.47%)	2018 (27.53%)		
Richest	4895 (81.88%)	1083 (18.11%)		
Place of Residence				
Urban	6973 (69.22%)	3101 (30.78%)	54.63	0.000
Rural	16173 (65.02%)	8674 (34.88%)		
Age Group (Year)				
15 - 24	3468 (68.36%)	1605 (31.64%)	12.11	0.002
25 - 35	9681 (66.14%)	4955 (33.85%)		
36 - 49	9997 (65.71%)	5215 (34.28%)		
Level of Education				
No education	6626 (56.79%)	5042 (43.21%)	1100	0.000
Primary	2859 (61.33%)	1803 (38.67%)		
Secondary	10693 (71.19%)	4327 (28.81%)		
Higher	2968 (83.11%)	603 (16.89%)		
Working Status of Respondent				
Currently working	5538 (65.39%)	2931 (34.60%)	386.43	0.000
Currently not Working	18277 (69.09%)	8175 (30.90%)		
Household member (Person)				
less than four	5054 (67.02%)	2487 (32.98%)	37.54	0.000
four to six	13812 (66.01%)	7112 (33.99%)		
more than six	4280 (66.30%)	2176 (33.71%)		
Number of living children				
No child	646 (47.60%)	711 (52.39%)	79.8166	0.000
1 child	3218 (50.57%)	3146 (49.43%)		
2 child	12531 (86.95%)	1881 (13.05%)		
3 or more child	6612 (51.70%)	6176 (48.30%)		

prevalence of women spousal violence happened by their husband. The prevalence of spousal violence incidence was higher among those women who lived into poorest household wealth quintile and the decreasing trend noticed with increasing household's wealth condition. Though the spousal violence against women is a common phenomenon for both in rural and urban areas, the proportion was slightly higher (5%) in rural areas. Notably, the prevalence of spousal violence was higher among those women who had no formal education (43.21%) and who were currently working (34.60%). Prevalence by number of household member and number of children in household marked a pivotal role that the rate was higher among those household where minimum household member is more than 4 (33.99%) and household no children (52.39%).

5.4. Multilevel logistic regression

5.4.1. Unconditional model (model 0)

Table 4.1 estimated the unconditional model of multilevel logistic setup, commonly known as variance component model. The unconditional model is an empty model without any explanatory variables at either individual level or state level. This model shows the proportion of total variation in experiencing of women's spousal violence by their husband between states rather than the variation between individuals. This model clearly indicates that there has a clear distinction between states (between state variance 0.87) in women's experience of spousal violence and it is significant at P < 0.001. The inter-class correlation (ICC) is 0.20 indicating that there has 20% of variance in experiencing women's spousal violence is at level-2 here, in state level and it is also significant at P < 0.01. The model also signifies that the unconditional probability [0.33/(1 +0 .33)] of spousal violence of women by their husband is 25% in allover the selected study area. The ICC more than 0 gives the permission to go ahead for the next step to identify the effect of individual level predictor and state level predictors on domestic spousal violence against women by their husband.

5.4.2. Multilevel logistic regression: individual level predictors (Model-1)

Women Characteristics (individual level predictors) associated with the prevalence of spousal violence of women were introduced in model-1 (Table 4.2). Earlier study (Ahmad et al., 2019) has shown that some degree of variation of women spousal violence could be explained by the individual level characteristics. Apart from this, model 0 (Table 4.1) or unconditional model also confirmed to us that there has 20% variance of women spousal violence between states is at level-2 and rest of it at level-1. Therefore, the expectation was that the level-1 predictors must reduce certain degree of variation of violence between states. Model-1 showed that the inclusion of women characteristics did reduced up to 18% of the variance in the prevalence of women spousal violence between states. The proportion of total variation in the prevalence of spousal violence that was explained by the state where one lives was now reduced to 0.18 (ICC 0.18) even after controlling the individual level characteristics and it was 2% point reduction from model 0.

