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Effects of education and poverty on the prevalence of girl child marriage in India: A district–level analysis

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ABSTRACT

Girl child marriage remains widespread in India despite implementation of several policies and programmes to eliminate the practice. This study examines the effects of girls' educational attainment and household poverty on the prevalence of female child marriage at the district–level in India. Data are drawn from the 2015–16 National Family Health Survey. Multiple linear regression models were employed to assess the factors of girl child marriage. The results indicate that girls with no schooling and primary level of education are having higher probability of getting married at an early age. However, likelihood of girl child marriage starts declining with secondary level of education. Moreover, higher secondary and higher level of education significantly reduces the prevalence of girl child marriage. Similarly, moving from poorest households to richest households significantly decreases the probability of child marriage. The results suggest that increasing opportunities for girls' education and financial supports to the poor families could be effective strategies towards eliminating the practice of girl child marriage in India.

1. Introduction

Girl child marriage remains a serious problem in lower-middle income countries with around 650 million (12 million annually) women are married under 18 years of age, worldwide (UNICEF, 2018). Child marriage, also known as early marriage or forced marriage is a violation of human right (United Nations, 1989) which adversely impact on girls' education, physical and social life (UNFPA, 2012; UNICEF, 2014). Therefore, eliminating child marriage is a major priority, globally. The aim of Sustainable Development Goal (SDG) is to eliminate the practice of girl child marriage by 2030 (Henderson, 2016). Despite, substantial progress has been made in reducing child marriage; it remains pervasive in sub-Saharan and South Asian countries (UNICEF, 2018). Moreover, child marriage is highly prevalent among the poor, uneducated and among those who are living in rural areas (Jain et al., 2007; Nour, 2009; Raj, Saggurti, Balaiah, & Silverman, 2009; UNFPA, 2012).

Around 285 million girls are married under 18 in South Asia, representing 44% of global burden (UNICEF, 2018). However, the rate of child marriage has declined by 30% in the last 25 years (UNICEF, 2018). Bangladesh represents the highest rates of girl child marriage among South Asian countries (59%, 2014), followed by Nepal (40%, 2016), Afghanistan (35%, 2015), India (27%, 2015–16), and Pakistan (21%, 2012–13) (UNICEF Global Databases, 2018).

Girl child marriage is negatively associated with health and well–being of women and children. It leads to early childbearing, closed spaced pregnancies, unwanted pregnancy, pregnancy termination, maternal morbidity and mortality (Adhikari, Soonthorndhada, & Prasartkul, 2009; Choe, Thapa, & Mishra, 2004; Godha et al., 2013; Kamal, 2012; Nasrullah, Muazzam, Bhutta, & Raj, 2014; Paul, 2018; Raj et al., 2009; Santhya, 2011). It also increases the risk of intimate partner violence (Erulkar, 2013; Kidman, 2016; Raj, Saggurti, Lawrence, Balalah, & Silverman, 2012; Yount et al., 2016), which further linked to sexually transmitted diseases including HIV (Campbell, 2002; Clark, 2004; Nour, 2006). Early marriage of girls also associated with increased risk of children's physical growth, lower educational attainment, morbidity and mortality (Bates, Maselko, & Schuler, 2007; Chari, Heath, Maertens, & Fatima, 2017; Nasrullah, Zakar, Zakar, & Krämer, 2014; Raj, 2010; Raj et al., 2010; Sekhri & Debnath, 2014).

2. Girl child marriage in India

India is the home of largest number of child brides, worldwide (UNFPA, 2012). Overall, about 27% of the women aged 20–24 years are married before 18 years of age in 2015–16. However, the prevalence of girl child marriage has declined by 20% in the last 10 years (IIPS and ICF, 2017). Poverty, control over women's sexuality and patriarchal

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social-cultural norms are the leading causes of child marriage in India (Caldwell, 2005; Caldwell, Reddy, & Caldwell, 1983; Jain et al., 2007; Raj et al., 2009; Roest, 2016; Singh & Revollo, 2016; Singh & Vennam, 2016).

