

Rashada, Ahmed Shoukry; Sharaf, Mesbah Fathy

Working Paper

Income inequality and intimate partner violence against women: Evidence from India

Frankfurt School - Working Paper Series, No. 222

Provided in Cooperation with:

Frankfurt School of Finance and Management

Suggested Citation: Rashada, Ahmed Shoukry; Sharaf, Mesbah Fathy (2016) : Income inequality and intimate partner violence against women: Evidence from India, Frankfurt School - Working Paper Series, No. 222, Frankfurt School of Finance & Management, Frankfurt a. M.

This Version is available at:

<http://hdl.handle.net/10419/148026>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Frankfurt School – Working Paper Series

No. 222

**Income Inequality and Intimate
Partner Violence against Women:
Evidence from India**

by Ahmed Shoukry Rashada and Mesbah Fathy Sharaf

July 2016



German Excellence. Global Relevance.

Sonnemannstr. 9–11 60314 Frankfurt am Main, Germany

Phone: +49 (0) 69 154 0080 Fax: +49 (0) 69 154 008 728

Internet: www.frankfurt-school.de

Abstract

Intimate Partner Violence (IPV) has been consistently linked to poor health and adverse social outcomes. Though there is substantial empirical evidence on the determinants of IPV, little attention has been given to the potential impact of income inequality on domestic violence, especially in the developing world. This study aims to investigate the relationship between the IPV and contextual income inequality in India, a country with high prevalence of IPV and substantial income inequality. We use data on a nationally representative sample of 69,704 women from the third National Family Health Survey for India, conducted in 2005-06. Standard logistic regression and a Tobit model are used to examine the effect of income inequality, measured by the Gini-index, on different forms of IPV: physical, and sexual. In addition to income inequality, the multivariate analyses also control for other IPV determinants that are widely used in the literature. Results show a robust statistically significant positive association between income inequality and IPV in India. A one unit increase in the Gini-index increases the odds of sexual violence by 6.2% and less severe form of violence by 2.1%. Results of the Tobit model show that the intensity of violence against women increases by 0.0317 when the Gini-index increases by one unit. As for the other covariates, we find education level, husband's employment status, living in rural areas, being from non-scheduled caste, and the economic status of household to be protective factors from IPV. We also find the type of religion and caste/tribe to influence the likelihood of experiencing IPV. Policies that reduce income inequality would help in reducing the level of IPV against women.

Key words: Income Inequality, Intimate Partner Violence, India

JEL classification: I14, I15 and I18

ISSN: 14369753

Contact:

Dr. Ahmed Shoukry Rashad

Visiting Scholar

Economics Department

Frankfurt School of Finance & Management

Sonnemannstraße 9-11

60314 Frankfurt am Main

Germany

ahmedshoukry@aucegypt.edu

Mesbah Fathy Sharaf

University of Alberta

9-11 Tory Building, HM

Office: 780-492-1331

sharaf@ualberta.ca

Content

1. Introduction.....	4
2. Materials and Methods.....	5
3. Results.....	10
4. Discussion.....	21
5. Conclusion	23
6. References.....	24

1. Introduction

Intimate partner violence (IPV) is a violation to the basic human rights, and is a major social problem, particularly in developing countries. More than one out of every three women worldwide has experienced either physical and/or sexual violence in their lifetime. Recent research showed that violence against women has severe consequences on women's mental and physical health (Campbell, et al., 2002; Golding, 1999; Kramer, et al., 2004; Rodriguez, et al., 1998; Sutherland, et al., 1997). IPV could lead to depression, sleep difficulties, eating disorders and injuries, and increases the risk of homicide or suicide. Spousal violence is correlated with greater rates of infant and child mortality and morbidity. The impact of violence against woman on economic development and poverty elimination has been found substantial (Duvvury, et al., 2013). For example, Morocco lost an estimated 1.2% of GDP in productivity due to violence against women (Duvvury, et al., 2009). The World Bank considers that both poverty alleviation and violence against women are connected. It stressed that to end poverty we have to eliminate violence against women and girls.

