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Local crime and early marriage

Evidence from India

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Abstract: This paper analyses whether living in a locality with high crime against women affects the probability of early marriage—that is, marriage before the legal age of marriage of girls. We hypothesize that parents who perceive themselves to live in a high-crime locality would marry their daughters off at an early age to protect the chastity of their daughters from any sexual violence. However, there would be no similar effect of perceived crime in the locality on the marriage of sons. Using a nationally representative longitudinal data set and tackling the potential endogeneity of local crime rates, we find evidence to support our hypothesis. The results show that perceived crime against women in the locality significantly increases the likelihood of early marriage of girls, while there is no such effect on boys of comparable age group. We also find no such effect of gender-neutral crimes (such as theft and robbery) on the likelihood of early marriage of girls. Moreover, we find that the relationship holds only in conservative households where the *purdah* system is practised, and also in the northern region of India, where patriarchal culture and gender norms are stronger than in the southern region. These findings are relevant as under-age marriage has negative consequences for the well-being of women in terms of health, education, post-marital agency, and future economic participation.

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1   Introduction

The marriage of female adolescents, referred to as 'early marriage', is an important issue. It remains prevalent in various parts of the world, particularly in South Asia and Africa, despite several efforts by national governments and international development agencies to end the practice.[1] The National Family Health Survey from 2015–16 shows that 27 per cent of females aged 20–24 at the time had married before their 18th birthday in India (UNICEF 2018).[2] The existing literature has studied the determinants and impacts of early marriage of young girls in developing country contexts, with a specific focus on South Asia. These studies document both the causes (Mathur et al. 2003; Oleke et al. 2006; Palermo and Peterman 2009; Walker 2012) and consequences (Jensen and Thornton 2003; Maria Pesando and Abufhele 2018; Sekhri and Debnath 2014; Senderowitz 1995) of early marriage. The findings suggest factors such as household poverty, parental education, access to opportunities, social norms, and more are important drivers of early marriage of young women. The literature on consequences of early marriage documents that under-age marriage has severe consequences for the well-being of women in terms of their health, human capital formation, vulnerability, and post-marital agency. Moreover, various studies have shown that child marriage that subsequently leads to early childbearing has detrimental effects on the offspring (Sekhri and Debnath 2014).[3] Against this backdrop, our study investigates a hitherto unexplored determinant of early marriage: how perceived crime against women in the locality plays a role in the marriages of adolescent girls in India.

A growing body of research has examined the impact of crime against women on their workforce participation and human capital development (Bowen and Bowen 1999; Ceballo et al. 2004; Chakraborty et al. 2018; Schwartz and Gorman 2003); however, relatively few papers have focused specifically on early marriage. In this paper, we investigate whether perceived local crime, specifically crime against women, has any differential effect on the likelihood of early marriage of adolescent girls in a locality. Our hypothesis is that parents who live in high-crime localities, particularly where crime against women is high, would marry their daughters off at an early age; however, due to the patrilocal residence system, there would be no such effect for the marriage of sons.[4] The argument is that in a patriarchal society such as India, the stigma of harassment or physical attack applies disproportionately to women than to men, and it damages the marital prospects of a girl. Therefore, when crime against women is higher in the locality, parents would arrange for their daughter's marriage at an early age due to the social costs associated with a girl

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[1] International organizations, governments, and non-governmental organizations (NGOs) have been designing interventions to raise awareness about the negative consequences of early marriage, provide parents with incentives in the form of cash and payments in-kind to postpone marriage for their daughters, and provide adolescent girls with education and employment as an alternative to early marriage and early motherhood. There are many such incentive schemes active across India. However, despite these efforts, the overall prevalence of early marriage among female adolescents around the world has yet to show a significant decline.

[2] The Sustainable Development Goals specifically include the elimination of child marriage as one of its targets (5.3) within the broader goal of gender equality, following the United Nations Human Rights Council's unanimous adoption of a resolution to 'eliminate child, early and forced marriage' in 2015.

[3] While early marriage is an issue for both genders, it has particular implications for females (Jensen and Thornton 2003; Maria Pesando and Abufhele 2018). Early marriage has been associated with withdrawal of adolescent girls from education and limited engagement with the labour market, as well as low literacy rates, increased risk of sexual violence, and poor health outcomes for women and their offspring (Bhanji and Punjani 2014; Nour 2009; Zahangir and Kamal 2011).

[4] In India, marriages are traditionally arranged by the family. Even in recent times an exceedingly high proportion of marriages continue to be family-arranged (Rubio 2014).

being a victim of sexual harassment. Unlike other studies in the existing literature, we focus on different types of crimes—gender-neutral and gender-specific. Though the existing literature on women's empowerment has highlighted the issue of safety and the concern for preserving the 'purity' of unmarried girls in a society with increasing crime against women, to the best of our knowledge none has empirically investigated the relationship between early marriage and crime against women.

Our study contributes to the existing knowledge base on early marriage in many ways. First, it adds to the literature of determinants of age of marriage by analysing an important but hitherto unexplored factor: crime against women. Second, the investigation is particularly important for India, where incidences of both early marriage of women and sexual violence are high. Crimes against women rose by 34 per cent between 2012 and 2015 (National Crime Records Bureau 2016), and the UN India Business Forum (2018) reported that 92 per cent of women in Delhi said they had experienced sexual or physical violence in public spaces. Moreover, in the conservative Indian society, the stigma surrounding young women who have been victims of sexual violence is particularly severe, as women's chastity is strongly valued. In this context, it is important to investigate whether crime against women in the locality as perceived by the household disproportionately hurts adolescent girls more than boys of comparable age in India. This leads us to the third contribution of the paper: adding to the existing literature of gender inequality in India, particularly on the issue of low female labour force participation rates. Gender inequality in India exists in various forms—starting from sex imbalance at birth due to female feticide, unequal survival rates, inequality in health and educational expenditures, labour market discrimination, and so on. While India has seen significant progress in reducing the gender gap in school enrolment, the labour market outcomes of women have not improved commensurately. The female labour force participation rate has remained very low—sometimes declining—in India (Klasen and Pieters 2015). Early marriage has negative consequence for education and future labour market participation of women. Thus, the findings of this study are also relevant to the current discourse on the low labour force participation of women in India.

We also investigate the potential mechanisms that drive the relationship between perceived crime against women and early marriage of adolescent girls. One channel that we test empirically is the value that conservative societies place on women's chastity. It is established in the literature that men from South Asia (including India) place greater weight on the sexual purity of their preferred female partner compared to men from countries in Europe, North America, South America, and sub-Saharan Africa (Buss 1989). Therefore, we conduct the analysis on two groups of samples: one in which the women of the households practise *purdah*—the practice of screening women from men or strangers by covering their faces—and another group where this practice is not present. We hypothesize that the practice of *purdah* is indicative of greater conservatism, which may also manifest itself in the decision of parents in these families to get their daughters married off at an earlier age if there is a perceived threat of gender-specific crimes in the locality. The existing literature also shows that gender norms and the patriarchal culture are stronger in northern states than southern states of India (Dyson and Moore 1983; Eswaran et al. 2013; Sarkar et al. 2019). Therefore, we also test our hypothesis by comparing the results for the northern region of India with those for the southern region.

We use nationally representative household-level panel data that surveyed the same households and individual members at two time points: 2005 and 2012. The survey also tracks most of the individuals who were present in 2005 but migrated before the follow-up survey in 2012 due to marriage, employment, or higher study. The data set contains relevant information on an individual's demographic characteristics as well as the household's perception of crime in the locality. We primarily focus on the sample of adolescent girls aged 12 to 16 in the first survey year (2005) and observe their marital status in the follow-up survey (2012) by using the tracking

information. We particularly take advantage of this tracking data to get information on women who were married between the two survey rounds and migrated with their husbands. Data on our main variable of interest, perceived crime against unmarried women in the locality, is used from the baseline survey of 2005.

