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Contextual Influence on Age at Marriage in Uttar Pradesh-India

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Abstract

Female age at marriage in Uttar Pradesh is amongst the lowest in India. Previous studies on female age at marriage in an Indian context primarily focused on the individual level factors impacting female age at marriage. Community level factors that influence the female age at marriage in Uttar Pradesh were non-existent. In this study, the impact of community presence of mass media is studied using Hierarchical Linear Models. Thus using the data from NFHS-2, the study explores the within community presence of any forms of print, electronic or local mass media and its impact on female age at marriage in Uttar Pradesh. Total of 7175 currently married individual women were nested in 317 rural communities across Uttar Pradesh. Hierarchal linear modeling using SAS PROC MIXED was used in the study. The intra-class correlation of 0.13 indicates fair bit of clustering of female age at marriage within communities. Thirteen percent of the differences in female age at marriage are due to between community differences in Uttar Pradesh. Communities' exposure to any forms of mass media has a positive impact on female age at marriage in Uttar Pradesh.

Keywords

Age at Marriage, Community, Mass Media

1. Introduction

Age at marriage is one of the areas, which have been relatively neglected in micro studies. The dynamics of nuptiality are still only imperfectly understood and a study of the factors, which influence the formation, and dissolution of not only legal marriage, but sexual unions in general, needs investigation. Age at marriage is intrinsically related to fertility. In countries such as India, universal and early

marriage, especially of females, has been prevalent for a long time and cohabitation outside marriage is uncommon. In this situation mother's age at birth of her first child is primarily linked with her age at marriage and its effects on the timings of subsequent childbearing within the reproductive period. To achieve reduction of fertility one of the measures proposed in the World Population Plan of Action (1974) [1] was to establish an appropriate lower limit for age at marriage, for it was taken as an important factor influencing fertility. It was pointed that raising the age at marriage, at least in high fertility countries, would dampen future population growth.

It is well recognized, that India's high population growth rate primarily is due to its low ages at marriage, resulting in high levels of fertility, as women get to spent more number of years in cohabitation due to a stretched reproductive life span. In not so recent past schooling of girl was considered a low priority due to prevailing patriarchy and limited number of schools available locally. In the absence of schooling and limited skills to be gainfully employed, marriage was the only socially legitimate option available for young women [2] [3]. In their study from Uttar Pradesh using three rounds of NFHS data [4] have documented increasing female age at marriage trends and slowing rate of nuptiality in Uttar Pradesh however, the current marriage levels are still low in comparison to most of the low fertility countries. Further there is lot of variation in the age at marriage among the states, and within states among castes, communities and across other social stratifications.

Achievements specially in raising age at marriage through legislation seemed to be limited in an Indian context if one looks at the implementation of Child Marriage Restraints Act (CMRA). Raising age at marriage through legislation has worked only in the regions where there has been rapid social, economic and political change. None the less a legislation relating to the minimum age at marriage was enacted by the Parliament in February 1978. Contravention of the child marriage Act became cognizable offence from October 1978. The Act rose the marriageable age from 15 to 18 years for girls and from 18 to 21 for boys. Though the child marriage was considered cognizable offence under the CMRA, the act did not provide the legal framework for the annulment of such marriages. Provisions of CMRA were modified in 2006 and a new child protection officer, with the required set of legal powers was introduced. This child protection officer is given powers to arrest the violators in order to stop the child marriage from being solemnized, unlike CMRA were investigating officer had wait and get the arrest warrant from the magistrate by the time such marriages usually got solemnized which couldn't be annulled under the CMRA law. Pathak [5] had shown that despite CMRA being in place, early marriages are prevalent in the Indian society.

Variations in the female age at marriage in India have primarily been explored from the individual perspective. Desai *et al.* [6] in their 2010 study on age at marriage using their own dataset have used the district level data to analyze the female marriage patterns from the construct of the prevailing societal gender

norms. The study challenges the modernization theorist's approach of analyzing female age at marriage only as individually driven phenomenon.