Though there is substantial empirical evidence on the determinants of IPV, little attention has been given to the potential impact of income inequality on IPV in the literature. This study aims to fill this gap in the literature by investigating the relationship between the IPV and contextual income inequality in India, a country with high prevalence of IPV and substantial income inequality. Our premise is based on the sociological theories of crime-social disorganization theory, and the strain theory- that focuses on the emotional feelings that derives individuals to become delinquents (Merton, 1938; Shaw & McKay, 1942). These theories suggest that deprivation and the large disparities in wealth could cause frustration, social tension, anxiety and stress that derive individuals to become more violent in general (Enamorado, et al., 2016). Wilkinson and Pickett (2010) presented a political economy argument to explain the mechanism behind the harmful effect of income inequality on the society and social cohesion. They argued that income inequality exerts pressure on social spending and tax revenue, as those who became wealthy have little incentive to pay taxes, as they purchase their own education, healthcare, security and other services that can be privatized.

Several studies have been conducted to investigate the impact of the contextual economic inequality on IPV in the US. For example, Whaley and Messner (2002) studied the within- country differences in gendered homicides in relation to constructed economic disadvantage index in the US. The index is made up of Gini index, percentage of black people, percentage of the poor, and percentage of

unemployed. They found a negative index shows moderate to strong harmful effect on women. In addition to other factors, D'Alessio and Stolzenberg (2010) examined the impact of economic inequality on violent crimes reported to police, for married in the US. They found a positive association between city-economic inequality and spousal violence. Likewise, Lanier and Maume (2009) studied the contextual impact of economic inequality at the county level on the counts of IPV incidents in the US. They found the impact tends to be rather small and weakly significant. A recent study by Sanz-Barbero, et al. (2015) on Spain suggested that economic disparities increase women's exposure to IPV.

In the developing world, Andersson, et al. (2007) estimated the impact of the overall inequality at the country level on domestic physical violence in eight southern African countries. They found no interpretable association between income inequality and domestic violence reporting across countries.

The objective of this study is to infer the effect of income distribution on IPV. To the best of our knowledge and to date, the current study is the first to address the within country differences in IPV in relation to wealth inequality in India. We focus the attention on India, as it is one of the largest developing countries, and the literature on IPV determinants are mainly focusing on developed countries particularly the US. In addition, spousal violence rate in India is one of the highest in the world, 35%, which roughly corresponds to 175 million women in 2005, and there is a growing concern with regard to violence (physical or sexual) against women in general not only IPV. Also the disparities in IPV prevalence across states, as well as the level of wealth inequality, are substantial. Thus, the country gives us large heterogeneity across regions to examine the effect of contextual income inequality on the individual risk of experiencing spousal violence.

The study is structured as follows: Section 2 presents the data and the econometric methodology. Section 3 presents the empirical results. Section 4 discusses the findings of the study in the light of the literature, and section 5 concludes the paper.

2. Materials and Methods

We use data from the third National Family Health Survey (NFHS-3) for India, conducted in 2005-06. The NFHS is an international survey conducted in 85 developing countries. The survey is spon-

sored by the U.S Agency for international development. The NFHS, a nationally representative household survey, provides data on a wide range of population and health indicators. In this study, we use a nationally representative sample of 124,385 women between age 15 to 49 (reproductive age) that were interviewed throughout India. The NFHS has a complex design. It involves stratification based on the level of urbanization, and region. It involves clustering, where the selected villages are the clusters for rural areas, and the selected districts/towns are the clusters for urban areas. The complex survey design has been taken into account in the descriptive and regression analysis.

The NFHS-3 contains detailed information on different forms of spousal violence experienced by the interviewed women, and their help seeking behavior. The collection of valid and reliable information on IPV is a challenging task due to the sensitivity of the topic, and the safety concerns of the interviewed women. NFHS-3 took certain measures to address these concerns. This includes using a module of questions known to increase the validity of domestic violence data, providing specialized training for the interviewers, in addition to other measures. To determine the IPV, The following set of yes or no questions was used in the interview.

