

**Unintended Benefit of Conditional Cash Transfer**  
**on Intimate Partner Violence: Evidence from**  
**MAMATA scheme**

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## **Abstract:**

Cash transfers to women have become an important policy tool to improve the social and economic well-being of women in India. This paper evaluates the impact of one such cash transfer scheme, MAMATA scheme, on intimate partner violence in rural Odisha. MAMATA was a conditional cash transfer scheme introduced in Odisha in October, 2011. Using propensity score-matching technique, this paper finds that relatively lesser proportion of women exposed to this scheme reported violence against them. The women exposed to this scheme also reported lower mean number of violent acts that they were subjected to from their partners. The impact is strongest in terms of severe forms of physical violence and emotional violence. MAMATA scheme did not have a significant differential impact on violence related outcomes for SC&ST women. The scheme also had no discernible impact on sexual violence that the women face. The results obtained here point towards the larger welfare gains that can be obtained through such cash transfer scheme to women.

### **1. Introduction:**

Discrimination against women is an all-pervasive issue. Women are subjected to discrimination in all the arenas of private and public life including households, labour market, educational institutions, healthcare sector, technical fields, religion, and political sphere. Gender based violence against women is both a cause and outcome of this widespread discrimination that women face at all levels. Gender based violence takes various forms such as female infanticide, female genital mutilation, murder, forced and early marriages, honour killings, sex trafficking, dowry deaths, sexual harassment, and rapes (WHO, 2021). Violence against women by their partner/husband is the most common form of violence against women. This form of violence is termed as intimate partner violence (IPV).

WHO defines IPV as “any behaviour within an intimate relationship that causes physical, psychological or sexual harm to those in the relationship.” The definition of IPV is gender neutral, however, the data obtained from many countries clearly show that women bear the maximum brunt of intimate partner violence. The incidence of IPV against women has shown a decline in the last century but it remains a serious issue in several countries. The data from WHO and DHS show that the incidence of IPV range from 15% in Ireland and Japan to as high as 71% in Ethiopia and 75% in Bangladesh. IPV is a serious issue in India as well. Results from recent surveys of NFHS show that IPV is still relatively high in India, with significant geographical variation<sup>1</sup>. In India, as per NFHS-4, weighted prevalence of physical, sexual, emotional, or any kind of IPV ever-experienced by women were 29.2%, 6.7%, 13.2%, and 32.8%. These subtypes of IPV depicted a relative change of – 14.9%, – 30.2%, – 11.0%, – 15.7% compared to round 3 (Garg et al, 2021). Apart from being morally and ethically wrong, intimate partner violence is associated with poor health, depression, drugs and alcohol abuse, life threatening injuries and psychological issues (Hidrobo and Fernald, 2013). For example, in India, close to a quarter of women had injuries as a result of intimate partner violence (Mondal and Paul, 2023). Added to this, IPV leaves behind it a trail of broken relationships and psychological impact on individuals close to the women, especially their children.

Given its serious consequences, there is an urgent need to adopt measures aimed at reducing violence against women. Governments play a crucial role in addressing IPV through policy development, legislation, and the implementation of various interventions. The measures adopted by governments include legislative action<sup>2</sup>, creating support services and shelters, public awareness programs, education and prevention programs, and collaboration

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<sup>1</sup> Despite having relatively high incomes and education level, the southern states of India on average have higher incidence of different types of intimate partner violence against women.

<sup>2</sup> The government of India has recognised domestic violence as a criminal offense (under the Indian Penal Code 498-A). This was given a statutory backing in 2005 when the Indian government enacted the Protection of Women from Domestic Violence Act 2005 (PWDVA).

with civic society (Rennison and Welchans, 2018). Another key instrument used by governments to reduce intimate partner violence is direct cash transfer to women. Many countries have adopted direct cash transfers to improve the quality of life that women lead. However, the impact of such cash transfers on domestic violence against women, especially in the context of developing countries, has not been explored much.

This study aims to fill this gap in existing literature by evaluating the impact of a conditional cash transfer doled out to women in rural Odisha. The objective of this study is to assess the impact of MAMATA scheme on different types of intimate partner violence indicators. MAMATA was a conditional cash transfer scheme aimed at improving maternal and child health in rural Odisha. The hypothesis of this study is that the improvement in the economic status of the women through this scheme influenced the incidence of intimate partner violence against women in rural Odisha. This study use propensity score matching technique to find the causal impact of MAMATA scheme on IPV.

The causal pathways through which cash transfers can reduce IPV are economic security and emotional well-being, intra-household conflict and women's empowerment (Buller et al, 2018). Theoretically, the impact of cash transfer to women on IPV can go both ways. By raising the status and influence of the women in the household, a cash transfer can potentially reduce violence (Tauchen, Witte, and Long 1991). Given that MAMATA is a conditional cash transfer scheme, the health requirements of CCT programs could also lead to decreases in domestic violence because increased exposure to health facilities makes it harder to hide physical and sexual abuse, and health care providers are often trained to deal with domestic violence. Furthermore, the required health and nutrition monthly information sessions can empower women leading to lower domestic violence. On the other hand, Eswaran and Malhotra (2011) point out that cash transfer to women may be perceived as a threat to the husband's dominance and the husband may then resort to violence to reassert his dominance.

Furthermore, cash and other transfers specifically directed at women could potentially expose them to risks if men use violence to extract money or resources from them (Bloch and Rao 2002).

This study finds that the MAMATA scheme led to reduced incidence of different types of partner violence against women in rural Odisha. The results from this study suggest that MAMATA scheme had no discernible impact on overall violence that women face from their partners but women exposed to this scheme had on average lower severe type of physical violence, lower emotional violence and faced reduced number of control issues from their husbands. The proportion of women who faced severe physical violence and emotional violence, was 2.71 percentage points and 2.93 percentage points lower in the treatment group. Moreover, the women exposed to MAMATA scheme fared better in terms of the count of different types of violent behaviour that they were subjected to under the ambit of emotional and physical violence. While, it is not possible to disentangle the various channels through which cash transfer under MAMATA scheme affect IPV, the improved economic well-being and health of women are the likely reasons for decrease in partner violence due to MAMATA scheme.

**Policy Background:** The MAMATA program is a conditional cash transfer initiative implemented in the state of Odisha, India. Its primary objective is to enhance maternal nutrition and promote positive health-seeking behaviors among women before and after childbirth. This program, akin to the Janani Suraksha Yojana (JSY), offers financial incentives to encourage eligible women to fulfill specific health-related conditions. Under MAMATA, pregnant and lactating women in Odisha, aged at least 19 years, are eligible for the scheme's benefits for their first two live births. The program disburses a total of INR 5,000 per beneficiary in four installments, covering the entire pregnancy period up to the child's ninth month. The first installment of INR 1,500 is provided at the end of the second trimester if the woman complies

with conditions such as registering her pregnancy, attending antenatal check-ups, receiving vaccinations, taking iron-folic acid tablets, and attending counseling sessions. Verification is done through a Mother-Child Protection (MCP) card.

The second installment of INR 1,500 is disbursed after three months of childbirth, contingent on the child's birth registration, weight checks, immunization, and counseling attendance. The third installment of INR 1,000 is given after six months if the child is exclusively breastfed, immunized, introduced to complementary food, and undergoes weight checks. The final installment of INR 1,000 is paid after nine months if the child receives measles vaccination, vitamin-A supplements, and age-appropriate complementary feeding, along with weight checks. The Anganwadi Workers (AWWs) play a crucial role in monitoring and motivating women to meet these conditions. AWWs also receive a cash incentive of INR 200 per beneficiary when all conditions are met. The program's management is overseen by the Integrated Child Development Services (ICDS), which reports to the State health department. Research conducted in Odisha's districts suggests that MAMATA has successfully increased the likelihood of women adhering to pregnancy registration, supplement consumption, and immunization schedules.

The household cash entitlement under MAMATA is large in monetary terms. The average per capita monthly household food consumption expenditure in rural India was INR 756 (National Sample Survey 2011-12) and for Odisha it was even lower at INR 570. Before a child's birth, at the beginning of the third trimester, a rural household receives almost triple the average per capita household food expenditure.

**Contribution to existing literature:** This paper adds to the nascent literature on the impact of cash transfer on IPV. The impact of MAMATA scheme has been studied by Mahajan et al. (2023) on child health outcomes. However, such a cash transfer scheme can also potentially

impact IPV. The author of this study did not come across any other study looking at the impact of CCT in IPV in India. This study also adds to the larger benefits of cash transfers to women in general.

The outline of this paper is as follows: Section 2 provides a brief literature review, section 3 describes the data and methodology, section 4 gives the summary statistics, section 5 provides results, and finally the last section provides the conclusion.