This study is a step further in analyzing the impact of contextual variable available at village level on individual female age at marriage in rural Uttar Pradesh using the NFHS-2 data. In the survey the individuals are nested within households and households are nested within communities it is wise to use the hierarchical linear modeling approach to analyze the data. Only rural areas of Uttar Pradesh were considered for the fact that the information was available only from rural villages and not from the urban wards. The primary objective is to study the impact of community's exposure to mass media, both print as-well-as electronic, on female age at marriage at individual level.

2. Review

In the population based household surveys, the subjects are often individuals, usually nested within the household and households nested within the communities and the regions. When the data is clustered so, the clustering effect needs to be taken into account while analyzing such data. This study therefore takes in to account the community context in analyzing the female age at marriage using hierarchical linear models. It is not surprising to see that the body of literature that emanate from India analyzed age at marriage mainly as an individually driven phenomenon.

Historically changes in nuptiality pattern have played very significant roles in many of the European demographic transitions [7]. In Western Europe late marriage and wide spread celibacy have been the main mechanisms through which its fertility was brought to a low level. However, in other parts of Europe (eastern and central), marriages generally occurred early, and were also nearly universal and decline in fertility was achieved mainly through reduction in marital fertility. However, changes in marriage pattern in terms of higher age at marriage and lower proportion ever married at different ages has characterized several early demographic transitions in many other developed countries [8] [9] [10]. As per Matra's [11] classification, shift towards late marriage is characteristic of a mid transitional stage in the course of fertility decline ever occurred among nations. Confirming to this, Coale's [8] analysis revealed that in the initial phase of demographic transition early and universal marriage was very common which slowly paved the way to later marriage and fairly common spinsterhood and then finally to a decline in marital fertility.

Evidences are on the rise in recent years too, to support the argument that nuptiality reductions produce a retarding effect on fertility. Analysing the data from several Asian countries, Cho and Retherford [12], demonstrated that marital factors have contributed substantially towards the reduction of fertility in these countries. In West Malaysia about two thirds of its decline in crude birth rate during the sixties has been attributed to change in the marital structure. The significant decline in CBR of Sri Lanka was also partly due to changes in age at marriage. Jones [13] also provides several examples from South-East Asia where

rising age at marriage has played an important role in major fertility declines. Lestheghe [14] analyzed the impact of nuptiality on fertility and growth rates of a series of populations from developing nations where extra marital fertility was negligible and found that nuptiality changes can produce the same effect on birth and growth rates as changes in marital fertility. The study concluded that an overall fertility reduction initiated by decreasing marital fertility alone would fall considerably short of the targets in several developing nations. Apart from family size being reduced through reduced exposure to pregnancy risk [15], the delayed marriage can lead to significant decline in birth rates through its effect on length of generation [10]. According to Ridley and Sheps [16] age at marriage affects fertility by changing the fertility schedule and family building pattern. Thus due to its combined effect through several routes, age at marriage can be termed the best single predictor of fertility.

Goode's [17] modernization theory emphasizes the impact of industrialization on marriage patterns. Modernization operates at both societal and individual levels by affecting marriage timing. According to him, expansion of educational opportunities, changes in work force and occupational activities, and urbanization are the most important "modem forces". In the process of modernization individuals with higher social status (more education, modem occupational roles etc.) want more freedom and thus tend to marry later in life. Place of residence is another factor-people reared in urban areas are exposed to more diverse life-styles and to weaker social controls than those who are reared in rural areas or small towns. As a result, those growing up in an urban environment are more likely to marry late than those living in the rural areas. Empirical studies in Asian countries support Goode's [17] [18] modernization theory. The effect of these modernization factors may be found in any population, although the degree influence of each factor may not be the same across countries and time or across provinces and country.

In addition to modernization, there are other influential factors affecting the pattern of age at marriage, for example, religion and caste or ethnicity, in certain developing countries. In this context, Dixon [19] in her sociological framework emphasized the effect of social institutions, such as the family system and marriage norms and customs as well as factor such as warfare, which may affect the age-sex ratio. While marriage squeeze (availability of marriage partner) is less likely to have effect on the age at marriage in most of the Indian states (there being no severe imbalances in the age-sex ratio of the marriageable population during the recent past) the other factors such as the family system, social pressure, marriage norms and customs as well as individual motivations to marry and financial and social conditions are again likely to be influenced by the modernization forces.