"Does/Did your last husband ever do any of the following things: slap you? Twist your arm or pull your hair? Push you, shake you, or throw something at you? Punch you with his fist or with something that could hurt you? Kick you, drag you or beat you up? Try to choke you or burn you on purpose? Threaten or attack you with a knife, gun, or any other weapons? Physically force you to have sexual intercourse with him even when you did not want to? Force you to perform any sexual acts you did not want to?"

Due to security precautions, NFHS-3 interviewed only 69,704 ever-married women on spousal violence. Since NFHS-3 requires privacy, only one woman in each household was interviewed for the domestic violence module to keep information confidential. Thus, our estimation sample includes 69,704 women nested in 29 states. In this paper, we use four outcome variables, three binary variables plus a constructed weighted index variable, to measure IPV. The first measure is a binary variable of whether a woman experienced less severe forms of spousal violence. The second measure is a binary variable of whether a woman experienced severe spousal violence. The third outcome variable is a binary variable of whether a woman experienced sexual violence. In addition to the three binary outcome variables, we constructed a weighted index of spousal violence from all of the

above IPV questions. The merit of the constructed index is that it would capture the overall intensity of violence (physical or/and sexual) toward a given woman.

The NFHS-3 has no data on household income or expenditure. Instead it collected detailed information on household assets ownership. The NFHS-3 team developed a measure of economic status based on household's ownership of selected assets. The wealth index is generated through principal components analysis, which yields a score for every household reflecting the economic affluence. The key control variable of interest is the degree of inequality in the wealth distribution. We measure the distribution of wealth across households in a given state by the Gini coefficient. The Gini coefficient is calculated from the wealth index score. It varies between zero (perfect equality) and 100 (extreme inequality).

In order to account for the multi-level nature of the study's hypothesis, we use standard logistic regression with cluster robust standard errors. We prefer the standard logistic model over multi-level (hierarchical) modeling, since the estimated parameters of the state level variables will not be reliable when the number of clusters, Indian states, is small (less than 30) (Bryan & Jenkins, 2013).

To determine the impact of economic inequality on the IPV, we estimate the following logistic regression model in Equation 1

$$Y = \beta_0 + \sum \beta_i X_i + \beta_2 Gini_i + \varepsilon \quad (1)$$

Where the dependent variable, $Y = \ln\left(\frac{p}{1-p}\right)$, and X is a vector containing the individual level covariates. Several individual control variables are included in our model. We control for women's education as well as husband's education, employment status of women and men, religion, caste/tribe, place of residence and household structure (nuclear/ non-nuclear). To control for difference in living standards, we add the wealth index that based on household's ownership of assets to our model. p is the probability of a woman facing spousal violence. We develop three dependent variables, the less severe physical violence, severe physical violence and sexual violence separately. The less severe violence variables is composed of whether woman has ever been pushed, slapped, punched, kicked or dragged, shook or threw something, twist arm, or pull hair. The severe violence variable consists of spouse ever tried to strangle or burn or ever attacked with knife or gun. The sexual violence looked on whether woman has been physically forced to have sex or other sexual

acts when not wanted. A descriptive statistics for all variables used in the analyses is depicted in Table 1.

Table 1: Descriptive Statistics

Variable	Mean
Spousal physical violence	35.1
Spousal sexual violence	10
Women with no education	40.6
Women with some primary education	8
Women with completed primary education	6.7
Women with some secondary education	32.7
Women with completed secondary education	4.7
Women with more than secondary education	7.3
Women with primary education	14.7
Women with secondary or higher education	44.7
Median years of education completed	4.2
Men with no education	18
Men with some primary education	10.2
Men with completed primary education	6.5
Men with some secondary education	45.5
Men with completed secondary education	7.2
Men with more than secondary education	12.5
Men with primary education	16.7
Men with secondary or higher education	65.2
Married women employed in the last 12 months receiving cash earnings	42.8

Married men employed in the last 12 months receiving cash earnings: Total	98.8
Household Structure	
Nuclear	60.5
Non-nuclear	39.5
Religion	
Hindu	82
Muslim	13
Christian	3
Sikh	2
Buddhist	1
Others	1
Region	
Urban	46
Rural	54
Type of tribe/caste	
scheduled castes	19
scheduled tribes	8
other backward classes	40
Other background	33

Source: Authors' calculations based on data from the NFHS-3.