Female education identified as a powerful policy and program factor for deterring the incidence of child marriage (Svanemyr, Chandramouli, Christiansen, & Mbizvo, 2012). Girls' completing secondary or higher level of education significantly delays in timing of marriage (Raj, Mcdougal, Silverman, & Rusch, 2014; Singh & Revollo, 2016; UNICEF & UNFPA, 2018). Educated girls' are more likely to have decision making power regarding their choice of spouse and timing of marriage than the uneducated girl (Jejeebhoy, Santhya, Acharya, & Prakash, 2013). Moreover, girls having higher level of education are more job aspirants than the lower educated girls'; therefore, they tend to marry at later ages (Roest, 2016).

Several prior studies have indicated that poverty is the main driving force of girl child marriage in developing countries (Lee-Rife & Malhotra, 2012; Nour, 2009; Otoo-oyortey & Pobi, 2003; UNFPA, 2012; UNICEF & UNFPA, 2018). Evidence has found that girls' belonging in poorest and poorer household are more likely to be married in early age than the girls' residing in richer and richest household (UNFPA, 2012; UNICEF & UNFPA, 2018). Poverty forces parents to marry–off their daughter at very early age because the demand of dowry is low for younger girls' (Singh & Vennam, 2016). In communities of South Asia where dowry practice in the form of cash payment is prevalent, it has been found that there is added financial incentive to the parents in getting their daughters married early on so that they do not have to pay as much in dowry to the would-be-groom's parents (Thapa, 1996). Girls' are often married–off as early as possible to avoid cost of education and release financial burden for girls' caring (IRCW and Plan Asia, 2013; Lee-Rife & Malhotra, 2012). Poverty could, thus, be an important impetus of early age at marriage.

Besides education and economic status, there are several other factors such as level of development, socio–cultural and religious norms, women's status, and geographical residence have significant influence in determining girls' age at marriage (Aryal, 2007; Jain et al., 2007; Kamal, 2010; Kamal, Hassan, Alam, & Ying, 2015; Mathur, Greene, & Malhotra, 2003; Nour, 2009; UNFPA, 2012).

Prior studies mainly focused to assess the socio–economic and demographic determinants of child marriage at the individual and household level. A very few studies have examined the drivers of child marriage beyond individual level (UNICEF & UNFPA, 2018; Singh & Samara, 1996; Srinivasan et al., 2015). Moreover, very little has been explored on the relationship between education and poverty and girl child marriage at the macro–level. India has exhibit large variations in education and economic status across districts. Therefore, the aim of this paper is to examine the effects of education and household poverty on the prevalence of girl child marriage at the district–level in India. District–level analysis will enable to suggest effective policy and programs to eliminate the child marriage practices in high prevalence areas.

3. Material and methods

Data used for the study are from the 2015–16 National Family Health Survey (NFHS) (IIPS and ICF, 2017). The 2015–16 NFHS is a nationally representative sample survey of 601,509 households, 699,686 women aged 15–49 years and 112,122 men aged 15–54 years based on population and housing census of India, 2011. This survey was selected sample using a stratified two-stage sampling design comprising of 28,586 clusters; 8397 in urban, 20,059 in rural, and 130 from slums list provided by Municipal Corporation Offices (MCOs). In the first stage, clusters were selected using probability proportional to clusters size. In the second stage, 22 households from each cluster were selected with an equal opportunity systematic selection from the household listing. A detailed description of sampling procedure and survey design is provided in the India report of NFHS–4 (IIPS and ICF, 2017). The data are available from the data repository of Demographic Health Survey (DHS) and could be accessed upon a request through online (https://dhsprogram.com/data/).

The prevalence of girl child marriage is the dependent variable in this study. It is measured as the percentage of married women below 18 years of age among all the women ages 20–24 years (Mathur et al., 2003). The prevalence of child marriage is typically measured from age 20–24 primarily because it allows for the inclusion of all girls who were married or in union by the age 18 with current level of prevalence (UNICEF, 2005).