Objectives

- To study the factors influencing the female age at marriage at individual level in Uttar Pradesh
- To study the relative influence of communities exposure to any form of mass

media such as films, drama & puppetry in predicting age at marriage at individual level

3. Data & Method

National Family Health Survey round-2 [20] dataset is used to study the relative influence of community level exposure to any form of mass media such as films, drama or puppetry shows on female age at marriage in Uttar Pradesh. The MIXED procedure in SAS is used to fit the NFHS-2 data that is clustered/ correlated and has non constant variability. Since the data is clustered the response is not necessarily normally distributed. It is therefore necessary to use generalized linear mixed models (GLMM) or random effect models to analyze such data. The GLMMs, like linear mixed models, assume normal (Gaussian) random effects. Conditional on these random effects, data can have any distribution in the exponential family. The exponential family comprises many of the elementary discrete and continuous distributions. The binary, binomial, Poisson, and negative binomial distributions, for example, are discrete members of this family. The normal, beta, gamma, and chi-square distributions are representatives of the continuous distributions in this family. For details one can refer to Longford [21].

4. Findings

Let Y_{ij} be the female age at marriage of i^{th} individual in the j^{th} community. Then the unconditional means model (model without any covariates) to estimate the intra-class correlation accounting for clustering in the data can be expressed by equation 1 as;

$$Y_{ij} = \mu + \alpha_j + r_{ij} \tag{1}$$

where

α_j -*iid* $N(0, \tau_{00})$ and r_{ij} -*iid* $N(0, \sigma^2)$.

The Equation (1) has one fixed effect (μ) and two variance components. The variation between community-means is represented by τ_{00} while σ^2 represents the variation among individuals within communities.

The above model can be expressed in a simpler form as two levels hierarchical models one each at an individual (level-1) and community level (level-2). The level-1 model or the individual level model expresses the individual outcome as the sum of an intercept for the individual's community (β_{0j}) and a random error (r_{ij}) associated with the i^{th} individual in the j^{th} community:

$$Y_{ij} = \beta_{0j} + r_{ij} \tag{1a}$$

where r_{ij}-*iid* $N(0, \sigma^2)$.

The level-2 model or the community level model expresses the community level intercepts as the sum of overall mean (γ_{00}) and a series of random deviations from that mean (u_{0j}):

$$\beta_{0j} = \gamma_{00} + u_{0j} \tag{1b}$$

where u_{0j}-*iid* $N(0,\tau_{00})$.

Substituting the Equation (1b) in (1a) the combined hierarchical linear model is represented below by Equation (1c)

$$Y_{ij} = \gamma_{00} + u_{0j} + r_{ij} \tag{1c}$$

where u_{0j}-*iid* $N(0,\tau_{00})$ and r_{ij}-*iid* $N(0,\sigma^2)$.

If we compare model (1) and (1c) the grand mean μ is represented by γ_{00}, the community effect (the α_j) is now represented by u_{0j}, and the residual associated with the i^{th} individual in the j^{th} community remains the r_{ij}. The model (1c) thus has two parts, one fixed effect (γ_{00} or the overall intercept) and two random effects (for the intercept u_{0j} and for the within community residual r_{ij}). Fitting model (1c) in SAS using PROC MIXED to the NFHS-2 data both the fixed effects and the random effects gets estimated. The fixed effects or γ_{00} gives the average female age at marriage in Uttar Pradesh while the random effect τ_{00} provides the variability in community means and σ^2 gives the within community variability in the female age at marriage. The variance in female age at marriage for any given individual is assumed to be $\tau_{00}+\sigma^2$. The covariance of female age at marriage for any two individual in a single community is τ_{00}. The covariance of female age at marriage for any two individuals in different community is 0.