Table 1 shows that 35.1% of women reported being exposed to physical violence, 10% were exposed to sexual violence. 40.6% of the women and 18% are with no education. 42.8% of women and 98.8% of men were employed in the last 12 month preceding the survey interview. 60.5% of the households have a nuclear structure. The majority of the women in our sample are Hindu (82%) ,

13% are Muslims, 3% are Christian and 2% are Sikh. 54% of the women in our sample live in rural areas. 19% of the sample live in a scheduled castes, 8% in scheduled tribes, and 40% belong to other backward classes.

Statistics show that 65% of the women in our sample reported that they did not experience any form of violence. Therefore, our constructed violence index based on principal component analysis would be skewed and has a long right tail, as a very large number of observations are centered at a specific value. We use Tobit model, which is estimated by the maximum likelihood, to estimate this limited dependent variable.

3. Results

The estimated coefficients of the logistic regression are quite difficult to interpret; thus, in Table 2, we present the odds ratio for the covariates of the three outcome variables; the less severe physical violence, severe physical violence, and sexual violence, separately.

Table 2: Results of the Multivariate Logistic Regression model of the determinants of IPV

Variables	Less severe violence	Severe violence	Sexual violence
Gini coefficient	1.021***	1.007	1.062***
	(1.006 - 1.035)	(0.989 - 1.026)	(1.023 - 1.102)
Wealth Index			
poorer	1.021	1.007	1.010
	(0.949 - 1.098)	(0.922 - 1.100)	(0.877 - 1.163)
middle	0.903	0.945	0.973

	(0.796 - 1.025)	(0.848 - 1.055)	(0.776 - 1.220)
richer	0.779***	0.715***	0.893
	(0.708 - 0.857)	(0.644 - 0.793)	(0.666 - 1.198)
richest	0.497***	0.392***	0.626**
	(0.428 - 0.578)	(0.333 - 0.462)	(0.412 - 0.950)
Partner's education level			
primary	1.069*	0.955	1.043
	(0.997 - 1.147)	(0.853 - 1.069)	(0.845 - 1.288)
secondary	0.890***	0.819***	0.917
	(0.839 - 0.944)	(0.756 - 0.889)	(0.770 - 1.091)
higher	0.758***	0.539***	0.622***
	(0.621 - 0.925)	(0.406 - 0.714)	(0.493 - 0.785)
don't know	0.800	0.800	1.300**
	(0.568 - 1.126)	(0.463 - 1.380)	(1.050 - 1.612)
Woman currently working			
yes	1.250***	1.441***	1.061
	(1.089 - 1.436)	(1.264 - 1.643)	(0.873 - 1.289)

Woman highest educational level			
primary	0.878	0.969	0.971
	(0.750 - 1.029)	(0.834 - 1.126)	(0.772 - 1.222)
secondary	0.650***	0.689***	0.838
	(0.540 - 0.783)	(0.555 - 0.856)	(0.617 - 1.138)
higher	0.306***	0.288***	0.375***
	(0.244 - 0.384)	(0.186 - 0.445)	(0.238 - 0.591)
Partner's occupation			
professional/technical/managerial	0.810*	0.531***	0.575***
	(0.654 - 1.003)	(0.361 - 0.782)	(0.429 - 0.769)
clerical	0.810**	0.717	0.538***
	(0.657 - 0.998)	(0.473 - 1.085)	(0.378 - 0.767)
sales	0.923	0.751**	0.682**
	(0.743 - 1.147)	(0.589 - 0.957)	(0.500 - 0.932)
agricultural	0.932	0.654***	0.542***
	(0.725 - 1.198)	(0.523 - 0.818)	(0.391 - 0.751)
services	0.854*	0.629***	0.533***