To remain firm with objectives, it has been proved that women characteristic predicted certain degree of variance in the prevalence of women spousal violence between states. Women lived in rural settings; had no formal education; aged more than 25 and those who were currently working had significantly higher odds of experiencing violence by their husband. Women belonged to poorest wealth quintile; had a household size with 4 or more members; and has 3 or more children were at more risk in experiencing violence by their husband.

5.4.3. Multilevel logistic regression: individual level & state level predictors (Model-2)

Model 2 estimated that whether the variation in the prevalence of women spousal violence could be better explained by certain characteristics of states rather than the characteristics of women living there (Table 4.2; Model 2). The result showed that by adding state-level variables the proportion of total variance in the prevalence of spousal violence between states reduced up to 11% (ICC 0.011) which was 20% (ICC 0.20) in base model. Alternatively, we can say that the total

Table 4.1
Unconditional Model or Variance Component (Model 0), coefficient.

Variables	Domestic Physical Violence			
	Estimates	Std. Err.	P>|">|Z|">|	95% C.I
Intercept (Odds)	0.33	0.069	0.000	0.27 -0 .50
Between-states Variance	0.87	0.028	0.000	0.46 - 1.10
ICC (Coefficient)	0.20	0.053	0.000	0.12 -0 .25

LR test vs. logistic model: chibar2(01) = 1773.49 Prob ≥ chibar2 = 0.000.
ICC-Inter-Class Correlation; CI- Confidence Interval.

Table 4.2
Multi-level logistic regression, model 1 and model 2, odds ratios and level 2 impacts.

Predictors	Model 1 (Level 1 Odd ratio)			Model 2 (Level 1 &"">& 2 odds ratio)		
	Odds Ratio	Std. Err.	95% C.I	Odds Ratio	Std. Err.	95% C.I
Level-1 (42886Women)						
Wealth Quintile						
Poorest®						
Poorer	0.89***	0.033	0.83 -0 .96	0.89***	0.033	0.83 - 0.96
Middle	0.77***	0.031	0.72 - 0.83	0.76***	0.031	0.72 - 0.83
Richer	0.62***	0.028	0.57 - 0.64	0.61***	0.028	0.57 - 0.64
Richest	0.45***	0.025	0.40 - 0.49	0.44***	0.026	0.40 - 0.49
Place of Residence						
Rural®						
Urban	0.87**	0.027	0.82 - 0.93	0.85**	0.027	0.82 - 0.93
Age Group (Year)						
15 - 24®						
25 - 35	1.31***	0.040	1.25 - 1.41	1.31***	0.040	1.25 - 1.41
36 - 49	1.19***	0.050	1.15 - 1.26	1.19***	0.050	1.15 - 1.26
Level of Education						
No education®						
Primary	0.96	0.037	0.89 - 1.03	0.96	0.037	0.89 - 1.03
Secondary	0.75***	0.024	0.70 - 0.79	0.74***	0.027	0.70 - 0.79
Higher	0.41***	0.023	0.36–0.46	0.39***	0.024	0.36–0.46
Working Status of Respondent						
Currently working®						
Currently not Working	0.94**	0.043	0.87 - 1.07	0.94**	0.043	0.87 - 1.07
Total household member (Person)						
less than four®						
Four to six	1.02	0.032	0.95 - 1.08	1.02	0.031	0.95 - 1.08
more than six	1.42**	0.052	1.32 - 1.53	1.42**	0.052	1.32 - 1.53
Total no. Of living children						
No child®						
1 child	0.46	0.012	0.43 - 0.48	0.46	0.012	0.43 - 0.48
2 child	0.45**	0.016	0.41 - 0.47	0.45**	0.016	0.41 - 0.47
3 or more child	1.43**	0.030	1.38 - 1.56	1.43**	0.030	1.38 - 1.56
Level -2 (20 States)						
Unemployment rate				1.07**	0.018	0.96 - 1.12
Poverty rate				1.05***	0.007	1.01- 1.09
Literacy Rate				0.96**	0.021	0.92 - 1.01
Between states Variance	0.72	0.056	0.49 -1.30	0.39	0.053	0.28- 1.01
ICC (Inter-Class Correlation)	**0.18**			**0.11**		
Reduction of ICC from Base Model	**0.02**			**0.09**		
Reduction of variance from Base Model	**0.15**			**0.48**		
LR test vs. logistic model	chibar2 (01) = 1256.90 Prob ≥ chibar2 = 0.000			chibar2 (01) = 966.48 Prob ≥ chibar2 = 0.000		