To study the source of variation in female age at marriages, the intra-class correlation (ρ) is estimated. The intra-class correlation tells us what portion of the total variance occurs between communities. The intra-class correlation is estimated by running unconstrained model (without co-variates) in HLM.

$$\rho = \frac{\tau_{00}}{\tau_{00}+\sigma^2}$$

Substituting the values of τ_{00} & σ^2 from the appendix **Table 1** we get:

Table 1. Female age at marriage in rural Uttar Pradesh (no predictors/fixed effects).

Dimensions (unconditional means model)	
Columns in Z Per Subject	1
Subjects	317
Max Obs Per Subject	50
Number of Observations	
Number of Observations Read	7175
Number of Observations Used	7175
Number of Observations Not Used	0

Fixed Effect	Subject	Estimate	S.E. (Kenward-Roger)	DF	t value	Pr > |t|	Alpha	Conf. limit	
								Lower	Upper
Intercept	ID	15.783	0.0548	296	288.0	<0.0001	0.05	15.6752	15.8909

$$\rho = \frac{0.6891}{0.6891 + 4.7125}$$

$$\rho = 0.13$$

The intra-class correlation (ρ) predicts fair bit of clustering of female age at marriage within communities (0.87) while thirteen percent of the total variance in female age at marriage was due to between community difference. This is also suggests that an ordinary least square analysis of this data would likely yield misleading results. The value of the intercept (15.78) in the unconstrained model predicts that the mean age at marriage for females in rural Uttar Pradesh is 15.78 years. The confidence limit shows that the female age at marriages in rural Uttar Pradesh varies from at-least 15.67 years to at-most 15.89 years.

As a next step we introduce the individual's exposure to various forms of mass media including films, drama and puppetry within community as a level-2 predictor in the Equation (1). The conditional model in this case is represented by set of equations represented by Equation (2) below:

$$Y_{ij} = \beta_{0j} + r_{ij} \quad \text{and} \quad \beta_{0j} = \gamma_{00} + \gamma_{01} exposure_j + u_{0j} \tag{2}$$

where u_{0j}-iid $N(0, \tau_{00})$ and r_{ij}-iid $N(0, \sigma^2)$.

Merging the level-1 and level-2 parts in Equation (2) we get final equation as:

$$Y_{ij} = \left[\gamma_{00} + \gamma_{01} exposure_j\right] + \left[u_{oj} + r_{ij}\right] \tag{2a}$$

The Equation (2a) has two components a fixed effect part and a random effect part. The term in the first bracket represents the fixed effect part while the term in the second bracket represents random effect part. The two gammas in the equation are the fixed effect part while u_{oj} (representing variations in intercepts between communities) and the r_{ij} (representing within community variations between individuals) are the random parts. The difference between model represented by Equation (1c) and (2a) can easily be visualized as the model represented in equation 2a has an additional fixed effect term "exposure" which is a level-2 variable whether or not community is exposed to films, drama and puppetry. This variable is arrived at by combining responses on three different set of questions asked, such as, whether or not community is exposed to film screening, any kind of drama/natak and puppetry shows. The three different variables are combined into one for keeping the model simple and the variance covariance matrix to converge. Exposure being coded as 0 (no) and 1 (yes), the female age at marriage can now be estimated using Equation (3)

$$\text{Female Age at Marriage} = 15.72 + 0.5107(\text{Exposure}) \tag{3}$$

This predicts communities that are not exposed to any form of mass media (film, drama, or puppetry) for them the female age at marriage is 15.72 years which is the community mean female age at marriage. Communities that are exposed to media (film, drama or puppetry) have female age at marriage as 16.23 years. This clearly shows the positive impact of community's exposure to mass media in breaking cultural barriers, taboos and influencing decision making

such that it positively impacts female age at marriage in Uttar Pradesh. The standard error of 0.16 of the communities exposure to mass media gives an observed t value of 3.2 ($p < 0.0018$), which indicates that we reject the null hypothesis that there is no relationship between communities exposure to mass media and female age at marriage. If we look at the covariance parameter estimates in Tables 2-4 with the introduction of level-2 parameter in the model; the

Table 2. The variance estimation: Covariance parameter estimates.