	(0.727 - 1.003)	(0.523 - 0.757)	(0.403 - 0.706)
skilled and unskilled manual	0.917	0.660***	0.631***
	(0.762 - 1.104)	(0.539 - 0.809)	(0.474 - 0.840)
don't know	0.385	0.312	0.289*
	(0.115 - 1.290)	(0.0745 - 1.306)	(0.0823 - 1.013)
Place of residence			
rural	0.784***	0.753***	1.022
	(0.691 - 0.888)	(0.682 - 0.832)	(0.895 - 1.167)
Religion			
muslim	1.221	1.236**	1.224*
	(0.958 - 1.558)	(1.007 - 1.517)	(0.999 - 1.499)
christian	1.035	1.242*	0.897
	(0.769 - 1.394)	(0.980 - 1.574)	(0.586 - 1.372)
sikh	1.097	1.101	1.369
	(0.810 - 1.485)	(0.777 - 1.561)	(0.761 - 2.461)
buddhist/neo-buddhist	1.255**	0.776**	0.287***
	(1.008 - 1.563)	(0.608 - 0.992)	(0.175 - 0.471)

jain	0.650	0.254*	0.970
	(0.308 - 1.372)	(0.0547 - 1.182)	(0.471 - 1.999)
no religion	0.664	1.537	0.0653***
	(0.327 - 1.348)	(0.355 - 6.654)	(0.00957 - 0.445)
donyi polo	1.174*	1.621***	1.340
	(0.984 - 1.402)	(1.450 - 1.812)	(0.856 - 2.097)
other	0.891	1.109	0.619**
	(0.679 - 1.170)	(0.862 - 1.427)	(0.387 - 0.988)
Household structure			
nuclear	1.243***	1.150	0.961
	(1.100 - 1.405)	(0.971 - 1.363)	(0.877 - 1.053)
type of caste or tribe of the household head			
scheduled tribe	0.786*	0.732***	0.723*
	(0.609 - 1.015)	(0.593 - 0.903)	(0.510 - 1.025)
other backward class	0.793***	0.772***	0.656***
	(0.680 - 0.926)	(0.653 - 0.913)	(0.521 - 0.826)
none of above	0.700***	0.671***	0.845*

	(0.631 - 0.776)	(0.570 - 0.792)	(0.694 - 1.030)
don't know	0.439***	0.451**	0.737
	(0.361 - 0.534)	(0.218 - 0.935)	(0.473 - 1.148)
Constant	0.517**	0.297***	0.0298***
	(0.294 - 0.909)	(0.152 - 0.579)	(0.00516 - 0.172)
Observations	66,373	66,373	66,378

95% confidence intervals are between brackets. *** p<0.01, ** p<0.05, * p<0.1

Of particular importance, the odds ratio of the Gini index has the expected detrimental effect on IPV, i.e. higher wealth inequality increases the odds of IPV, in all the estimated models. Results show a statistically significant negative association between the Gini index and all forms of IPV, but for the severe physical violence model which has the expected sign but was not statistically significant. Table 2 shows that the odds that a woman experience less severe form of violence increases by 2.1% for each additional unit increase in the Gini index. Likewise, the odds of experiencing sexual violence increases by 6.2% for each addition unit increase in the Gini index.

The positive association between the Gini index and IPV was robust and remained significant after controlling for household economic status and other factors. This indicates that if a couple migrates from a certain state where income inequality is low to a state where income inequality is high; they face higher risk of experiencing IPV, even though their own wealth did not change. Therefore, IPV is not only affected by the level of absolute wealth, but also by the rank of the household in the community.