We find that perceived crime against women significantly increases the likelihood of marriage and early marriage (i.e. marriage before the legal age) of young females. In other word, the likelihood of marriage and early marriage increases by 12.6 percentage points and 6.6 percentage points, respectively, with every one-unit increase in perceived crime against women. The results remain almost unchanged after controlling for other gender-neutral crimes in the locality, such as theft, burglary, threats, and attacks, in addition to a wide range of background characteristics and state fixed effects. Moreover, our investigation goes a step further to find that this relationship depends on the extent to which a society values female chastity and stigmatizes victims of sexual crimes. Crime against women has a significant effect on the likelihood of marriage and early marriage of young women only in households with conservative rituals such as the practice of *purdah*. Similarly, the results only hold true for northern states of India, where there are stronger gender norms and a more patriarchal value system.

The rest of the paper is structured as follows. Section 2 discusses the existing literature on early marriage and effect of crime on women. Section 3 outlines the research question and empirical method. Section 4 describes our data and details the construction of the main variables used in the analysis. Section 5 discusses the results and Section 6 concludes.

2   Literature review

The existing literature on early marriage has focused on both its drivers and consequences. Despite the adverse welfare consequences of child marriage being well established, the phenomenon is still pervasive in developing countries.[5] Although most countries have a legal minimum age of marriage, in practice age of marriage in developing countries is determined by social norms.

Considerable research has identified a number of root causes or key drivers of child marriage. However, these drivers are often context-specific and depend on the country- or region-specific characteristics and institutions. Many studies have established an association between household poverty and girl child marriage (Dahl 2010; Handa et al. 2015; Mathur et al. 2003). In societies with a patrilocal residence system, parents view daughters as responsibilities while sons are viewed as old-age security. Therefore, marrying off daughters relieves the parents of an economic responsibility. Moreover, the cost associated with marriage, called dowry, increases with the girl's age, further pressurizing parents to marry their daughters off early. Lack of economic opportunities coupled with traditional gender roles has also been established as a driver of early marriage (Arends-Kuenning and Amin 2000; Mathur et al. 2003).

Most of these studies have also highlighted the issue of purity concerns of young women once they reach puberty. As discussed by Mathur et al. (2003), once a girl reaches menarche the fear of

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[5] Using Demographic and Health Survey data from 48 countries for the period 1986–2010, a United Nations study found little improvement in the practice of child marriage in either rural or urban areas (UNFPA 2012). It is also important to note two other stylized facts about female early marriage practices. Historically, the practice has been widely prevalent in China, the Middle East, and the Indian sub-continent (Dixon 1971), and absent from Europe from at least the beginning of the eighteenth century, when reliable records began (Hajnal 1965). Second, the practice is most prevalent today in the least developed countries (UNICEF 2016).

potential pre-marital sexual activity and pregnancy becomes a major concern among family members who are accountable for 'protecting' her chastity and virginity until her marriage. This fear may lead to the decision to marry the girl off early to preclude any such 'improper' sexual activity. The safety and purity concerns of young women are naturally heightened if there are increasing incidences of crimes against women in the locality. However, none of the studies in the extant literature on early marriage has explored this issue.

In a recent article on female labour force participation, Chakraborty et al. (2018) view low female labour force participation in India as a response to fear of crime against women. Using nationally representative cross-sectional data from the India Human Development Survey (IHDS), they show that women's declining workforce participation in India can partially be accounted for by rising crime against women in the locality. However, this article only looks at the effect of perceived crime against women on their decision to work; it does not look at any other outcomes. The relationship between the gender gap in earning potential and crime against women in India is also established by Bandyopadhyay et al. (2020). Using the same survey data as Chakraborty et al. (2018), the authors construct measures of earning potential for men and women and combine them with administrative records on both domestic violence and rape and indecent assault in Indian districts. Unlike the previous paper, this paper uses the panel aspect of the survey by using two subsequent waves. The paper provides evidence of a backlash effect—a smaller gender gap is associated with more rapes and indecent assaults. The literature on crime against women has mostly focused on investigating its effect on women's labour market outcomes. It ignores the fact that the effect of crime could start even earlier by forcing young girls to discontinue their education and get married at an earlier age compared to their male counterparts. A recent paper has focused on marriage age of women in India and how it is negatively affected by natural disaster (Das and Dasgupta 2020). Using the same data from the IHDS 2005 wave, and employing a difference-in-differences strategy, the authors find a statistically significant reduction in women's marriage age caused by the disaster. They also find a lower probability of marital matches within the same villages, a decrease in spousal educational difference and probability of marrying a husband with more education, and an increased likelihood of women marrying into poorer households. The paper discusses several channels through which results could be affected and provides empirical evidence on changes in dowry payments as a potential mechanism.

We contribute to this literature by providing evidence on the effect of crime against women as perceived by the households on the likelihood of marriage and early marriage of young women. We also examine the potential mechanisms through which this relationship is established, by investigating social norms and the stigma attached to being the victim of sexual harassment. The findings from this paper have policy implications for reducing early marriage in developing countries. Despite repeated efforts by national governments and international development agencies to discourage and end the practice of early marriage, it remains prevalent. So far, the policies have focused on creating awareness among parents and providing cash transfers to reduce drop-out and delay the age of marriage of girls. There have been many such programmes in operation across the India, from the Apni Beti Apna Dhan programme of the Government of Haryana in 1994 to the Kanyashree Prakalpa launched in West Bengal in 2015. These schemes have used financial aid to incentivize families to educate girls, continue their schooling, and to delay marriage. Currently, there are at least 15 such schemes in operation in India. However, these programmes have not been able to achieve the desired result. Therefore, looking at other factors such as local-level safety and changing the perceptions of households may be an alternative policy instrument.

3 Methodology

To investigate the relationship between perceived crime against women in the locality and the likelihood of getting married, we first construct the dependent variable *MarriedBetweenRounds* dummy. It denotes whether an individual has been married between the two survey rounds in 2005 and 2012:

$$MarriedBetweenRounds = \begin{cases} 1 & \text{if marital status in 2012 = married} \\ 0 & \text{if marital status in 2012 = unmarried} \end{cases}$$

The second dependent variable, *EarlyMarriage*, is a dummy variable denoting whether the individual married below legal age or not (including those married above legal age and those unmarried). This regression can be run on those who have crossed the legal age, hence the outcome variable is not censored. We define the dependent variable *EarlyMarriage* as:

$$EarlyMarriage = \begin{cases} 1 & \text{if age of marriage < legal age (18 for girls and 21 for boys)} \\ 0 & \text{if age of marriage} \geq \text{legal age or unmarried} \end{cases}$$

We estimate the following equations mainly for females:

$$\Pr\left(MarriedBetweenRounds_{ihv} = 1\right) = \beta_0 + \beta_1 LocalCrimeBeforeMarriage_v + \beta_2 X_{ihv} + \varepsilon_{ihv} \tag{1}$$

$$\Pr\left(EarlyMarriage_{ihv} = 1\right) = \gamma_0 + \gamma_1 LocalCrimeBeforeMarriage_v + \gamma_2 X_{ihv} + u_{ihv} \tag{2}$$

In equations (1) and (2) we sequentially add different types of crime, gender-specific crime, and all other gender-neutral crime to see how the effects on likelihood of marriage and early marriage change. These two equations are estimated primarily for women and thus do not tell us whether the effect of crime level is significantly different for women compared to men. Therefore, in equation (3) we introduce an interaction term between crime before marriage and the female dummy and estimate the equation for the entire sample of men and women:

$$\begin{aligned} \Pr\left(MarriedBetweenRounds_{ihv} = 1\right) = \; &\beta_0 + \beta_1 LocalCrimeBeforeMarriage_v \\ &+ \beta_2 Female_{ihv} + \beta_3 LocalCrimeBeforeMarriage_v \\ &\times Female_{ihv} + \beta_4 X_{ihv} + \varepsilon_{ihv} \end{aligned} \tag{3}$$

We expect β_1 to be insignificant and β_3, the coefficient of our main interest variable, to be positive and significant. We estimate equation (3) using a linear probability model.[6]

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[6] Due to data limitations, we restrict the analysis of the overall sample including males to estimating the likelihood of marriage; analysis of early marriage is not conducted for the male sample.