## **2. Literature Review:**

The literature review on cash transfers encompasses a wide range of research and studies conducted in the field of economics, social policy, and development. Cash transfers involve providing individuals or households with direct cash payments or transfers, often with the aim of reducing poverty, improving well-being, and addressing various social and economic challenges. Bastagli et al (2016) present a review of existing evidence on the impact of such cash transfers, both conditional and unconditional and show that cash transfers have had desirable impact on women's health and nutrition, education, household bargaining power, economic independence, domestic violence, financial health etc. Cash transfers have also played a big role in improving the well-being of women in India (Coffey 2014, Standing 2012, Dev 2020, Mahajan and Kekre 2023).

The existing literature on IPV provides several reasons for the prevalence of violence against women. Researchers from varied fields such as criminology, evolutionary biology, sociology, economics, psychology, have propounded several theories to explain intimate partner violence (Heise, 2012). In economics, IPV is modelled through bargaining dynamics between a couple. Bargaining theory, sometimes called exchange theory, sees men's and women's employment and earnings as a source of dyadic power by providing individuals with a means of exchange within their relationship (Bloch and Rao 2002). In India, where divorce

rates are notably low, household dynamics often revolve around the ability to provide and control material resources. Consequently, the potential threat of resource restriction can result in the partner with fewer resources making accommodations for the partner with more resources (Weitzman, 2014). In the field of sociology, the concept of marital dependency theory suggests that women who rely on their partners for financial support face an increased vulnerability to experiencing domestic violence (Vyas and Watts, 2009).

Lawson (2012) demonstrates that intimate partner violence serves as a mechanism to uphold the patriarchal structure of society. Furthermore, Lawson (2012) contextualizes IPV within a historical framework, highlighting its longstanding presence in the evolution of society and its institutions throughout recorded human history. The intergenerational transmission of violence hypothesis posits that individuals who observe or undergo violence during their childhood are more likely to replicate such behavior in their adulthood (Stith, Rosen et al. 2000).

Using the status inconsistency theory, it is posited that women are at an increased risk of experiencing violence when significant power disparities exist between husbands and wives concerning factors such as age, educational attainment, or occupational prestige (Yick 2001). A more contemporary perspective within this context is presented by theorists who suggest that men may turn to violence as a compensatory tactic when external factors hinder them from fulfilling their expected societal role as providers (Jewkes 2002). Empirical examinations have assessed various factors for their influence on intimate partner violence (IPV), including socio-demographic variables, relationship status and cohabitation with a partner, the number of children, women's financial reliance and employment, childhood exposure to violence, alcohol misuse, and controlling behavior (Heise 2012). Dhanraj and Mahambre (2022) show that the combined effect of 'male backlash' channel and the 'female guilt' channel leads to higher incidence of intimate partner violence towards women in employment compared to women

only involved in domestic work only. Using difference-in-difference framework, Chhatterjee and Poddar (2020) find that adolescent girls exposed to SABLA scheme faced lower incidence of intimate partner violence in their marriage. There are several other factors that impact the prevalence of domestic violence. Sarma (2022) shows that MNREGA weakened the link between rainfall shocks and domestic violence. Dixit et al (2023) show that the alcohol ban in Bihar reduced the violence against women.

Studies also suggest that cash transfer programmes influence the intensity of domestic violence. Though these studies have given mixed results. Hidrobo et al (2016) find that cash transfers in Ecuador decreased physical and emotional abuse that women faced from their partners. In Bangladesh, the combination of cash transfers and gender training led to a decrease in the occurrence of intimate partner violence (IPV) (Duvvury et al, 2013). In Brazil, Litwin (2019) finds that CCT reduced physical violence as well as case of women homicide. However, Jan et al (2008) did not find any impact of cash transfer on partner violence in South Africa. Some studies have even suggested potential negative consequences.

Bobonis et al. (2010) examined the impact of Mexico's Conditional Cash Transfer (CCT) program, Oportunidades, and observed a short-term reduction of 3.6 percentage points in physical violence in 2009, but noted that these effects vanished 5 to 9 years after the program's implementation. Buller et al (2018) in their review of existing studies find that a majority of their studies shows a negative impact of cash transfers on IPV but there are studies that suggest that cash transfers to women can actually lead to increased violence against them. They conclude their review by pointing towards the importance of the design features of the cash transfer program in reducing IPV.

Thus, the factors affecting intimate partner violence include social-economic factors such as poverty and unemployment, cultural factors such as inherent biases against women in the

society, alcoholism and drug abuse, childhood exposure to domestic violence, and economic dependence on spouse. Most of these factors have been studied for their effect on IPV in India. However, a significant gap in the literature is with regards to impact of CCT on IPV in India. The present study fills this gap by analysing the impact of MAMATA scheme on IPV in rural Odisha.

### **3. Data and methodology:**

The study uses the fourth round of a nationally representative cross-sectional demographic health survey, the National Family Health Survey (NFHS-4) of India for the year 2015–16. NFHS provides information on various topics such as population demographics, health and nutrition status, women empowerment, gender role attitudes, fertility preferences, marital histories and domestic violence for India. It is conducted by the International Institute for Population Sciences (IIPS) in Mumbai administered under the Ministry of Health and Family Welfare (MoHFW), Government of India, and is a part of the global Demographic Health Survey (DHS) program.<sup>6</sup> The NFHS-4 was conducted between January 2015 and December 2016 and covered 601,509 households across India. The sample is drawn using stratified random sampling. The NFHS-4 survey conducted interview of 699,686 women. The number of women selected for the domestic violence module was 83,396.

The NFHS module on domestic violence contains a series of questions to capture the incidence of intimate partner violence and there are also questions pertaining to ‘control’ issues faced by women.

The questions pertaining to emotional violence faced by women are:

1. husband/partner doesn't trust respondent with money.
2. ever been threatened with harm by husband/partner.
3. ever been insulted or made to feel bad by husband/partner.

The questions on physical violence are divided into two parts- one part of questions pertaining to less severe forms of physical violence, and second part pertaining to more severe forms of physical violence.

The questions pertaining to less severe forms of physical violence are:

1. ever been pushed, shook or had something thrown by husband/partner.
2. ever been slapped by husband/partner.
3. ever been punched with fist or hit by something harmful by husband/partner.
4. ever had arm twisted or hair pulled by husband/partner.

The questions pertaining to more severe forms of physical violence:

1. ever been kicked or dragged by husband/partner.
2. ever been strangled or burnt by husband/partner.
3. ever been threatened with knife/gun or other weapon by husband/partner.

The questions pertaining to sexual violence:

1. ever been physically forced into unwanted sex by husband/partner.
2. ever been forced into other unwanted sexual acts by husband/partner.
3. ever been physically forced to perform sexual acts respondent didn't want to.

The questions pertaining to 'control' issues faced by women are:

1. husband/partner jealous if respondent talks with other men.
2. husband/partner accuses respondent of unfaithfulness.
3. husband/partner does not permit respondent to meet female friends.
4. husband/partner tries to limit respondent's contact with family.
5. husband/partner insists on knowing where respondent is.
6. husband/partner doesn't trust respondent with money.

The study uses the above questions to construct the main outcome variables which are given in the table below.

**Table 1- Outcome Variables**

<b>Outcome Variable</b>	<b>Values</b>
<b>Intimate Partner Violence</b>	Takes value 1 if the women answers ‘Yes’ to any of the violence related questions, 0 otherwise.
<b>Intimate Partner Violence count</b>	Count of the number of questions answered ‘Yes’. Takes value between 0 to 13.
<b>Emotional Violence</b>	Takes value 1 if the women answers ‘Yes’ to any of the emotional violence related questions, 0 otherwise.
<b>Emotional Violence count</b>	Count of the number of questions on emotional violence answered ‘Yes’. Takes value between 0 to 4.
<b>Mild Physical Violence</b>	Takes value 1 if the women answers ‘Yes’ to any of the less severe physical violence related questions, 0 otherwise.
<b>Severe Physical Violence</b>	Takes value 1 if the women answers ‘Yes’ to any of the more severe physical violence related questions, 0 otherwise.
<b>Physical Violence count</b>	Count of the number of questions on (less severe and severe) violence answered ‘Yes’. Takes value between 0 to 7.

<b>Sexual Violence</b>	Takes value 1 if the women answers ‘Yes’ to any of the sexual violence related questions, 0 otherwise.
<b>Sexual Violence count</b>	Count of the number of questions on sexual violence answered ‘Yes’. Takes value between 0 to 3.
<b>Control Issues Faced</b>	Count of the number of questions on control issues answered ‘Yes’. Takes value between 0 to 6.

Since the MAMATA scheme was only introduced in rural Odisha, the treatment group consists of women of rural Odisha, who gave birth to their first or second child after October, 2011<sup>3</sup>. To obtain a comparable group of women who were not exposed to the scheme, the analysis uses PSM on data from rural women who were not exposed to the scheme in Odisha, Jharkhand and Chhattisgarh. The rationale for using Jharkhand and Chhattisgarh as control group states is that these states share border with Odisha, have higher tribal presence, have relatively similar economic status with mining being a major sector, and have similar cultural practices. Data on the dependent variable and control variables for the control group is also obtained from NFHS-4. Also note that since we do not have data in NFHS on who actually availed the benefits under the MAMATA scheme, the treatment group is composed of women who were exposed to the MAMATA scheme. Hence, the treatment effect this study obtains is intent-to-treat (ITT) effect.

