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The Effect of Maternal Child Marriage on Morbidity and Mortality of Children under 5 in India: An Empirical Analysis Using Unit Level Data

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ABSTRACT

The present study aims to investigate the effect of maternal child marriage (marriage before age 18 year) on morbidity, mortality, malnutrition (stunting, wasting, and underweight) and low infants birth weight (<2500 kg) among children under 5 in India. The Generalised estimating equation has been applied to analyze secondary data (DLHS-4) of birth in past five years reported by ever married women (aged 14-24 year) in India. The result of this study shows that women who get married and begin childbearing at a younger age are also more likely to have a greater number of children, which is also linked to increased the mortality related infections diseases (acute respiratory infection, diarrhoea); malnutrition (stunting, wasting, underweight) and low birth weight (<2500 kg) among infants. Although bivariate analyses shows significant associations between maternal child marriage and malnutrition (stunted, wasted, underweight) among children under 5 in India. Moreover, only stunting (adjusted odds ratio 1.19, 95% CI 1.12 to 1.33) and underweight (1.26, 95% CI 1.14 to 1.36) are significant in adjusted analyses. The risk of malnutrition is higher among young children born to mothers married as child than in those born to mother married at adult age. So, the policy level intervention should focus on reduce child marriage and delay childbirth among those married as minors, and support nutritional vulnerabilities among young mothers are also likely to be important in improving the child health and reducing the mortality of children under 5 in India.

JEL classification: *I12, J12, J13, R20*

Key Words : Maternal child marriage, Infant mortality, Wealth quintile fertility, India

INTRODUCTION

Marriage is an important institution for the Individual and the society at large. For the Individual, it is a significant and memorable event in one's life cycle as well as the most important foundation in the family formation process. But, "Child Marriage is one of the most prevalent forms of sexual abuse and exploitation especially among the adolescent girls. It serves as a means of perpetuating power imbalances between men and women, both in the home and outside" (Ghosh, 2011, p.1).Child marriage has seriously affected sustainable development goals and millennium development goals in under developed countries, including India (Nayan, 2015).

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According to the "Prohibition of Indian child marriage act 2006", child marriage today is defined as one where the girls and boys who were married below the age of 18 and 21.Moreover, India, the most populous nation in South Asia, has the highest number of under-5 deaths in the region. The leading causes of child mortality in South Asian countries becomes infectious diseases, specifically pneumonia and diarrhoea (UNICEF, 2008). However, UNICEF's 2008 report on the "State of the World's Children" highlights that the large proportion of adolescent mothers in the country suffering from various health related problem, such as poor infant child birth, neonatal death, stillbirth, low birth weight and child mortality related infections diseases. These disproportionate risks seem to be related to social and health related vulnerabilities among adolescents, including increased rates of poverty, maternal depression, and malnutrition (Alam, 2000). The lack of education and inadequate access to health facilities (because of impeded mobility as well as residence in rural areas with no local providers) became major problems for adolescents girls to impedes proper utilization of antenatal care, safe delivery care, and complete infant vaccination schedules (Taffa, 2003).

Objective of the study :

This paper is planned to attain the following objectives:

1. The purpose of the current study was to assess the associations between maternal child marriage (marriage of women before age 18 years) and major forms of child morbidity, mortality related infection diseases (acute respiratory infection and diarrhoea), malnutrition (stunting, wasting, and underweight) and low infants birth weight (<2500 kg) among children under 5 in India.
2. This study aims to provide some lesson to the policy makers. So, the early marriage and child morbidity, mortality and low infant birth weight can be removed in India.

METHODOLOGY

Data:

In present study, I have used the Districts Level Household Survey-4 (DLHS-4) data conducted by the Ministry of Health and Family Welfare, Government of India, 2013.In this study, the sample was restricted to live births from the past five years reported by women aged 14-24 years who were ever married women to ensure inclusion of a population that reflects current marriage of girls and its effects on health of their children under 5 in India.