As for the other covariates, we find that a husband's and wife's education, husband's employment status, living in rural areas, being from non-scheduled caste, and the economic status of household to be protective factors from IPV. We also found statistically significant evidence that the type of religion influences the likelihood of experiencing IPV. Compared to Hindu, Muslim, Christian and

donyi polo women face higher risk of experiencing IPV. Similarly, Buddhist women face lower risk of IPV, except for the less severe violence. Working women are more likely to be subject to IPV, which is unexpected. However, this variable is likely to be biased, as spousal violence could drive women to join the labor market and become more independent. Scheduled caste women are more likely to encounter IPV compared to other caste/tribe. Results yield that living in a nuclear family increases the odds of spousal violence.

Table 3: Results of the Multivariate Tobit model of the Intensity of IPV

Variables	coefficients
Gini coefficient	0.0317***
	(0.0172 - 0.0462)
Wealth Index	
poorer	0.00950
	(-0.0940 - 0.113)
middle	-0.0907
	(-0.253 - 0.0715)
richer	-0.298***
	(-0.415 - -0.180)
richest	-0.804***
	(-0.967 - -0.640)
Partner's education level	

primary	8.31e-05
	(-0.102 - 0.103)
secondary	-0.195***
	(-0.275 - -0.114)
higher	-0.445***
	(-0.630 - -0.260)
don't know	-0.216
	(-0.537 - 0.105)
Woman currently working	
yes	0.273***
	(0.120 - 0.427)
Woman highest education level	
primary	-0.0663
	(-0.213 - 0.0800)
secondary	-0.372***
	(-0.547 - -0.198)
higher	-1.172***

	(-1.451 - -0.894)
Partner's occupation	
professional/technical/managerial	-0.513***
	(-0.727 - -0.299)
clerical	-0.524***
	(-0.849 - -0.199)
sales	-0.326***
	(-0.522 - -0.129)
agricultural	-0.444***
	(-0.657 - -0.232)
services	-0.484***
	(-0.644 - -0.324)
skilled and unskilled manual	-0.392***
	(-0.541 - -0.244)
don't know	-1.318**
	(-2.483 - -0.153)
Place of residence	

rural	-0.196***
	(-0.306 - -0.0858)
Religion	
muslim	0.216*
	(-0.0117 - 0.445)
christian	0.0714
	(-0.217 - 0.359)
sikh	0.131
	(-0.183 - 0.446)
buddhist/neo-buddhist	-0.0643
	(-0.260 - 0.131)
jain	-0.461
	(-1.136 - 0.213)
jewish	-10.23
	(-10.23 - -10.23)
parsi/zoroastrian	0.922***
	(0.375 - 1.469)

no religion	-0.378
	(-1.252 - 0.496)
donyi polo	0.258**
	(0.0521 - 0.463)
other	-0.298**
	(-0.553 - -0.0433)
Household structure	
nuclear	0.156**
	(0.0254 - 0.286)
Type of caste or tribe of the household head	
scheduled tribe	-0.348***
	(-0.554 - -0.142)
other backward class	-0.366***
	(-0.459 - -0.273)
none of above	-0.347***
	(-0.467 - -0.227)
don't know	-0.762***

	(-0.930 - -0.594)
Constant	-1.209***
	(-1.921 - -0.497)
Observations	66,430

95% confidence intervals are between brackets. *** p<0.01, ** p<0.05, * p<0.1

Results of the Tobit model show a statistically significant positive association between the intensity of IPV and income inequality. In particular, the intensity of violence against women will increase by 0.0317 when the Gini index increases by one unit. In addition, results of the Tobit model show a socio-economic gradient in the intensity of IPV. Women from households with higher economic status, as measured by the wealth index, have lower intensity of IPV, compared to women from poorest families. Partner's education level, as well as a woman's level of education, has in general a statistically significant negative association with the intensity of IPV. The intensity of IPV is higher among working women, Muslims, households with a nuclear structure, compared to their corresponding reference groups. Women from rural areas and scheduled tribe have lower intensity of IPV compared to the reference groups.