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<sup>3</sup> The women who gave birth after October, 2011 but already had two living children born before October, 2011 were not eligible for benefits under the MAMATA scheme. Also, for the analysis, women who were pregnant at the time of the survey are dropped because their treatment status is unclear. This forms a miniscule proportion of the treatment group.

This study uses propensity score matching (PSM) technique to obtain comparable treatment and control groups. Introduced by Rosenbaum and Rubin (1983), PSM is a statistical technique used in observational research to estimate the causal effect of a treatment, intervention, or exposure on an outcome variable. It is particularly valuable when conducting non-randomized studies, where subjects are not randomly assigned to treatment and control groups, as is typically done in randomized controlled trials (RCTs). The underlying idea is to obtain the propensity score which is the probability of an individual receiving the treatment, given their observed covariates (variables that could influence both the treatment assignment and the outcome) and then match observations based on this propensity score. The individuals who actually did not receive the treatment but have the same propensity score form a part of the control group. The propensity score is estimated using statistical methods like logistic regression. The key assumption of PSM is that, conditional on the propensity score, the distribution of covariates should be similar between the treatment and control groups<sup>4</sup>. This balance helps reduce selection bias and makes the treatment effect estimation more reliable. Once matched, the mean difference in outcomes of interest between the treated and control groups provides the causal effect of the treatment. This study uses the following specification to estimate the propensity score using logistic regression.

$$\begin{aligned}
 Prob(Treatment = 1) & \\
 &= \beta_0 + \beta_1 HHsize_i + \beta_2 socialgroup_i + \beta_3 wealthindex_i \\
 &+ \beta_4 relative\ education_i + \beta_5 alcohol\ consumption_i \\
 &+ \beta_6 education\ years_i + u_i
 \end{aligned}$$

The control variables used are the following

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<sup>4</sup> Another important assumption of PSM is that conditional on propensity scores, the treatment and control groups are also similar on unobservables.

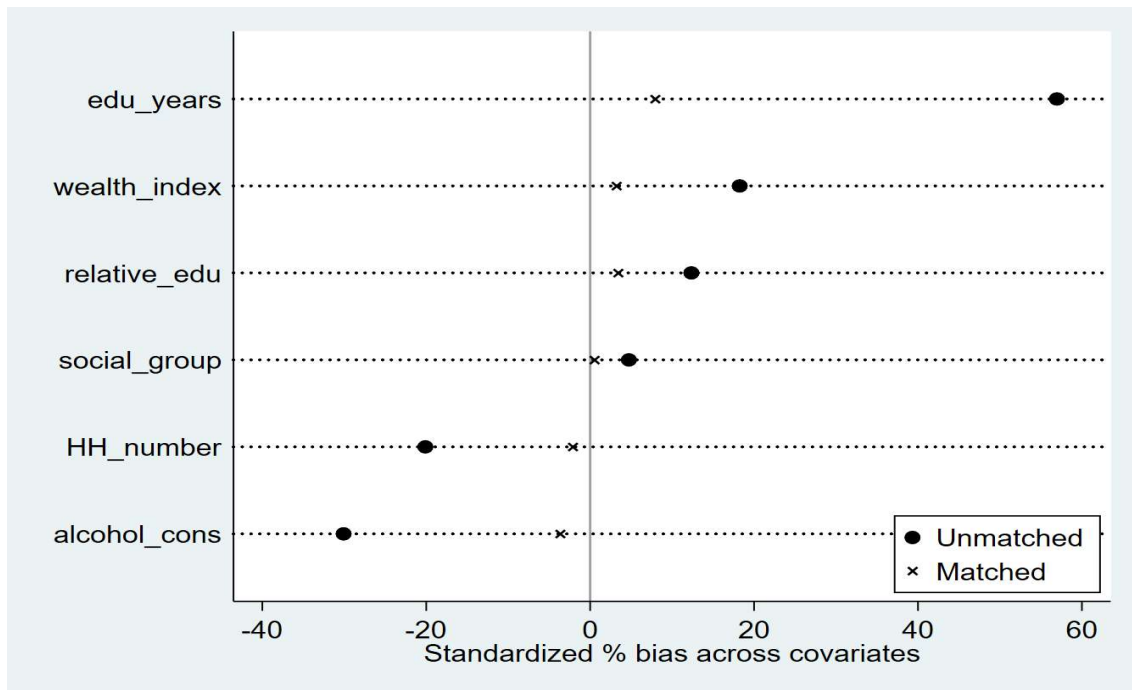
- a) HH\_size - The number of household residents.
- b) Social group- Indicator variable of whether the woman belongs to SC, ST, OBC or none.
- c) Wealth index- Indicator variable of whether the woman belongs to poor class, poorer class, middle class, rich class or richest class.
- d) Relative education- Takes the value one if woman has more years of education than her husband, 0 otherwise.
- e) Alcohol consumption- Takes the value one if husband consumer alcohol.
- f) Education years- Number of years of education the woman has had.

The conditional probability of a woman receiving treatment is estimated using logistic regression. The resultant p-score is used for matching the treatment and control group using kernel and radius caliper matching<sup>5</sup>. This study runs a total 6 sets of PSM regression on ten dependent variables. The 6 sets of regressions include sub-sample analysis on Odisha sample and SC&ST sample. The basic idea behind kernel matching is to give more weight to control units that are similar to the treated units in terms of their propensity scores. This helps in creating balanced groups and reduces bias when estimating treatment effects. Fig.1 and Fig. 2 show the kernel matching on covariates that helps in creating a balanced sample of treatment and control group. Both kernel matching and radius calliper matching are used to create balanced groups of treated and control units in PSM, reducing the potential for bias when estimating treatment effects.

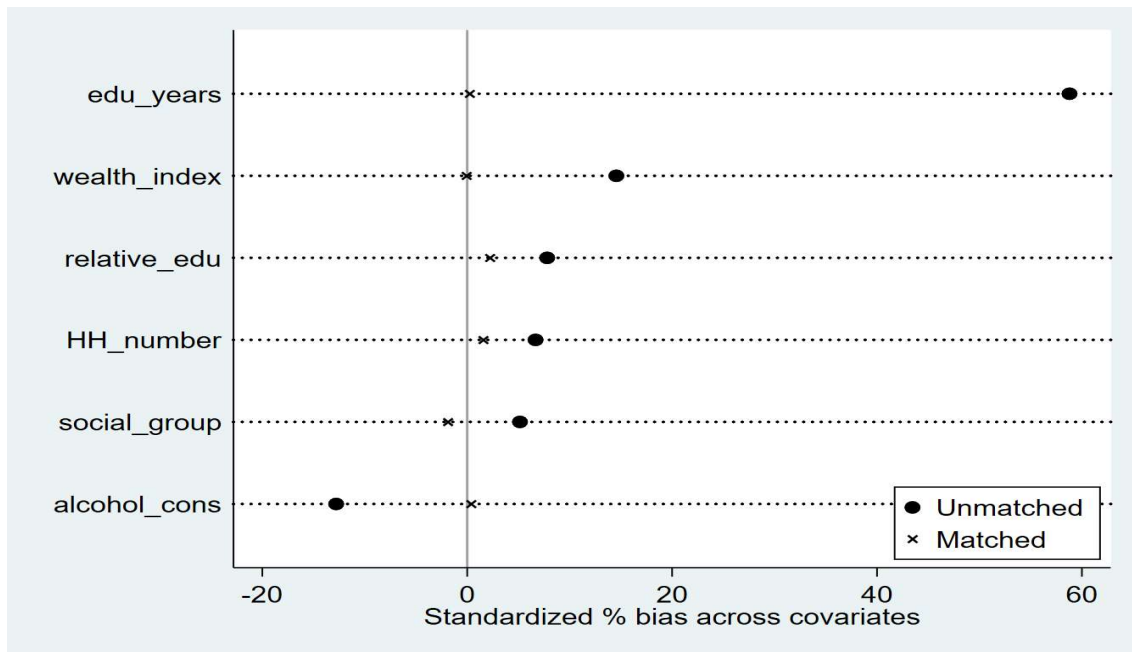
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<sup>5</sup> Kernel matching is a method used in PSM that assigns each treated unit (those receiving the treatment) a weight based on their propensity score and the distance between their propensity score and that of each control unit (those not receiving the treatment). The kernel function used is typically a smooth function, such as a Gaussian kernel. This function assigns higher weights to control units that are closer in terms of propensity scores to the treated units. Radius caliper matching is another approach in PSM, where you specify a maximum allowable difference (caliper) in propensity scores within which a treated unit can be matched to a control unit.