Methodology:

In this study, I have shown the associations between maternal child marriage and child demographic characteristics were assessed using $\chi 2$ analysis for categorical variables and Student's t test for continuous variables. In this study, the logit model was used to estimate the generalized equation analyses. The results were reported to adjusted odds ratios and 95% confidence intervals were used to assess the statistical stability of the associations. The adjusted models for all morbidity outcomes (infectious disease and malnutrition indicators) were based on current health indicators of living children, including age of child, sex of child, whether the child was from a multiparous birth, maternal education, and maternal BMI. The Maternal education was classified into 4 categories (no formal education or illiterate, primary education, secondary education, or higher education). A relative index of household wealth was calculated on the basis of assets own by the household and divided into five quintiles with 1= poorest and 5= wealthiest 20 percent of the households. Child

marriage was coded on the basis of participant's age at marriage; those reporting marriage before age 18 years were defined as having experienced child marriage.

All child health indicators (outcomes and covariates) were specific to live births in the past five years reported by participants. All outcomes were developed to assess whether any of the children under 5 had experienced a health concern or had died in the specified timeframe. Infectious disease outcomes included acute respiratory illness (cough and rapid breathing) and diarrhoea in past two weeks. The nutritional health was assessed with three standard indices of physical growth: height-for-age (stunting), weight-for-height (wasting), and weight-for-age (underweight). Each of the three nutritional status indicators is expressed in standard deviation units (z scores) from the median of the reference population (World Health Organization, 2006). The stunting is an indicator of linear growth retardation and cumulative growth deficits; children whose height-for-age z score was below minus two standard deviations from the median of the reference population were considered short for their age (stunted) and chronically malnourished. The wasting is measured by body mass in relation to body length; children whose z score was below minus two standard deviations from the median of the reference population were considered thin (wasted) for their height and acutely malnourished. The underweight is a composite index of height-for-age and weight-for-age; children whose weight-for-age was two standard deviations or more below the median of the reference population were classified as underweight and being both acutely and chronically malnourished. Infant and child mortality outcomes were coded as dichotomous variables. The infant mortality was defined as death of an infant before his or her first birthday. The child mortality was defined as death of a child during the period between the 13th and 59th months of life.

RESULTS AND DISCUSSION

Sample characteristics :

In Table 1 represents, overall 55.3 percent of births involved mothers receiving antenatal care and population represented was predominantly in Hindu and poor category. The children born to mothers under age 18 years were almost exclusively born to mothers married as child. The maternal demographics related to childbearing differed by age at marriage. The mothers who married as child had slightly older children and gave birth at a younger age than those mothers married at adult age. Moreover, mother who married as child were more likely than mothers married as adults age to have two or more children born in past five years. The antenatal care was less likely for mothers married as child compared to those married at adult age. Moreover, mothers who married as child were more likely to have no formal education, live in poverty, low BMI and majority of them are Hindu compared to mothers married as adults age.

Child Morbidity, Mortality and Low Birth Weight among Children under 5 in India :

In Table 2 represent, about 14.6 percent of children under 5 born to young married women had experienced acute respiratory infection in past two weeks and 15.3 percent of children experienced diarrhoea in the same timeframe. Almost half of the children was described as stunted (49.8 %) or underweight (49 %) with about 18.3 percent reported as wasting. Moreover, 6.9 percent of these children born in past five years (had died) and majority of them death occur in first year of birth. About 23.0 percent of births were described by mothers as small or very small infants.