® - Reference Category; CI stands for Confidence Interval; P <0.05 =**"">** & P <0.01=***">***.

reduction of variance in the prevalence of spousal violence was 9% point from the base model, out of which 2% point reduction was due to level 1 predictors and 7% point reduction was due to level 2 predictors. The result elucidates that state level characteristics has a greater effect for the reduction of variation in the prevalence of spousal violence in selected study area. It seems that overall progress of the employment generation, reduction of poverty and increase of literacy rate might reduce the incidence of spousal violence across the different states. Nevertheless, despite the statically significant contribution of state level variables, a significant amount of variation in the prevalence of women spousal violence was left unexplained (11%), indicating that the differences between states regarding violence are not totally accounted. And a further research should be suggested from here for the reduction of variance of women spousal violence between states by considering more individual level and state level predictors.

The result of model 2 highlights that the addition of state level predictors had a relatively minor influence on the strength of relationship between individual level characteristics and the prevalence of women spousal violence, which remained significant even after controlling state level predictors. State level predictors mainly influenced upon women's household wealth, level of education and place of residence among all level 1 predictors. Level 2 odds estimated that every one unit increase of unemployment rate and poverty rate the odds of being violated will be increased 0.07 times (odd 1.07 and 95% CI 0.96 - 1.12) and 0.05 times respectively. On the other hand every one unit

increase of literacy rate the odds of being violated will be decreased 0.04 times (odd 0.96 and 95% CI 0.92 - 1.01).

6. Discussion

On the basis of National Family Health survey-4 data set, this study tried to explore the risk factors associated with the prevalence of spousal violence against women of selected 16 states and 4 union territories in India. In this present paper we used a nested model popularly known as two level random intercept model because some earlier studies of under developed and developing countries have shown that spousal violence against women not only vary across individual level determinants but also there has some contextual regional effects (Ahmad et al., 2019; Benebo et al., 2018; Paul Sohini 2016; Kimuna et al., 2012). Most of the scholars accused to social inequalities and differentiation of women autonomy (Dyson & Moore, 1983; Bhengra et al., 1999) for the variation of domestic violence across different geographical regions in India. Although in literature there has several studies that deal with the same subject which explore the factors associated with the prevalence of women spousal violence in Indian context but none of these has done by considering only high and low prevalence states. Therefore, the results of this study is highly relevant because the results are the outcomes of the study based on comparing those women who belonged to top 10 high prevalence and bottom 10 low prevalence states & territories. Findings of this study showed that the women belonged to poorest wealth