**Figure 1- Bias reduction using kernel matching for observations from Odisha, Jharkhand and Chhattisgarh**



**Figure 2- Bias reduction using kernel matching for observations from Odisha**



The common support and Kernel density plots showing the distribution of treatment and control group observations are given in the appendix. After the final match, the treatment group consist of 705 women and 1505 women when using only observations from Odisha. When the full sample is used, the final match gives 708 observations in the treatment group and 5111 observations in the control group.

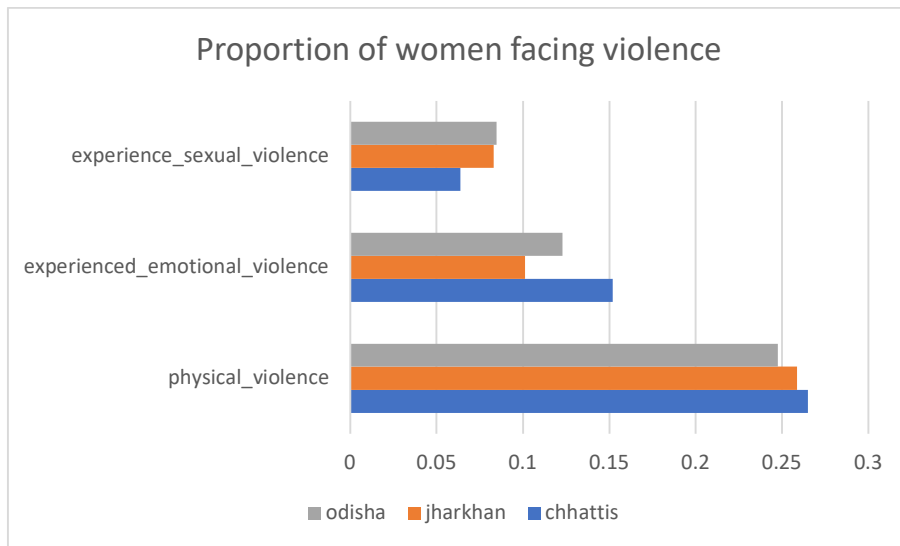
#### **4. Descriptive statistics:**

The incidence of IPV in India shows significant geographical variation. The map of proportion of women reporting IPV state-wise (given in appendix) show that the incidence of IPV is highest in the Southern states of India, especially Telangana, Andhra Pradesh and Tamil Nadu. The Northern states (apart from UP) and western states show relatively lower incidence of IPV. The figures below show the proportion of women facing violence in the states of Odisha, Jharkhand and Chhattisgarh. Fig. 3 shows the proportion of women who have faced different types of violence. Around 6-8% of women reported saying that they had experienced sexual violence in Chhattisgarh, Jharkhand and Odisha. The number is higher in terms of emotional violence and ranges from 10% to 15% for the three states. For physical violence, the proportion is 25-26%. Fig. 4 shows the mean count of violence questions answered 'yes', representing the intensity of the violence experienced. The mean number of control issues experienced by women is between 1.13 to 1.46 for the three states of Odisha, Jharkhand and Chhattisgarh. The violence indices show the severity of the violence experienced sexually, physically and emotionally. The mean value of sexual, physical and emotional violence varies between 0.12 to 0.16, 0.74 to 0.79, 0.17 to 0.25 respectively.

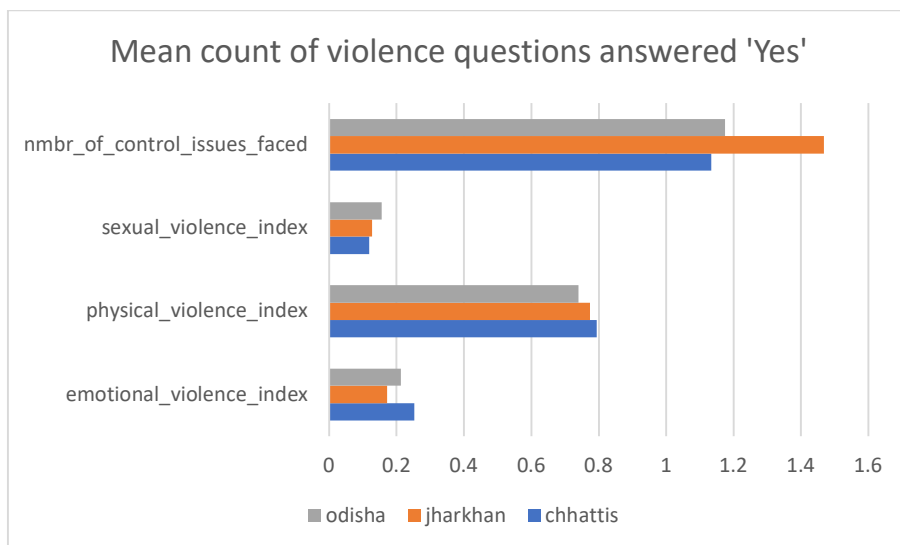
Table 2 and Table 3 give the mean of the dependent and control variables across treatment and control groups respectively. Table 2 clearly shows that the mean value of all the dependent variables is lower for the treatment group. However, this itself is not indicative of the impact

of MAMATA scheme since the treatment and control groups are significantly different. Its only after creating a match between the treatment group and control group using p-score, the causal link between the treatment assignment and the outcome can be established. Table 3 also points towards the importance of matching, since there is significant variation between treatment and control groups in their observed covariates.

**Figure 3- Proportion of women facing violence.**



**Figure 4- Mean count of violence questions answered 'Yes'.**



**Table 2. Summary Statistics- Dependent Variables (Mean)**

	(1)	(2)	(3)
	Full sample	Treatment	Control
IPV	0.40 (0.489)	0.35 (0.478)	0.40 (0.491)
IPV_count	1.23 (2.131)	0.91 (1.719)	1.27 (2.179)
emotional_violence	0.13 (0.336)	0.09 (0.291)	0.14 (0.342)
emotional_violence_count	0.22 (0.629)	0.14 (0.494)	0.23 (0.645)
mild_phy_violence	0.37 (0.482)	0.31 (0.465)	0.37 (0.484)
severe_phy_violence	0.11 (0.308)	0.07 (0.257)	0.11 (0.314)
physical_violence_count	0.87	0.64	0.90

	(1.448)	(1.230)	(1.473)
sexual_violence	0.08	0.07	0.09
	(0.279)	(0.257)	(0.281)
sexual_violence_ count	0.14	0.12	0.15
	(0.530)	(0.487)	(0.536)
N_control_issues	1.34	1.19	1.36
	(1.548)	(1.437)	(1.562)
<hr/> <i>N</i>	5850	719	5131
	<hr/>	<hr/>	<hr/>

**Table 3: Summary Statistics: Control Variables (Mean)**

	(1)	(2)	(3)
	Full sample	Treatment	Control
edu_years	4.24 (4.554)	6.50 (4.435)	3.92 (4.480)
HH_number	4.93 (1.967)	4.61 (1.662)	4.98 (2.002)
alcohol_cons	0.47 (0.499)	0.34 (0.475)	0.49 (0.500)
social_group	2.39 (0.883)	2.43 (0.980)	2.39 (0.868)
wealth_index	2.91 (1.410)	3.15 (1.391)	2.88 (1.409)
relative_edu	0.52 (0.499)	0.58 (0.494)	0.52 (0.500)
<i>N</i>	5850	719	5131

## 5. Results:

Table 4 provides ATT estimates obtained from the mean difference between treatment and control group with matched p-score on observations from Odisha, Jharkhand and Chhattisgarh. The ATT is the average difference in outcomes between individuals who received a particular treatment and those who did not, but it focuses specifically on the subset of the population that received the treatment. The ATT represents the causal effect of the treatment on the treated group, assuming that the propensity score model and matching process have adequately controlled for observed covariates. Column 1 and 2 of the table gives results from the kernel and radius caliper matching, respectively. Column 3 provides estimates using radius caliper matching but for SC-ST samples.

A positive ATT suggests that the treatment positively affects the exposed individuals compared to not receiving the treatment. Conversely, a negative ATT implies a negative treatment effect. Table 4 shows that the ATT effect on IPV, mild physical violence, sexual violence and sexual violence count is statistically insignificant throughout different model specifications. However, the impact on IPV count, emotional violence and emotional violence count is negative and significant in all three model specifications. The proportion of women who faced emotional and severe physical violence was 2.93 and 2.71 percentage points lower in the treatment group. Also, on average, women exposed to MAMATA scheme had faced 0.15 less count of different types of Violence and 0.06 mean count lower of different types of emotional violence.

The ATT effect is negative and significant for the overall sample for severe physical violence and physical violence count. Column 1 implies that the treatment has a negative effect on severe physical violence and physical violence count by 2.1 percentage points and 0.0905 count, respectively, for the treated individuals compared to not receiving the treatment. However, for the SC-ST sample, the results are negative but insignificant. For the variable on

number of control issues, the effects are negative in three columns and only significant at 5% significance level in column 2.