Girls' educational attainment and household poverty were identified as the main explanatory variables in this study. Girls' educational attainment is categorized into five educational levels: [1] no education/illiterate [2] primary level (1–5), [3] secondary level (5–10), [4] higher secondary level (10 − 12), and [5] college or higher level of education (12 +). Household poverty is a composite measure of household's standard of living. A score was generated by Demographic Health Survey (DHS) using principal component analysis on the basis of ownership of number and kinds of consumer items such as television, bicycle and car; dwelling characteristics such as flooring and roof materials; type of drinking water; sanitation facility and other characteristics that related to wealth status. Wealth status was divided into five quintiles: [1] poorest, [2] poorer, [3] middle, [4] richer, and [5] richest; each quintile represents 20% of the households (Croft, Marshall, Allen, & Allen, 2018).

Other independent variables included in the analysis are urbanization, religion (Hindu population), women autonomy, and region. The proportion of urban residence was computed for all the 640 districts. The proportion of Hindu population was measured as a proxy for socio-religious norms related to marriage among Hindus. It is assumed that Hindu religion has different sets of norms and culture regarding marriage compared to Muslim and other religious groups.

Women autonomy is considered as an important indicator for women's decision making ability regarding marriage. Women's autonomy is assessed from a composite measure of three dimensions: [1] household decision making, [2] physical mobility, and [3] access to economic resources (Bloom, Wypij, & Gupta, 2001). Household decision making was assessed from women's ability to take decisions on their own health care, large household purchases, visit to family or relatives, and money earned by husband; freedom of movement was measured from three question such as can go alone to the market, visit to the health, and to the places outside village or community; and access to economic resources was measured from the questions on ownership of land, house, and bank account. The proportion of “autonomous” women was measured by assigning ‘1’ if women have some degree of autonomy; otherwise they were scored as ‘0’.

Region variable is used as a proxy for regional–level diversity. It is classified into six groups: [1] North (Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan, and Uttarakhand), [2] Central (Chhattisgarh, Madhya Pradesh, and Uttar Pradesh), [3] East (Bihar, Jharkhand, Odisha, and West Bengal), [4] Northeast (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura), [5] West (Dadra & Nagar Haveli, Daman & Diu, Goa, Gujarat, and Maharashtra), and [6] South (Andaman & Nicobar Islands, Andhra Pradesh, Karnataka, Kerala, Lakshadweep, Pondicherry, Tamil Nadu, and Telangana). Regional classification is based on the India report of NFHS–4 (IIPS and ICF, 2017). Further, region variable is dichotomized as ‘South’ (coded as ‘1’) and ‘otherwise’ (coded as ‘0’) to examine the influence of region on girl child marriage. Southern part of India is socio-culturally different from other parts of the country. South India is also recognized as socioeconomically and educationally forward than the rest of the part of country (Dyson & Moore, 1983; Sopher, 1980).

“District” is used as a unit of analysis. Multiple linear regression models (ordinary least square) were estimated for the analysis of the

Table 1
Prevalence of girl child marriage by region, India, 2015–16.

Prevalence (% married under 18 years)		No. of districts	Percent of total population[a]	Region
Median	Mean (range)			
22.5	24.6 (0.0–67.9)	640	100	All India
15.1	18.4 (0.7–57.2)	131	14.0	North
25.0	26.7 (6.8–67.9)	139	24.6	Central
37.1	35.7 (6.2–63.5)	111	22.3	East
20.4	22.1 (2.4–46.2)	86	3.8	Northeast
24.4	25.3 (4.5–51.3)	66	14.4	West
19.8	19.2 (0.0–46.1)	107	20.9	South

[a] Estimated from Census of India, 2011.

data. Two separate (ordinary least square (OLS) regression models (for education and poverty) were carried out to examine the effects of these on girl child marriage. Pearson correlation (r) between the independent variables were performed, and r value exceeding 0.40 were considered a cut–off point for excluding a particular variable jointly in a model. Sampling weight was applied to estimate the district–level percentages. Analyses were carried out using STATA version 12.1 (StataCorp LP, College Station, Texas, USA).