4. Discussion

IPV has major negative health consequences on women and children, and it is a major health concern in developing countries (Chai, *et al.*, 2016). Several factors have been suggested in the literature to explain the existence of IPV. These include lower level of education, husband's use of alcohol or drug, witnessing family violence, and weak or no legal sanctions for domestic violence. Few studies investigated the role of economic inequality on domestic violence in the developing world.

While sociological theories such as, social disorganization theory, and strain theory argued that economic inequality will increase the level of violence within the society, extant empirical findings on the impact of income distribution on IPV do not support these theories' predications. For example, Andersson, *et al.* (2007), Lanier and Maume (2009), D'Alessio and Stolzenberg (2010), found no or weak support for the positive association between income inequality and IPV.

In this study, we examined the effect of the state economic inequality on the individual risk of experiencing IPV using data from India. Our results provide statistical support for the positive association between wealth inequality and IPV. We found the impact of inequality on IPV, not only statistically significant, but also large in magnitude. For instance, a one unit increase in Gini index, which ranges between 0 and 100, increases the odds of sexual violence by 6%. Our findings are in line with the recent literature that examines the role of income distribution on social outcomes. For example, several studies suggest that income inequality, measured by the Gini index, have adverse effects on health (Kondo, *et al.*, 2009; Lochner, *et al.*, 2001; Subramanian & Kawachi, 2004). In the criminology literature, it is widely documented that inequality is associated with higher levels of crimes (Blau & Blau, 1982; Demombynes & Özler, 2005; Kelly, 2000; Kennedy, *et al.*, 1998). However, some of these studies are accused of overstating the role of income inequality (McLeod, *et al.*, 2004). We tried to address this concern by controlling for several explanatory variables such as religion and tribe/caste.

The current study has some limitations, in addition to several merits. The cross sectional design of data raises the concern over omitted variable bias. But it seems relatively unlikely, as we control for a wide set of covariates. Despite that NFHS-3 take several steps to address this concern, underreporting of IPV because of failure to recall and stigmatization may affect the reliability of our dependent variables. A unique contribution of this study is the use of Gini index that is based on assets

ownership, which is a more comprehensive measure of inequality in comparison to the Gini index based on household expenditure or income, which is likely to be understated by interviewed respondents in developing countries. Additionally, we developed a weighted index of IPV to reflect the intensity of violence which is not captured by the standard binary variables.

5. Conclusion

In summary, the impact of income distribution on IPV has been empirically addressed in few studies, but with mixed findings, and mainly for developed countries. After controlling for a wide range of control variables, we found a statistically significant positive association between income inequality and IPV in India, except for severe violence, and the estimated odd ratios were large in magnitude. We found that household wealth protect women from IPV. However, it is important to note that increasing individuals' wealth alone, while maintaining the gap between social classes, is not sufficient to reduce IPV prevalence. Other background factors such as religion and type of caste/ tribe also influence the likelihood of being victim of IPV. Reducing income inequality would be an effective instrument to reduce the level of IPV against women.

Conflict of Interest

None

6. References

- Andersson, N., Ho-Foster, A., Mitchell, S., Scheepers, E., & Goldstein, S. (2007). Risk factors for domestic physical violence: national cross-sectional household surveys in eight southern African countries. *BMC Women's Health*, 7(1), 1.
- Blau, J. R., & Blau, P. M. (1982). The cost of inequality: Metropolitan structure and violent crime. *American Sociological Review*, 114-129.
- Bryan, M. L., & Jenkins, S. P. (2013). Regression analysis of country effects using multilevel data: A cautionary tale.
- Campbell, J., Jones, A. S., Dienemann, J., Kub, J., Schollenberger, J., O'Campo, P., *et al.* (2002). Intimate partner violence and physical health consequences. *Archives of internal medicine*, 162(10), 1157-1163.
- Chai, J., Fink, G., Kaaya, S., Danaei, G., Fawzi, W., Ezzati, M., *et al.* (2016). Association between intimate partner violence and poor child growth: results from 42 demographic and health surveys. *Bull World Health Organ*, 94(5), 331-339.
- D'Alessio, S. J., & Stolzenberg, L. (2010). The sex ratio and male-on-female intimate partner violence. *Journal of Criminal Justice*, 38(4), 555-561.
- Demombynes, G., & Özler, B. (2005). Crime and local inequality in South Africa. *Journal of Development Economics*, 76(2), 265-292.
- Duvvury, Callan, A., Carney, P., & Raghavendra, S. (2013). Intimate partner violence: Economic costs and implications for growth and development. *Women's Voice, Agency, & Participation Research Series*(3).
- Duvvury, Kes, A., Chakraborty, S., Milici, A., Ssewanyana, S., Mugisha, F., *et al.* (2009). Intimate partner violence: High costs to households and communities.