**Table 4: ATT - Propensity score matching on observations from Odisha, Jharkhand and Chhattisgarh**

Dependent Variable	ATT (Kernel)	ATT (radius calliper 0.1)	ATT (radius calliper 0.1) – SC_ST sample
IPV	0.00846 (0.430)	-0.0120 (-0.617)	0.0276 (0.999)
IPV_count	-0.143* (-1.929)	-0.219*** (-3.004)	-0.185* (-1.697)
Emotional Violence	-0.0225* (-1.825)	-0.0293** (-2.414)	-0.0376** (-2.139)
Emotional Violence count	-0.0528*** (-2.461)	-0.0641*** (-3.042)	-0.0872*** (-2.899)
Mild Physical Violence	0.00189 (0.0984)	-0.0188 (0.990)	0.0156 (0.576)
Severe Physical Violence	-0.0210* (-1.909)	-0.0271*** (-2.506)	-0.0246 (-1.475)
Physical Violence count	-0.0905* (-1.729)	-0.145*** (-2.815)	-0.0959 (-1.225)

Sexual Violence	-0.000895 (-0.0838)	-0.00638 (-0.607)	-0.00551 (-0.362)
Sexual Violence count	0.000405 (0.984)	-0.00959 (-0.478)	-0.00193 (-0.0627)
Number of Control Issues	-0.0883 (-1.477)	-0.113* (-1.913)	-0.0964 (-1.149)

t statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.10

Table 5 provides similar estimates of ATT from the propensity score matching (PSM) on observations but only from Odisha. Column 1 and 2 of the table gives results from the kernel and radius caliper matching, respectively. Column 3 provides estimates using radius caliper matching but for SC-ST samples.

The estimates suggest that the ATT effect on different dimensions of violence is negative for overall and SC-ST samples. The results are highly significant in all the model specifications for the IPV count, emotional violence count, severe physical violence and physical violence count. This implies the treatment has a negative effect on IPV count, emotional violence count, severe physical violence and physical violence count, for the treated individuals compared to not receiving the treatment. For other dimensions of violence, the impact, though negative, is either significant at 10% level of significance or insignificant.

Another set of ATT estimates (not reported in this paper) was also found for OBC, and relatively wealthier households' sample. However, most of the results obtained in this subsample analysis were highly insignificant, and hence not reported here.

**Table 5: Propensity score matching on observations from only Odisha**

Dependent Variable	ATT (Kernel)	ATT (radius calliper 0.1)	ATT (radius calliper 0.1) – SC_ST sample
IPV	-0.0363 (-1.560)	-0.0413* (-1.768)	-0.0146 (-0.433)
IPV_Index	-0.280*** (-2.901)	-0.300*** (-3.175)	-0.316** (-2.202)
Emotional Violence	-0.0276* (-1.782)	-0.0284* (-1.866)	-0.0348 (-1.535)
Emotional Violence Index	-0.0637** (-2.313)	-0.0648** (-2.4)	-0.0721* (-1.816)
Mild Physical Violence	-0.0314 (-1.352)	-0.0350 (-1.533)	-0.00143 (-0.0434)
Severe Physical Violence	-0.0500*** (-3.417)	-0.0529*** (-3.695)	-0.0707*** (-3.166)
Physical Violence Index	-0.177*** (-2.666)	-0.191*** (-2.935)	-0.198** (-1.984)
Sexual Violence	-0.0153 (-1.126)	-0.0170 (-1.275)	-0.0263 (-1.335)
Sexual Violence Index	-0.0389 (-1.435)	-0.0439* (-1.651)	-0.0460 (-1.119)
Number of Control Issues	0.0155 (0.214)	0.0132 (0.186)	-0.00310 (-0.0298)

t statistics in parentheses

\* p<0.1, \*\* p<0.05, \* p<0.01

### **Placebo**

A placebo test is conducted to check the validity of the results. For this, the treatment status is reversed, that is, the actual treatment group is assigned 0 for treatment status, and the actual control group is assigned 1 for treatment status. The results are presented in table 6 below.

**Table 6: Placebo test results**

<b>Dependent variable</b>	<b>Coefficient for full sample</b>	<b>Coefficients for Odisha sample</b>
IPV	-0.0206 (-0.93)	0.024 (0.936)
IPV_index	0.112 (1.366)	0.242** (2.435)
Emotional violence	0.015 (1.089)	0.0227 (1.392)
Emotional violence index	0.0453* (1.913)	0.0531* (1.836)
mild physical violence	-0.0153 (-0.712)	0.0159 (0.638)
severe physical violence	0.00976 (0.8)	0.0356** (2.372)
physical violence index	0.0682 (1.172)	0.122* (1.76)
sexual violence	-0.00043 (-0.0361)	0.0289** (2.025)
sexual violence index	-0.00149 (-0.06)	0.067** (2.389)
control issue	0.132** (1.965)	0.0815 (1.52)

t statistics in parentheses

\* p<0.1, \*\* p<0.05, \* p<0.01

Column 2 and column 3 are for the full and Odisha sample respectively. The results obtained here reinforce are key findings from the main results. Most of the coefficients are positive (significant for a lot of violence variables) which means that the incidence of violence have

increased over time but for the women actually exposed to the scheme it has reduced. Thus, the impact of the MAMATA scheme on IPV is validated.

### **Discussion:**

This study throws up some interesting results. First, the MAMATA scheme does not have a significant impact on the overall intimate partner violence but it reduces certain types of partner violence such as emotional and severe types of physical violence. Second, women exposed to the MAMATA scheme on average reported lower count of different types of violence including physical and emotional violence. This means that the cash transfer under MAMATA lowered the intensity of violence that women are subjected to by their partners. Third, women belonging socially marginalised groups such as SC&STs on average report higher incidence of intimate partner violence. However, MAMATA scheme did not have a significant differential impact on violence related outcomes for SC&ST women.

The result from this study also has important implication for overall economic welfare of the society. IPV imposes significant economic and welfare costs on the society. The costs include burden on policing and justice system, costs for the health system to provide care and treatment, resources expended for provision of social services, costs borne by the individual woman including health care costs, housing and shelter costs, and legal costs, foregone income for households and overall economy through lost wages, decreased productivity due to trauma, pain and suffering, and the consequent decrease in taxes revenues to the state; and second-generation costs including effects on children and impact on human capital formation.. Nearly 40 studies have attempted to establish economic estimates of IPV in high-, middle- and low-income countries (Duvvury et al, 2013). IPV imposes significant health costs on individuals and the state. The estimate of overall economic cost arising due to IPV varies from country to country. William et al (2018) use actuarial and econometric analysis to show that women with

a history of IPV in Australia had a mean lifetime excess health cost of 42%. In monetary terms, Women who experience IPV have AUD48,413 higher lifetime health costs per person. Peterson et al (2018) calculate the economic impact of intimate partner violence over the course of a victim's lifetime in US. They found that individual cost amounts to \$103,767 for female victims and \$23,414 for male victims. This translated to a collective economic burden of nearly \$3.6 trillion in 2014 US dollars, considering a victimized population of approximately 43 million adults in the United States. This comprehensive estimate encompassed various components, including \$2.1 trillion (59% of the total) in healthcare expenses, \$1.3 trillion (37%) attributed to lost productivity among both victims and perpetrators, \$73 billion (2%) associated with criminal justice-related activities, and an additional \$62 billion (2%) covering various costs such as property damage or loss experienced by victims. Government sources were responsible for covering approximately \$1.3 trillion (37%) of this lifetime economic burden. Roldos et al. (2013) found the economic burden of IPV in Ecuador to be \$109 million.

The results of this study show that a conditional cash transfer of 5000 rupees under the MAMATA scheme had a desirable impact on certain types of intimate partner violence measures. Mahajan et al (2023) have found that MAMATA scheme also improved the health outcomes of children in Odisha. Given such beneficial effects of this cash transfer scheme, this study reinforces the importance of a universal cash transfer scheme for women. The female population of India in 2011 was 586.46 million. Now assuming an annual cash transfer of 5000 rupees annually to the same number of women, the total bill for the state comes out to be almost \$35 billion annually. We don't have an existing economic cost estimate of IPV in India, but results from less populated countries show that economic costs are much higher than the proposed \$35 billion. This implies that India can gain a lot in terms of improved health outcomes, lower IPV, lower health costs, increased employability and a brighter future generation through a universal cash transfer scheme for women.

## **6. Conclusion:**

IPV is a serious health and social issue faced by women. IPV is a pervasive problem that affects people of all genders, races, socioeconomic backgrounds, and sexual orientations. It is not limited to any particular demographic group. IPV can manifest in various forms, including physical violence (hitting, slapping, choking), emotional abuse (manipulation, humiliation, isolation), sexual abuse (rape, coercion), economic abuse (controlling finances), and verbal abuse (threats, insults). This study looks at the impact of cash transfers to women in rural Odisha under the MAMATA scheme on the incidence of IPV. The study finds mixed results. The proportion of women who faced emotional and severe physical violence was 2.93 and 2.71 percentage points lower in the treatment group. Also, on average, women exposed to MAMATA scheme had faced 0.15 less count of different types of Violence and 0.06 mean count lower of different types of emotional violence. The treatment has a negative effect on severe physical violence and physical violence index by 2.1 percentage points and 0.0905 count, respectively, for the treated individuals compared to not receiving the treatment. However, for the SC-ST sample, the results are negative but insignificant.