4 Data and descriptive statistics

We use data from the IHDS.[7] The IHDS is a nationally representative survey of 41,554 households in 1,503 villages and 971 urban neighbourhoods across India. It is a panel survey—the first round was surveyed in 2004–05 and the second follow-up survey was carried out in 2011–12. Most of the households (83 per cent) and around 85 per cent of individuals surveyed during the first round were resurveyed during the second wave. The data contains information on a rich set of individual and household-level characteristics. However, the IHDS does not provide information on age at marriage for every individual. Only a specially administered questionnaire for women has this information, which is not useful for our study since these women are married women and came to reside in the sample households in a particular neighbourhood after marriage. Therefore, the marital age of these women is not expected to be affected by the perceived crime rate of their husbands' localities. Similarly, women who were born in the survey households and got married between two rounds had left the survey household (to live in their husbands' households due to the patrilocal residence system in India), and therefore were not present in round 2. So, construction of our dependent variables, married dummy and early marriage dummy, is not straightforward.

4.1 Construction of dependent variable

We, focus on two dependent variables: (1) *MarriedBetweenRounds* dummy, and (2) *EarlyMarriage* (marriage before legal age). For the first one, we simply look at those who were unmarried in round 1 and observe their marital status in round 2 of the survey. Those who got married between the two survey rounds (2005 and 2012) are assigned a value of 1, and those who remained unmarried are assigned a value of 0. This outcome is observed easily for those who are present in the household during the second survey round. However, those who moved out of the main household or migrated are not included in the household roster of round 2. For these women, we use the tracking data and the information on migrated individuals. The IHDS team has tracked the individuals who moved out of the original households and migrated to a different place. Around 57 per cent of females surveyed in the first round migrated between the two survey rounds. The survey team was able to track 72 per cent of these migrated individuals (Appendix Table A1). The tracking data has information on their education, marital status, year of migration, reason for migration, current place, occupation, and more. We use this information to construct our *MarriedBetweenRounds* dummy.

Similarly, for the *EarlyMarriage* dummy we mainly use the information from tracking data as the survey does not collect information on age at marriage for all the ever-married individuals, only for a sub-sample of eligible married women. Therefore, we use the year of migration and reason for migration as a proxy to construct the *age_at_marriage* variable. Married women in India leave their natal family and migrate to live with their husbands' families. The year of migration can be used as the proxy for the year of marriage, especially for women who reported the reason for migration as 'marriage'. It works perfectly for our sample of young women as 93.5 per cent of the sampled women who got married between rounds migrated, and among them 95 per cent reported 'marriage' as the reason for migration. However, because of patrilocality, we cannot proxy the *age_at_marriage* variable for married men by using migration year, as men do not necessarily migrate because of marriage. The reasons for migration for 80 per cent of migrated men are 'work' and 'study' (Appendix Figure A1). Therefore, we restrict our analysis of early marriage to the female

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sample. Once we have the *age_at_marriage* variable for the female sample, we construct the *EarlyMarriage* dummy by assigning a value of 1 to those who got married before the legal age of marriage (18) and a value of 0 to those who either got married or remained unmarried after turning 18. In this way we may underestimate the incidence of early marriage if some or all of the sample women actually got married a few years before the migration year. However, we argue that if we see any effect of crime on the probability of early marriage, the effect would be a lower bound of the true effect.

4.2   Construction of the main independent variable: crime in the locality

Our main independent variable of interest is the household's perception of crime in the neighbourhood. The data provides information about the perception of each household about different types of crime in their locality, such as conflicts, thefts, attacks/threats, and, most importantly, harassment of girls. Specifically, it asks 'How often are unmarried girls harassed in your village/neighbourhood?'. The response is a categorical variable that takes values of 0 for never, 1 for sometimes, and 2 for often. The question is specifically asked for unmarried girls, and therefore is perfect to use in our study as our main focus is unmarried individuals in the first survey round. We aggregate the household responses to the neighbourhood level to construct our measure of perception of crime against women as the proportion of households in the neighbourhood who perceive that girls are harassed (responses 1 and 2) in their neighbourhoods. It could be argued that the households with more unmarried women may experience or perceive higher crime against women. To avoid this problem, we take the average of each of these reported crimes for the neighbourhood except the household itself. For example, the crime rate for the ith household in jth village is estimated by taking the average of crime rates reported by all other households in the jth village except the ith household.

4.3   Final sample and descriptive statistics

We restrict our sample of females to those who were 12–16 years of age in 2005 and were not married. We look at how their probability of getting married and probability of early marriage during the period 2005 and 2012 are affected by the crime rates of 2005. In this way, we do not observe the outcome and explanatory variables at the same time point. We chose this age group as most adolescent girls enter menarche at this age and, thus, are marriageable. Moreover, in 2012 when the outcome (marriage) is observed the sampled women are 19–23 years old, crossing the legal age of marriage (18).[8] Similarly, we restrict our male sample to a comparable age group, aged 15–19 in 2005 so that they are above the legal age of marriage (21) when the outcome is observed in 2012.

The sample size for unmarried women in the 12–16 years age group in 2005 is 12,392, with an average age of 13.86 and six years of average completed schooling in 2005 (Table 1). The outcome variables, marital status and early marriage, are observed in the follow-up survey in 2012. Information on marital status is obtained for 10,396 (84 per cent) of sampled women and the early marriage dummy is created for 9,963 women (80 per cent of the sample). This may lead to sample selection bias, as those who have missing information for the outcome variables could be systematically different from the others. We deal with this issue of sample selection in the robustness section. Around half (47.1 per cent) of the young women in our sample got married between 2005 and 2012. The rate of early marriage is 14.7 per cent for the sampled women, while

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[8] Note that all women in our sample have crossed the legal age of marriage – therefore the outcome of early marriage is fully observed for all of them.

the rate is 9.6 per cent for the sampled men of the comparable age group.[9] In terms of crime rates, 12 per cent of households report harassment of unmarried girls in the locality during the baseline survey.