4. Results

Table 1 shows district–level prevalence of girl child marriage by region in India. As of 2015–16, there were 25% of girls who were married before 18 years of age (legally defined as girl child marriage). The average prevalence ranged from 18% in 131 districts representing 14% of the total population to a high of 36% representing 22% of the total population. The districts with highest prevalence in girl child marriage are located in the east region of India, while the districts with the lowest prevalence are in the North. Thus, the lower and higher prevalence of child marriage are also linked to particular regions of the country.

Table 2 shows descriptive statistics for the prevalence of child marriage and selected factors. On an average, more than one-fourth of the girls (28%) had no schooling, while only 12% of them were in college or higher level of education. The average wealth quintile raged from 22% (first quintile) to 18% (richest quintile). More than two–-thirds of population are Hindus. In overall, 40% of women have some degree of autonomy in their households.

Because of high Pearson correlation between different levels of educational attainment, separate results are estimated for each level of educational attainment. This also afforded to assess the effect of each level of educational attainment on the prevalence of girl child marriage.

Table 2
Descriptive statistics for girl child marriage and associated factors, India, 2015–16 (n = 640).

Variable	Mean	Median	Std. Dev.	Min	Max
Girl child marriage	24.6	22.5	13.6	0.0	67.9
No education	27.8	26.4	14.2	0.1	71.0
Primary education	12.4	11.9	4.2	1.6	32.7
Secondary education	36.1	35.7	8.4	14.6	66.3
Higher secondary education	12.3	11.4	5.1	2.2	28.2
College or higher level of education	11.5	9.9	6.9	0.8	46.2
Poorest household (first quintile)	21.9	16.0	20.3	0.0	77.2
Poorer household (second quintile)	21.6	21.9	10.6	0.6	51.1
Middle household (third quintile)	20.3	19.6	8.4	3.1	58.7
Richer household (fourth quintile)	18.7	17.9	9.8	2.2	50.7
Richest household (fifth quintile)	17.5	11.9	16.9	0.2	78.5
Urbanization	28.1	21.6	21.8	0.0	100.0
Hindu population	75.1	85.8	27.5	0.0	99.8
Women autonomy	37.9	37.4	7.8	13.0	62.1

Similarly, separate model estimates are carried out for each quintile of household wealth status.

Table 3 presents regression results for the effects of different levels of education on child marriage. It is clearly shown that increasing level of education among girls significantly reduces the risk of child marriage. In the districts, girls with no education and primary level of education have significantly higher percentage of them having been married. However, beginning with secondary level of educational attainment, percentage having been married before 18 becomes less. The percentage starts declining rapidly with higher levels of educational attainment, as indicated by co-efficient values from −0.307 to −1.486.

Besides education, other variables included in the analysis also have significant effects on girl child marriage. Urbanization is modestly and inversely associated with girl child marriage. That is, child marriage is less in district with higher levels of urbanization. Districts with higher percentage of Hindu population have higher girl child marriage irrespective of the levels of education. Women autonomy is associated with lower prevalence of child marriage. South region has a significantly lower child marriage across all educational groups.

Overall, the five independent variables included in the model estimation explained 28% to 49% of the total variations in girl child marriage, as indicated by R–squared. Of these variables, education variable alone explained between 9% (primary level of education) to 43% (higher secondary level of education) in total variation (based on a step-wise regression analysis, not shown in a table).

Table 4 presents results pertaining to the effects of household wealth quintiles on girl child marriage. Districts with higher percentages of poorest and poorer household are significantly associated with higher prevalence of child marriage. In the household with upper wealth quintiles, girl child marriage is significantly lower. These effects are the highest in the richer household (−0.527), and slightly lower among those in the middle wealth group (−0.199).

As with the education results, districts with higher level of urbanization have significantly lower prevalence of child marriage across all poverty group. Similarly, districts with higher percentage of Hindu population significantly have higher percentage of girl child marriage. Women autonomy has a significant negative effect on child marriage. That means with increasing level of women's autonomy significantly decreases the risk of child marriage. South region of the country shows significantly lower prevalence of child marriage.