However, it is pertinent to point out the limitations of the study. First, the study only looks at the impact of IPV in rural Odisha. The impact of cash transfers on IPV can vary across different states in India. Second, given the data is cross-sectional, the study is unable to track changes in IPV taking place over time. Third, there are concerns related to under-reporting of violence by women in the NFHS. Future avenues of research can include understanding the pathways through which cash transfers can affect IPV in India. Targeted surveys conducted for tracking IPV over time should be the base proper assessment of the impact of cash transfers on IPV.

## **References:**

1. Bastagli, F., Hagen-Zanker, J., Harman, L., Barca, V., Sturge, G., Schmidt, T., & Pellerano, L. (2016). Cash transfers: what does the evidence say. *A rigorous review of programme impact and the role of design and implementation features*. London: ODI, 1(7), 1.
2. Bloch, F., & Rao, V. (2002). Terror as a bargaining instrument: A case study of dowry violence in rural India. *American Economic Review*, 92(4), 1029-1043.
3. Bobonis, G., & Castro, R. (2010). The role of conditional cash transfers in reducing spousal abuse in Mexico: short-term vs. long-term effects. *Unpublished Working Paper*. [http://homes.chass.utoronto.ca/~bobonis/BC\\_dviolence2\\_mar10.pdf](http://homes.chass.utoronto.ca/~bobonis/BC_dviolence2_mar10.pdf) (Retrieved March 3, 2011).
4. Buller, A. M., Peterman, A., Ranganathan, M., Bleile, A., Hidrobo, M., & Heise, L. (2018). A mixed-method review of cash transfers and intimate partner violence in low- and middle-income countries. *The World Bank Research Observer*, 33(2), 218-258.
5. Chatterjee, S., & Poddar, P. (2020). Women's Empowerment and Intimate Partner Violence: Evidence from a Multidimensional Policy in India.
6. Chowdhury, S., Singh, A., Kasemi, N., & Chakrabarty, M. (2022). Decomposing the gap in intimate partner violence between Scheduled Caste and general category women in India: An analysis of NFHS-5 data. *SSM-Population Health*, 19, 101189.
7. Coffey, D. (2014). Costs and consequences of a cash transfer for hospital births in a rural district of Uttar Pradesh, India. *Social science & medicine*, 114, 89-96.
8. Dev, S. M. (2020). Income support through cash transfers and employment guarantee schemes during the pandemic times in India. *The Indian Journal of Labour Economics*, 63, 133-138.

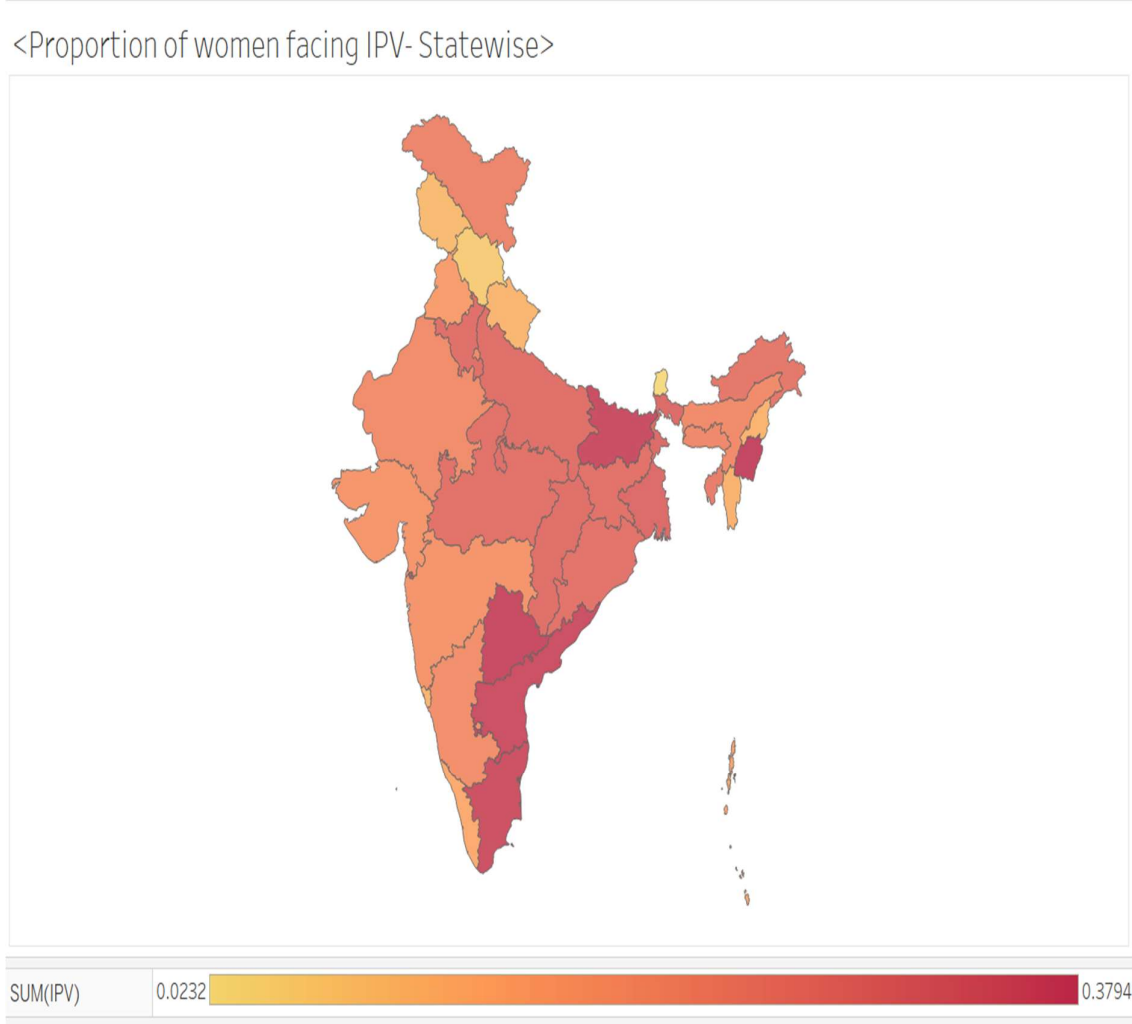
9. Dixit, M., Mukherjee, S., & Rajan, J. (2023). Alcohol Consumption and Intimate Partner Violence: Evidence from a recent policy in India
10. Duvvury, N., Callan, A., Carney, P., & Raghavendra, S. (2013). Intimate partner violence: Economic costs and implications for growth and development.
11. Eswaran, M., & Malhotra, N. (2011). Domestic violence and women's autonomy in developing countries: theory and evidence. *Canadian Journal of Economics/Revue canadienne d'économique*, 44(4), 1222-1263.
12. Garg, P., Das, M., Goyal, L. D., & Verma, M. (2021). Trends and correlates of intimate partner violence experienced by ever-married women of India: results from National Family Health Survey round III and IV. *BMC public health*, 21(1), 1-17.
13. Global, regional and national prevalence estimates for intimate partner violence against women and global and regional prevalence estimates for non-partner sexual violence against women. WHO: Geneva, 2021.
14. Heise, L. L. (2012). *Determinants of partner violence in low and middle-income countries: exploring variation in individual and population-level risk* (Doctoral dissertation, London School of Hygiene & Tropical Medicine).
15. Hidrobo, M., & Fernald, L. (2013). Cash transfers and domestic violence. *Journal of health economics*, 32(1), 304-319.
16. Jan, S., Ferrari, G., Watts, C. H., Hargreaves, J. R., Kim, J. C., Phetla, G., ... & Pronyk, P. M. (2011). Economic evaluation of a combined microfinance and gender training intervention for the prevention of intimate partner violence in rural South Africa. *Health policy and planning*, 26(5), 366-372.
17. Jewkes, R. (2002). Intimate partner violence: causes and prevention. *The lancet*, 359(9315), 1423-1429.