Table 1: Summary statistics

Variable	Female			Male		
	Obs.	Mean	Std dev.	Obs.	Mean	Std dev.
Dependent variables						
Married dummy	10,396	0.471	0.499	9,467	0.344	0.475
Early marriage dummy	9,963	0.147	0.354	8,160	0.096	0.294
Main variables of interest (baseline)						
Gender-specific: harassment of unmarried girls (baseline)	12,311	0.126	0.207	11,090	0.123	0.203
Gender-neutral crimes (baseline)						
Theft in the locality (baseline)	12,367	0.04	0.091	11,143	0.038	0.088
Breaking-in at any household in the locality (baseline)	12,369	0.010	0.033	11,145	0.010	0.033
Threat or attack in the locality (baseline)	12,369	0.028	0.078	11,145	0.026	0.072
Conservatism: practice of purdah *and men eating first (baseline)*						
Practice of *purdah*	10,957	0.578	0.494	9,529	0.570	0.495
Men eating first	10,972	0.332	0.471	9,528	0.328	0.469
Membership and media exposure (baseline)						
Membership of household: Mahila Mandal	12,380	0.070	0.255	11,153	0.072	0.262
Membership of household: self-help group	12,378	0.098	0.297	11,154	0.093	0.290
Media exposure of women	12,174	0.456	0.332	10,954	0.467	0.333
Individual characteristics (baseline)						
Age	12,392	13.867	1.431	11,174	16.854	1.378
Age square	12,392	194.353	39.918	11,174	285.957	46.583
Years of education completed	12,357	6.043	2.977	11,139	7.799	3.458
Parental years of education	11,955	3.085	4.299	10,708	2.905	4.204
Household characteristics (baseline)						
Caste: upper caste	12,392	0.443	0.497	11,174	0.448	0.497
Caste: Other Backwards Class	12,392	0.211	0.408	11,174	0.209	0.407
Caste: Scheduled Caste	12,392	0.088	0.284	11,174	0.084	0.277
Caste: Scheduled Tribes	12,392	0.258	0.438	11,174	0.259	0.438
Religion: Hindu	12,392	0.767	0.423	11,174	0.778	0.416
Religion: Muslim	12,392	0.156	0.363	11,174	0.146	0.353
Religion: Other	12,392	0.077	0.267	11,174	0.076	0.266
Relationship to head: daughter/son of head	12,392	0.848	0.359	11,174	0.872	0.334

[9] The rate of early marriage among women aged 19–23 is 26 per cent in India as estimated from another nationally representative survey, the National Family and Health Survey (NFHS) in 2012.

Relationship to head: granddaughter/son	12,392	0.111	0.314	11,174	0.075	0.263
Relationship to head: other relationship	12,392	0.041	0.198	11,174	0.051	0.220
Years living in the locality	12,380	72.976	30.018	11,158	72.594	30.059
Household occupation: agriculture	12,392	0.263	0.440	11,174	0.265	0.441
Household occupation: casual labour	12,392	0.319	0.466	11,174	0.312	0.463
Household occupation: artisan/petty	12,392	0.168	0.374	11,174	0.164	0.371
Household occupation: salaried	12,392	0.200	0.400	11,174	0.210	0.407
Household occupation: other	12,392	0.050	0.218	11,174	0.050	0.217
HH total income quintile 1	12,392	0.210	0.407	11,174	0.178	0.383
HH total income quintile 2	12,392	0.21	0.410	11,174	0.196	0.397
HH total income quintile 3	12,392	0.211	0.408	11,174	0.214	0.410
HH total income quintile 4	12,392	0.195	0.396	11,174	0.230	0.421
HH total income quintile 5	12,392	0.169	0.375	11,174	0.182	0.386
HH asset quintile 1	12,392	0.210	0.408	11,174	0.193	0.395
HH asset quintile 2	12,392	0.238	0.426	11,174	0.235	0.424
HH asset quintile 3	12,392	0.219	0.414	11,174	0.211	0.408
HH asset quintile 4	12,392	0.168	0.374	11,174	0.176	0.381
HH asset quintile 5	12,392	0.164	0.370	11,174	0.185	0.388
Household size	12,392	6.615	2.904	11,174	6.180	2.821
Household highest adult education	12,375	6.782	4.896	11,163	7.028	5.014
Urban location dummy	12,392	0.331	0.471	11,174	0.347	0.476
Village-level characteristics (baseline)						
Current enrolment of girls (6–16), proportion	12,326	0.819	0.215	10,929	0.854	0.200

Note: the table includes the sample of young women who were 12–16 years old in 2005, and young men who were 15–19 years old in 2005.The dependent variables are measured using 2012 data from the follow-up survey. All other characteristics are measured using baseline data from the 2005 survey. Mahila Mandals are voluntary service organizations that work for the betterment of women in the villages of India**.** A self-help group is a community-based group with 10–20 members, usually women, with anti-poverty agendas. The members are from similar social and economic backgrounds, all voluntarily coming together to save small sums of money, on a regular basis.

Source: author's compilation based on IHDS data.

We compare the estimates of early marriage and gender-specific crime rates from the IHDS data with other nationally representative survey data. For early marriage, we use the NFHS data and compare it with the estimates from the IHDS data in a scatterplot (Figure 1). The figure shows a positive relationship with a correlation coefficient of 0.5 that is also statistically significant. We also compare the gender-specific crime rates estimated from the IHDS data with the equivalent estimates from the National Crime Record Bureau (NCRB) data at the district level. The scatterplot between the estimates from these two sources is presented in Figure 2. The curve shows a weak negative or no relationship between the two estimates. This could be due to the differences in the data: the NCRB data captures the actual reporting of the crime rates (and suffers from under-reporting due to various reasons such as stigma), while the IHDS data captures the households' perception of crime against unmarried women in the locality. Therefore, these two estimates may not be correlated.

Figure 1: Scatter plot of early marriage rates estimated from NFHS and IHDS data, 2012

Slope = 0.50(0.06)   R-squared = 0.1823
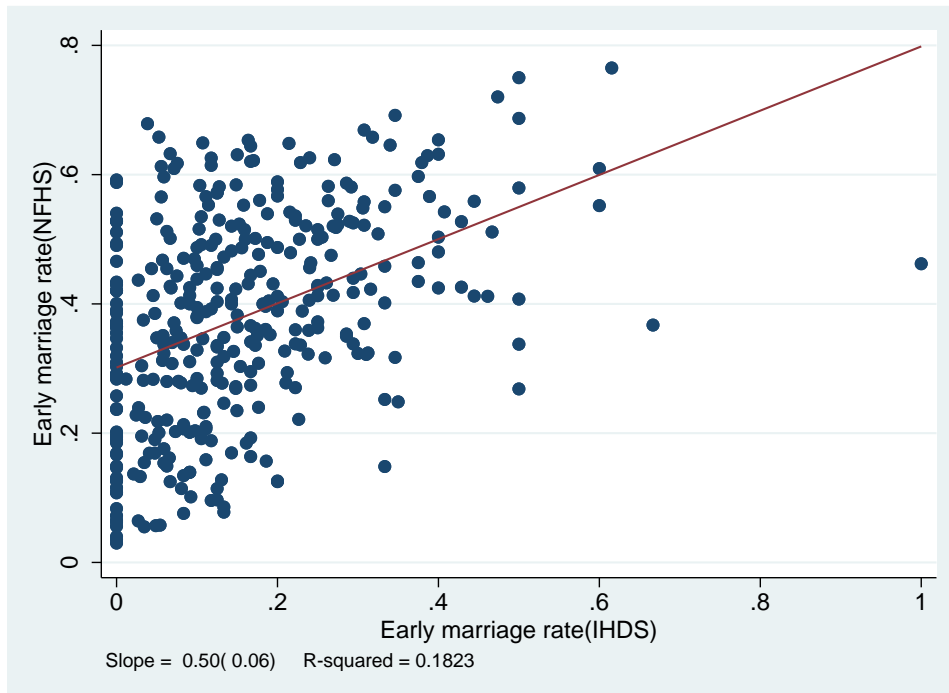
Note: the figure is a scatterplot for early marriage rates of girls as estimated from NFHS and IHDS data for the year 2012. The early marriage rate for girls is defined as the percentage of girls in the 19–23 years age group in the year 2012 who got married before the age of 18.