Covariance Parameter	Subject	Estimate	S.E. (Kenward-Roger)	Z Value	Pr > Z	Alpha	Conf. limit	
							Lower	Upper
Intercept	ID	0.6891	0.0752	9.17	<0.0001	0.05	0.5627	0.8638
Residual		4.7125	0.0804	58.58	<0.0001	0.05	4.5587	4.8742

Table 3. Communities exposure to mass media on female age at marriage in UP (fixed effects).

Dimensions (unconditional means model)	
Covariance parameters	2
Columns in X	2
Columns in Z Per Subject	1
Subjects	317
Max Obs Per Subject	50
Number of Observations	
Number of Observations Read	7175
Number of Observations Used	7175
Number of Observations Not Used	0

Fixed Effect	Subject	Estimate	S.E. (Kenward-Roger)	DF	t value	Pr > |t|	Alpha	Confidence limit	
								Lower	Upper
Intercept	ID	15.7177	0.05793	295	271.3	<0.0001	0.05	15.6037	15.8317
Community Exposure to film, drama or puppetry		0.5107	0.1618	298	3.2	<0.0018	0.05	0.1923	0.8290

Table 4. Variance in female age at marriage (Covariance parameter estimates).

Covariance Parameter (Random Effects)	Subject	Estimate	S.E. (Kenward-Roger)	Z Value	Pr > Z
Intercept	ID	0.6656	0.0732	9.09	<0.0001
Residual		4.7119	0.0804	58.59	<0.0001

between-community differences in female age at marriage is reduced to 0.6656 while with-in community differences remained same at 4.72. However, the interpretation of these are not the same as it were in the unconditional means model. With the introduction of level-2 predictors the value of τ_{00} and σ^2 are the conditional components. So the conditional component σ^2 representing the within community variance has remained unchanged while the between community variance τ_{00} has reduced to 0.6656. This indicates that the level-2 predictor "exposure" explains some proportion of community to community variation in female age at marriage in Uttar Pradesh. In order to assess how much variation in communities is explained by "exposure" we compute how much variance component τ_{00} has diminished in two models represented by Equation (1c) and Equation (2a), respectively. This is computed as (0.6891 – 0.6656)/0.6891. The value of 0.0341 or 3.4% of the explainable variation in community female age at marriage is explained by the variable "exposure". This percentage is not similar to usual R^2 statistics. It only talks about the fraction of explainable variation that is already explained. As the amount of explained variation between communities after the introduction of level-2 predictor is small it calls for introducing other community level variable such as communities access to education, community distance to school etc. etc. which is beyond the scope of this paper. This is substantiated by the fact that the residual variance component for intercept which is τ_{00} has z-statistics of 9.09 ($p < 0.0001$) thereby rejecting the null hypothesis that $\tau_{00} = 0$. This suggests that even after introducing the variable "exposure" there is additional explainable variation present. We can also compute the residual intra-class correlation as 0.6656/[0.6656 + 4.72] = 0.12. This is partial correlation and can be explained as similarity in female ages at marriage among individuals within community after controlling for the effect of "exposure".

Having introduced the level-2 predictor, as a next step, the predictors at individual level are introduced in the model (2a). The independent predictors at individual level (level-1) used in the model are respondents current age (*CAge*), education (*EduW*), husband education (*EduH*), respondents caste ("*Cst*" coded as SC/ST = 0 general & OBC = 1), and religion ("*Rlg*" coded as Hindus = 1, other = 0). Limitation with regard to respondent's education is that educational level in retrospective surveys are recorded at the time of the survey and is not available at the time of the marriage making it difficult to precisely estimate the true education effect on female age at marriage in Uttar Pradesh. The model specification is as under

Level 1

$$Y_{ij} = \beta_{0j} + \beta_{1j}\left(CAge_{ij}\right) + \beta_{2j}\left(EduW_{ij}\right) + \beta_{3j}\left(EduH_{ij}\right) + \beta_{4j}\left(Cst_{ij}\right) + \beta_{5j}\left(Rlg_{ij}\right) + r_{ij}$$