background were at more risk in experiencing violence by their husband but in case of richest wealth quintile the odds of being violation is 0.45 times lower compared to poorest wealth quintile and it is significant. It is not an uncommon findings because this findings also consistent with various previous findings (Kimuna et al., 2012). Though, some previous research reported that spousal violence against women is not bound within a particular economic class but the women of economically weaker section are the worst sufferers (Ahmad et al., 2019). In this regard it will not be wrongfully to assume that poverty in a family may create a mental agony on household head here on husband and eventually they force out their anger, depression, irked against their partner while it is only a form of expression of economic depression nothing else. The result also showed that the probability of spousal violence against women by their husband is higher among rural women compared to urban women even after controlling the higher level contextual variables. However, this is not a conclusive result because various earlier studies conclude that rural house wife highly face physical violence as well as sexual violence where as urban women tolerate emotional violence more (Babu & &Kar, 2009; Sabri et al., 2014). Lesser educational qualification of husband and wife, unemployment, lack of availability of permanent job, poverty, more economic dependence of rural housewife on their husband, some time large household size may act as triggering factors for doing such violence in rural areas.The study revealed that women aged 25 to 35 year were at more risk in experiencing violence than the elderly by their husband and this findings is also similar with some another studies. This range of age is the time span for constructive activity when many outer world pressures came into existence into a family life. From a parental point of view, to stand their family, for making better image of their family to the community life, to fulfill the demands of their children, father and sometime both father & mother take extra work load which make their mind distressed and this stress some time may act like a stimulus for violation. In this mature age rang thinking differentiation of couple in case of decision making, family planning etc. drive the spouse to engage in violation. This paper clearly indicated that education is a protective factor for women which help to safe themselves from domestic violence. This is a consistent finding with many other findings Rapp et al., 2012; Bhat, 2015; Abo-Elfetoh & El-Mawgod 2015). Education makes the women empower, economically active & independent, self-decision maker and all of these help them to protect themselves from violation not only from their husband but also from the outer world (Bhattacharya, 2015). Result of this present study shows that the odds of violenceof not currently working women were 0.94 times lower than those who are currently working and it is also a consistent result (Biswas, 2017; Paul, 2016). In Indian culture, not always but many times it is observed that if a woman employed herself, it may hurt the partner's ego, and in order to restore his supremacy, he may turn to violence whileit is an expression of gender discrimination. The results showed that probability of spousal violence against women by their husband increased with increasing household size. The possible reason is that large household size means more economic pressure on family's head here on husband, diverse thinking pattern among household's members on a particular family issue, more dependency ratio etc. make their mind irritating, disturbed and sometime this kind of irritation give birth such kind of violation. The present paper also conclude that women without children and more children were at more risk in experiencing violence and this result also consistent with various previous research (Kimuna et al., 2012; Ahmad et al., 2019; Martin 1999). According to traditional belief of India's people a women is not completed without a child and that's why she is often humiliated and tortured by her husband as well as by other family members of that household. On the other hand presence of too many children in a family may act as a stimulus for violence against women especially if most of the children are girls. Generally in Indian society strong desire of a son sometime may increase total number of children in households. Eventually it enhances the cumulative effect of youth dependency ratio on the working head and the allied incidences in family.

Higher level contextual variables also showed significant association with the prevalence of spousal violence against women. Unemployment, poverty may create economic pressure; make the male desperate while literacy can change societal view on women. Thus higher level contextual variables effect on individual level determinants in occurrences of women spousal violence randomly.

7. Conclusion

This study sought to highlight major causal analysis about the incidence of spousal violence against women. Though, it is a deep rooted, multi-correlated phenomena and an issue of self as well as family's prestige that's why biasness in reporting answer is a common matter of fact. In this context, NFHS is large scale survey and include a large proportion of women in violence module, that's why the result is considerable. Male dominance orthodox patriarchal Indian society is the main triggering factor for inciting such kind of crux where, husbands always consider at her wife like a lifetime property instead of priority and this fanatical thinking drive them to take such decision of violation also if the problem is so tinny between them. This analytical study provides some grass route areas where formative work can be done to stop this cruel activity. The Govt. promptness as a collective responsibility to enhance educational facilities for men and women, create employment opportunities and take policies for overall economic and societal development, these may change the individual perception of a person to cause the spousal violence against women.

Human and animal rights

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Availability of data

The data are collected from the data repository of Demographic Health Survey (DHS) which is publicly available and could be sassed upon a request subject to non-profit and academic interest only.

Informed consent

It was obtained from all individual participants included in the study.

Ethical statement

- This material has not been published in whole or in part elsewhere
- The manuscript is not currently being considered for publication in another journal.
- All the authors have been personally and actively involved in substantive work leading to the manuscript and will hold themselves jointly and individually responsible for its content.

Authorship Contributions

Tanu Das: Conception and design of study, Acquisition of data, methods, Analysis of data, Drafting the manuscript, Revising the manuscript critically for important intellectual content,

Tamal Basu Roy: Conception and design of study, Acquisition of data, methods, Drafting the manuscript, Revising the manuscript critically for important intellectual content,

Declaration of competing interest

The authors have no conflict of interest to declare.

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