Source: author's compilation based on data from the NFHS (wave 4) and IHDS (2011–12).

Figure 2: Scatterplot of gender crime rates obtained from NCRB data and IHDS data, 2005

Slope = -5.71(1.63)   R-squared=0.0347
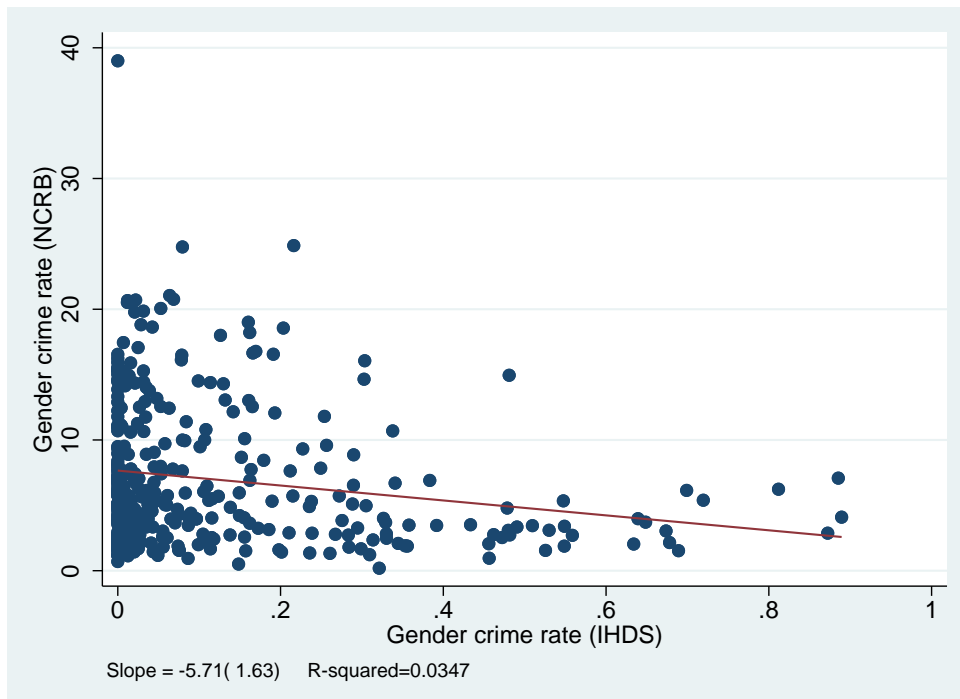
Note: the figure is a scatterplot between the gender crime rates obtained from NCRB data and IHDS data. Note that the NCRB data gives the crime rate calculated on the basis of actual reported crimes in a district, while the IHDS data gives households' perception about crime in a district.

Source: author's compilation based on data from the NCRB and IHDS, 2004–05.

5   Results

5.1   Main results

In Table 2 we present the result estimated from equations (1) and (2) using a linear probability model (LPM). We use the LPM as we are interested in marginal effects and our model includes interaction terms that are easier to interpret when estimated through the LPM rather than non-linear models. Table 2 reports the marginal effects for our main variables of interest—crime levels in the locality as perceived/experienced by the households. Gender-specific crime is defined by the perceived threat of harassment of unmarried girls by the households. After controlling for a range of background characteristics from the baseline survey, gender-specific crime significantly increases the chance of getting married for women in the 19–23 age group.

Table 2: Regression result: perceived crime in the locality and marriage decision of women

	Pr (Married = 1)		Pr(Early marriage = 1)	
	(1)	(2)	(3)	(4)
	Gender-specific crime	Gender-specific and -neutral crime	Gender-specific crime	Gender-specific and -neutral crime
Gender-specific: harassment of unmarried girls	0.116***	0.102***	0.060**	0.055**
	(0.037)	(0.040)	(0.025)	(0.025)
Theft in the locality		−0.010		0.046
		(0.085)		(0.070)
Breaking-in at any household in the locality		0.220		0.186
		(0.199)		(0.143)
Threat or attack in the locality		0.119		−0.050
		(0.082)		(0.059)
Membership and media exposure	Yes	Yes	Yes	Yes
Individual control	Yes	Yes	Yes	Yes
Household control	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes
Constant	−0.435	−0.448	−0.441	−0.433
	(0.533)	(0.533)	(0.415)	(0.416)
Observations	8,796	8,789	8,444	8,437
R-squared	0.257	0.258	0.114	0.114

Note: robust standard errors in parentheses. Standard errors are clustered at the primary survey unit (PSU) level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample includes young women who were 12–16 years old in the first survey in 2005 and unmarried at that time. The outcome variables are observed in the second survey round in 2012. All the regressions include control variables at the individual level, household level, and village level from baseline survey and state fixed effects.

Source: author's compilation based on IHDS data.

In the third specification, we investigate whether other gender-neutral crimes—theft, breaking-in, and threat/attack—are also associated with marriage probability of young women. The results show that it is only the gender-specific crime that has a significant positive association with the

11

probability of marriage of young women, along with threat and attack. This is not surprising, since both harassment of unmarried girls and threat and physical attack are crimes likely to cause substantial damage to a woman's modesty. Similarly, the probability of early marriage significantly increases with the increase in gender-specific crime in the locality, whereas the gender-neutral crime (theft/robbery, breaking-in, and threat/attack) in the locality as perceived by the households does not have any significant relationship with the probability of early marriage.

One line of literature, mostly based on high-income countries, has shown an association between crime and early motherhood (Comanor and Phillips 2002; Donohue III and Levitt 2001). According to this literature, early motherhood produces children who are likely to be engaged in criminal activity. Hence, it can be possible that in locations where early marriages are common there is also more crime due to intergenerational poverty transmission mechanisms. However, this literature has mainly looked at the arrest rate in a locality (Comanor and Phillips 2002). It does not differentiate between gender-specific and gender-neutral crimes. The channel through which this association between crime and early motherhood works is mainly due to unwanted teenage pregnancy of unmarried girls (Comanor and Phillips 2002). Another reason cited in the papers for engaging in crime is the absence of fathers for these children as child is born outside a marriage/formal partnership. In India the rate of pregnancy outside marriage is very low or absent, so the chance of early marriage leading to crime through early motherhood is also low. If anything, early marriage should lead to crimes of all sorts. In our paper, the main focus is gender-specific crime while controlling for all other gender-neutral crimes that are reported by the households. If early marriage and subsequent motherhood lead to higher crime in the locality, it should be controlled by the three other crime types that we include in the model.

The regression equations control for a rich set of covariates and state fixed effects. To capture the media exposure of women of the households, we use the aggregate index of radio, newspaper, and television use by women. In addition, we also include variables to capture the household's representativeness in various women's groups, such as Mahila Mandals and self-help groups. These variables are potential factors that should have an effect on the marriage decisions of girls in the households. Thus, controlling for these factors is necessary to avoid omitted variable bias. Our results remain significant after controlling for these variables in addition to individual characteristics, household characteristics, and some village-/PSU-level factors. The individual-level characteristics include age, age squared, education, and marital status. Household characteristics include caste, religion, occupation, income, assets, adult male education, and duration in the locality. We also control for an urban dummy and the proportion of girls in the age group 6–16 years enrolled in the school at the village or PSU level in all the regression specifications. The results with all the control variables are presented in Appendix Table A2.