18. Kekre, A., & Mahajan, K. (2023). Maternity support and child health: Unintended gendered effects. *Journal of Comparative Economics*.
19. Lawson, J. (2012). Sociological theories of intimate partner violence. *Journal of Human Behavior in the Social Environment*, 22(5), 572-590.
20. Litwin, A., Perova, E., & Reynolds, S. A. (2019). A conditional cash transfer and Women's empowerment: Does Bolsa Familia Influence intimate partner violence?. *Social Science & Medicine*, 238, 112462.
21. Mondal, D., & Paul, P. (2023). Prevalence and factors associated with intimate partner violence and related injuries in India: evidence from National Family Health Survey-4. *Journal of Family Studies*, 29(2), 555-575.
22. Peterson, C., Kearns, M. C., McIntosh, W. L., Estefan, L. F., Nicolaidis, C., McCollister, K. E., ... & Florence, C. (2018). Lifetime economic burden of intimate partner violence among US adults. *American journal of preventive medicine*, 55(4), 433-444.
23. Rennison, C. M., & Welchans, S. (2018). Intimate partner violence. In *Handbook of crime and deviance* (pp. 573-592). Springer.
24. Roldos, M. I., & Corso, P. (2013). The economic burden of intimate partner violence in Ecuador: setting the agenda for future research and violence prevention policies. *Western journal of emergency medicine*, 14(4), 347.
25. Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70(1), 41-55.
26. Sarma, N. (2022). Domestic violence and workfare: An evaluation of India's MGNREGS. *World Development*, 149, 105688.
27. Standing, G. (2012). Cash transfers: A review of the issues in India.

28. Stith, S. M., Rosen, K. H., Middleton, K. A., Busch, A. L., Lundeberg, K., & Carlton, R. P. (2000). The intergenerational transmission of spouse abuse: A meta-analysis. *Journal of Marriage and Family*, 62(3), 640-654.
29. Tauchen, H. V., Witte, A. D., & Long, S. K. (1991). Domestic violence: A nonrandom affair. *International Economic Review*, 491-511.
30. Vyas, S., & Watts, C. (2009). How does economic empowerment affect women's risk of intimate partner violence in low and middle income countries? A systematic review of published evidence. *Journal of International Development: The Journal of the Development Studies Association*, 21(5), 577-602.
31. Weitzman, A. (2014). Women's and men's relative status and intimate partner violence in India. *Population and Development Review*, 40(1), 55-75.
32. William, J., Loong, B., Hanna, D., Parkinson, B., & Loxton, D. (2022). Lifetime health costs of intimate partner violence: A prospective longitudinal cohort study with linked data for out-of-hospital and pharmaceutical costs. *Economic Modelling*, 116, 106013.
33. Yick, A. G. (2001). Feminist theory and status inconsistency theory: Application to domestic violence in chinese immigrant families. *Violence against women*, 7(5), 545-562.

APPENDIX

**Figure 5:**



**Figure 6: Common support for observations from Odisha, Jharkhand and Chhattisgarh**

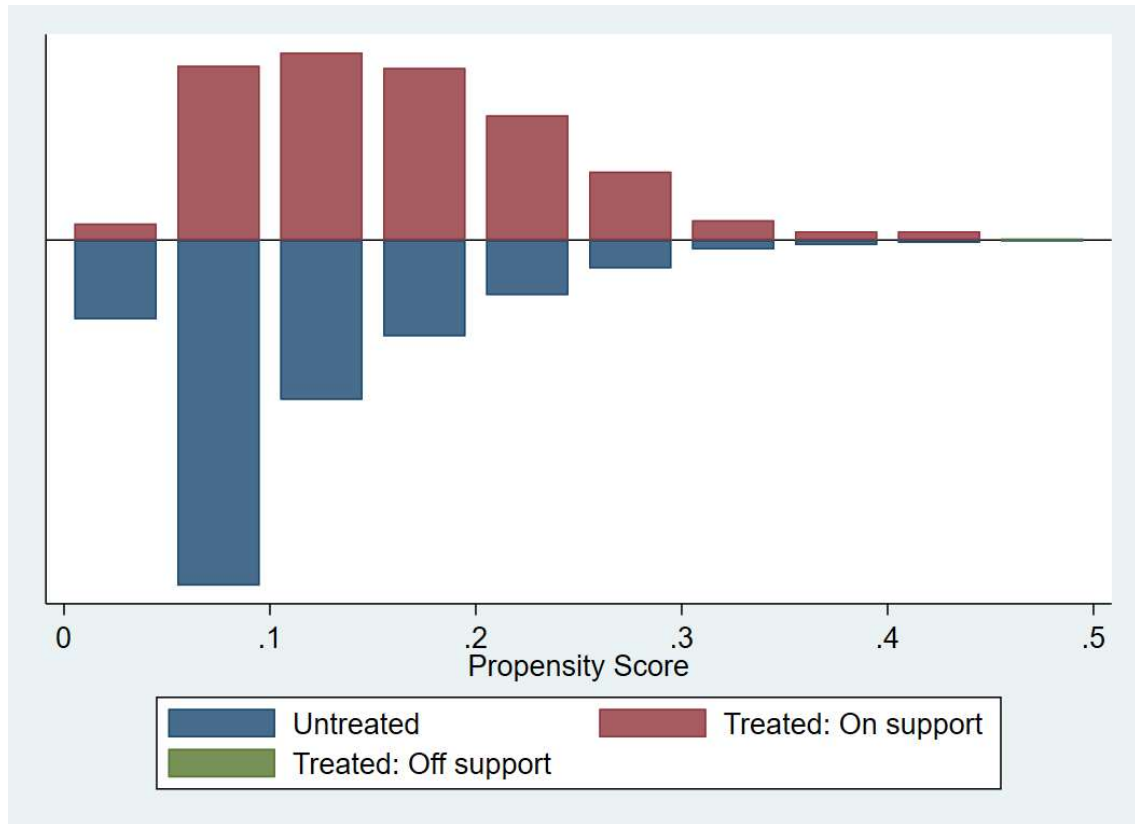
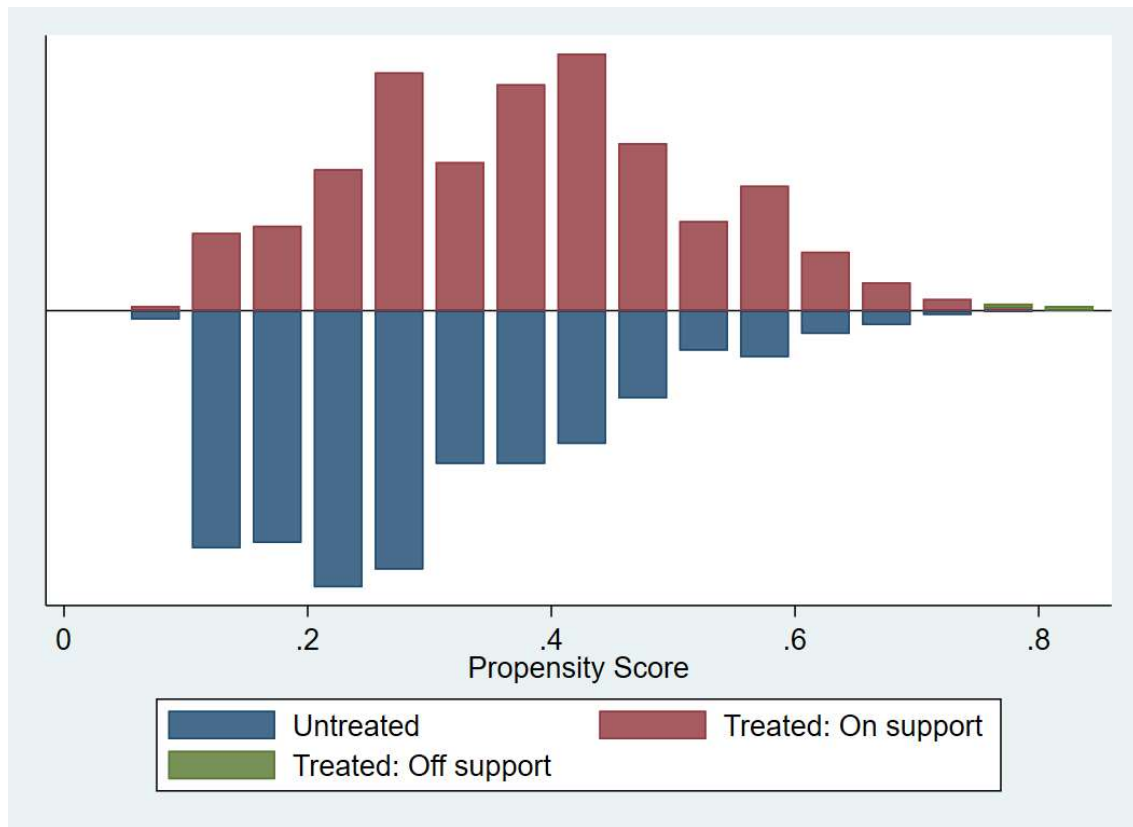
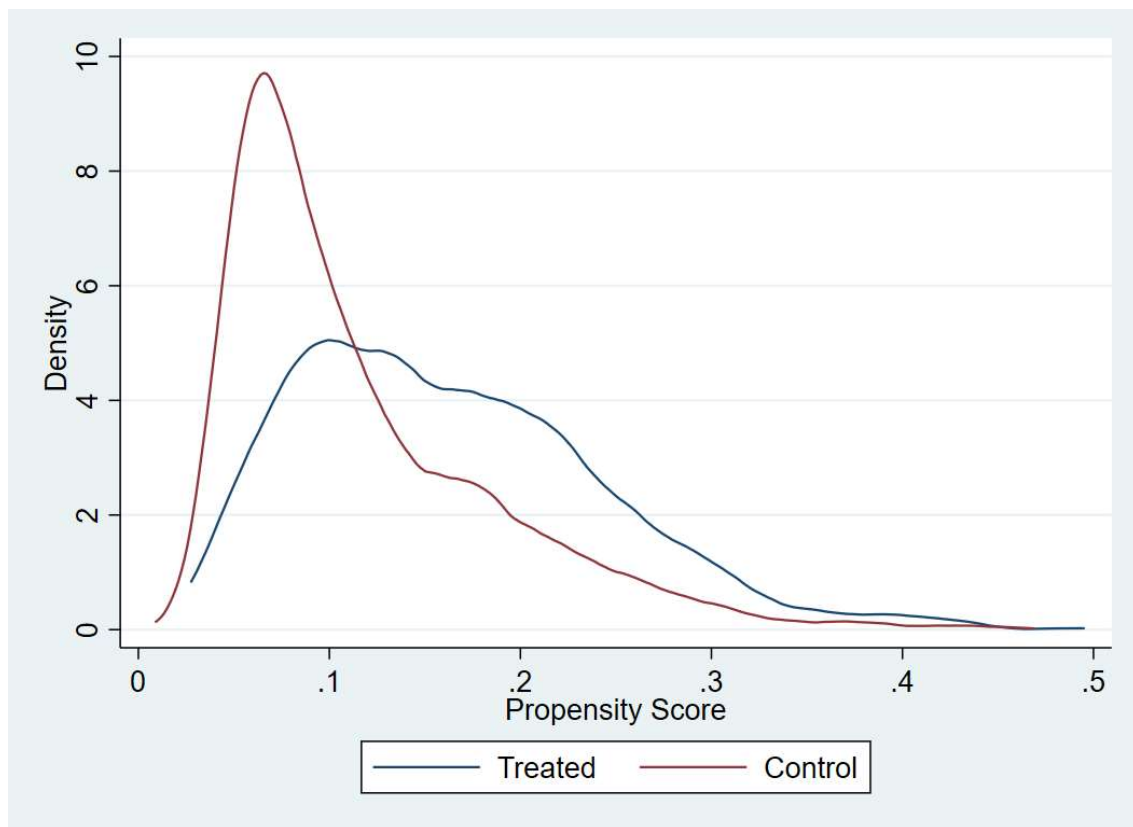