The independent variables explained 26% to 38% of variations in child marriage (as indicated by R–squared). Of these variables, poverty variable alone explained between 5% (middle) to 32% (poorest) in total variation (based on a step-wise regression analysis, not shown in a table).

5. Discussion

Most previous studies on India, as referred to earlier, are based on individual level data regarding age at marriage for girls. In the present study, aggregate (district) level data are used. As of National Family Health Survey of India (2015–16), among 122,955 sample women aged 20–24 years, 12,368 (11%) and 30,459 (27%) of them were married before 16 and 18 years age, respectively.

As the result indicates girls with no education and primary level of education increases the risk of girl child marriage, while the effect of secondary, higher secondary, and higher level of education are highly effective to eliminating the practice of girl child marriage at the large scale. The findings of this current study are consistent with the results of several other previous studies conducted at individual and household level in lower-middle income countries (Field & Ambrus, 2008; Lloyd & Mensch, 2008; Male & Wodon, 2018; Raj et al., 2014; UNICEF & UNFPA, 2018; Wodon, Male, Claudio, Nguyen, & Onagoruwa, 2018). In a patriarchal society like India where inequality is deeply rooted in its socio-cultural norms, girls have little opportunities for their education. Most of them are dropped out before the completion of secondary

Table 3
Effects of education on girl child marriage in India, 2015–16: Results based on ordinary least squares regression.

Independent variables	Level of schooling				
	No education	Primary	Secondary	Higher secondary	College or higher
No education	0.522***				
	(0.034)				
Primary education		0.661***			
		(0.114)			
Secondary education			−0.307***		
			(0.058)		
Higher secondary education				−1.486***	
				(0.085)	
College or higher level of education					−1.308***
					(0.078)
Urbanization	−0.044**	−0.143***	−0.162***	−0.074***	0.080***
	(0.021)	(0.022)	(0.022)	(0.019)	(0.024)
Hindu population	0.098***	0.118***	0.110***	0.094***	0.141***
	(0.015)	(0.017)	(0.018)	(0.015)	(0.015)
Women autonomy	−0.045	−0.324***	−0.232***	−0.109**	−0.179***
	(0.057)	(0.062)	(0.063)	(0.053)	(0.053)
South region	−2.143*	−4.060***	−4.689***	−1.916*	−0.618
	(1.130)	(1.284)	(1.276)	(1.085)	(1.116)
Constant	6.015*	24.51***	41.52***	42.33***	33.65***
	(3.094)	(3.222)	(3.424)	(2.537)	(2.501)
Observations	640	640	640	640	640
R-squared	0.448	0.284	0.278	0.490	0.478

Standard errors in parentheses.
*** $p < .01$.
** $p < .05$.
* $p < .1$.

Table 4
Effects of household poverty on girl child marriage in India, 2015–16: Results based on ordinary least squares regression.

Independent variables	Household poverty group				
	Poorest	Poorer	Middle	Richer	Richest
Poorest household	0.307***				
	(0.028)				
Poorer household		0.318***			
		(0.052)			
Middle household			−0.199***		
			(0.063)		
Richer household				−0.527***	
				(0.064)	
Richest household					−0.414***
					(0.035)
Urbanization	−0.041*	−0.086***	−0.182***	−0.065***	0.059**
	(0.024)	(0.026)	(0.023)	(0.025)	(0.028)
Hindu population	0.087***	0.139***	0.117***	0.110***	0.123***
	(0.017)	(0.017)	(0.018)	(0.017)	(0.016)
Women autonomy	−0.176***	−0.282***	−0.252***	−0.186***	−0.306***
	(0.059)	(0.061)	(0.065)	(0.062)	(0.057)
South region	−0.830	−4.754***	−3.530**	0.073	−6.544***
	(1.257)	(1.265)	(1.412)	(1.395)	(1.179)
Constant	19.21***	21.18***	35.09***	35.05***	33.58***
	(2.995)	(3.446)	(3.111)	(2.873)	(2.723)
Observations	640	640	640	640	640
R-squared	0.368	0.288	0.258	0.320	0.382

Standard errors in parentheses.
*** $p < .01$.
** $p < .05$.
* $p < .1$.

education because of early age at marriage (Lloyd & Mensch, 2008). Among many interventions, education of girls empowered them to take their marriage decisions by themselves (Jejeebhoy et al., 2013; Malhotra, 1991) when parents and other family members are the primary decision makers of daughters' marriage in India (Caldwell et al., 1983; Nour, 2009).