5.2   Comparison with men

Next we compare these results with that of men by estimating equation (3). We run the regression with the overall sample comprising both men and women. The regression includes an interaction term between the variable crime against women and the female dummy to test whether crime against women has any differential effect on the likelihood of marriage of women compared to men of a comparable age group. We do not find any significant association between the perceived gender-specific crime in the locality and likelihood of getting married of young men of aged 22–26, as presented in Table 3. However, the interaction term is significant and positive, implying significant gender differences in the effect of crime against women on the likelihood of marriage of young women. The results indicate that gender-specific crime in the neighbourhood as perceived by the households has an association only with the likelihood of marriage of women. In the next section we talk about the channel through which households' perceptions of crime against unmarried women influences their decisions to marry their daughters off at an early age.

Table 3: Regression result: male (15–19 years old at baseline)

Variables	(1)
	Pr (Married = 1)
Female dummy	0.303***
	(0.011)
Gender crime: harassment of unmarried girls	0.006
	(0.034)
Interaction term: *Female_dummy # gender crime*	0.108***
	(0.038)
Constant	−0.774***
	(0.194)
Observations	18,475
R-squared	0.196
State fixed effects	Yes

Note: robust standard errors in parentheses. Standard errors are clustered at the PSU level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample includes women aged 12–16 and men aged 15–19 in the first survey in 2005 and unmarried at that time. The outcome variables are observed in the second survey round in 2012. The regression includes gender-neutral crimes, membership and media exposure of women, individual characteristics, and household-level and village-level characteristics from the baseline survey as controls.

Source: author's compilation based on IHDS data.

5.3   Channel analysis: social norms and stigma cost

Our results show that only perceived gender-related crime (crime specifically targeting women) has a positive relationship with likelihood of marriage or early marriage of young women. Perceived gender-neutral crime in the neighbourhood has no significant association with women's likelihood of getting married and getting married early. Moreover, we also find that crime against women has no significant association with the likelihood of marriage of young men of a comparable age group. One explanation for these results is that the stigma cost that the society attaches to a victim of sexual harassment is high for unmarried young women, particularly in a society in which female chastity is valued highly in the marriage market. As found by Buss (1989) in a cross-country study of mate preferences, Indian men put more weight on their spouse's sexual purity at marriage than on physical appearance (Buss 1989).[10] Therefore, the stigma attached to being a victim of sexual harassment is higher in a more conservative society, and consequently the age of marriage for women is lowered. To test our hypothesis, we use information on whether the household follows the *purdah* system or not. The survey asks this question of the women in the sample. We test our hypothesis by conducting our analysis on two sub-samples: one comprising households in which the women practice *purdah* (the practice of screening women from men or strangers by covering the face), and another in which this practice is not present. Using the same Indian data, Desai and Andrist (2010) find that the practice of *purdah* or *ghunghat*, male–female segregation in the household, and restricted female mobility are all associated with early age at marriage. We use this information to divide the sample and look at the relationship between crime

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[10] The study also found men from China, Indonesia, Taiwan, and Iran revealed the same preference, while the opposite prioritization was seen in each of the 24 European, North American, South American, and sub-Saharan African countries included in the study (Buss 1989).

against women and probability of marriage and early marriage for the sample with and without the practice of *purdah*.

We also test this hypothesis by dividing the sample into two regions: the northern region and the southern region. The existing literature shows that gender norms and patriarchal culture are stronger in the northern states of India than in the southern states (Dyson and Moore 1983; Eswaran et al. 2013; Sarkar et al. 2019). We hypothesize that the north–south difference may also manifest itself in the decision of parents to marry off their daughters at an early age if there is a perceived threat of gender-specific crimes in the locality. Hence, we estimate the model separately for northern and southern states and test whether the effects of gender-specific crime on marriage/early marriage are different.

In Table 4 we present the results for both groups and for both the dependent variables *MarriedBetweenRounds* dummy and *EarlyMarriage* dummy. The results confirm our hypothesis. Crime against women has a significant positive association with likelihood of both marriage and early marriage in the households where women practice *purdah*. Similarly, crime against women is significant and positive only in the sample for the northern region; the coefficients are insignificant in the sample for the southern region.

Table 4: Regression result: gender norms

Variables	Pr (Married =1)				Pr (Early marriage=1)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Purdah	No *purdah*	North	South	*Purdah*	No *purdah*	North	South
Gender-specific: harassment of unmarried girls	0.136***	0.029	0.138***	0.000	0.074**	0.015	0.097***	−0.030
	(0.049)	(0.055)	(0.046)	(0.079)	(0.034)	(0.034)	(0.031)	(0.042)
Constant	−0.480	−0.375	−0.140	−0.968	−0.720	−0.042	−0.369	−0.343
	(0.694)	(0.845)	(0.623)	(1.029)	(0.572)	(0.595)	(0.499)	(0.795)
Observations	5,201	3,595	6,373	2,641	4,997	3,447	6,105	2,514
R-squared	0.269	0.255	0.254	0.254	0.125	0.102	0.112	0.098
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: robust standard errors in parentheses. Standard errors are clustered at the PSU level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample includes young women who were 12–16 years old in the first survey in 2005 and unmarried at that time. The outcome variables are observed in the second survey round in 2012. The regression includes gender-neutral crimes, membership and media exposure of women, individual characteristics, and household-level and village-level characteristics from the baseline survey as controls.

Source: author's compilation based on IHDS data.

5.4 Robustness analysis

Heckman sample selection

Our sample of adolescent girls in 2005 has attrition in the follow-up survey carried out in 2012, mainly due to migration to a different location. As discussed in the data section, the survey tracks some of the migrated members in the follow-up survey and collects information, including their demographic characteristics, education, reason for migration, year of migration, and place of migration. However, some individuals could not be tracked in the follow-up survey, leading to missing information on the outcome variables. Around 16 per cent and 19.6 per cent of the sampled women do not have information on marital status and early marriage, respectively, and

thus are not included in the regression. This may result in biased estimates if these sample drop-outs are non-random. The existing literature suggests that sample drop-outs are often endogenous for estimating transition probabilities and hence should not be ignored (Cappellari 2007; Cappellari and Jenkins 2004). Therefore, we introduce a latent variable *insample* as a binary indicator of whether the individual was tracked in 2012 (*insample* = 1) or dropped out (*insample* = 0). Next, we calculate the selection correction term and control it in the main regression equations to correct for endogeneity arising from the selection problem due to the sample attrition. We use the Heckman selection correction model to perform this whole exercise. For identification, the selection equation should include some explanatory variables (instruments) which are validly excluded from the main equations of probability of marriage and early marriage (Heckman 1981). Otherwise, identification would completely depend on the non-linear functional form of the inverse Mills ratios. Following the line of thought used by Mahringer and Zulehner (2015) to predict individual-level attrition, we use the person serial number from the household roster in the 2005 sample as an instrument of being in the sample or being tracked in the follow-up survey. Mahringer and Zulehner (2015) use whether the individual was the respondent for the family-specific questions in the interview as the identifier. Person serial numbers are numbers that are assigned to each member of the household by the surveyor, and are used as identifiers of sample attrition/retention in developing countries (Sarkar et al. 2019). The argument is that persons who are recorded first are those with higher attachment to the household and, hence, are less likely to subsequently drop out of the sample or more likely to be tracked even though they migrate from the household. After controlling for relationship to the head of household, the person identifier should predict being in the sample but not have any direct effect on marital decision through the relationship with the household head.

The results are presented in Table 5. Perceived crime against women remains significant after correcting for sample selectivity bias. The identifying variables in the selection equation, person serial number and its square term, are both statistically significant and indicate a positive and concave relationship.