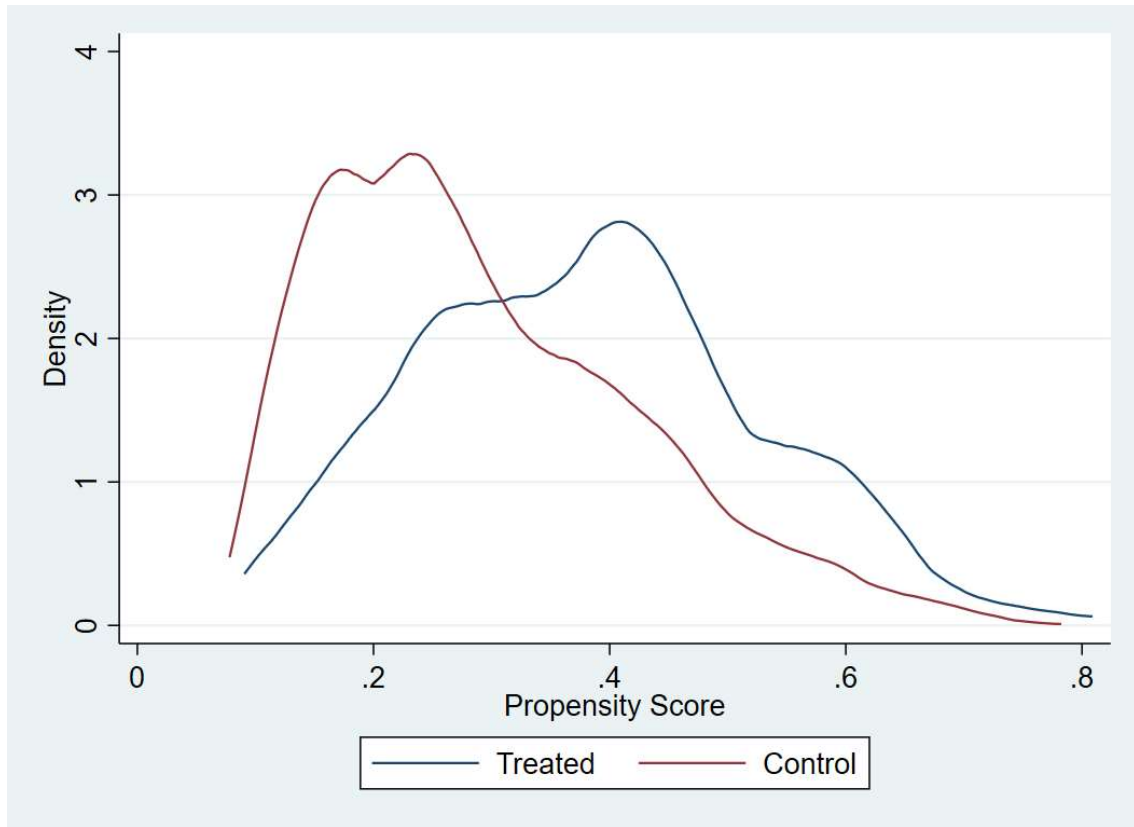
Figure 7: Common support for observations only from Odisha



**Figure 8: Kernel density for treatment and control- for observations from Odisha, Jharkhand and Chhattisgarh**



**Figure 9: Kernel density for treatment and control- for observations only from Odisha**



**Table 7: p-score matching- For observations from Odisha, Jharkhand and Chhattisgarh**

Unmatched	Mean		%reduct	t-test		V(T)/	
Variable	Treated	Control	%bias	bias	t	p>t	V(C)
Matched							
edu_years	6.443	3.913	57.000		14.140	0.000	0.970
U							
M	6.431	6.079	7.9	86.100	1.460	0.145	0.880
HH_number	4.611	4.981	-20.100		-4.700	0.000	0.69*
U							
M	4.613	4.652	-2.100	89.400	-0.420	0.672	0.85*
social_group	2.430	2.386	4.7		1.240	0.216	1.27*
U							
M	2.428	2.423	.5	88.900	0.090	0.925	1.050
wealth_index	3.134	2.879	18.200		4.530	0.000	0.970
U							
M	3.133	3.088	3.2	82.400	0.610	0.544	0.990
relative_edu	0.578	0.517	12.300		3.070	0.002	.
U							
M	0.578	0.561	3.4	72.300	0.640	0.520	.

alcohol\_cons 0.344 0.491 -30.100 -7.370 0.000 .

U

M 0.345 0.362 -3.700 87.900 -0.700 0.484 .

\* if variance ratio outside [0.86; 1.16] for U and [0.86; 1.16] for M

Sample	Ps	R2	LR	chi2	p>chi2	Mean Bias	Med Bias	B	R	%Var
Unmatched	0.057	247.770	0.000	23.700	19.200	65.9*	0.870	50		
Matched	0.001	2.860	0.826	3.5	3.3	9	0.930	25		

\* if B>25%, R outside [0.5; 2]

**Table 8: P-Score matching - For observations from Odisha**

Unmatched	Mean		%reduct	t-test		V(T)/	
Variable	Treated	Control	%bias	bias	t	p>t	V(C)
Matched							
edu_years	6.443	3.871	58.800		12.950	0.000	1.030
U							
M	6.393	6.383	.2	99.600	0.040	0.965	0.920
HH_number	4.611	4.499	6.7		1.460	0.144	0.980
U							
M	4.606	4.580	1.6	76.500	0.290	0.772	0.940
social_group	2.430	2.379	5.1		1.130	0.260	0.970
U							
M	2.433	2.451	-1.900	63.300	-0.350	0.724	0.970
wealth_index	3.134	2.934	14.600		3.210	0.001	1.050
U							
M	3.131	3.131	-0.100	99.500	-0.010	0.989	0.990
relative_edu	0.578	0.540	7.8		1.710	0.087	.
U							
M	0.577	0.566	2.2	71.600	0.420	0.677	.

alcohol_cons	0.344	0.406	-12.800		-2.790	0.005	.
U							
M	0.346	0.344	.4	97.000	0.070	0.941	.

\* if variance ratio outside [0.86; 1.16] for U and [0.86; 1.16] for M

Sample	Ps	R2	LR	chi2	p>chi2	Mean Bias	Med Bias	B	R	%Var
Unmatched	0.066	182.110	0.000	17.600	10.300	63.8*	0.930	0		
Matched	0.000	0.370	0.999	1.1	1	3.2	0.980	0		

\* if B>25%, R outside [0.5; 2]