Level 2

$$\beta_{0j} = \gamma_{00} + \gamma_{01} exposure_j + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + u_{1j}$$
$$\beta_{2j} = \gamma_{20} + u_{2j}$$
$$\beta_{3j} = \gamma_{30} + u_{3j}$$
$$\beta_{4j} = \gamma_{40} + u_{4j}$$
$$\beta_{5j} = \gamma_{50} + u_{5j}$$

Combined

$$\begin{aligned} Y_{ij} &= \gamma_{00} + \gamma_{01}\left(exposure_j\right) + \gamma_{10}\left(CAge_{ij}\right) + \gamma_{20}\left(EduW_{ij}\right) + \gamma_{30}\left(EduH_{ij}\right) \\ &\quad + \gamma_{40}\left(Cst_{ij}\right) + \gamma_{50}\left(Rlg_{ij}\right) + r_{ij} + u_{0j} + u_{1j} + u_{2j} + u_{3j} + u_{4j} + u_{5j} \end{aligned} \tag{4}$$

where $r_{ij} \sim iid\ \ N\left(0,\sigma^2\right)$ and

$$\begin{pmatrix} u_{0j} \\ u_{1j} \\ u_{2j} \\ u_{3j} \\ u_{4j} \\ u_{5j} \end{pmatrix} \sim N\left[\begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \tau_{00} & \tau_{01} & \tau_{02} & \tau_{03} & \tau_{04} & \tau_{05} \\ \tau_{10} & \tau_{11} & \tau_{12} & \tau_{13} & \tau_{14} & \tau_{15} \\ \tau_{20} & \tau_{21} & \tau_{22} & \tau_{23} & \tau_{24} & \tau_{25} \\ \tau_{30} & \tau_{31} & \tau_{32} & \tau_{33} & \tau_{34} & \tau_{35} \\ \tau_{40} & \tau_{41} & \tau_{42} & \tau_{43} & \tau_{44} & \tau_{45} \\ \tau_{50} & \tau_{51} & \tau_{52} & \tau_{53} & \tau_{54} & \tau_{55} \end{pmatrix}\right] \tag{5}$$

The SAS output gives the output for Equation (5) as:

$r_{ij} \sim iid\ \ N\left(0,4.07\right)$ and

$$\begin{pmatrix} u_{0j} \\ u_{1j} \\ u_{2j} \\ u_{3j} \\ u_{4j} \\ u_{5j} \end{pmatrix} \sim N\left[\begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 0.24 & -0.00 & 0.03 & 0.01 & 0.27 & -0.21 \\ -0.00 & 0.00 & 0.00 & 0.00 & -0.01 & -0.01 \\ 0.03 & 0.00 & 0.01 & 0.00 & -0.02 & -0.04 \\ 0.01 & 0.00 & 0.00 & 0.00 & 0.00 & -0.01 \\ 0.27 & -0.01 & -0.02 & 0.00 & 0.02 & -0.11 \\ -0.21 & -0.01 & -0.04 & -0.01 & -0.11 & 0.58 \end{pmatrix}\right] \tag{6}$$

The fixed effects in **Table 5** are all significantly different from 0 ($p < 0.05$) except for respondents current age. As the variable exposure is a dummy variable indicating whether community is exposed to films, drama & puppetry or not, the pair for equation for variable exposure can be written as:

For communities exposed to film, drama, puppetry and individuals belonging to Hindu religion and either other backward caste and general category for them the average female age at marriage is given by Equation (7)

$$\begin{aligned} &\text{Female age at marriage} \\ &= 15.51 + 0.002\left(\text{CAge}\right) + 0.17\left(\text{EduW}\right) + 0.06\left(\text{EduH}\right) \\ &\quad + 0.14\left(\text{General \& Obc}\right) - 0.30\left(\text{Hindus}\right) \end{aligned} \tag{7}$$

For communities not exposed to film, drama, puppetry and individuals belonging to religion other than Hindus and SC/ST caste for them the average female age at marriage is given by Equation (8)

$$\begin{aligned} &\text{Female age at marriage} \\ &= 15.12 + 0.002\left(\text{CAge}\right) + 0.17\left(\text{EduW}\right) + 0.06\left(\text{EduH}\right) \end{aligned} \tag{8}$$

Table 5. Effect of communities exposure to any form of mass media on individual level predictors in determining female age at marriage in UP (fixed effects).