Associations between Maternal Child Marriage and Poor Health of Infants and Children

Table 1 : Demographic Indicator for Births in Past Five Years to 14-24 Year of Ever Married Women by Maternal Age at Marriage in India

	Total births	Births to child marriage mothers	Births to adult marriage mothers	P for difference in demographic by maternal age at marriage
Current age of child				P<0.01
<1	25.1	22.5	32.3	
1-1.9	22.2	20.8	26.1	
2-2.9	18.2	18.5	17.5	
3-3.9	15.6	17.0	11.9	
4-4.9	11.9	13.8	6.7	
Deceased	7	7.4	5.5	
Sex of child				P=0.72
Male	52.6	52.4	52.8	
Female	47.4	47.6	47.2	
Antenatal care				P<0.01
Yes	55.3	51.4	65.8	
No	12.8	14.6	8.0	
Unknown	31.9	34.0	26.2	
Wealth index				P<0.01
Poorest	23.9	27.7	13.4	
Poorer	24.0	26.8	16.0	
Middle	22.1	23.0	19.7	
Richer	19.3	16.2	27.7	
Richest	10.7	6.3	23.2	
Religion				P<0.01
Hindu	80.1	80.9	77.6	
Muslim	16.2	16.1	16.6	
Other	3.7	3.0	5.8	
Mother's age at birth				P<0.01
<18 years	14.0	19.2	0.01	
18-20 years	47.2	52.4	32.5	
21-24 years	38.8	28.4	67.4	
Mean age of mother (SD)	19.8 (0.03)	19.3 (0.02)	21.3 (0.02)	P<0.01
Maternal education				P<0.01
No formal	44.6	51.7	25.3	
Primary	16.9	18.3	13.2	
Secondary	38.5	30	61.5	
Mean BMI of mother (SD)	19.4 (0.02)	19.2 (0.03)	19.9 (0.05)	P<0.01

Source: Ministry of Health and Family Welfare, Government of India (2013) for DLHS-4(2012-13) data
Notes: Figure in parentheses is the Chi-square statistics; x^2 test applied for each variable.
Level of significance: * p<0.01

under 5 in India :

In Table 3, the Generalised estimating equation analysis represent, there is an insignificant association between maternal child marriage and child acute respiratory infection among children under 5 in India. However, child marriage was found to be insignificant in its association with infant and child diarrhoea (OR 0.84, 95% CI 0.78 to 0.96) in crude analysis. The maternal child marriage was also associated with malnutrition among children under 5 in India. Children of women married as minors were significantly more likely to have stunting (OR 1.83, 95% CI 1.71 to 1.99), wasting

Table 2 : Prevalence of Morbidity, Mortality and Low Birth Weight among Children in Past Five Years Reported by 14-24 Year Age Group of Ever- Married Women in India

Infant/Child Health Indicators	Births (%)
Acute respiratory infection in past two weeks	
Yes	14.6
No	85.4
Diarrhoea in past two weeks	
Yes	15.3
No	84.7
Stunting	
Yes	49.8
No	50.2
Wasting	
Yes	18.3
No	81.7
Underweight	
Yes	49.0
No	51.0
Infant or child (<5)mortality	
Yes	6.9
No	93.1
Infant (<1 year)mortality	
Yes	6.3
No	93.7
Child (1-5 years) mortality	
Yes	0.6
No	99.4
Low birth weight among infant	
Yes	24.0
No	76.0
Small or very small infant	
Yes	23.0
No	77.0

Source: Ministry of Health and Family Welfare, Government of India (2013) for DLHS-4(2012-13) data.
All figures are in percentage

(1.21, 1.07 to 1.30) and underweight status (1.85, 1.74 to 2.01). The associations between maternal child marriage and being stunted or underweight remained significant after adjusting for demographics and maternal BMI (stunted AOR 1.19, 95% CI 1.12 to 1.33; underweight 1.26, 1.14 to 1.36). The association between maternal child marriage and infant or child wasting was no longer significant in adjusted analysis. The early marriage of mothers was associated with an increased likelihood of infant or child mortality in the crude analysis (OR 1.55, 95% CI 1.35 to 1.78). However, infant and child mortality were insignificant in adjusted models. The mother who married before the age of 18 year were more likely to give birth to low birth weight among infants (OR 1.13, 1.04 to 1.26) than mothers who married above 18 years.