Table 5: Robustness result: Heckman selectivity corrected estimates

Variables	(1)	(2)	(3)	(4)
	Pr (Married = 1)	Selection equation	(Early marriage = 1)	Selection equation
Gender-specific: harassment of unmarried girls	0.114***	0.083	0.059***	−0.006
	(0.028)	(0.093)	(0.023)	(0.087)
Roster ID within baseline household		0.094***		0.095***
		(0.023)		(0.021)
c.PERSONID2005 # c.PERSONID2005		−0.006***		−0.006***
		(0.001)		(0.001)
Lambda		0.240**		0.204**
		(0.103)		(0.093)
Constant	−0.786	−0.885	−0.595	0.665
	(0.532)	(1.783)	(0.421)	(1.661)
Observations	11,579	11,579	11,579	11,579
State fixed effects	Yes	Yes	Yes	Yes

Note: robust standard errors in parentheses. Standard errors are clustered at the PSU level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample includes young women who were 12–16 years old in the first survey in 2005 and unmarried at that time. The outcome variables are observed in the second survey round in 2012. The regression includes gender-neutral crimes, membership and media exposure of women, individual characteristics, and household-level and village-level characteristics from the baseline survey as controls. The Heckman selection equation uses the person serial number or roster ID from the baseline household roster as the identifying variable.

Source: author's compilation based on IHDS data.

Conservative attitudes

It could be argued that households with conservative attitudes may perceive higher risk of threats towards women's chastity and may report higher levels of crime against women in the locality. Though we are not able to tackle the endogeneity, we try to deal with this issue by including a range of household-level factors. To capture the conservative attitudes of households, we include a dummy indicating whether the women of the households practice *purdah* and eat their meals after the male members of the household. These are the practices that are followed in households with conservative attitudes towards women. By adding these variables into the regression, we can safely assume to control for the conservative attitude of the households to some extent. The results are presented in Table 6. The coefficients of crime against women become smaller but remain significant for both likelihood of marriage and early marriage. As expected, both the *purdah* dummy and the dummy indicating whether men eat first are significant and positive, implying that households with these regressive practices have a higher likelihood of early marriage of adolescent girls in India.

Table 6: Robustness result: controlling for conservative attitudes

	(1)	(2)
	Pr (Married = 1)	Pr (Early marriage = 1)
Gender-specific: harassment of unmarried girls	0.102***	0.055**
	(0.040)	(0.025)
Purdah dummy	0.030**	0.029***
	(0.014)	(0.010)
Men eat first dummy	0.035***	0.028***
	(0.013)	(0.010)
Constant	−0.448	−0.433
	(0.533)	(0.416)
Observations	8,789	8,437
R-squared	0.258	0.114
State fixed effects	Yes	Yes

Note: robust standard errors in parentheses. Standard errors are clustered at the PSU level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample includes young women who were 12–16 years old in the first survey in 2005 and unmarried at that time. The outcome variables are observed in the second survey round in 2012. The regression includes gender-neutral crimes, membership and media exposure of women, individual characteristics, and household-level and village-level characteristics from the baseline survey as controls.

Source: author's compilation based on IHDS data.

Village infrastructure and shocks for the rural sample

In addition to the stigma, the impact of perceived crime on early marriage may depend on the village infrastructure and any shocks the households have experienced during the years in rural areas. For example, access to a police station, access to transportation, access to educational institutions, etc. may affect the perception of gender-specific crime in the locality as well as the decision of early marriage of girls. Similarly, shocks like drought or flood in the village may influence both the perception of crime in the locality and the decision to marry of the girls of the households. To capture the effects of these variables we include in the regression information on distance to the nearest police station, distance to the bus stop and nearest railway station, and the distance to the nearest college. We also include the square terms of these distance variables in the regression to capture the non-linear effects. Along with these infrastructural variables we include information on six different shocks experienced by the villagers between the two survey rounds. The survey collects information on these infrastructure-related variables from the village chief. We take advantage of this village-level data and include these additional variables as controls in the rural sample. The results from the analysis are reported in Table 7. The effect of crime against women persists even after controlling for these village-level variables. In fact, the perceived crime against women has a higher impact on the likelihood of marriage and early marriage in the rural sample (14 percentage points and 11.6 percentage points, respectively) compared to the effects in the overall sample.

Table 7: Robustness result: controlling for village infrastructure and shocks

| | Pr (Married = 1) | Pr (Early marriage = 1) |
	(1)	(2)
Gender-specific: harassment of unmarried girls	0.140**	0.116***
	(0.059)	(0.043)
Theft in the locality	0.085	0.063
	(0.111)	(0.094)
Breaking-in at any household in the locality	0.250	0.075
	(0.267)	(0.170)
Threat or attack in the locality	0.083	−0.100
		(0.082)
Village infrastructural control	Yes	Yes
Village shocks	Yes	Yes
State fixed effects	Yes	Yes
Constant	−1.092*	−1.089**
	(0.652)	(0.536)
Observations	6,114	5,840
R-squared	0.244	0.102

Note: robust standard errors in parentheses. Standard errors are clustered at the PSU level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample is the rural sample including young women who were 12–16 years old in the first survey in 2005 and unmarried at that time. The outcome variables are observed in the second survey round in 2012. All the regressions include gender-neutral crimes, membership and media exposure of women, individual characteristics, and household-level and village-level characteristics from baseline as controls. The village infrastructural control includes the distances to the nearest police station, bus stop, railway station, and college from the village in kilometres and their square terms. The village shocks include the occurrence of drought, flood, epidemic, earthquake, cyclone, hailstorm, and any other shock in the village between the survey years of 2005 and 2012.

Source: author's compilation based on IHDS data.

6   Conclusion

We study the relationship between the probability of early marriage of men and women and perceived crime levels in the neighbourhood. Both gender-neutral crimes and crimes specifically targeting women are explored. Our results suggest that an increase in crimes against women, as perceived by the households in a locality, significantly increases the likelihood of marriage and early marriage of women, while it does not affect the likelihood of marriage of men of the comparable age group. The result holds after controlling for a range of individual- and household-specific factors and state fixed effects.

We also investigate the channels through which crimes against women influence the decisions of households to get adolescent girls married off before the legal age for marriage. We argue that the positive association between perceived crime against women and their early marriage exists because of the concern regarding preservation of young women's chastity, and the social stigma attached to victims of sexual violence, particularly in more conservative households. Our results support this argument by providing evidence that this positive relationship holds only in households where the *purdah* system—screening of women from men or the outside world by covering their faces—is practised, and also in the northern region of India, where patriarchal

culture and gender norms are stronger than in the southern region. In societies where female chastity is highly valued and rewarded, perhaps more than their education, parents are pressurized to marry off their daughters early, for fear of sexual harassment or activity before marriage. Higher levels of crime against women in the locality, including rape, molestation, eve-teasing,[11] etc., naturally heighten these fears, and lower the age of marriage.

The phase between adolescence and adulthood is an important time in the lives of young people. The transition to marriage and subsequent fertility has serious implications for a woman's future life trajectory and well-being, particularly for young women in developing countries. Discontinuation of education after puberty and early marriage can contribute to the issue of low female labour force participation. Therefore, the age at which these transitions occur is a key concern as it is associated with human capital development, labour market outcomes, health, vulnerability, and the vicious circle of poverty.