Dimensions (unconditional means model)	
Covariance parameters	22
Columns in X	1
Columns in Z Per Subject	6
Subjects	317
Max Obs Per Subject	50
Number of Observations	
Number of Observations Read	7175
Number of Observations Used	6781
Number of Observations Not Used	394

Fixed Effect	Subject	Estimate	S.E.	DF	t value	Pr > |t|	Alpha	Confidence limit	
								Lower	Upper
Intercept	ID	15.120	0.15	315	102.96	<0.0001	0.05	14.83	15.41
***Level*-2**									
Community Exposure to film, drama or puppetry		0.390	0.14	315	2.73	<0.0067	0.05	0.11	0.67
***Level*-1**									
Women's current age		0.002	0.00	6459	0.54	0.591	0.05	−0.005	0.007
Women's Education		0.170	0.01	6459	16.69	<0.0001	0.05	0.15	0.19
Husbands Education		0.060	0.01	6459	9.45	<0.0001	0.05	0.05	0.07
Caste		0.140	0.06	6459	2.20	0.028	0.05	0.02	0.26
Religion		−0.300	0.12	6459	−2.58	0.009	0.05	−0.52	−0.07

The average female age at marriage for communities exposed to film, drama and puppetry is 15.51 while those not exposed is 15.12 years. At given values of current age of women, their and husbands levels of education those belonging to Hindu religion and are from general & Other Backward Caste (OBC) the average female age at marriages are significantly different.

The variance component for intercepts ($\tau_{00} = 0.24$) is not significantly different from zero, so the null hypothesis that the intercepts do not differ across communities cannot be rejected. It also suggests that the level-1 predictors used in the model capture almost all the variability in the female age at marriages in Uttar Pradesh.

The variance component for slope is $\tau_{55} = 0.58$ is significantly different from zero, so the null hypothesis that the slopes do not differ across communities is rejected. The components representing the covariance between intercept

and slopes are represented by matrix in Equation (6) and the values are too small, and the null hypothesis that the values of covariance parameter is zero ($p > 0.05$) cannot be rejected. This finding is suggestive of the fact that a simpler model in which only the intercept vary across communities but not the slope would provide a better fit.

In order to assess how much within community variations in female age at marriage is explained by the introduction of the individual level predictors in the model. We compare the value of residual from unconstrained models to that of the model Equation (4). This is calculated as $(4.72 - 4.07)/4.72 = 0.1377$ or 14 percent of the explainable variation within communities. The 14 percent is the explainable variation of the 83 percent within community variation previously explained. For details on SAS PROC MIXED and model fitting refer to article by Judith D. Singer [22].

5. Conclusions

The community's exposure to media (films, drama or puppetry) does influence female age at marriage positively. Compared to the communities that are not exposed to such kind of media, those exposed to such media have higher female age at marriage and are statistically significant. At individual level the educational levels of both respondents as well as their husbands has a positive impact and raises the female age at marriage in Uttar Pradesh and is statistically significant. Similarly, Hindu female have lower age at marriage compared to other religious groups, this is primarily due to the prevalent return marriage (gauna) ceremonies among Hindus which is considered as the effective age at marriage. Being from general caste and other backward caste pulls the mean age at marriage upwards than SC/ST.

It is therefore imperative for the government not only to strengthen the rural educational opportunities for females in Uttar Pradesh but also to strengthen the reach and access to informative and educative films/snippets and other forms of educative media in these areas targeting rural adolescent's females using local dialect. This will enable the young adolescents in making informed decisions in the matters relating to their marriage age and not to marry below the legal minimum of 18 years.

NFHS-2 is the only dataset providing information at community level. In order to capture the digital revolution of the recent times in true sense within the community in rural areas, breaking the stereotypes, the future rounds of NFHS (proposed NFHS-5 in 2018-19) should incorporate some of these variables that capture the impact of social media revolution in the country and it's within community impacts on social indicators.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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