Household poverty was found to be a strong impetus of child marriage at the aggregate level, indicating with advancement of girls' education, eliminating poverty should be a major priority to combat the prevalence of girl child marriage. Previous studies also demonstrate that child marriage is highly prevalent among the poorest and poorer household (Jain et al., 2007; Mathur et al., 2003; UNICEF, 2005, 2014; UNICEF & UNFPA, 2018). Poorer families may see daughters as an economic burden; therefore, they marry–off their daughter as early as possible (Lee-Rife & Malhotra, 2012). Parents often think that they may have to pay less dowry to the groom's family if their daughter is married at an early age (Nour, 2009; Thapa, 1996). Moreover, virginity and chastity of girls are highly important in patriarchal Indian society (Caldwell et al., 1983; Dyson & Moore, 1983). The bride–groom is willing to marry the young girl with lower bride price because younger girls have lower chances of previous history of sexual contact (Jensen & Thornton, 2003; Nour, 2009). Child marriage barriers to the girls' full potential human capabilities by compromising education, livelihood skills, physical and mental well-being which creates '*vicious cycle of poverty*' among women (Otoo-oyortey & Pobi, 2003; Parsons et al., 2015).

In addition, this study has found that socio–religious practices related to marriage, women's autonomy, region, and level of urbanization have significantly influences on girl child marriage. In Hindu tradition, marriage is considered as a sacrament for parents because of '*Kanya Daan*' in marriage which earns religious merit (Arnold, Choe, & Roy, 1998). Among Hindus, parents prefer to marry-off their daughter before the onset of puberty because "purity" at marriage is very important in Hindu culture (Aryal, 2007; Bloom & Reddy, 1986). Women's autonomy plays a major role regarding their choice of husband and timing of marriage. The result of this current study indicates that with higher women autonomy significantly reduces the prevalence of child marriage, which suggests enhancing girls' education, development of skills and network, providing girls to more economic opportunities and changing social norms (Lee-Rife & Malhotra, 2012; UNICEF & UNFPA, 2018). Regional differences of child marriage prevalence could be explained by its different socio–cultural norm regarding marriage, girls'

social value and kinship organization (Caldwell et al., 1983; Dyson & Moore, 1983; Karve, 1965). Urbanization has a moderate impact on the prevalence of girl child marriage at the district-level. These findings are similar to the study conducted in developing countries at the country level (Singh & Samara, 1996). Urbanization and modernization increases education and employment opportunities of girl in some degree (Ghosh & Roy, 1997) which may translate into decreasing prevalence of child marriage.

The findings of this study should be understood with consideration of some limitations. This study assessed the correlates of education and poverty on girl child marriage at the aggregate (district) level. Therefore, individual effects cannot be assumed from this analysis. Further, education was measured at boarder level– primary, secondary, higher secondary, and higher levels. Future research could be done with more detail educational levels that could enable to assess the effects of each increment in educational year on child marriage.

6. Conclusion

This study has found that education and poverty remain the two major factors of girl child marriage at the aggregate level in India. The effects of these two variables are net of the effects of level of urbanization, religion, women's autonomy, and region. Girls with no education and primary level of education are having higher probability of getting married at an early age. However, likelihood of girl child marriage is significantly lowering down with secondary, higher secondary and higher level of education. Similarly, moving from poorest household to richest household significantly decreases the probability of child marriage. The results imply that increasing opportunities for girls' education and financial supports to the poor families would be strong paths towards eliminating the practice of girl child marriage in India.

Conflicts of interest

The author has no conflicts of interest.

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