- Enamorado, T., López-Calva, L. F., Rodríguez-Castelán, C., & Winkler, H. (2016). Income inequality and violent crime: Evidence from Mexico's drug war. *Journal of Development Economics*, *120*, 128-143.
- Golding, J. M. (1999). Intimate partner violence as a risk factor for mental disorders: A meta-analysis. *Journal of family violence*, *14*(2), 99-132.
- Kelly, M. (2000). Inequality and crime. *Review of economics and Statistics*, *82*(4), 530-539.
- Kennedy, B. P., Kawachi, I., Prothrow-Stith, D., Lochner, K., & Gupta, V. (1998). Social capital, income inequality, and firearm violent crime. *Social science & medicine*, *47*(1), 7-17.
- Kondo, N., Sembajwe, G., Kawachi, I., van Dam, R. M., Subramanian, S. V., & Yamagata, Z. (2009). Income inequality, mortality, and self rated health: meta-analysis of multilevel studies. *BMJ*, *339*. doi: 10.1136/bmj.b4471
- Kramer, A., Lorenzon, D., & Mueller, G. (2004). Prevalence of intimate partner violence and health implications for women using emergency departments and primary care clinics. *Women's Health Issues*, *14*(1), 19-29.
- Lanier, C., & Maume, M. O. (2009). Intimate partner violence and social isolation across the rural/urban divide. *Violence Against Women*.
- Lochner, K., Pamuk, E., Makuc, D., Kennedy, B. P., & Kawachi, I. (2001). State-level income inequality and individual mortality risk: a prospective, multilevel study. *American Journal of Public Health*, *91*(3), 385.
- McLeod, J. D., Nonnemaker, J. M., & Call, K. T. (2004). Income inequality, race, and child well-being: An aggregate analysis in the 50 United States. *Journal of Health and Social Behavior*, *45*(3), 249-264.
- Merton, R. K. (1938). Social structure and anomie. *American sociological review*, *3*(5), 672-682.

- Rodriguez, M. A., Bauer, H. M., Flores-Ortiz, Y., & Szkupinski-Quiroga, S. (1998). Factors affecting patient-physician communication for abused Latina and Asian immigrant women. *Journal of Family Practice*, 47(4), 309-312.
- Sanz-Barbero, B., Vives-Cases, C., Otero-García, L., Muntaner, C., & Torrubiano-Domínguez, J. (2015). Intimate partner violence among women in Spain: the impact of regional-level male unemployment and income inequality. *The European Journal of Public Health*, ckv048.
- Shaw, C. R., & McKay, H. D. (1942). Juvenile delinquency and urban areas. *Chicago, Ill.*
- Subramanian, S., & Kawachi, I. (2004). Income inequality and health: what have we learned so far? *Epidemiologic reviews*, 26(1), 78-91.
- Sutherland, C., Bybee, D., & Sullivan, C. (1997). The long-term effects of battering on women's health. *Women's health (Hillsdale, NJ)*, 4(1), 41-70.
- Whaley, R. B., & Messner, S. F. (2002). Gender equality and gendered homicides. *Homicide Studies*, 6(3), 188-210.
- Wilkinson, R., & Pickett, K. (2010). *The Spirit Level: Why More Equal Societies Almost Always Do Better*: Allen Lane.