Our findings shows that children born to women married as child were significantly more vulnerable to malnutrition than those born to women married at adult age. In previous studies shows, the child brides are often more controlled by husbands and in-laws (UNICEF, 2007) and may be that women married as child are unable to advocate for adequate nutrition for their children. Such insufficient access to food and limited nutritional reserves stored within the bodies of adolescent

Table 3 : Generalised Estimating Equation Analyses to Assess the Associations Between Maternal Child Marriage and Poor Infant and Child Health Outcomes for Births in Past Five Years Reported by 14-24 Year of Ever- Married Women in India

Infant/child health outcomes	Births to child married mothers	Births to adult married mothers	Odds ratio (95% CI)	Adjusted odds ratio (95% CI)
Acute respiratory infection			97 (0.92 to 1.15)	99 (0.91 to 1.19)
Yes	12.6	11.5		
No	87.4	88.5		
Diarrhoea			0.84 (0.78 to 0.96)	0.95 (0.84 to 1.08)
Yes	11.9	11.2		
No	88.1	88.8		
Stunting			1.83 (1.71 to 1.99)	1.19 (1.12 to 1.33)
Yes	43.3	30.2		
No	56.7	69.8		
Wasting			1.21 (1.07 to 1.31)	98 (0.97 to 1.21)
Yes	15.7	14.9		
No	84.3	85.1		
Underweight			1.85 (1.74 to 2.01)	1.26 (1.14 to 1.36)
Yes	48.9	34.5		
No	51.1	65.5		
Infant/child (0-5 years) mortality			1.55 (1.35 to 1.78)	0.93 (0.79 to 1.10)
Yes	7.4	5.6		
No	92.6	94.4		
Low birth weight among infant			1.13 (1.004 to 1.26)	0.99 (0.86 to 1.13)
Yes	25.1	22.2		
No	74.9	77.8		

Source: Ministry of Health and Family Welfare, Government of India (2013) for DLHS-4(2012-13) data

mothers probably places their offspring at substantial risk for low birth weight and inadequate access to breast milk (King, 2003). In this study, I have shown the maternal child marriage was significant associations with child morbidity, mortality and low birth weight among children under 5 in India Thus child marriage is probably a marker for maternal vulnerabilities that compromise the health of infants and young children; these include early age at childbirth, low maternal education, and low maternal nutrition as indicated by low BMI. In present study represent, there is an insignificant association between maternal child marriage and recent acute respiratory infection or diarrhoea among children under 5 in India. Surprisingly, the bivariate analyses represent a increased risk for infant and child diarrhoea associated with maternal child marriage. Moreover, maternal child marriage was also associated with malnutrition among children under 5 in India. Furthermore, children of women married as minors were significantly more likely to have stunting, wasting and underweight status. From the above study, we can find children born to women married as minors were more likely to be aged 2 years or older compared with those born to women married as adults.

Conclusion, policy implications and limitations of the study :

The findings from the study represent, the maternal child marriage was significant associations with child morbidity, mortality and low birth weight among children under 5 in India and all this variable are significantly associated with early motherhood, low maternal education, poor maternal health and socio-economic status of women. Therefore, the policy level intervention should focus on reduce child marriage and delay childbirth among those married as minors, and support nutritional

vulnerabilities of young mothers are also likely to be important in improving the health of mothers and her child (under 5) in India. Moreover, the women's development scheme are likely to be important in improving the young wives' autonomy and decision making power within the family and ability to care for their children, Such efforts are needed across India. It has been observed in previous studies, the rural, poor and less educated girls and women remain most vulnerable to child marriage and its consequences. The social change programs in the country must provide better educational and job opportunities for rural girls and their families for which they can achieve economically feasible options other than early marriage.

Moreover, my research paper has some limitation as well. I have taken the sample to births in past five years to ever married women aged 14-24 year age group and can't be generalized to all births in past five years. Finally, findings are specific to young women, and cannot be generalized to women from other age groups in India.

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