Existing policies to eradicate girl child marriage focus mainly on the implementation of legal age of marriage (18 years for girls) and provide several incentives to prevent school drop-out of adolescent girls. However, our study reveals that it is also important to ensure the safety of women in the locality so that girls can live and operate in a safe environment. To achieve gender equality and empowerment, which is the target of Sustainable Development Goal 5, it is imperative that girls and boys get equal opportunities in the early stages of life. Our study highlights that crime against women in the locality disproportionately hurts girls and is a barrier to achieving gender equality in human development.

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[11] Eve-teasing is a form of sexual harassment practised generally by a man or a group of men to annoy women. Examples include verbal abuse by making sexual comments in public places.

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Appendix A: Figures and tables

Figure A1: Reason for migration
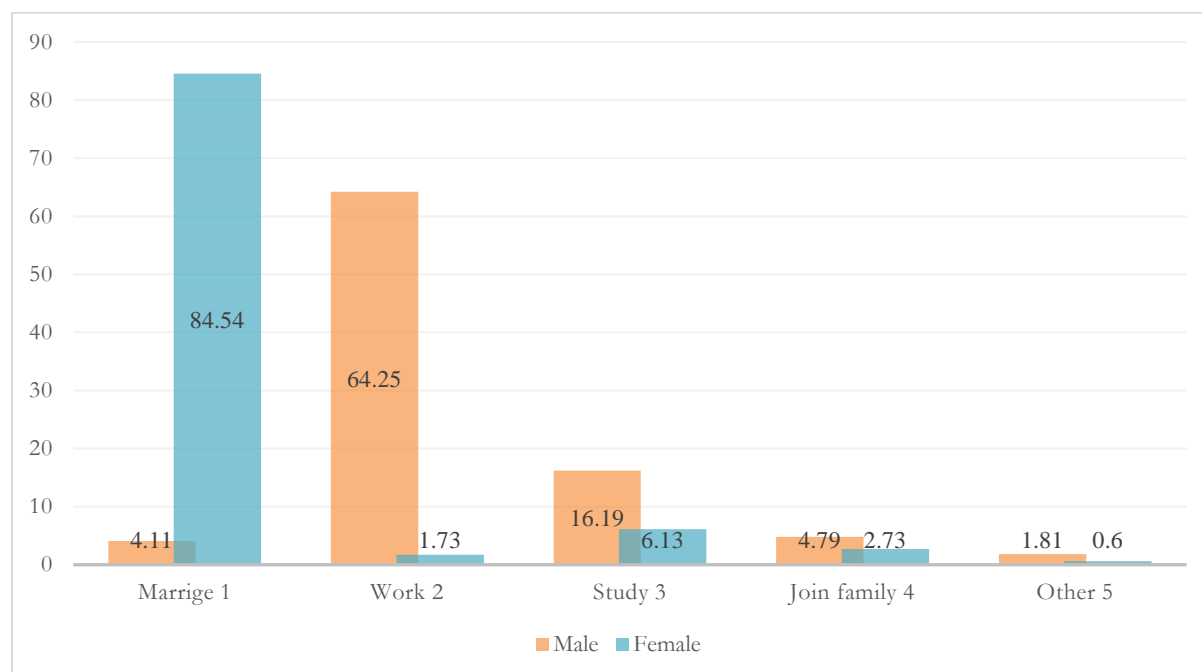
Note: the figure includes females 12–16 years old in 2005 and males 15–19 years old in 2005 who migrated between the years 2005 and 2012.

Source: author's compilation based on IHDS data.

Table A1: Sample retention in surveys

	Male		Female		All	
	N	*%*	*N*	*%*	*N*	*%*
Present in both surveys	7,438	66.57	5,291	42.7	12,729	54.01
Migrated between rounds (2005 and 2012)	3,736	33.43	7,101	57.3	10,837	45.99
Tracked in 2012	2,045	54.74	5,136	72.33	7,181	66.26
Could not be tracked	1,691	45.26	1,965	27.67	3,656	33.74
Total	11,174	100	12,392	100	23,566	100

Note: the sample includes unmarried females, 12–16 years old, and unmarried males, 15–19 years old in 2005.

Source: author's compilation based on IHDS data.

Table A2: Full regression result with all control variables for females, 12–16 years old in the baseline year

Variables	(1)	(2)
	Pr(Married = 1)	Pr(Early marriage = 1)
Crime levels (baseline)		
Gender crime: harassment of unmarried girls	0.109***	0.060**
	(0.039)	(0.024)
Theft in the locality	0.036	0.070
	(0.080)	(0.064)
Breaking-in at any household in the locality	0.136	0.110
	(0.202)	(0.135)
Threat or attack in the locality	0.142*	−0.034
	(0.084)	(0.057)
Membership and media exposure (baseline)		
Membership of household: Mahila Mandal	0.004	0.004
	(0.020)	(0.015)
Membership of household: self-help group	−0.025	−0.008
	(0.019)	(0.015)
Media exposure of women	−0.055***	−0.028**
	(0.019)	(0.014)
Individual characteristics (baseline)		
Age	0.159**	0.159***
	(0.073)	(0.056)
Age squared	−0.003	−0.007***
	(0.003)	(0.002)
Years of education completed	0.005**	−0.000
	(0.002)	(0.002)
Parental years of education	−0.006***	−0.004***
	(0.002)	(0.001)
Household's characteristics (baseline)		
Caste: Other Backwards Class	−0.010	0.001
	(0.014)	(0.011)
Caste: Scheduled Caste	−0.084***	−0.041**
	(0.023)	(0.017)
Caste: Scheduled Tribes	0.002	0.001
	(0.014)	(0.010)
Religion: Muslim	−0.096***	−0.039***
	(0.021)	(0.013)
Religion: Others	−0.078***	−0.006
	(0.023)	(0.014)
Relationship to head: daughter/son of head	−0.014	0.010
	(0.030)	(0.024)
Relationship to head: granddaughter/son	0.005	0.007
	(0.033)	(0.025)
Years living in the locality	−0.000**	−0.000**

	(0.000)	(0.000)
Household occupation: casual labour	0.015	0.017
	(0.014)	(0.012)
Household occupation : artisan/petty trade/business	−0.012	−0.003
	(0.016)	(0.013)
Household occupation: salaried	−0.022	0.011
	(0.017)	(0.012)
Household occupation: other	−0.006	0.005
	(0.024)	(0.016)
HH total income quintile 2	−0.016	−0.017
	(0.015)	(0.012)
HH total income quintile 3	−0.008	0.004
	(0.016)	(0.012)
HH total income quintile 4	−0.008	−0.004
	(0.017)	(0.013)
HH total income quintile 5	−0.013	−0.005
	(0.020)	(0.013)
HH asset quintile 2	−0.060***	−0.062***
	(0.015)	(0.013)
HH asset quintile 3	−0.082***	−0.082***
	(0.019)	(0.015)
HH asset quintile 4	−0.119***	−0.100***
	(0.023)	(0.017)
HH asset quintile 5	−0.177***	−0.110***
	(0.027)	(0.018)
Household size	0.002	0.003**
	(0.002)	(0.002)
Household highest adult education	−0.009***	−0.005***
	(0.001)	(0.001)
Urban location dummy	−0.056***	−0.022**
	(0.016)	(0.011)
Village-/PSU-level characteristics (baseline)		
Current enrolment of girls (6–16 years), proportion	−0.624***	−0.224***
	(0.033)	(0.025)
Constant	−0.595	−0.524
	(0.510)	(0.396)
Observations	9,789	9,382
R-squared	0.252	0.105
State fixed effects	Yes	Yes

Note: robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The sample includes young women who were 12–16 years old in the first survey in 2005 and unmarried at that time. The outcome variables are observed in the second survey round in 2012.

Source: author's compilation based on IHDS data.